

Gender gaps in financial literacy: a multi-arm RCT to break the response bias in surveys*

Laura Hospido

Banco de España, CEMFI and IZA

Nagore Iriberry

University of the Basque Country, UPV/EHU and IKERBASQUE, Basque Foundation for Science

Margarita Machelett

Banco de España

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Abstract

Women are consistently more likely to respond “I do not know” (IDK) to financial questions, a pattern that might not solely reflect knowledge gaps. We test whether this behavior can be shifted and how it shapes measured financial literacy, using a randomized experiment with 6,000 adults in Spain. We evaluate three interventions: removing the IDK option, offering monetary incentives, and providing an informational nudge. All three reduce IDK responses significantly, suggesting that IDK use is not purely knowledge-driven. In particular, the informational nudge reduces the gender gap in IDK responses by half, and eliminates it in specifications with controls. Turning to financial literacy, we find suggestive evidence that incentives, if anything, would increase the gender gap, while the informational nudge type of interventions would go in the direction of reducing the gender gap in financial literacy.

JEL Classification: C8, C9, D14, D91, G53, I22, J16

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1 Introduction

Financial literacy, the understanding of basic financial concepts such as inflation and risk diversification, impacts important economic decisions, for example, retirement and saving plans, stock market participation, and, ultimately, households' wealth levels and well-being (IOSCO, 2018; Lusardi and Mitchell, 2014, 2023). Improving the general population's financial literacy, especially for the most vulnerable, has become a major policy goal in many countries (OECD, 2013). For example, the G20 has declared financial literacy an essential skill, supporting the design and evaluation of financial literacy policies (G20, 2021). An appropriate policy response should consider that financial knowledge is not evenly distributed in the population. In particular, women consistently perform worse than men on financial literacy surveys, a fact that is persistent across countries and over time (OECD, 2016; Klapper and Lusardi, 2020). Part of this gap can be explained by differences in observable characteristics such as education, experience in financial decisions, and interest in financial topics.¹ Yet, a considerable part of this gap remains unexplained.

In this paper, we argue that part of the observed gender gap can reflect response behavior in surveys rather than actual differences in knowledge. Standard financial literacy measures are based on the share of correct answers in surveys that typically allow for "I do not know" (IDK) as a valid option. This creates a challenge: we cannot distinguish whether IDK reflects lack of knowledge or other motivations such as lack of confidence, risk, regret, action aversion or other behavioral traits. In addition, women are systematically more likely than men to choose IDK (Chen and Garand, 2018; Cziriak et al., 2024; Kim and Mountain, 2019; Hospido et al., 2023; Wilmarth et al., 2023; Conte et al., 2024; Bertola and Lo Prete, 2025; Bucher-Koenen et al., 2024; Tranfaglia et al., 2024). As a result, measured gender gaps may partly capture response bias, a form of measurement error in which the observed distribution of correct answers does not map one-to-one to true knowledge. The implications of this are far from innocuous. To illustrate, consider a simple extreme case: suppose men and women were equally and perfectly knowledgeable, but women always answered IDK while

¹See, among others, Chen and Volpe (2002); Fonseca et al. (2012); Driva et al. (2016); Hsu (2016); Bucher-Koenen et al. (2017); Zaccaria and Guiso (2020); Bottazzi and Lusardi (2021).

men always provided an answer. Then, conventional measures would show men to be perfectly literate and women entirely illiterate. Such distortions risk misleading policy interventions. More broadly, any relationship between financial literacy and financial behavior should be interpreted with explicit attention to the role of IDK responses.

We causally test whether the propensity to choose IDK can be shifted and measure its impact on financial literacy by gender. We evaluate three interventions designed to reduce the response bias in the propensity to choose IDK. Using a sample of 6,000 adults in Spain, we field an online survey based on the OECD International Network of Financial Education (INFE) questionnaire and the Spanish Survey of Financial Competences (OECD, 2022; Hospido et al., 2023). We focus on the key concepts measured by the “Big Five” financial literacy questions (Hastings et al., 2013), originally developed by Annamaria Lusardi and Olivia Mitchell, to measure the basic understanding of inflation, compound interest rate, risk diversification, mortgages, and bond pricing.² They are either multiple choice or true or false questions that allow for IDK as a valid answer. We isolate the causal impact of policy interventions to answer IDK and the measured gender gaps by assigning participants to the control or one of the three treatment arms: without IDK, incentives or informational nudge.

Participants in the control group complete the financial literacy section with the IDK option available, as in standard surveys. The first treatment, “without IDK”, presents the same financial literacy section but without the IDK option, forcing respondents to provide an answer. This allows for a benchmark to financial literacy changes when IDK is no longer possible by design. The remaining two treatments identify a different margin than “without IDK”: whether participants can shift their response behavior. The second treatment, “incentives” keeps the IDK option and provides explicit and immediate monetary rewards for each correct answer. This should induce profit-maximizing participants to strictly prefer selecting an option over IDK, and provide a quantifiable measure to the extent in which participants prefer to forego a chance of receiving credit. Finally, the information

²We measure the same five underlying concepts relying on the OECD/INFE Toolkit for Measuring Financial Literacy and Financial Inclusion as our primary reference. As such, the precise wording and format of our questions do not exactly follow the Lusardi–Mitchell formulation.

nudge, also keeps the IDK option while informing all participants about the gender gap in financial literacy and women's propensity to choose IDK relative to men's (the information part) and a sentence prompting participants to provide educated guesses when uncertain (the nudge part).³

Overall, we confirm the two key patterns observed in the literature in our control group. First, women score lower on financial literacy and are more likely to select IDK. The difference amounts to roughly 9 percentage points in correct answers and 6 percentage points in IDK responses, while the gap in incorrect answers is small. Controlling for observable characteristics reduces but does not close the gaps in correct and IDK responses. By contrast, the gap in incorrect answers is no longer significantly different from zero. The gender gap in IDK responses accounts for two-thirds of the gender gap in financial literacy.

Interestingly, and the main innovation of this paper, we find that the propensity to provide an answer is highly malleable. Across all three interventions -removing the IDK option, providing monetary incentives, and giving an informational nudge - IDK responses fall sharply. Importantly, we observe different impacts by treatment and gender. By design, the without IDK reduces the gap in IDK use to zero. Introducing incentives does not significantly reduce the gender gap in IDK answers. By contrast, the informational nudge treatment is effective in reducing the gap in response bias, reducing it to half, from over 6 to close to 3 percentage points, and becoming statistically indistinguishable from zero in specifications with controls.

In turn, we test the implications of decreasing the IDK in the gender gap in financial literacy and incorrect responses. While the effect on IDK use is highly malleable, the implied effects on gender gaps in financial literacy are modest and less precisely estimated. Eliminating the IDK answer seems to go in the direction of reducing the gender gap in financial literacy, but the effect is not significant. In addition, it increases the percent of incorrect answers significantly more for women. If we consider this treatment as the cleanest benchmark - since it removed the possibility of opting out- it can be viewed as capturing the maximum observable measure of an individual's knowledge.

³The use of information has been widely used in different settings, as shown by [Gabaix \(2019\)](#), both in non-financial settings ([Boring and Philippe, 2021](#)) and in financial settings, for example, to increase loan repayment or savings ([Karlan et al., 2015](#); [Haran Rosen and Sade, 2022](#)).

Under this interpretation, then, at most women know 57 percent of the questions (relative to 49 in the control group), while men answer correctly up to 63 percent (relative to 58).

The incentives treatment does not reduce the gender gap in financial literacy; if anything, the point estimates imply a larger gap, but the difference is not statistically significant. Percent correct increases for men and women similarly, but the percent incorrect significantly increases only for women. Therefore, the introduction of incentives would draw more knowledgeable men than women. By contrast, the informational nudge raises women's correct response rates by more than men's, with an effect of about 3 percentage points that is marginally significant at the 10 percent level in specifications with controls. Under this treatment, the gender gap in measured financial literacy decreases and the remaining difference is not statistically distinguishable from zero in specifications with controls (but with a p -value equal to 0.11). This treatment also shows the smallest widening of the gender gap in incorrect responses. These results show that informational nudges help equalize behavior in surveys in terms of the use of IDK across men and women, and they provide suggestive evidence that they narrow gender differences in measured financial literacy, although the estimates are too imprecise to draw firm conclusions.

A complementary benchmark for interpreting these effects compares the observed increase in correct and incorrect answers, with those expected under random guessing. This helps distinguish answering *more* from *more informed* answering. Overall, the evidence is suggestive but inconsistent with participants just guessing at random. While results regarding correct answers are imprecise, the differential increase in incorrect answers is significantly smaller than what would be expected under random guessing. This suggests that the reduction in IDK responses reflects more informative answers. The benchmark analysis also reinforces our gender-specific results: monetary incentives draw in more knowledgeable men into answering, with differences that are statistically distinguishable from the random-guessing benchmark. By contrast, the informational nudge draws in more knowledgeable women into answering, although the evidence is weaker and only marginally statistically significant for incorrect answers.

Taken together, these findings suggest that IDK use is highly malleable, but that gender gaps

in measured financial literacy are more difficult to shift. Although all interventions substantially reduce IDK responses, they do not have uniform effects on financial literacy outcomes by gender. Without IDK and monetary incentives do not reduce the gender gap in financial literacy. In contrast, the informational nudge eliminates the gender gap in IDK and provides suggestive evidence of a narrowing in the financial literacy gap. The random guessing benchmark analysis points in the same direction, showing that these treatment differences are reflected in gender-specific patterns of correct and incorrect responses rather than in random guessing. Altogether, we find suggestive evidence that monetary incentives seems to bring more knowledgeable men into answering, while the informational nudge induces relatively more knowledgeable women to respond.

Beyond the experimental evidence, we complement our analysis with descriptive correlations between IDK answers and a broad set of financial outcomes that are directly relevant for individual well-being. Using the 2021 Spanish Financial Competences Survey, we relate the share of IDK responses in the core financial knowledge questions to standard indices of financial behavior, objective and subjective financial well-being, and financial product awareness and holding as proposed by the 2023 OECD/INFE International Survey of Adult Financial Literacy ([OECD, 2023](#)). These indices summarize whether individuals follow recommended financial practices (such as actively saving, keeping track of expenses and paying bills on time), their ability to cope with shocks, their satisfaction with their financial situation, and the range of payment, savings, insurance and credit products they know and use. We find that, even after conditioning on the level of financial knowledge and gender, a higher IDK share is strongly negatively associated with most of these indicators and with many of their underlying components. This suggests that IDK answers capture systematic differences in financial behavior and market participation, not just measurement noise, and underscores the policy relevance of understanding and potentially shifting response behavior in financial literacy surveys.

This paper contributes to the literature on gender differences in financial literacy and in the choice of IDK responses. A large literature has documented persistent gender gaps in financial literacy and has focused primarily on observable characteristics that explain part of this gap (see

reviews by [Lusardi and Mitchell 2014](#); [Bucher-Koenen et al. 2017](#)). More recently, a smaller but growing body of work has examined how survey design and response behavior shape measured financial literacy and gender differences.

In particular, several papers explicitly model the choice of IDK or analyze it in correlational regressions ([Chen and Garand, 2018](#); [Kim and Mountain, 2019](#); [Hospido et al., 2023](#); [Wilmarth et al., 2023](#); [Conte et al., 2024](#); [Bertola and Lo Prete, 2025](#)). These studies highlight the role of confidence and response behavior in explaining the higher propensity of women to select the IDK option. We add to this literature by providing causal evidence on interventions that impact IDK responses.

More closely related papers are [Tranfaglia et al. \(2024\)](#), [Bucher-Koenen et al. \(2024\)](#). [Tranfaglia et al. \(2024\)](#) and [Bucher-Koenen et al. \(2024\)](#) find that removing the IDK option shrinks gender gaps in financial literacy. [Bucher-Koenen et al. \(2024\)](#) use a within-subject panel design, in which their second-round questions additionally elicit confidence after each item. [Tranfaglia et al. \(2024\)](#) compare financial literacy in the 2021 Survey of Household Economics and Decision Making between respondents who face a survey with an IDK option and those who do not, and find that the gender gap in financial literacy shrinks when IDK is removed. In our experiment, the effect of eliminating the IDK option also goes in this direction but is not statistically significant. Importantly, the without IDK treatment mechanically eliminates the IDK option, so it cannot show whether participants would voluntarily change their IDK response behavior - the channel our remaining treatments can address.

Interestingly, gender gaps in measured political knowledge have also been attributed to gender differences in the choice of IDK; see, for example, [Mondak and Anderson \(2004\)](#) and [Lizotte and Sidman \(2009\)](#). As far as we know, no RCT was implemented to test for the effect of survey takers' propensity to choose IDK answer option in the political domain. It remains to be studied whether similar interventions presented in our study are equally effective in reducing the choice of the IDK answer option in surveys measuring political knowledge.

Finally, our work is also related to gender differences in omitting questions in multiple-choice

tests used in educational tests. In particular, to a large literature that has studied how gaps vary in multiple-choice tests with and without differential grading for omitting questions and providing wrong answers. Women are found to omit more questions than men (Ben-Shakhar and Sinai, 1991; Baldiga, 2014; Pekkarinen, 2015; Coffman and Klinowski, 2020; Espinosa and Gardezabal, 2020; Iriberry and Rey-Biel, 2021), which can be related to choosing IDK answers. These studies often find that deleting differential grading of incorrect and omitted answers reduces gender gaps in performance measures. While these studies examine high-stakes testing environments, we analyze anonymous surveys, showing that simple design interventions can reduce gender differences in response behavior even in low-stakes contexts.

The rest of the paper is organized as follows. In Section 2 we describe the survey design and the treatments. Section 3 presents the results. Section 4 explores the association between IDK and financial outcomes. Finally, Section 5 concludes.

2 Survey Design and Treatments

We designed an online survey experiment to test the effectiveness of three interventions to reduce the frequency of choosing IDK answers and their effect on financial literacy. The main focus is on their effect on gender gaps in these three outcomes: percent IDK, percent correct and percent incorrect. The survey design was approved by the Ethics Committee at the Institutional Review Board and the survey design and pre-analysis plan were pre-registered.⁴

The survey consisted of about 40 questions, lasted 15 minutes on average, and was administered by the survey company 40dB in Spain between October 24 and November 18 of 2022. Survey takers received a small fixed payment of 1.20€ for completing the questionnaire. This amount was determined based on the expected time required to complete the survey and is standard compensation in the company.

⁴The University of the Basque Country UPV/EHU Ethics Committee certified the exemption (<https://www.ehu.eus/en/web/ceid/>) because the researchers received anonymized data from the survey company, 40dB, which has configured and implemented a personal data protection program in accordance with the reforms of the European Data Protection Regulation 2016/679 and the Organic Law on Protection of Personal Data 3/2018. The experiment and the pre-analysis plan are pre-registered in the AEA RCT Registry under the RCT ID [AEARCTR-0009896](#).

The survey was divided into three main parts, starting with questions about individual demographic information, family and household background, and the elicitation of behavioral traits and perceptions such as interest and perceived knowledge of financial topics and risk preferences. The inclusion of these questions is motivated by the research that shows that these are important variables in explaining gender gaps in financial literacy.⁵ We also included questions on family background, such as parental education, to have a richer set of control variables. This section was the same for all survey takers and had no time limit. These questions were included before participants received each treatment and entered the financial literacy section for two reasons. First, this sequence aligns with INFE toolkit guideline and thus follows the standard structure used in international surveys practice measuring financial literacy. Second, this order ensures that participants' responses are not affected by the treatments, preventing potential biases such as shifts in confidence or risk aversion.

Then, the survey included a financial literacy section based on the INFE/OECD questionnaire. The introductory section text is standard and encourages participants to try to avoid choosing the IDK answer option. Of course, this text was excluded from the treatment arm without IDK. This section included 10 questions with a total time limit of 7 minutes to complete.⁶ These included the Big Five financial literacy questions that assess the understanding of inflation, compound interest rate, risk diversification, mortgages and bond pricing concepts. These will be the focus for the main results.⁷ The goal of providing a time limit to complete was to minimize the probability of section interruptions and searching for answers. We also kept track of the time spent answering the financial literacy section.

Finally, after the financial literacy section, the survey ended with 7 additional questions about participants' experiences, perceptions, and holdings of financial products. Unlike previous studies, we gathered information on individual's experiences which might help explain decision-making and

⁵See, for instance, [Bucher-Koenen et al. \(2017\)](#) for an overview of the literature exploring gender gaps in financial literacy.

⁶The purpose of the time limit was to minimize the probability of searching for answers online. As shown in Section 3.3, this seems to be the case, as participants did not spend considerable time on these questions, and there are no differences by gender.

⁷In addition to the Big Five, we included a simple division question, an interest rate question without compounding, a probability question, a question included in the cognitive reflection test, and a simple subtraction exercise that we used to identify those survey takers who did not pay attention.

gender gaps. Based on participants' experiences, we construct a lean-in index as a standardized measure combining information such as asking for a job promotion or wage increase. The perceptions refer to behavioral traits such as having the confidence to deal with unexpected events. The financial products questions referred to ownership and means of interacting with banks (e.g., online). Then, the questionnaire ended with a question on perceived survey difficulty. This last part was the same for all survey takers and had no time limit.⁸

Importantly, we randomly varied the financial literacy section design while keeping the same questions. For a diagram of the experimental design, see Figure A1 in the Appendix A. The survey design included a control version and three treatments to evaluate as interventions to potentially reduce IDK. Following standard survey practices, the control group included the financial literacy questions with the option IDK among the answer options. Specifically, we follow INFE/OECD toolkit for measuring financial literacy suggestion (OECD, 2022) and use the verbatim text from the Spanish Financial Competences Survey (Hospido et al., 2023). Related to IDK answers, it states: "If you do not know the answer, just say so. If you think you have the right answer, it is likely that you do." The first treatment arm, without IDK, omitted this option from the possible answers and the standard introductory section text omitted the mention of IDK answers. The second treatment arm, incentives, kept the IDK option in the answers and offered additional monetary incentives for correct answers. Specifically, the incentive consisted of paying 7 additional cents for each correct answer, up to 70 cents if all 10 questions were answered correctly. Although the overall incentives are low, they are substantial in relative terms, as they can earn an additional 60 percent of their fixed payment of 1.20€. Finally, the third treatment, referred to as information, also kept IDK among the answers and included an introductory text before starting the financial literacy section. This information aimed to increase awareness of gender differences in propensities to choose IDK and repeated the instruction to try to avoid choosing IDK answers to nudge them away from choosing this answer. Specifically, all survey takers assigned to this treatment, both men and women, received the following information:

⁸All the questions included in the survey can be found in the Appendix B.

Men typically answer 7 out of 10 financial questions correctly. Women 6 out of 10. This difference is mostly explained (65 percent) because women choose the answer “I do not know” more often than men. Therefore, we ask you to - please - avoid answering “I do not know”.

These statistics came from the microdata of the Spanish Survey of Financial Competences implemented by the Bank of Spain and the Comisión Nacional del Mercado de Valores in 2016. Any intervention using informational nudges might be susceptible to potential experimenter demand effects. However, it is reassuring that [De Quidt et al. \(2018\)](#) show that experimenter demand effects tend to be small in online experiments.

The survey code randomly assigned each treatment by gender immediately before entering the financial literacy section. The survey was pre-tested in a pilot implemented in September 2022. For the final sample, we received 6,000 completed surveys in total (3,000 men and 3,000 women): 2,400 in the control group (40 percent of the sample: 1,200 men and 1,200 women) and 1,200 (20 percent of the sample: 600 men and 600 women) in each of the three treatment arms. To obtain 6,000 completed surveys, the survey company collected 6,879 surveys, of which 879 survey takers abandoned the survey before completing it. In Subsection 3.3, we test whether there are gender differences in the probability of exiting the survey, and, in particular, we analyze if different treatment arms impact the probability of exiting the survey differently.

3 Results

3.1 Descriptive Statistics and Randomization

Table 1 presents summary statistics for the control and the three treated groups. It includes all characteristics later used as control variables and outcome variables in the main analysis and shows the p -value for the F-test on differences across groups.

Table 1: Descriptive Statistics (mean values) and Randomization

		(1)	(2)	(3)	(4)	(5)
		Control	Without IDK	Incentives	Information Nudge	<i>p</i> -value
Demographics	Woman	0.50	0.50	0.50	0.50	1.00
	Age 18-34	0.19	0.19	0.17	0.18	0.70
	Age 35-44	0.26	0.27	0.26	0.27	0.87
	Age 45-54	0.30	0.30	0.30	0.30	0.97
	Age 55-70	0.25	0.24	0.27	0.26	0.47
	Spaniard	0.91	0.93	0.93	0.91	0.16
	Pop. size 0-20th	0.21	0.18	0.19	0.20	0.16
	Pop. size 20th-100th	0.27	0.26	0.28	0.27	0.70
	Pop. size 100th+	0.52	0.56	0.53	0.53	0.16
	Primary education	0.20	0.17	0.25	0.21	0.00
	Secondary education	0.34	0.37	0.35	0.35	0.36
	University education	0.35	0.35	0.30	0.34	0.02
	Master, PhD education	0.11	0.11	0.10	0.10	0.76
	Working	0.70	0.69	0.67	0.67	0.12
Retired	0.10	0.10	0.12	0.11	0.37	
Unemployed	0.19	0.19	0.20	0.21	0.31	
Household	< 1 bookshelf at age 10	0.75	0.74	0.73	0.73	0.74
	> 2 bookshelves at age 10	0.25	0.26	0.27	0.27	0.74
	Household size	2.99	2.97	3.04	2.97	0.43
	Primary earner	0.67	0.66	0.69	0.66	0.44
	Lives with partner	0.73	0.71	0.72	0.73	0.59
	Mother: Primary education	0.60	0.57	0.59	0.59	0.60
	Mother: Secondary education	0.19	0.21	0.19	0.20	0.43
	Mother: Post-secondary education	0.20	0.19	0.19	0.19	0.80
	Father: Primary education	0.53	0.53	0.55	0.56	0.38
	Father: Secondary education	0.20	0.20	0.20	0.19	0.68
	Father: Post-secondary education	0.23	0.23	0.20	0.22	0.42
	Partner: Primary education	0.17	0.15	0.18	0.18	0.12
	Partner: Secondary education	0.24	0.25	0.24	0.23	0.78
	Partner: Post-secondary education	0.33	0.32	0.30	0.32	0.50
Assessments	Very low financial knowledge	0.02	0.02	0.02	0.03	0.70
	Low financial knowledge	0.12	0.12	0.12	0.12	0.94
	Neutral financial knowledge	0.42	0.41	0.40	0.44	0.20
	Good financial knowledge	0.38	0.41	0.40	0.37	0.09
	Very good financial knowledge	0.06	0.04	0.06	0.05	0.03
	Expected correct answers	5.58	5.73	5.79	5.52	0.00
	Interest in finance	6.10	6.13	6.14	5.97	0.35
	Risk willingness	4.65	4.77	4.74	4.62	0.48
	Lottery choice	3.62	3.58	3.67	3.65	0.77
Perceptions	Lean-in index	0.01	0.01	-0.03	0.00	0.39
	Perceived self-efficacy	3.96	4.00	4.00	4.02	0.20
	Perceived confidence	3.80	3.87	3.83	3.83	0.18
Managing finances	Perceived lean-in	3.65	3.67	3.64	3.63	0.84
	Saving products (N)	2.53	2.60	2.46	2.56	0.07
	Debt products (N)	1.39	1.39	1.36	1.42	0.48
	Online bank operations	0.80	0.82	0.80	0.81	0.66
Main outcomes	No bank operations	0.03	0.03	0.03	0.04	0.34
	Big five: IDK answers (%)	0.15	0.00	0.06	0.08	0.00
	Big five: Correct answers (%)	0.53	0.60	0.56	0.57	0.00
Other outcomes	Big five: Incorrect answers (%)	0.30	0.38	0.33	0.34	0.00
	Perceived survey difficulty	4.23	4.15	4.17	4.13	0.76
	Big-five: Completion time	99.57	102.34	100.77	102.59	0.49
Observations		2,400	1,200	1,200	1,200	

First, regarding respondents' main demographics, they are equally represented by gender by design, are, on average, 46 years old, about 92% were born in Spain, and more than 50% live in big cities. More than half of them have completed at most secondary education, and over 68% are currently working.

Second, regarding respondents' household characteristics, over 70% live with a partner, have an average of about 3 household members, and are most likely the primary income earners. Survey takers' parents have low education, as more than half of mothers and fathers have completed at most primary education. In line with this, close to 75% recall having fewer than a bookshelf of books when they were 10 years old.

Third, regarding their self-assessments on financial knowledge and risk-taking behavior, we find that most participants perceive they have either neutral (over 40%) or good (close to 40%) knowledge of financial topics. In line with this, they believe they would get close to 6 correct answers in a 10-question financial questionnaire and their interest in finance is about 6 on a scale between 0 and 10. Both risk aversion measures, one qualitative and one lottery choice using the elicitation method by [Eckel and Grossman \(2002\)](#), show that the survey takers are, on average, slightly risk averse.

Finally, they place themselves close to 4 in their self-efficacy, confidence and lean-in measures, which come from statements with an agreement scale between 0 and 5. Regarding their management of finances, they have, on average, 2.5 out of 6 saving or investing products, such as saving accounts or pension plans, and about 1.4 out of 3 debt products, among loans, mortgages, and credit cards. Most have performed online bank operations over the last 12 months, while about 3% had no bank operations.

The last column reports the p -values for the F-test when comparing all control variables across the four treatment groups. Overall, all these values show that the randomization was implemented successfully. The exceptions are the education level (the proportion of those with primary education and university studies), the assessment of having good or very good financial knowledge, the expected number of correct answers. Reassuringly, the results are not sensitive to including these characteristics as controls.

These descriptive statistics are also presented, separately by gender, in Tables [A1](#) and [A2](#) in the Appendix [A](#). Consistent with the literature, men and women differ in some characteristics, mainly in behavioral traits and perceptions. They also differ in managing finance variable characteristics. For example, women tend to be more risk-averse ([Croson and Gneezy, 2009](#)), less interested in finance ([Brown and Graf, 2013](#)), and less confident in their self-perceived financial knowledge than men ([Bordalo et al., 2019](#)). They also hold fewer financial products, are less likely to do online bank operations, and are more likely to have no bank operations ([Almenberg and Dreber, 2015](#); [Bottazzi and Lusardi, 2021](#); [Balutel et al., 2023](#)). Most importantly, the p -values in the final columns show that, when split by gender, both men and women have comparable socio-demographics, family background, behavioral traits, and experience managing finances across the four treatment groups.

3.2 *Main Results: Evaluation of the Three Interventions*

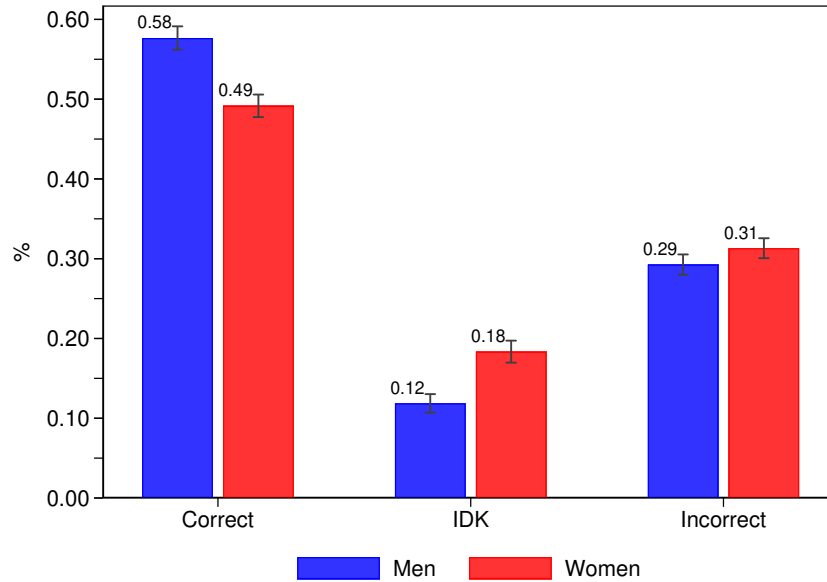
The *main outcomes* panel in [Table 1](#) show the mean values for the percent of IDK, correct and incorrect answers for the Big Five financial literacy questions, for each of the treatment groups. In the control group, the survey takers choose the IDK answer on average in 15 percent of the questions, while the three treatment arms reduce this percentage significantly. Mechanically, the biggest decrease is when this option is eliminated, followed by the information treatment, chosen in 7 percent of the questions, and finally, introducing monetary incentives, chosen in 9 percent of the questions. When participants respond to more questions, the results in financial literacy and percent incorrect are also shifted. On average, in the control group, survey takers answer 53 percent of the questions correctly, and the three treatment arms are effective in increasing this percentage. When deleting the IDK option, survey takers answer correctly 60 percent of the questions, followed by providing information and monetary incentives, with about 57 and 56 percent correct each, respectively. With respect to percent incorrect, they increase from 30 percent in the control to 38, 33 and 34 percent in the without IDK, incentives and information nudge, respectively.⁹ As expected by these differences, the p -values in the final column show that the different interventions impacted

⁹Skipped answers are not considered correct, incorrect or “I do not know” answers. This account for 1.2 percent in the control group, 1.7, 1.7, and 2 percent in the without IDK, incentives and information treatment. [Table A8](#) shows the results do not vary if these are considered as IDK answers.

these two outcome variables significantly.

With respect to gender differences, for the control group, we confirm the two main findings on gender gaps in financial literacy, which we show in Figure 1.

Figure 1: Main Outcomes in the Big Five Questions in the Control Group by Gender



Notes: Raw average percent correct answers, percent IDK answer option, and percent incorrect answers, along with their 95% confidence intervals, for the Big Five questions in the control group, by gender. Average percents do not add up to 1 because 1.2% of men and 1.2% of women skipped at least one question. There are 140 participants that skipped at least one of the Big Five questions. There are currently considered non-IDK, non-correct, and non-incorrect answers as in the Spanish Financial Competences Survey.

First, we observe a gender gap of about 9 percentage points in financial literacy (men answer about 58 percent of the questions correctly, while women answer correctly 49 percent of them), in line with the existing literature and comparable to the findings by [Hospido et al. \(2023\)](#), that report a 10 percentage point gender gap among the Spanish adult population, and slightly smaller than the one found by [Bucher-Koenen et al. \(2024\)](#), that report a 14 percentage point gender gap in the dutch speaking population in Netherlands. Second, the about 9 percentage point difference is explained by a 6 percentage point gender gap in IDK answers. Consistent with [Bucher-Koenen et al. \(2024\)](#) and [Hospido et al. \(2023\)](#), about two-thirds of the gender gap in financial literacy corresponds to different propensities to choose IDK answer. Specifically, men choose the IDK in close to 12 percent of the questions. In comparison, women choose it at a higher rate (18 percent).

Last, when looking at the percent incorrect answers, an outcome not usually studied in the literature, we find that men’s and women’s performance differs by less than 2 percentage points (significant at the 10% significance level). It is worth noting that the gender gap in IDK answers and financial literacy remain large and significant in the specifications that add control variables. For instance, adding confidence and risk aversion among the controls helps reduce the gender gap in financial literacy from 9 percentage points to 6, and in IDK from 6.5 to 4 percentage points (as shown in Tables 3 and 2). In contrast, the adjusted gender gap in incorrect answers is further reduced and no longer significantly different from zero, as shown in Table 4.

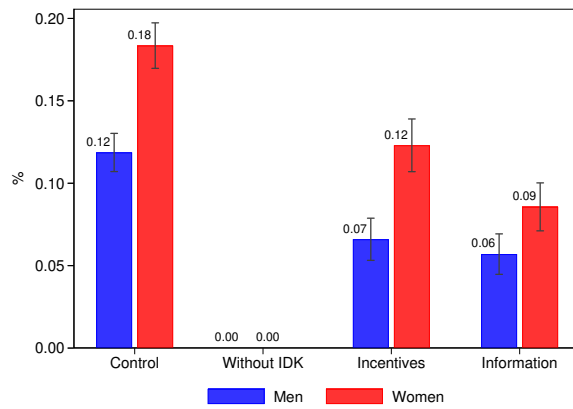
Formally, for each outcome, percent IDK, correct and incorrect, we estimate:

$$\begin{aligned}
 Y_i = & \alpha + \beta \text{Woman}_i + \theta_1 \text{WithoutIDK}_i + \theta_2 \text{Incentives}_i + \theta_3 \text{Information}_i \\
 & + \lambda_1 (\text{Woman}_i \times \text{WithoutIDK}_i) + \lambda_2 (\text{Woman}_i \times \text{Incentives}_i) + \lambda_3 (\text{Woman}_i \times \text{Information}_i) \\
 & + X_i' \gamma + \varepsilon_i,
 \end{aligned} \tag{1}$$

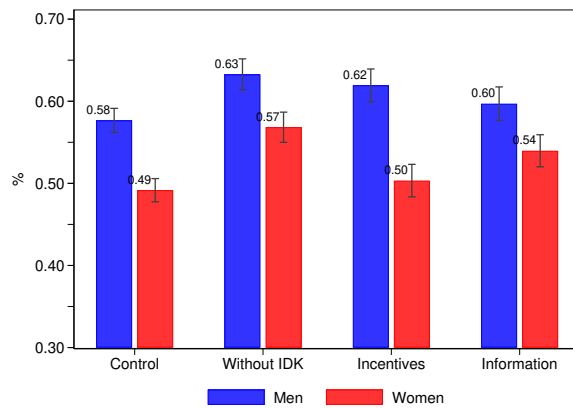
where Woman_i is an indicator for female respondents, WithoutIDK_i , Incentives_i , and Information_i are indicators for the three treatment arms, and $\text{Woman}_i \times \text{WithoutIDK}_i$, $\text{Woman}_i \times \text{Incentives}_i$, and $\text{Woman}_i \times \text{Information}_i$ are the respective interactions between being a female respondent and each of the treatments. Finally, X_i is the vector of control variables, and ε_i is the error term.

With this framework, we evaluate the impact of the three interventions on the gender gaps in both, the frequency of IDK, financial literacy (percent correct) and percent incorrect measures. Figure 2a and Table 2 show the results for the choice of IDK, Figure 2b and Table 3 show the results for financial literacy, and finally, Figure 2c and Table 4 show the results for percent incorrect. Figures 2a, 2b and 2c show the mean values by gender and by treatment. Tables 2, 3 and 4 show the estimation results without any controls, shown in column (1), with all controls, shown in column (2), and with a lasso-selected set of controls that include the main controls variables from column (2) and interactions between these, shown in column (3). Appendix Tables A3, A4 and A5 report all the estimated coefficients of the corresponding Tables 2, 3 and 4, respectively.

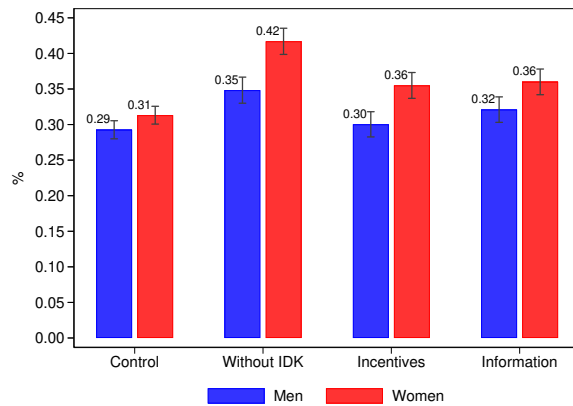
Figure 2: Percent IDK, Percent Correct and Incorrect by Treatment Group and Gender



(a) Percent “I do not know”



(b) Percent Correct



(c) Percent Incorrect

Notes: Panel (a) plots raw average percent IDK answer option, panels (b) and (c) plot raw average percent correct and incorrect answers, along with their 95% confidence intervals, for the Big Five questions by treatment group and gender. Average percents do not add up to 1 because 1.2% of men and 1.2% of women skipped at least one question. There are 140 participants that skipped at least one of the Big Five questions. They are currently considered non-IDK, non-correct, and non-incorrect answers as in the Spanish Financial Competences Survey.

Regarding the impact on IDK answers, with the extreme intervention of deleting the option of IDK, this is mechanically reduced to 0, and consequently, the gender gap is closed. Offering incentives also reduces significantly this answer option. However, the gender gap is not significantly reduced with this intervention. Finally, the information nudge is also effective in reducing the percent of IDK. In this case, however, the effect is significantly larger for women (reduced to 8.6 percent) than for men (reduced to 5.7 percent), at the 1% significance level, such that the gender gap is reduced. In the specification without controls, in column (1), the response bias is reduced to half, from 6 to 3 percentage points, and in the specification with controls, in columns (2) and (3), the gender gap in the propensity to choose IDK is closed. As shown in Table 2, we reject the hypothesis that all treatment effects are equal for each gender.

How do these results in the IDK answers translate into the financial literacy and percent incorrect measures? As shown in Tables 3 and 4, respectively, we reject the null hypothesis that all treatment effects in percent correct and incorrect are equal for both men and women.

For women, the 18 percentage point mechanical reduction in the without IDK treatment translates into gains of 8 points in correct and 10 points in incorrect answers. For men, the corresponding 12 percentage point reduction is split evenly into each. Relative to [Bucher-Koenen et al. \(2024\)](#) and [Tranfaglia et al. \(2024\)](#), we also find that eliminating IDK raises correct responses more for women than for men, but, in our case, the implied narrowing of the gender gap in correct answers is not statistically significant. By contrast, the increase in incorrect answers is significantly larger for women.

In contrast to the without IDK treatment - which eliminates the IDK by design - the incentives and information nudge treatments operate through adjustments in participants' answer choices. The introduction of incentives significantly increased the percent of correct answers for men and for women but in a similar way. At the same time, the treatment does not significantly increase incorrect answers for men, while it does for women. This effectively increases the gender gap in incorrect answers. These results suggest that the incentives treatment induced more knowledgeable men to move away from IDK, than the corresponding women that shifted their behavior. If anything, this

intervention would *increase* the gender gap, although not significantly.

Table 2: Percent “I do not know” Answers: Big Five Questions

	(1)	(2)	(3)
Women	0.065*** (0.009)	0.041*** (0.009)	0.041*** (0.009)
Without IDK	-0.119*** (0.006)	-0.115*** (0.006)	-0.114*** (0.006)
Incentives	-0.053*** (0.009)	-0.049*** (0.008)	-0.050*** (0.008)
Information Nudge	-0.062*** (0.009)	-0.063*** (0.008)	-0.060*** (0.008)
Women x Without IDK	-0.065*** (0.009)	-0.067*** (0.009)	-0.071*** (0.009)
Women x Incentives	-0.008 (0.014)	-0.015 (0.013)	-0.015 (0.012)
Women x Information Nudge	-0.036*** (0.013)	-0.038*** (0.012)	-0.041*** (0.012)
Av outcome for control group men	0.119	0.119	0.119
Controls	No	All	Selected
P-value Test: treatments equal for men	0.000	0.000	0.000
P-value Test: treatments equal for women	0.000	0.000	0.000
Observations	6000	6000	6000
R-squared	0.105	0.239	0.263

Notes: OLS regression of the outcome percent IDK answers in the Big Five questions. The first column includes no control variables, the second column includes all control variables specified in Table 1 and the third column includes a lasso-selected set of control variables from a regression of the outcome variable on these control variables and the interactions between them. Table A3 in the Appendix reports the estimated values of the baseline coefficients in each of the columns. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Percent Correct Answers: Big Five Questions

	(1)	(2)	(3)
Women	-0.085*** (0.010)	-0.056*** (0.010)	-0.076*** (0.012)
Without IDK	0.056*** (0.012)	0.052*** (0.011)	0.052*** (0.011)
Incentives	0.043*** (0.013)	0.040*** (0.012)	0.043*** (0.011)
Information Nudge	0.020 (0.013)	0.021* (0.012)	0.021* (0.011)
Women x Without IDK	0.021 (0.017)	0.021 (0.016)	0.019 (0.016)
Women x Incentives	-0.031* (0.018)	-0.021 (0.016)	-0.024 (0.016)
Women x Information Nudge	0.028 (0.018)	0.028* (0.017)	0.029* (0.016)
Av outcome for control group men	0.577	0.577	0.577
Controls	No	All	Selected
P-value Test: treatments equal for men	0.042	0.077	0.056
P-value Test: treatments equal for women	0.000	0.000	0.000
Observations	6,000	6,000	6,000
R-squared	0.037	0.176	0.208

Notes: OLS regression of the outcome percent correct answers in the Big Five questions. The first column includes no control variables, the second column includes all control variables specified in Table 1 and the third column includes a lasso-selected set of control variables from a regression of the outcome variable on these control variables and the interactions between them. Table A4 in the Appendix reports all the estimated values of the baseline coefficients in each of the columns. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Percent Incorrect Answers: Big Five Questions

	(1)	(2)	(3)
Women	0.021** (0.009)	0.017* (0.009)	0.007 (0.011)
Without IDK	0.056*** (0.011)	0.056*** (0.011)	0.054*** (0.011)
Incentives	0.008 (0.011)	0.006 (0.011)	0.008 (0.011)
Information Nudge	0.028** (0.011)	0.029*** (0.011)	0.027** (0.011)
Women x Without IDK	0.048*** (0.016)	0.051*** (0.016)	0.056*** (0.016)
Women x Incentives	0.034** (0.016)	0.030* (0.015)	0.030** (0.015)
Women x Information Nudge	0.018 (0.016)	0.019 (0.016)	0.019 (0.015)
Av outcome for control group men	0.293	0.293	0.293
Controls	No	All	Selected
P-value Test: treatments equal for men	0.001	0.000	0.001
P-value Test: treatments equal for women	0.000	0.000	0.000
Observations	6000	6000	6000
R-squared	0.026	0.080	0.117

Notes: OLS regression of the outcome percent incorrect answers in the Big Five questions. The first column includes no control variables, the second column includes all control variables specified in Table 1 and the third column includes a lasso-selected set of control variables from a regression of the outcome variable on these control variables and the interactions between them. Table A5 in the Appendix reports all the estimated values of the baseline coefficients in each of the columns. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Finally, the information treatment increases the share of correct answers for both men and women. Contrary to the incentives treatment, the increase is larger for women (5 percentage points) than for men (2 percentage points), implying a reduction in the gender gap in correct answers of about 3 percentage points. This differential decrease, is marginally statistically significant (p -value < 0.10). As a result, the gender gap in correct answers is reduced by half, from 6 to 3 percentage points in specifications with controls. The residual gap of 3 percentage points is not statistically distinguishable from zero (p -value = 0.11), suggesting that the information treatment narrows the gender gap in measured financial literacy.¹⁰ In line with this, the treatment does not significantly change the gender gap in incorrect answers. The estimates suggest that the participants induced by the information treatment to provide a response—particularly women—are respondents with underlying knowledge who would otherwise select IDK, rather than respondents induced to give incorrect answers. If anything, this type of intervention would *decrease* the gender gap.

A complementary benchmark for interpreting these effects is to compare the observed increase in correct and incorrect answers, by treatment and gender, with the increase that would be expected under random guessing. This concern is particularly salient in the without IDK treatment, where participants are forced to provide an answer by design. For example, if participants answered one additional question and that question had four answer options, we would expect an increase of 25 percent in financial literacy (and a 75 percent increase in incorrect answers) by simple random guessing. The differences between the observed increase in percent correct and incorrect and the expected increase under random guessing are provided in the Table 5, top panel for correct answers and bottom panel for incorrect answers, by treatment and both for all participants and separately by gender.¹¹

¹⁰Pairwise comparisons by gender show that the treatment effects in financial literacy are significantly different, except when comparing men in the without IDK and incentives group, where the p -value for the last specification is 0.45.

¹¹To calculate the expected increase in percent correct by random guessing, we first calculate the expected increase question by question, weight it by the increase in provided answers, and then we take the simple average. In particular, as the inflation question has 3 alternative answers, the interest rate question has 4, the risk diversification and mortgages are true/false questions and the bond pricing one has 3 alternative answers, the expected increase for each type of question would differ.

Table 5: Big-Five: Random Guessing Benchmark

	(1)	(2)	(3)	(4)	(5)
	Δ Answers	Δ Correct	Δ Correct by Random Guessing	Difference	p -value
All					
Without IDK	0.15	0.066	0.057	0.010	0.13
Incentives	0.06	0.027	0.022	0.005	0.25
Information Nudge	0.08	0.034	0.030	0.004	0.30
Women					
Without IDK	0.18	0.077	0.069	0.008	0.23
Incentives	0.06	0.012	0.023	-0.011	0.85
Information Nudge	0.10	0.048	0.037	0.01	0.15
Men					
Without IDK	0.12	0.056	0.045	0.011	0.18
Incentives	0.05	0.043	0.021	0.022	0.03
Information Nudge	0.06	0.020	0.024	-0.003	0.60
Δ					
	Δ Answers	Δ Incorrect	Δ Incorrect by Random Guessing	Difference	p -value
All					
Without IDK	0.15	0.080	0.094	-0.015	0.04
Incentives	0.06	0.025	0.035	-0.009	0.11
Information Nudge	0.08	0.038	0.049	-0.012	0.07
Women					
Without IDK	0.18	0.104	0.115	-0.011	0.15
Incentives	0.06	0.043	0.038	-0.005	0.67
Information Nudge	0.10	0.046	0.061	-0.015	0.09
Men					
Without IDK	0.12	0.056	0.074	-0.018	0.06
Incentives	0.05	0.008	0.032	-0.024	0.02
Information Nudge	0.06	0.029	0.038	-0.009	0.20

Notes: The first column shows the increase in the percent of provided answers. The second column shows the observed increase in percent correct. The third column shows the expected increase under random guessing. The fourth column shows the difference between Columns (2) and (3). p -values for Column (4) are obtained from the bootstrap distribution of the estimated difference, $\widehat{\text{diff}}$, and they are computed as $p_1 = \Pr(\widehat{\text{diff}} \leq 0)$.

In the top panel, the first column replicates the overall reduction in IDK answers by each of the interventions, shown in Table 2. The second column, similarly, replicates the effects in percent correct, shown in Table 3. The third column shows the expected change in percent correct within a simple random guessing benchmark. Finally, the fourth column shows the difference between the observed increase in percent correct and the one expected under random guessing, and the last

column shows the p -value of whether the difference in column four is significantly different from zero. The bottom panel shows the equivalent results for incorrect answers. This complementary evaluation shows that in the full sample no intervention significantly raises correct answers above the random-guessing benchmark, but the increase in incorrect answers is significantly lower than the random-guessing benchmark. This apparent contradiction in significance is due to the statistical precision being different for the correct and incorrect answers.¹²

There are some gender specific differential patterns, in line with the results in Tables 3 and 4. On the one hand, the incentives treatment induces more knowledgeable men than women into answering. Men's increase in percent correct and percent incorrect are significantly higher and lower than the one expected under random guessing, while for women this is not the case. The informational nudge treatment, on the other hand, if anything induces more knowledgeable women than men into answering. For women in the information nudge, the increase in incorrect answers is significantly below the random-guessing benchmark (p -value 0.06), suggesting that the marginal female participants are answering with some knowledge. The increase in correct is above the benchmark but the difference is not statistically significant (p -value 0.15).

Finally, we have several robustness. First, as our analysis tests for the impact on multiple outcomes, we additionally examined whether the impacts are significant due to multiple hypothesis testing. Following Anderson (2008), we calculated the adjusted q -values that control for the false discovery rate (FDR). Appendix Table A6 shows that the conclusions remain similar to our main analysis. Using the three main outcomes, we find that the significance remains at similar levels for all the estimates using the FDR-adjusted q -values. The exception corresponds to the impact in correct answers for men receiving the information treatment, where the q -value increases to 0.115. The gender gap, however, is still significantly reduced at the 10% with this treatment.

¹²The comparison with the random guessing benchmark is statistically more precise for incorrect answers than for correct answers. Under random guessing, the probability of an incorrect answer is substantially larger than that of a correct one (e.g., 75% vs. 25% with four options), so the observed increase in incorrect answers and the expected increase under random guessing are larger than from our benchmark in correct answers. The difference between these is therefore large enough to be statistically distinguishable. For correct answers, both the observed increase and the random guessing benchmark are small, so their difference is a small number, making it harder to reject the null that respondents who switched out of IDK were guessing randomly.

Second, the same pattern remains when analyzing the Big Five questions individually, as shown in Tables A7 in the Appendix A. Although the behavioral patterns go in the same direction and are less precise for each of the Big Five questions, the strongest effects in closing the gender gap in the choice of IDK answers with the information treatment seem to come from the questions on inflation, risk diversification and bond pricing. In addition, we re-do the analysis with alternative measures of financial literacy. We use different sets of questions included in the financial literacy section (see Table A8 in the Appendix A). Specifically, we include the Big Five but define omitted questions as IDK answers (column 2)¹³, the Big Three (column 3), which excludes the questions on the mortgages and bond pricing from the Big Five questions. We add the simple interest rate question to the Big Five questions ('Big Six, column 4), and finally, we include all the questions in the financial literacy section (All, column 5). The results are robust to all the different measures.

To sum up, the three interventions effectively reduce IDK responses, and the propensity to choose IDK proves differently malleable by gender. In addition to the by design reduction in IDK when deleting this option, the informational nudge is more effective in reducing the gender gap in IDK than the incentives treatment. Turning to whether the resulting responses reflect knowledge, both the regression and the random guessing benchmark analyses suggest both the incentives and informational nudge induce more knowledgeable participants into answering although by gender the results differ. While the incentives treatment induces more knowledgeable men than women, the informational nudge, if anything, induces more knowledgeable women than men. Taken together, these results suggest that the informational nudge type of treatment are more promising candidates than monetary incentives to reducing the gender gap in financial literacy.

3.3 Further Results: Attrition, Perceived Difficulty and Completion Time

We also study the impact of the treatments on measures of attrition, perceived difficulty and completion time of the Big Five questions obtained from the survey (Appendix Table A9).

Overall, there are no outstanding differences by treated group and gender, except for completion

¹³There are 140 participants that skip at least one of the Big Five questions. They are currently considered non-IDK, non-correct, and non-incorrect answers. In this robustness exercise, they are considered IDK answers

time.¹⁴ The probability of abandoning the survey is a policy-relevant outcome, particularly, for online surveys. The survey company 40dB collected 6,879 surveys to obtain 6,000 completed surveys. Therefore, 879 survey takers left the survey before completing it, a metric that is expected by 40dB. Of those, we exclude 115 individuals whose gender is not reported as they exit the survey before reaching the first question. For the 6,764 remaining participants, we can test whether men and women have a different likelihood of exiting the survey, and for the 6,220 remaining participants who stayed until randomization into treatments was implemented, we can further test if the three treatments impact the probability of exiting the survey differently. We find that 13 percent of the survey takers abandon the test and that, on average, they do it early in the questionnaire, in question numbers 1 and 2. However, once participants have passed the first part of the questionnaire and are assigned to different treatments, the exit rate is as low as 4 percent. Women are more likely to abandon the test early (4.5 percentage points higher) but this gender gap disappears once they complete the first part. More importantly, we find no evidence that the three treatments affect differently the probability of abandoning the test (columns 1 to 4 in Table A9 in the Appendix A).

With respect to perceived difficulty, measured on a scale between 0 and 10, survey takers, on average, give a score slightly over 4, as shown at the bottom part of Table 1. Women, on average, find it more difficult than men. However, we find no evidence that the treatments affect differently participants' perceived difficulty (columns 5 and 6 in Table A9 in the Appendix A).

Finally, regarding the completion time of the Big Five questions, the bottom part of Table 1 shows participants take about a minute and a half to do the 5 questions. If completion time is taken as a proxy for effort, see for example in Augenblick et al. (2015) and Gneezy et al. (2019), we would conclude that there are not effort differences by gender or treatment. The only remarkable effect is that the without IDK treatment increases completion time significantly for female survey takers (columns 7 and 8 in Table A9 in the Appendix A).

¹⁴There is a significant increase in completion time for women in the without IDK group. While it could indicate an increase in effort to answer the questions, it does not translate into a significant reduction in the financial literacy gender gap.

4 Further Discussion: “I do not know” Answers and Financial Outcomes

Our experimental results show that the propensity to choose the IDK option is highly malleable and differs systematically by gender. But does this matter economically? If IDK use were unrelated to financial behavior conditional on knowledge- then measurement concerns would be limited to survey concerns. We show that this is not the case. We complement the experimental evidence with descriptive correlations between IDK answers and a broad set of financial outcomes related to individual well-being, using the 2023 OECD/INFE International Survey of Adult Financial Literacy (OECD, 2023). The OECD survey combines a battery of financial knowledge questions with rich information on financial behaviors, financial resilience, and ownership and awareness of financial products. We construct the financial indicators¹⁵ and combine them with the microdata from the 2021 Financial Competences Survey, which is representative of the Spanish population, so that our measures are directly comparable to the standard OECD financial literacy and financial well-being indices.

Formally, for each financial outcome Y_i we estimate

$$Y_i = \alpha + \beta_W \text{Woman}_i + \beta_K \text{Share_Correct}_i + \beta_{IDK} \text{Share_IDK}_i + \varepsilon_i, \quad (2)$$

where Woman_i is an indicator for female respondents, Share_Correct_i is the share of correct answers to the seven OECD financial knowledge questions, and Share_IDK_i is the share of those questions for which the respondent chose the IDK option.¹⁶ Our coefficient of interest is β_{IDK} , which captures whether a stronger tendency to answer IDK is associated with differences in financial outcomes, conditional on the level of financial knowledge and gender.

¹⁵The definitions are drawn from Appendix C of the 2023 OECD/INFE International Survey of Adult Financial Literacy (OECD, 2023) and reflect the Spanish Competences Survey available data.

¹⁶Following OECD (2023), the financial knowledge module includes seven questions on basic concepts such as simple and compound interest, inflation, and risk diversification. Share_Correct_i and Share_IDK_i are defined over these seven items. The outcome indices are rescaled so that higher values correspond to better financial behavior or well-being.

Table 6: Association: IDK & financial indicators

	(1)	(2)	(3)	(4)	(5)
	Financial behavior	Objective financial well-being	Subjective financial well-being	Financial products awareness	Financial products holding
Women	0.997** (0.476)	-0.839* (0.499)	0.903** (0.460)	0.175*** (0.049)	-0.043 (0.049)
Correct (%)	17.138*** (1.504)	17.498*** (1.560)	12.535*** (1.457)	2.849*** (0.163)	2.707*** (0.159)
IDK (%)	-15.259*** (1.871)	-4.341* (2.243)	-0.075 (1.829)	-2.483*** (0.258)	-1.089*** (0.181)
Constant	51.376*** (1.256)	25.170*** (1.334)	17.948*** (1.204)	7.851*** (0.142)	1.627*** (0.130)
Observations	7764	7754	7764	7764	7764

Notes: OLS regression of the each financial indicator on indicator for women participants, the percent of correct financial knowledge questions (out of seven) following the OECD measures, and the percent of IDK answers to these same financial knowledge questions. The first column reports the correlation of IDK to financial behavior index with a score equal to 100. This behavior score is built on 8 questions on the following savvy behaviors: keeping track of money, actively saving, not borrowing to make ends meet, seeking advice, watching personal financial affairs, setting long-term financial goals, making considered purchases, and paying bills on time. The second column outcome is objective financial well-being as measured by having income to cover expenses if the main source of income had been lost in the last 12 months, and being able to cover living expenses without borrowing or moving homes for at least three months if the main source of income was lost. The third column outcome is subjective financial well-being as measured by being satisfied with their present financial situation, disagreeing that the financial situation limits their ability, disagreeing with having too much debt, never tending to worry about paying normal living expenses, and not being concerned that money won't last. The fourth column outcome is financial product awareness as measured by the sum of being aware of at least one financial product on the categories of payment products, saving-investment-retirement product, insurance products, credit products (including a mortgage), or crypto products. The fifth and last column outcome is financial product holding as measured by the sum of holding at least 1 financial product on each category as in product awareness. In this case, product holding can be shared with other household members. See [OECD \(2023\) Appendix C](#) for a detailed definition and construction of each measurement. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6 reports the results for five composite indicators: (i) financial behavior index, (ii) objective financial well-being, (iii) subjective financial well-being, (iv) financial product awareness, and (v) financial product holding. The financial behavior index aggregates eight “good practice” behaviors that are keeping track of money, actively saving, not borrowing to make ends meet, seeking advice, monitoring personal finances, setting long-term goals, making considered purchases, and paying bills on time. Objective and subjective financial well-being capture, respectively, the ability to cope with income shocks and self-reported satisfaction with one’s financial situation. Finally, the product indices summarize how many broad categories of financial products respondents know and actually hold. These financial product categories involve payment products; savings, investment or retirement products; credit products; insurance products, and crypto-assets.

Two patterns emerge. First, the share of correct answers is strongly positively associated with all five indicators, as expected: individuals who answer more questions correctly also display more

prudent financial behaviors, greater resilience, and broader product awareness and use. Second, and more importantly for our purposes, the share of IDK answers is negatively associated with most of these outcomes, even after conditioning on financial knowledge. A higher propensity to answer IDK is strongly correlated with lower scores in the financial behavior index and with lower objective financial well-being, and it is also associated with knowing and holding fewer categories of financial products. The only time the coefficient on IDK is not statistically significant is for subjective financial well-being, suggesting that self-reported satisfaction is less tightly linked to IDK behavior than objective indicators.

To better understand which dimensions drive these aggregate associations, Online Appendix Tables [A10](#) and [A11](#) decompose the indices into their underlying components. Table [A10](#) reports regressions of each individual behavior (e.g. keeping track of expenses, actively saving, paying bills on time) on the same regressors as in equation (2). Table [A11](#) repeats the exercise at the category level for product awareness (Panel A) and product holding (Panel B). The categories involve knowing or holding at least one product in payment, savings/investment/retirement, insurance, credit, and crypto products categories. This granular evidence allows us to see on which specific behaviors and margins of financial market participation the IDK propensity is most strongly reflected, and confirms that survey response behavior is strongly intertwined with economically meaningful outcomes.

Overall, these descriptive correlations indicate that IDK responses carry information about respondents' financial behavior, resilience, and participation in financial markets over and above what is captured by standard measures of financial knowledge. In combination with our experimental results, these associations suggests that policies and survey designs that shift individuals away from IDK—and in particular interventions that mitigate gender differences in the propensity to choose IDK—may affect not only measured financial literacy, but also the identification of groups at risk of poor financial outcomes.

5 Concluding Remarks

This paper shows that, consistent with other studies, there is a gender gap in financial literacy and tests whether it partly reflects response behavior differences in choosing IDK. As the main contribution, we carried out the first RCT to evaluate how different interventions impact men's and women's propensity to choose IDK answers and consequently gender gaps in financial literacy.

Our first main finding is that IDK use is highly malleable. All three interventions substantially reduce IDK answers, confirming that the choice of this answer option does not solely reflect lack of knowledge. Importantly, the interventions differ in their effectiveness in reducing this gender gap. Removing the IDK mechanically eliminates it. Incentives reduces the overall IDK shares but do not significantly narrow the gender difference. By contrast, the informational nudge is the only treatment that significantly reduces this gender gap - reducing it by half in raw specifications and closing it entirely in specifications with controls.

Our second finding is that gender gaps in measured financial literacy and in incorrect answers are more difficult to shift. While the three interventions increase the percent correct, the effects on the gender gaps are smaller and imprecisely estimated. Without IDK goes in the direction of reducing the gender gap, but at the same time this treatment significantly increases the gender gap in incorrect answers. In addition, this extreme intervention is unlikely to be feasible in voluntary surveys implemented by institutions. It might also not be desirable as it introduces a new bias from forcing participants to select an answer when it is not known. Then, with respect to the incentives treatment, if anything, it would increase the gender gap in financial literacy, as it appears to be drawing more knowledgeable men than women into responding. Finally, the informational nudge increases financial literacy by more for women relative to men's, with an effect that is only marginally significant at the 10 percent level in specifications with controls. Under this treatment, the gender gap is reduced and even not statistically different from zero.

Altogether, we view the results as suggestive evidence that informational nudges are more promising candidates than monetary incentives for narrowing the gender gap in financial literacy.

Our complementary analysis using a simple random-guessing benchmark supports the interpretations comparing treatments. In particular, that the informational nudge appears to draw knowledgeable women into answering as the increase in incorrect answers for women is significantly below what random guessing would predict - while the monetary incentives attracts more knowledgeable men.

Taken together, we conclude that, although the choice of IDK can be highly malleable, both overall and also differently by gender, using these types of interventions in standard financial literacy surveys, the measurement of financial literacy, and in particular gender gaps in financial literacy, are more difficult to impact. Overall, as long as men and women choose “I do not know” answer option with different propensities, and possibly guided by different motivations, other than lack of knowledge, we should interpret gender gaps in financial literacy with caution. Our experimental results suggest that simple survey design interventions can substantially reduce gendered response bias, but that closing the gender gap in measured knowledge is still an open challenge.

Beyond the experimental results, we show that IDK responses also have information about participant’s economic behavior beyond what standard financial literacy measures capture. With the 2021 Spanish Financial Competences Survey, we show that a higher propensity to answer IDK is strongly associated with poorer financial behaviors, lower financial well-being, and more limited use of financial products, even after conditioning on the level of financial knowledge and gender. These are descriptive associations that have a practical implication: to the extent that IDK use flags a behaviorally different population, understanding and potentially shifting this response behavior can be relevant for the design and targeting of financial literacy policies.

A Additional Figures and Tables

Figure A1: Diagram of the Experimental Design

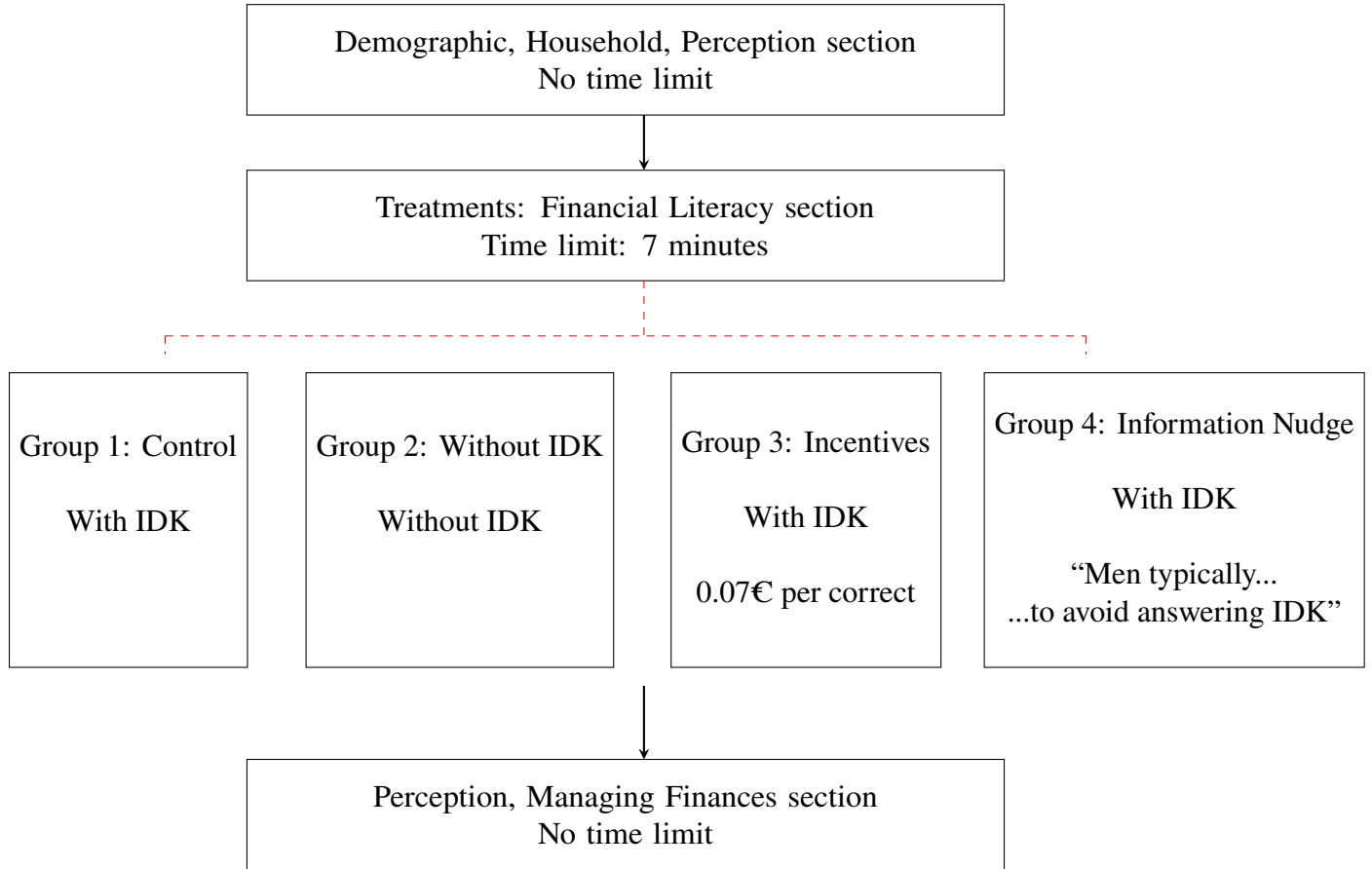


Table A1: Descriptive Statistics (mean values) and Randomization: Women Sample

		(1)	(2)	(3)	(4)	(5)
		Control	Without IDK	Incentives	Information Nudge	<i>p</i> -value
Demographics	Age 18-34	0.20	0.21	0.20	0.17	0.35
	Age 35-44	0.28	0.30	0.28	0.27	0.77
	Age 45-54	0.31	0.28	0.29	0.33	0.39
	Age 55-70	0.21	0.21	0.23	0.23	0.63
	Spaniard	0.90	0.91	0.92	0.90	0.56
	Pop. size 0-20th	0.22	0.17	0.20	0.20	0.04
	Pop. size 20th-100th	0.26	0.28	0.28	0.29	0.49
	Pop. size 100th+	0.52	0.55	0.52	0.51	0.37
	Primary education	0.21	0.15	0.26	0.20	0.00
	Secondary education	0.31	0.36	0.36	0.35	0.06
	University education	0.36	0.37	0.28	0.36	0.00
	Master, PhD education	0.12	0.13	0.10	0.08	0.02
	Working	0.67	0.66	0.63	0.61	0.08
	Retired	0.07	0.07	0.08	0.09	0.45
Unemployed	0.25	0.24	0.28	0.29	0.18	
Household	< 1 bookshelf at age 10	0.71	0.73	0.70	0.73	0.64
	> 2 bookshelves at age 10	0.29	0.27	0.30	0.27	0.64
	Household size	3.03	2.98	3.02	3.02	0.85
	Primary earner	0.51	0.50	0.54	0.49	0.35
	Lives with partner	0.72	0.70	0.69	0.70	0.61
	Mother: Primary education	0.59	0.57	0.61	0.60	0.40
	Mother: Secondary education	0.19	0.22	0.20	0.19	0.52
	Mother: Post-secondary education	0.20	0.20	0.17	0.19	0.29
	Father: Primary education	0.54	0.51	0.56	0.54	0.39
	Father: Secondary education	0.20	0.20	0.20	0.22	0.89
	Father: Post-secondary education	0.21	0.25	0.19	0.20	0.10
	Partner: Primary education	0.19	0.16	0.19	0.18	0.38
	Partner: Secondary education	0.23	0.24	0.26	0.25	0.50
	Partner: Post-secondary education	0.30	0.30	0.25	0.27	0.06
Assessments	Very low financial knowledge	0.03	0.02	0.03	0.02	0.29
	Low financial knowledge	0.15	0.16	0.16	0.14	0.84
	Neutral financial knowledge	0.44	0.43	0.39	0.47	0.07
	Good financial knowledge	0.33	0.37	0.38	0.34	0.11
	Very good financial knowledge	0.05	0.03	0.04	0.03	0.03
	Expected correct answers	5.22	5.37	5.35	5.17	0.28
	Interest in finance	5.88	5.73	5.80	5.70	0.50
	Risk willingness	4.24	4.34	4.32	4.18	0.75
	Lottery choice	3.59	3.48	3.48	3.58	0.69
	Perceptions	Lean-in index	-0.12	-0.11	-0.16	-0.13
Perceived self-efficacy		3.96	3.98	4.00	4.02	0.56
Perceived confidence		3.82	3.85	3.79	3.83	0.73
Perceived lean-in		3.64	3.67	3.62	3.65	0.88
Managing finances	Saving products (N)	2.35	2.42	2.21	2.33	0.04
	Debt products (N)	1.35	1.39	1.32	1.34	0.51
	Online bank operations	0.79	0.81	0.78	0.80	0.71
	No bank operations	0.04	0.04	0.04	0.06	0.27
Main outcomes	Big five: IDK answers (%)	0.18	0.00	0.12	0.09	0.00
	Big five: Correct answers (%)	0.49	0.57	0.50	0.54	0.00
	Big five: Incorrect answers (%)	0.31	0.42	0.36	0.36	0.00
Other outcomes	Perceived survey difficulty	4.41	4.45	4.36	4.38	0.94
	Big-five: Completion time	99.23	108.92	103.41	104.36	0.02
Observations		1,200	600	600	600	

Table A2: Descriptive Statistics (mean values) and Randomization: Men Sample

		(1)	(2)	(3)	(4)	(5)
		Control	Without IDK	Incentives	Information Nudge	<i>p</i> -value
Demographics	Age 18-34	0.17	0.17	0.15	0.18	0.49
	Age 35-44	0.25	0.25	0.24	0.26	0.87
	Age 45-54	0.30	0.31	0.30	0.28	0.58
	Age 55-70	0.29	0.27	0.30	0.28	0.63
	Spaniard	0.92	0.94	0.94	0.92	0.25
	Pop. size 0-20th	0.20	0.20	0.17	0.20	0.74
	Pop. size 20th-100th	0.28	0.24	0.28	0.25	0.15
	Pop. size 100th+	0.52	0.56	0.54	0.56	0.32
	Primary education	0.20	0.20	0.23	0.21	0.22
	Secondary education	0.36	0.38	0.34	0.35	0.61
	University education	0.34	0.34	0.32	0.31	0.61
	Master, PhD education	0.11	0.10	0.11	0.13	0.30
	Working	0.73	0.72	0.71	0.72	0.77
	Retired	0.14	0.12	0.15	0.13	0.45
Unemployed	0.12	0.14	0.13	0.13	0.72	
Household	< 1 bookshelf at age 10	0.78	0.76	0.76	0.73	0.19
	> 2 bookshelves at age 10	0.22	0.24	0.24	0.27	0.19
	Household size	2.95	2.97	3.06	2.92	0.15
	Primary earner	0.83	0.81	0.83	0.83	0.76
	Lives with partner	0.75	0.73	0.75	0.76	0.69
	Mother: Primary education	0.61	0.58	0.57	0.59	0.60
	Mother: Secondary education	0.18	0.20	0.19	0.20	0.75
	Mother: Post-secondary education	0.19	0.18	0.20	0.18	0.71
	Father: Primary education	0.52	0.54	0.54	0.57	0.18
	Father: Secondary education	0.21	0.21	0.20	0.16	0.09
	Father: Post-secondary education	0.24	0.21	0.22	0.23	0.62
	Partner: Primary education	0.15	0.14	0.17	0.17	0.24
	Partner: Secondary education	0.24	0.26	0.23	0.21	0.31
	Partner: Post-secondary education	0.35	0.34	0.35	0.37	0.71
Assessments	Very low financial knowledge	0.01	0.02	0.01	0.03	0.01
	Low financial knowledge	0.09	0.09	0.09	0.09	0.99
	Neutral financial knowledge	0.40	0.38	0.40	0.41	0.84
	Good financial knowledge	0.43	0.46	0.42	0.40	0.25
	Very good financial knowledge	0.07	0.05	0.08	0.07	0.19
	Expected correct answers	5.94	6.09	6.23	5.87	0.01
	Interest in finance	6.32	6.53	6.48	6.25	0.15
	Risk willingness	5.05	5.19	5.17	5.06	0.69
	Lottery choice	3.66	3.68	3.87	3.72	0.35
Perceptions	Lean-in index	0.13	0.12	0.10	0.13	0.80
	Perceived self-efficacy	3.96	4.01	4.01	4.02	0.41
	Perceived confidence	3.79	3.90	3.87	3.82	0.06
	Perceived lean-in	3.65	3.67	3.65	3.62	0.87
Managing finances	Saving products (N)	2.70	2.79	2.71	2.78	0.52
	Debt products (N)	1.44	1.38	1.41	1.50	0.09
	Online bank operations	0.82	0.83	0.82	0.82	0.93
	No bank operations	0.03	0.01	0.02	0.02	0.38
Main outcomes	Big five: IDK answers (%)	0.12	0.00	0.07	0.06	0.00
	Big five: Correct answers (%)	0.58	0.63	0.62	0.60	0.00
	Big five: Incorrect answers (%)	0.29	0.35	0.30	0.32	0.00
Other outcomes	Perceived survey difficulty	4.04	3.86	3.99	3.88	0.50
	Big-five: Completion time	99.92	95.72	98.16	100.79	0.51
Observations		1,200	600	600	600	

Table A3: Percent IDK Answers: Big Five Questions

	(1)	(2)	(3)
Women	0.065*** (0.009)	0.041*** (0.009)	0.041*** (0.009)
Without IDK	-0.119*** (0.006)	-0.115*** (0.006)	-0.114*** (0.006)
Incentives	-0.053*** (0.009)	-0.049*** (0.008)	-0.050*** (0.008)
Information Nudge	-0.062*** (0.009)	-0.063*** (0.008)	-0.060*** (0.008)
Women x Without IDK	-0.065*** (0.009)	-0.067*** (0.009)	-0.071*** (0.009)
Women x Incentives	-0.008 (0.014)	-0.015 (0.013)	-0.015 (0.012)
Women x Information Nudge	-0.036*** (0.013)	-0.038*** (0.012)	-0.041*** (0.012)
Age 35-44		-0.001 (0.007)	
Age 45-54		-0.007 (0.007)	
Age 55-70		-0.018** (0.007)	
Spaniard		-0.002 (0.008)	
Pop. size 20th-100th		-0.002 (0.007)	
Pop. size 100th+		-0.004 (0.006)	
Secondary education		-0.005 (0.008)	
University education		-0.016* (0.008)	
Master, PhD education		-0.014 (0.010)	
Working		-0.002 (0.018)	
Retired		-0.003 (0.019)	
Unemployed		0.002 (0.018)	
> 2 bookshelves at age 10		0.002 (0.005)	
Household size		0.002 (0.002)	
Primary earner		-0.008 (0.006)	
Lives with partner		-0.029*** (0.008)	
Mother: Secondary education		0.009 (0.006)	
Mother: Post-secondary education		0.001 (0.007)	
Father: Secondary education		-0.007 (0.006)	
Father: Post-secondary education		-0.001 (0.007)	
Partner: Secondary education		0.010 (0.007)	
Partner: Post-secondary education		0.014* (0.008)	
Low financial knowledge		-0.056** (0.026)	
Neutral financial knowledge		-0.082*** (0.025)	
Good financial knowledge		-0.106*** (0.026)	-0.011 (0.007)
Very good financial knowledge		-0.113*** (0.027)	-0.010 (0.011)
Interest in finance		-0.008*** (0.001)	-0.008*** (0.002)
Expected correct answers		-0.001 (0.002)	-0.001 (0.002)
Risk willingness		-0.002** (0.001)	-0.002** (0.001)
Lottery choice		-0.001 (0.001)	
Saving products (N)		-0.004** (0.002)	-0.005*** (0.002)
Debt products (N)		-0.006** (0.003)	
Online bank operations		-0.006 (0.007)	
No bank operations		0.104*** (0.024)	
Lean-in index		-0.016*** (0.003)	0.005 (0.010)
Perceived self-efficacy		-0.004 (0.003)	
Perceived confidence		-0.013*** (0.004)	-0.014*** (0.003)
Perceived lean-in		-0.006** (0.003)	-0.005** (0.003)
Constant	0.119*** (0.006)	0.433*** (0.035)	0.299*** (0.016)
Controls	No	All	Selected
Observations	6000	6000	6000
R2	0.105	0.239	0.263

Notes: OLS regression of the outcome percent IDK answers in the Big Five questions. The first column includes no control variables, the second column includes all control variables and the third column includes the coefficients from the set of a lasso-selected control variables, excluding the selected interaction terms. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A4: Percent Correct Answers: Big Five Questions

	(1)	(2)	(3)
Women	-0.085*** (0.010)	-0.056*** (0.010)	-0.076*** (0.012)
Without IDK	0.056*** (0.012)	0.052*** (0.011)	0.052*** (0.011)
Incentives	0.043*** (0.013)	0.040*** (0.012)	0.043*** (0.011)
Information Nudge	0.020 (0.013)	0.021* (0.012)	0.021* (0.012)
Women x Without IDK	0.021 (0.017)	0.021 (0.016)	0.020 (0.016)
Women x Incentives	-0.031* (0.018)	-0.021 (0.016)	-0.024 (0.016)
Women x Information Nudge	0.028 (0.018)	0.028* (0.017)	0.030* (0.016)
Age 35-44		0.013 (0.009)	
Age 45-54		0.036*** (0.009)	
Age 55-70		0.071*** (0.010)	
Spaniard		0.008 (0.011)	
Pop. size 20th-100th		0.007 (0.009)	
Pop. size 100th+		-0.000 (0.008)	
Secondary education		0.033*** (0.009)	
University education		0.079*** (0.011)	0.027 (0.042)
Master, PhD education		0.074*** (0.014)	
Working		-0.002 (0.025)	
Retired		0.003 (0.027)	
Unemployed		-0.010 (0.025)	
> 2 bookshelves at age 10		0.009 (0.007)	
Household size		-0.005* (0.003)	-0.006* (0.003)
Primary earner		0.004 (0.008)	
Lives with partner		0.012 (0.010)	
Mother: Secondary education		-0.021** (0.009)	
Mother: Post-secondary education		-0.018* (0.011)	
Father: Secondary education		0.001 (0.008)	
Father: Post-secondary education		-0.011 (0.010)	
Partner: Secondary education		-0.000 (0.010)	
Partner: Post-secondary education		0.010 (0.011)	
Low financial knowledge		0.031 (0.023)	
Neutral financial knowledge		0.030 (0.023)	
Good financial knowledge		0.033 (0.024)	
Very good financial knowledge		0.011 (0.028)	
Interest in finance		0.011*** (0.002)	0.012*** (0.003)
Expected correct answers		0.008*** (0.002)	
Risk willingness		-0.002* (0.001)	
Lottery choice		-0.002 (0.001)	
Saving products (N)		0.011*** (0.003)	0.006* (0.004)
Debt products (N)		0.005 (0.004)	
Online bank operations		0.062*** (0.009)	
No bank operations		-0.050** (0.021)	
Lean-in index		0.026*** (0.005)	
Perceived self-efficacy		0.011** (0.004)	0.011** (0.005)
Perceived confidence		0.007 (0.005)	0.006 (0.005)
Perceived lean-in		0.005* (0.003)	0.004 (0.003)
Constant	0.577*** (0.007)	0.189*** (0.039)	0.305*** (0.024)
Controls	No	All	Selected
Observations	6000	6000	6000
R2	0.037	0.176	0.208

Notes: OLS regression of the outcome percent correct answers in the Big Five questions. The first column includes no control variables, the second column includes all control variables and the third column includes a lasso-selected set of control variables. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Percent Incorrect Answers: Big-five Questions

	(1)	(2)	(3)
Women	0.021** (0.009)	0.017* (0.009)	0.007 (0.011)
Without IDK	0.056*** (0.011)	0.056*** (0.011)	0.054*** (0.011)
Incentives	0.008 (0.011)	0.006 (0.011)	0.008 (0.011)
Information Nudge	0.028** (0.011)	0.029*** (0.011)	0.027** (0.011)
Women x Without IDK	0.048*** (0.016)	0.051*** (0.016)	0.056*** (0.016)
Women x Incentives	0.034** (0.016)	0.030* (0.015)	0.030* (0.015)
Women x Information Nudge	0.018 (0.016)	0.019 (0.016)	0.020 (0.015)
Age 35-44		-0.017* (0.009)	
Age 45-54		-0.040*** (0.009)	
Age 55-70		-0.057*** (0.010)	
Spaniard		-0.004 (0.011)	
Pop. size 20th-100th		-0.006 (0.008)	
Pop. size 100th+		0.000 (0.008)	
Secondary education		-0.031*** (0.009)	
University education		-0.069*** (0.010)	-0.014 (0.033)
Master, PhD education		-0.078*** (0.013)	
Working		0.010 (0.023)	
Retired		0.011 (0.026)	
Unemployed		0.015 (0.024)	
> 2 bookshelves at age 10		-0.008 (0.007)	
Household size		0.002 (0.003)	
Primary earner		0.002 (0.007)	
Lives with partner		0.013 (0.010)	
Mother: Secondary education		0.003 (0.008)	
Mother: Post-secondary education		0.014 (0.010)	
Father: Secondary education		0.008 (0.008)	
Father: Post-secondary education		0.016 (0.010)	
Partner: Secondary education		-0.011 (0.010)	
Partner: Post-secondary education		-0.018* (0.010)	
Low financial knowledge		0.013 (0.024)	
Neutral financial knowledge		0.040* (0.023)	
Good financial knowledge		0.063*** (0.024)	
Very good financial knowledge		0.086*** (0.028)	
Interest in finance		-0.002 (0.002)	
Expected correct answers		-0.007*** (0.002)	
Risk willingness		0.005*** (0.001)	0.002 (0.002)
Lottery choice		0.003*** (0.001)	0.003 (0.004)
Saving products (N)		-0.006** (0.002)	0.005 (0.008)
Debt products (N)		-0.002 (0.003)	
Online bank operations		-0.054*** (0.008)	-0.003 (0.020)
No bank operations		-0.051*** (0.020)	
Lean-in index		-0.008 (0.005)	
Perceived self-efficacy		-0.006 (0.004)	
Perceived confidence		0.008* (0.005)	
Perceived lean-in		0.001 (0.003)	
Constant	0.293*** (0.006)	0.369*** (0.038)	0.358*** (0.017)
Controls	No	All	Selected
Observations	6000	6000	6000
R2	0.026	0.080	0.117

Notes: OLS regression of the outcome percent incorrect answers in the Big Five questions. The first column includes no control variables, the second column includes all control variables and the third column includes a lasso-selected set of control variables. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Adjusted p -values for the effect of interventions on the percent “I do not know”, Correct and Incorrect for the Big-Five Questions

	“I do not know”		Correct		Incorrect	
	(1) Estimate	(2) FDR q -value	(3) Estimate	(4) FDR q -value	(5) Estimate	(6) FDR q -value
Women	0.041*** (0.009)	0.001 [0.000]	-0.076*** (0.012)	0.002 [0.000]	0.007 (0.011)	0.511 [0.051]
Without IDK	-0.114*** (0.006)	0.001 [0.000]	0.052*** (0.011)	0.001 [0.000]	0.054*** (0.011)	0.001 [0.000]
Incentives	-0.050*** (0.008)	0.001 [0.000]	0.043*** (0.011)	0.001 [0.000]	0.008 (0.011)	0.493 [0.469]
Information Nudge	-0.060*** (0.008)	0.001 [0.000]	0.021* (0.011)	0.115 [0.082]	0.027** (0.011)	0.025 [0.014]
Women x Without IDK	-0.071*** (0.009)	0.001 [0.000]	0.019 (0.016)	0.228 [0.194]	0.056*** (0.016)	0.001 [0.000]
Women x Incentives	-0.015 (0.012)	0.262 [0.237]	-0.024 (0.016)	0.207 [0.157]	0.030** (0.015)	0.083 [0.051]
Women x Information Nudge	-0.041*** (0.012)	0.002 [0.001]	0.029* (0.016)	0.087 [0.058]	0.019 (0.015)	0.228 [0.195]

Notes: This table reports the adjusted p -values for the impact of the interventions on the Big Five percent of IDK, correct, and incorrect answers. Columns (1), (3), and (5) reproduce the results for each outcome from Column (3) of tables 2, 3 and 4. Columns (2), (4) and (6) report the false discovery rate (FDR) adjusted p -values (“ q -values”), standard p -values are reported below each adjusted p -value in brackets. The FDR adjusted p -values control for the number of false positives when multiple hypotheses are tested following [Anderson \(2008\)](#).

Table A7: Percent IDK Answers Question by Question: Big Five Questions

	(1) Inflation	(2) Compound Interest Rate	(3) Risk Diversification	(4) Mortgages	(5) Bond Pricing
Women	0.027*** (0.010)	0.023** (0.011)	0.064*** (0.017)	0.010 (0.013)	0.079*** (0.017)
Without IDK	-0.046*** (0.006)	-0.051*** (0.006)	-0.196*** (0.011)	-0.090*** (0.008)	-0.193*** (0.012)
Incentives	-0.013 (0.009)	-0.017* (0.010)	-0.100*** (0.016)	-0.040*** (0.012)	-0.073*** (0.017)
Information Nudge	-0.024*** (0.009)	-0.031*** (0.009)	-0.123*** (0.015)	-0.039*** (0.012)	-0.098*** (0.017)
Women x Without IDK	-0.045*** (0.011)	-0.039*** (0.011)	-0.104*** (0.018)	-0.030** (0.013)	-0.118*** (0.018)
Women x Incentives	-0.017 (0.016)	-0.012 (0.016)	-0.003 (0.026)	-0.012 (0.018)	-0.029 (0.026)
Women x Information Nudge	-0.029** (0.014)	-0.010 (0.015)	-0.051** (0.024)	-0.022 (0.018)	-0.079*** (0.025)
Constant	0.317*** (0.045)	0.265*** (0.044)	0.622*** (0.063)	0.353*** (0.051)	0.609*** (0.063)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	6000	6000	6000	6000	6000
R2	0.101	0.091	0.163	0.102	0.149

Notes: OLS regression of the outcome percent IDK answers in each of the Big Five questions with all control variables included. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Percent IDK Answers with Big Five, Big Five, Big Three, Big Six and All Nine Questions

	(1)	(2)	(3)	(4)	(5)
	Big Five	Big Five	Big Three	Big Six	All Nine
Women	0.041*** (0.009)	0.040*** (0.009)	0.038*** (0.009)	0.040*** (0.008)	0.037*** (0.007)
Without IDK	-0.115*** (0.006)	-0.108*** (0.008)	-0.098*** (0.006)	-0.113*** (0.006)	-0.108*** (0.005)
Incentives	-0.049*** (0.008)	-0.046*** (0.009)	-0.043*** (0.008)	-0.047*** (0.008)	-0.044*** (0.007)
Information Nudge	-0.063*** (0.008)	-0.050*** (0.010)	-0.059*** (0.008)	-0.061*** (0.008)	-0.056*** (0.007)
Women x Without IDK	-0.067*** (0.009)	-0.072*** (0.012)	-0.063*** (0.009)	-0.064*** (0.009)	-0.057*** (0.008)
Women x Incentives	-0.015 (0.013)	-0.009 (0.014)	-0.011 (0.013)	-0.012 (0.012)	-0.005 (0.011)
Women x Information Nudge	-0.038*** (0.012)	-0.048*** (0.014)	-0.030** (0.013)	-0.032*** (0.012)	-0.027** (0.011)
Constant	0.433*** (0.035)	0.442*** (0.037)	0.401*** (0.037)	0.429*** (0.033)	0.400*** (0.029)
Controls	All	All	All	All	All
Observations	6000	6000	6000	6000	6000
R2	0.239	0.191	0.204	0.249	0.251

Notes: OLS regression of the outcome percent IDK answers in different set of question with all control variables included. Column (1) reproduces our main results for the Big Five answers, Column (2) shows the results for the Big Five answers redefining the IDK to include the skipped answers, Column (3) uses the Big Three answers, corresponding to inflation, compound interest rate and risk diversification, Column (4) adds the simple interest rate answer to the Big Five, and Column (5) includes all questions of the section. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Further Results: Prob. of Exiting, Perceived Difficulty and Completion Time

	(1) Exit	(2) Exit Q N.	(3) Exit	(4) Exit Q N.	(5) Difficulty	(6) Difficulty	(7) Time	(8) Time
Women	0.045*** (0.008)	0.520*** (0.126)	0.006 (0.007)	0.170 (0.175)	0.368*** (0.113)	0.246** (0.116)	-0.692 (2.930)	0.064 (2.732)
Without IDK			0.002 (0.008)	0.007 (0.197)	-0.183 (0.137)	-0.146 (0.132)	-4.195 (3.084)	-3.843 (3.067)
Incentives			0.005 (0.009)	0.151 (0.217)	-0.052 (0.139)	-0.027 (0.133)	-1.765 (3.166)	-1.952 (3.225)
Information Nudge			0.006 (0.009)	0.248 (0.231)	-0.162 (0.145)	-0.180 (0.140)	0.866 (3.136)	1.793 (3.054)
Women x Without IDK			-0.000 (0.012)	-0.085 (0.287)	0.222 (0.196)	0.212 (0.191)	13.887*** (4.565)	13.514*** (4.467)
Women x Incentives			0.011 (0.013)	0.192 (0.332)	-0.002 (0.195)	-0.010 (0.190)	5.947 (4.552)	5.343 (4.470)
Women x Information Nudge			-0.005 (0.013)	-0.264 (0.319)	0.130 (0.200)	0.198 (0.196)	4.265 (4.325)	1.638 (4.225)
Men control	0.089	1.326	0.029	0.681	4.042	4.042	99.920	99.920
Sample	All	All	Treated	Treated	Treated	Treated	Treated	Treated
Controls	No	No	No	No	No	Yes	No	Yes
Observations	6764	6764	6220	6220	6000	6000	5844	5844
R2	0.000	0.001	0.001	0.001	0.007	0.067	0.003	0.058

Notes: Columns (1) and (3) show the probability abandoning or exiting the survey. Columns (2) and (4) show the number of question in which the survey taker abandons the survey. Columns (5) and (6) show the survey perceived difficulty measured in a scale between 0 and 10. Columns (7) and (8) show the time spent in responding the Big Five questions in seconds. Men control row refers to the mean value of each outcomes variable for men in the control group, except for Columns (1) and (2) that show this value for men. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Association: IDK & financial behavior

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Keep track of money	Actively saving	Not borrow to make ends meet	Seek financial advise	Watch personal financial affairs	Set long-term financial goals	Makes considered purchases	Pays bills on time
Women	0.076*** (0.014)	-0.012 (0.013)	-0.025** (0.010)	-0.063*** (0.018)	0.050*** (0.011)	0.024* (0.014)	0.027*** (0.010)	0.013* (0.007)
Correct (%)	0.122*** (0.043)	0.263*** (0.040)	0.219*** (0.033)	0.451*** (0.059)	0.129*** (0.036)	-0.008 (0.044)	0.245*** (0.032)	0.121*** (0.022)
IDK (%)	-0.262*** (0.056)	-0.376*** (0.056)	0.066 (0.045)	-0.428*** (0.058)	-0.097* (0.050)	-0.295*** (0.058)	0.081* (0.045)	-0.063* (0.034)
Constant	0.456*** (0.036)	0.563*** (0.034)	0.712*** (0.028)	0.187*** (0.048)	0.690*** (0.031)	0.496*** (0.036)	0.670*** (0.028)	0.849*** (0.020)
Observations	7764	7764	7764	7764	7764	7764	7764	7764

Notes: OLS regression of the each financial savvy behavior indicator on women participants, the percent of correct financial knowledge questions (out of seven), and the percent of IDK answers to these same financial knowledge questions. This table reports the individual financial behavior measures that integrate the financial behavior score presented in table 6. Each column represents the following behaviors: (1) keeping track of money, (2) actively saving, (3) not borrowing to make ends meet, (4) seeking advise, (5) watching personal financial affairs, (6) setting long-term financial goals, (7) making considered purchases, and (8) paying bills on time. See OECD (2023) Appendix C for a detailed definition and construction of each measurement. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A11: Association: IDK & financial product awareness and holding

	(1)	(2)	(3)	(4)	(5)
	Payment product	Savings, investment, or retirement product	Insurance product	Credit product	Crypto assets
Panel A. Financial product awareness					
Women	0.002 (0.004)	0.006** (0.003)	0.009*** (0.003)	-0.001 (0.002)	-0.034*** (0.010)
Correct (%)	0.048*** (0.014)	0.037*** (0.009)	0.048*** (0.011)	0.022*** (0.007)	0.333*** (0.032)
IDK (%)	-0.124*** (0.031)	-0.044*** (0.016)	-0.068** (0.027)	-0.016 (0.011)	-0.478*** (0.049)
Constant	0.956*** (0.012)	0.967*** (0.008)	0.957*** (0.010)	0.983*** (0.006)	0.681*** (0.028)
Panel B. Financial product holding					
Women	-0.007 (0.013)	0.008** (0.004)	-0.014 (0.013)	0.025** (0.013)	-0.036*** (0.005)
Correct (%)	0.673*** (0.040)	0.057*** (0.014)	0.324*** (0.043)	0.335*** (0.041)	0.088*** (0.019)
IDK (%)	-0.113** (0.049)	-0.074** (0.029)	-0.266*** (0.051)	-0.296*** (0.055)	-0.040** (0.017)
Constant	-0.038 (0.033)	0.946*** (0.013)	0.242*** (0.035)	0.484*** (0.035)	0.010 (0.015)
Observations	7764	7764	7764	7764	7764

Notes: OLS regression of the each product category integrating the financial product awareness (Panel A) and financial product holding (Panel B) indexes on indicator for women participants, the percent of correct financial knowledge questions (out of seven) following the OECD measures, and the percent of IDK answers to these same financial knowledge questions. Each category is an indicator equal to one if at least 1 financial product on each category is known or hold for Panel A and B, respectively. In this case, product holding can be shared with other household members. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

B Survey Questions in the Four Different Versions

The text in squared brackets [] is not shown to the survey respondents but we include it here to ease the understanding of the survey design to readers.

[The survey starts here:]

This Bank of Spain survey aims to measure the familiarity of the Spanish population with basic economic and financial concepts. Its duration is approximately 15 minutes. The survey is carried out in accordance with the applicable regulations on the protection of personal data, which guarantees that your data will be processed solely for statistical purposes and for quality control of the survey, guaranteeing their due integrity and confidentiality. We inform you that both your personal identification and contact data provided by 40db, as well as the academic-professional, economic-financial and related to your personal characteristics that you provide us, are processed by the Bank of Spain exclusively for (i) measure for statistical purposes the familiarity of the Spanish population with basic economic and financial concepts; and (ii) supervise and control the quality of the survey. You can withdraw your consent by sending an email to micro@bde.es and exercise your rights regarding the protection of personal data, proving your identity, either in person, by postal mail to C/Alcalá 48, 28014, Madrid (A/A Data Protection Officer) or electronically through the procedure indicated in the Virtual Office of the Bank of Spain, available at: [link](#)

For more information, you can consult the Record of Processing Activities available at:[link](#)

Q1. Do you agree to participate and the processing of your data for the purposes indicated?

- a. Yes
- b. No

[First part of the questionnaire: questions include socio-demographic variables, family background variables and variables measuring behavioral traits: Q2-Q29]

Q2. Are you a ...?

- a. Man
- b. Woman

Q3. How old were you on your last birthday?

Q4. In which country were you born?

- a. Spain
- b. Other, which one?

Q5. About how many books were in your home when you were 10 years old? (Do not include magazines, newspapers, or textbooks)

- a. None or very few (between 0 and 10 books)
- b. Enough to fill a shelf (between 11 and 25 books)
- c. Enough to fill a bookshelf (between 26 and 100 books)
- d. Enough to fill two bookshelves (between 101 and 200 books)
- e. Enough to fill more than two bookshelves (more than 200 books)

Q6. Zip Code

Q7. What is your current relationship status?

- a. I live with a partner
- b. I do not live with a partner

Q8. What is your current legal marital status?

- a. Single (never married or domestic partner before)
- b. Married or common-law partner
- c. Divorced or separated

- d. Widower
- e. Other, which one?

Q9. Including yourself, how many people live in your household?

- a. 1 person
- b. 2 people
- c. 3 people
- d. 4 people
- e. 5 people
- f. 6 or more people

Q10. Including yourself, how many people receive some type of income?

- a. 0
- b. 1
- c. 2
- d. 3
- e. 4 or more

Q11. Are you the person who contributes the most income to the household?

- a. Yes
- b. No

[If Q11 is answered with “a” then jump to Q17]

Q12. What is your relationship with the person who contributes the most income to the household?

- a. It is my partner

- b. It is my father
- c. It is my mother
- d. He is my son
- e. She is my daughter
- f. Other, which one?

Q13. What are the highest level official studies that the main breadwinner of the household has completed? (We understand the main breadwinner or head of the family to be the person from whom the basic income of the family comes).

- a. Can't read or write
- b. Without studies or with unfinished primary studies
- c. First Grade (School certificate, 1st stage of EGB, more or less up to 10 years old)
- d. Second Grade - 1st Cycle (School graduate, or EGB 2nd stage, or 1st and 2nd ESO, up to 14 years old)
- e. Second Grade - 2nd Cycle (FP I and II, High School, BUP, ESO 3 and 4, COU, PREU, 1 and 2 Baccalaureate, up to 18 years old)
- f. Third Degree - 1st Cycle (Equivalent to Technical Engineer, 3 years, University Schools, Technical Engineers, Technical Architects, Experts, Teaching, ATS, University Diplomas, 3-year degree, Social Graduates, Social Assistants, etc.)
- g. Degree, Degree - 2nd Cycle (Universities, Higher Graduates, Faculties, Higher Technical Schools, etc.)
- h. Third Degree (Master)
- i. Third Degree (PhD)
- j. Others

Q14. What is the employment status of the main breadwinner in the household?

- a. Currently working

- b. Retired/pensioner/disabled
- c. Unemployed, have previously worked
- d. Unemployed, has not previously worked
- e. Student
- f. Unpaid household work

Q15. What is the current employment status of the main breadwinner? (If he/she is not currently working, please indicate the status of the last job he/she had)

- a. Employee account (eg: employee)
- b. Own account (eg: self-employed or entrepreneur)

Q16. What is the profession of the main breadwinner? (If not currently working, please indicate the last job held)

- a. Agricultural entrepreneur with 6 or more employees
- b. Agricultural entrepreneur with 1 to 5 employees
- c. Farm owner with no employees
- d. Member of agricultural cooperatives
- e. Entrepreneur/Businessperson with 6 or more employees
- f. Entrepreneur/Trader with 1 to 5 employees
- g. Businessman/Trader without employees
- h. Non-agricultural cooperative member
- i. Self-employed Professional or Technician (Doctor, Lawyer, etc.)
- j. Self-employed manual worker and Craftsman (Bricklayer, Painter, Plumber, Electrician, Upholsterer, etc.)
- k. None of the above
- l. Director of a Public or Private Company with 25 or more workers
- m. Director of a Public or Private Company with less than 25 workers

- n. Senior Management/Employee at a higher level of Companies, Public Administration or Army Chiefs (Occupations associated with 2nd and 3rd cycle university degrees)
- o. Intermediate Management/Employee at the medium level of Companies, Public Administration or Army Officers (Occupations associated with 1st cycle university degrees, diplomas, etc...)
- p. Foreman, Supervisor, Warrant Officer Army
- q. Commercial Agent, Representative, etc...
- r. Administrative
- s. Specialized worker, Civil Guard and Police number
- t. Seller, Clerk, etc...
- u. Junior Clerk (Janitor, etc.)
- v. Unskilled worker, Laborer, Domestic Service
- x. Farm laborer
- y. Other unqualified personnel
- z. None of the above

Q17. What are the highest level official studies that you have completed? (obtaining the corresponding official degree)

[Answers as in Q13]

Q18. In which of the following situations do you currently find yourself?

- a. I currently work
- b. Retired/pensioner/disabled
- c. Unemployed, I have worked before
- d. Unemployed, has not previously worked
- e. Student
- f. Unpaid household work

[If Q18 answered with (“d”, “e”, or “f”) then Q21]

Q19. What is the current labor regime in which you find yourself? (If you are not currently working, please indicate the status of the last job you had)

- a. Employee account (eg: employee)
- b. Own account (eg: self-employed or entrepreneur)

Q20. What is your profession? (If you are not currently working, please indicate the last job you had)

[Answers as in Q16]

[Do not show if Q8 answered with “a” or Q7 answered with “b”]

Q21. What are the highest level official studies that your partner completed? (obtaining the corresponding official degree)

[Answers as in Q13.]

[Do not show if Q8 answered with “a” or Q7 answered with “b”]

Q22. In which of the following situations is your partner currently?

- a. I currently work
- b. Retired/pensioner/disabled
- c. Unemployed, I have worked before
- d. Unemployed, has not previously worked
- e. Student
- f. Unpaid household work

[Show only if (Q11=b and Q12!=c) or Q11=a]

Q23. What are the highest level official studies that your mother has completed? (obtaining the corresponding official degree)

[Answers as in Q13]

[Show only if (Q11=b and Q12!=b) or Q11=a]

Q24. What are the highest level official studies that your father has completed? (obtaining the corresponding official degree)

[Answers as in Q13.]

Q25. How would you rate your level of general knowledge on financial topics?

- a. Very good
- b. good
- c. Neutral
- d. Bad
- e. Very bad

Q26. How many correct answers do you think you could have in 10 questions about basic financial topics? Use a scale of 0 to 10, where 0 means “none correct” and 10 “all correct”

Q27. What is your interest in financial matters? (We refer to the management of personal finances) Use a scale from 0 to 10, where 0 indicates “No interest” and 10 “Maximum interest”

Q28. Are you generally willing to take risks? Use a scale from 0 to 10, where 0 indicates “I am not willing to take any risk” and 10 “I am totally willing to take risk”

Q29. Choose which of the following 8 lotteries you would prefer to participate in. Each lottery

has two possible payouts, each with a 50% probability:

- a. Lottery 1 1.1€ with 50% and 1.1€ with 50%
- b. Lottery 2 1.0€ with 50% and 1.2€ with 50%
- c. Lottery 3 0.7€ with 50% and 1.6€ with 50%
- d. Lottery 4 0.6€ with 50% and 1.8€ with 50%
- e. Lottery 5 0.5€ with 50% and 1.9€ with 50%
- f. Lottery 6 0.3€ with 50% and 2.0€ with 50%
- g. Lottery 7 0.1€ with 50% and 2.1€ with 50%
- h. Lottery 8 0€ with 50% and 2.2€ with 50%

[Middle part of the questionnaire: Financial Literacy questions, FQ1-FQ10. We will also underline the questions included in the big-five, which will be the main focus of our main results. Define 4 groups. Group 1: *Control*, group 2: *Without IDK*, group 3: *Incentives*, and group 4: *Information*]

The next 10 questions include various exercises. It is okay if you can not answer them all, but it is important that you try to answer each one.

If you do not know the answer, just say so. If you think you have the right answer, it is likely that you do. [Filter show if Group = 1, 3 or 4]

[If *Incentives* treatment only:]

You will earn an additional 7 cents for each correct answer. If all 10 answers are correct, you can earn 70 more cents, increasing your payment for participating by more than 60%.

[If *Information* treatment only:]

Men typically answer 7 out of 10 financial questions correctly. Women 6 out of 10. This difference is explained mostly (65%) because women choose the answer “I do not know” more often than men.

Therefore, we ask you - please - to avoid answering “I do not know”.

The section must be completed in a maximum of 7 minutes. Once started, you will not be able to interrupt it. If you exceed this time, the screen will take you to the next section and you will not be able to go back. When you are ready to start, click “next”.

FQ1: Imagine that 5 brothers receive a gift of 1,000 euros in total. If they share the money equally, how much will each get?

- a.
- b. I do not know [Filter show if Group = 1, 3 or 4]

FQ2 [Big Five.1: Inflation]: Now imagine that the 5 brothers had to wait a year to get their share of the 1,000 euros, and that inflation for that year was 8%. With that money and within a year they will be able to buy:

- a. More than they could buy today with their share of the money
- b. The same amount
- c. Less than they could buy today
- d. I do not know [Filter show if Group = 1, 3 or 4]

FQ3: Suppose you deposit 100 euros in a savings account with a fixed interest of 2% per year. If you do not make any other deposits or withdraw any money, how much money will be in the account at the end of the first year, after interest is paid? (In this account there are no commissions or taxes)

- a.
- b. I do not know [Filter show if Group = 1, 3 or 4]

FQ4 [Big Five.2: Interest Rates and Compounding]: Again, if you do not make any deposits or withdraw any money, how much money will be in the account after 5 years, after the interest

payment is paid? (Remember that the savings account has a fixed interest of 2% per year).

- a. More than 110 Euros
- b. Exactly 110 Euros
- c. Less than 110 Euros
- d. It is impossible to say with the information given
- e. I do not know [Filter show if Group = 1, 3 or 4]

FQ5 [Big Five.3: Risk Diversification]: Generally, it is possible to reduce the risk of investing in the stock market by buying a wide variety of stocks. True or false?

- a. True
- b. False
- c. I do not know [Filter show if Group = 1, 3 or 4]

FQ6 [Big Five.4: Mortgages]: A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less. True or false?

- a. True
- b. False
- c. I do not know [Filter show if Group = 1, 3 or 4]

FQ7 [Big Five.5: Bond Pricing]: What happens to the price of the bonds if the interest rate increases?

- a. Falls
- b. Goes up
- c. Stays the same
- d. The price of the bonds is not related to the interest rate
- e. I do not know [Filter show if Group = 1, 3 or 4]

FQ8: In a lottery, the probability of winning a prize is 1%. How many people do you think will win a prize if 1,000 people each buy a single different ticket?

- a.
- b. I do not know [Filter show if Group = 1, 3 or 4]

FQ9a: If 5 machines take 5 minutes to make 5 objects, how long would it take 100 machines to make 100 objects?

FQ9b: If 5 microwaves take 5 minutes to heat 5 plates, how long would it take 100 microwaves to heat 100 plates?

FQ9c: If 5 microwaves take 5 minutes to heat 5 plates, how long would it take 100 microwaves to heat 100 plates?

- a. 15 minutes
- b. 10 minutes
- c. 100 minutes
- d. 200 minutes
- e. I do not know [Filter show if Group = 1, 3 or 4]

FQ10: Imagine that you are reviewing your household budget. What is $10 - 2$?

- a. 3
- b. 8
- c. 10
- d. 20

[Final part of the questionnaire: variables measuring behavioral traits.]

POSTQ1: Thinking about this section with 10 questions, how many do you think you have answered correctly?

POSTQ2: If the Spanish population answered these same 10 questions, on average, how many correct answers do you think the following groups would have? The average grade can take values between 0 and 10 where 0 indicates that none would be correct and 10 indicates that all would answer the 10 questions correctly.

- a. The entire population:
- b. Women:
- c. Men:
- d. Young people (between 18 and 30 years old):

POSTQ3: Do you have any of the following products? Click on any of the four possible answers:
Yes-No-I do not know-I do not know the product

- a. Checking account:
- b. Savings accounts or deposits:
- c. Credit card:
- d. Mortgage:
- e. Personal loans:
- f. Individual or company pension plans:
- g. Mutual funds or stocks:
- h. Cryptocurrencies:
- i. Life or medical insurance:

POSTQ4: In the last 12 months, have you done banking in any of the following ways? (Check all that apply)

- a. By personally visiting a bank branch
- b. Using an ATM
- c. Calling on the phone

- d. Using the computer or tablet
- e. Using mobile phone apps
- f. Otherwise, which one?
- g. None of the above

POSTQ5: Of the following options, mark all that you have done at least once:

- a. I applied for a promotion at work
- b. I asked for an increase in my payroll/salary/pay
- c. I was a class representative at school/institute/university
- d. I competed in an individual sport (for example: swimming, tennis, judo, fencing, etc.)
- e. I competed in a team sport (for example: soccer, gymnastics, basketball, volleyball, etc.)
- f. None of the above

POSTQ6: Tell us to what extent you agree with each of the statements. Use a scale of 1 to 5, where 1 indicates strongly disagree and 5 strongly agree.

- a. I can solve most problems if I put in the necessary effort
- b. I am confident that I can handle unexpected events efficiently
- c. I tend to ask questions in class/work meetings
- d. Men tend to handle financial problems better than women

POSTQ7: How complicated did you find the survey? Use a scale from 0 to 10, where 0 indicates no complexity and 10 maximum complexity

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