

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

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Introduction: Financial Literacy

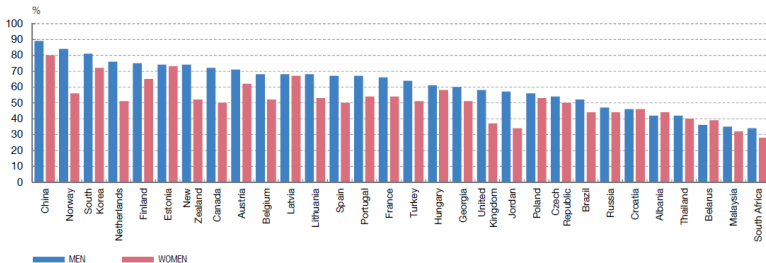
- **Financial Literacy**: the understanding of basic financial concepts → Percent correct *BIG Five* survey (A. Lusardi and O. Mitchell):
 - Inflation: ▶ Inflation
 - Compound Interest Rate: ▶ Interest
 - Risk diversification: ▶ Risk
 - Mortgages: ▶ Mortgages
 - Bond pricing: ▶ Bonds
- Financial Literacy impacts important economic decisions: retirement and saving plans, stock market participation. Ultimately, households' wealth levels and well-being (IOSCO, 2018; Lusardi and Mitchell, 2014)
- **Improving the general population's financial literacy**, especially for the most vulnerable, **has become a major policy goal** (OECD, 2013).
Different Initiatives: compulsory finance course in the USA and G20 statement in 2021: "We recognise that financial literacy is an essential skill for the empowerment of people..."

Introduction: Financial Literacy and Women

- Women are financially less literate than men.
- Gender gaps in financial literacy are pervasive and persistent (OECD, 2016; Klapper and Lusardi, 2020):

FINANCIAL LITERACY BY GENDER IN VARIOUS COUNTRIES

There are gender differences in financial literacy in most countries, with generally higher levels for men than for women. In Spain, 67% of men correctly answer at least five of the seven financial questions common to the other countries, compared with 50% of women.



SOURCES: Banco de España calculations based on ECF (2016) microdata and Atkinson *et al.* (2016).

NOTE: The chart shows the percentage of respondents scoring at least five out of seven in financial literacy, by gender and by country.

Introduction: Financial Literacy, Measurement and Women

- Measuring Financial Literacy:

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- Ideal measure:

$p(\text{correct}) = p(\text{correct}|\text{ans}) * p(\text{ans}) + p(\text{correct}|\text{no-ans}) * p(\text{no-ans})$ Ideal “scan” machine that measures directly $p(\text{correct})$ for any individual (those who want to provide an answer and those who do not).

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- Reality: surveys with “I do not know” option, we can only observe:

$p(\text{ans}) = 1 - p(\text{IDK})$ and **$p(\text{correct}|\text{ans})$** . Financial Literacy is measured by $p(\text{correct}|\text{ans}) * p(\text{ans})$ ignoring $p(\text{correct}|\text{no-ans}) * p(\text{no-ans})$. **When comparing men and women we may have a problem if men and women have a different $p(\text{ans})$** . Extreme example: same knowledge, $p(\text{ans}) = 1$ for men $p(\text{ans}) = 0$ for women \rightarrow We would conclude men’s FL is perfect and that women’s FL is null.

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- In this project we design a survey RCT to test:

- **Can interventions impact $p(\text{ans})$? Do they do it differently by gender?**

- **Can interventions impact observed percent correct? Do they do it differently by gender?**

Outline:

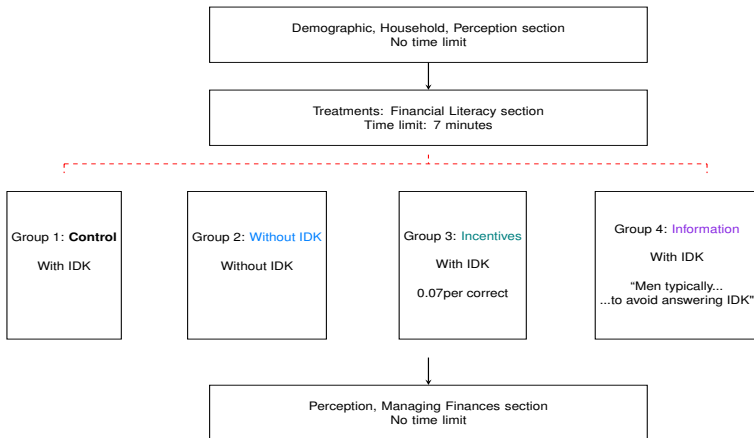
- **RCT design**
- Results
- Conclusions

RCT Design: Survey

- RCT in Survey: 6,000 participants, administered by 40dB company, in October-November of 2022.
- Approved by the University of the Basque Country UPV/EHU Ethics Committee and design and pre-plan analyses registered at AEA RCT Registry: ID AEARCTR-0009896.
- 15 minutes survey, around 40 questions, and 1.20€ for completion (as it is standard in 40dB).
- We **only varied the design of the financial literacy question part** and kept the rest the same: control group (2,400 participants) and three treatment arms (without IDK, 1,200, incentives, 1,200, information, 1,200).

RCT Design: Survey Diagram

Figure: Diagram of the Experimental Design

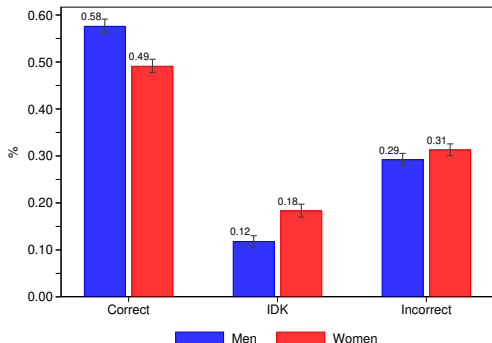


Outline:

- RCT design
- **Results**
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Main Result 1: Gender gap in FL, percent correct and IDK, different by gender!

Figure: Main Outcomes in the Big-Five 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.

Main Result 2: Are treatments effective? Percent IDK, any effect by gender?

Table: Percent "I do not know" Answers: Big Five Questions

	(1)	(2)	(3)
Women	0.065*** (0.009)	0.041*** (0.009)	0.040*** (0.009)
Without IDK	-0.119*** (0.006)	-0.115*** (0.006)	-0.115*** (0.006)
Incentives	-0.053*** (0.009)	-0.049*** (0.008)	-0.049*** (0.008)
Information	-0.062*** (0.009)	-0.063*** (0.008)	-0.063*** (0.008)
Women x Without IDK	-0.065*** (0.009)	-0.067*** (0.009)	-0.067*** (0.009)
Women x Incentives	-0.008 (0.014)	-0.015 (0.013)	-0.015 (0.013)
Women x Information	-0.036*** (0.013)	-0.038*** (0.012)	-0.038*** (0.012)
Men Control	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	0.239

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Summary Results on percent IDK

Main findings:

- All three interventions are very effective in reducing the percent of IDK.
- The effect of the second treatment (Deleting IDK) is by construction.
- Only the information nudge is able to close the gap in percent IDK.

It is clear simple interventions can impact the choice of IDK... but how do these interventions affect financial literacy measures and gender gaps in financial literacy? Who is being attracted into answering?

Main Result 2: Are treatments effective? Percent Correct, any effect by gender?

Table: **Percent Correct Answers**: Big Five Questions

	(1)	(2)	(3)
Women	-0.085*** (0.010)	-0.056*** (0.010)	-0.056*** (0.010)
Without IDK	0.056*** (0.012)	0.052*** (0.011)	0.052*** (0.011)
Incentives	0.043*** (0.013)	0.040*** (0.012)	0.040*** (0.012)
Information	0.020 (0.013)	0.021* (0.012)	0.021* (0.012)
Women x Without IDK	0.021 (0.017)	0.021 (0.016)	0.021 (0.016)
Women x Incentives	-0.031* (0.018)	-0.021 (0.016)	-0.021 (0.016)
Women x Information	0.028 (0.018)	0.028* (0.017)	0.028* (0.017)
Men Control	0.577	0.577	0.577
Controls	No	All	Selection
P-value Test: treatments equal for men	0.042	0.077	0.076
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	0.176

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Summary Results on percent Correct

Main findings:

- All three interventions are very effective in increasing percent correct.
- Only the information nudge is able to reduce the gender gap in financial literacy to half.

A simple information nudge is able to close the gender gap in the percent IDK and reduce to half the gender gap in financial literacy.

Outline:

- RCT design
- Results
- **Conclusions**

Concluding Remarks:

- Women are found to be financially less literate than men (6-9 percentage points gender gap) but two-thirds of this gap is explained by women choosing more often “I do not know” answer option (4-6 percentage points gender gap).
- Can we reduce the choice of “I do not know” and impact financial literacy differently by gender?
 - Yes!
 - Deleting IDK is equally effective for both, no effect on gender gap in financial literacy
 - Incentives, if anything, are more effective for men, so it is not a good candidate to reduce the gender gap in financial literacy
 - Information treatment is more effective for women than for men, so it is a good candidate to reduce the gender gap in financial literacy. **A simple information treatment can eliminate the gender gap in the choice of “I do not know” and can reduce the gender gap in financial literacy to half: from 6 percentage points to 3 percentage points**
- Regular financial literacy surveys overstate the gender gap in financial literacy

THANK YOU FOR YOUR ATTENTION

Big Five.1 Inflation:

Inflation: 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:

- More than they could buy today with their share of the money
- The same amount
- **Less than they could buy today**
- I do not know

▶ Back

Big Five.2 Compound Interest Rate:

Compound Interest Rate: Suppose you deposit 100 euros in a savings account with a fixed interest of 2% per year. 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?

- **More than 110 Euros**
- Exactly 110 Euros
- Less than 110 Euros
- It is impossible to say with the information given
- I do not know

▶ Back

Big Five.3 Risk Diversification:

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?

- **True**
- False
- I do not know

▶ Back

Big Five.4 Mortgages:

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?

- **True**
- False
- I do not know

▶ Back

Big Five.5 Bond Pricing:

Bond Pricing: What happens to the price of the bonds if the interest rate increases?

- **Falls**
- Goes up
- Stays the same
- The price of the bonds is not related to the interest rate
- I do not know

▶ Back

RCT Design: **Control Group**

The next 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.

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".

Example:

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?

- True**
- False
- I do not know

RCT Design, 1. Treatment: Without IDK

The next 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.

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Example:

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?

- True
- False

RCT Design, 2. Treatment: Monetary Incentives

The next 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.

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%.

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".

Example:

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?

- True
- False
- I do not know

RCT Design, 3. Treatment: Information

The next 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.

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 to please avoid answering "I do not know".

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Example:

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?

- True
- False
- I do not know