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

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Motivation

- Financial Literacy impacts economic decisions and well-being (IOSCO, 2018; Lusardi and Mitchell, 2014)

- Financial literacy improvement is a major policy goal (OECD, 2013)

    - FL highs school course mandates in the US

    - OECD governments official recognition of financial literacy importance in 2002

    - International Network of Financial Education (OECD/INFE) created in 2008

    - Financial literacy as an essential skill, especially for most vulnerable (G20, 2021)

Motivation

- Gender gaps in financial literacy

  - Persistent across countries and time (OECD, 2016: Klapper and Lusardi, 2020)

  - In Spain, men have 56% and women 46% correct answers (ECF, 2016)

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.

■ MEN   ■ WOMEN
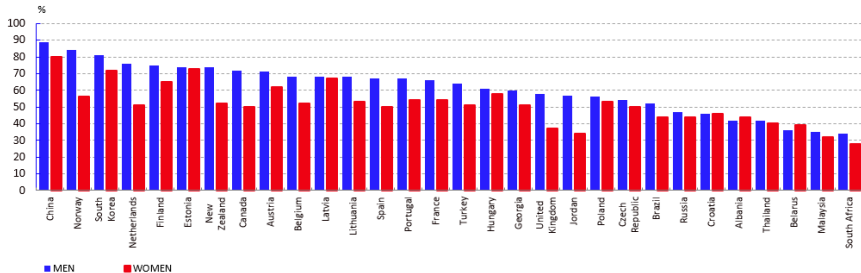
SOURCES: Banco de España calculations drawing on ECF (2016) microdata and Atkinson et al. (2016).

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

Motivation

- Financial Literacy as the percent of correct answers, with IDK as an answer option. *Big-Five* questions by Lusardi and Mitchell:

    - Inflation: ▶ Inflation

    - Compound Interest Rate: ▶ Interest

    - Risk diversification: ▶ Risk

    - Mortgages: ▶ Mortgages

    - Bond pricing: ▶ Bonds

Motivation

- Ideal measure: Elicit $p(correct)$ for everyone
  $p(correct) = p(correct|ans) * p(ans) + p(correct|IDK) * p(IDK)$

- Challenge: $p(correct|IDK)$ is not observed

- Gender comparisons might be biased if there are different $p(IDK)$.
  Extreme example:

  - Women and men have perfect knowledge

  - $p_{male}(IDK) = 0$, $p_{female}(IDK) = 1$

  - FL measurement we conclude that men have perfect knowledge and
    women no FL

This paper

- We design an RCT in financial literacy survey to test:

  1. Can interventions impact the probability of choosing " I do not know"? Can these vary by gender?

  2. Can interventions impact financial literacy measures? Do these vary by gender?

Outline

1. RCT design

2. Main results

3. Conclusion

Section 1

RCT design:

Survey and treatments

Survey: Outline

- Online 15 minute-survey, 40 questions, payment of 1.20 €

- Pre-test: Pilot, IRB exemption, AEA RCT Registry
  (*AEARCTR-0009896*)

- Survey: 6,000 panel participants in Spain, October-November of
  2022

- Wide array of information:
  - Demographics, risk aversion, confidence
  - Perceptions, intergenerational and partner data
  - Survey attrition, time spent on questions, perceived difficulty

- Only vary financial literacy section, all else equal

RCT design: Treatments

Demographic, Household, Perception section
No time limit

↓

Treatments: Financial Literacy section (Big-Five)
Time limit: 7 minutes

Group 1: **Control**

With IDK

Group 2: Without IDK

Without IDK

Group 3: Incentives

With IDK

0.07 €per correct

Group 4: Information

With IDK

"Men typically...
...to avoid answering IDK"

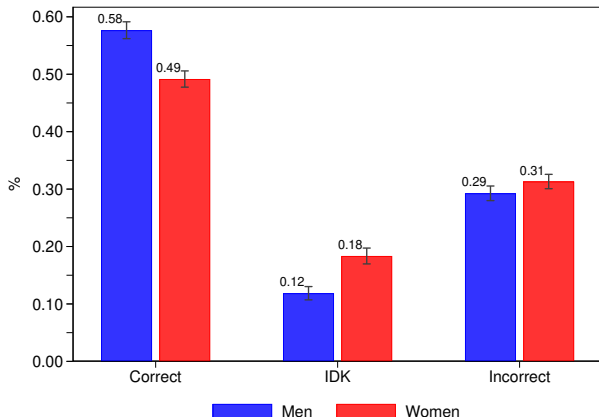Perception, Managing Finances section
No time limit
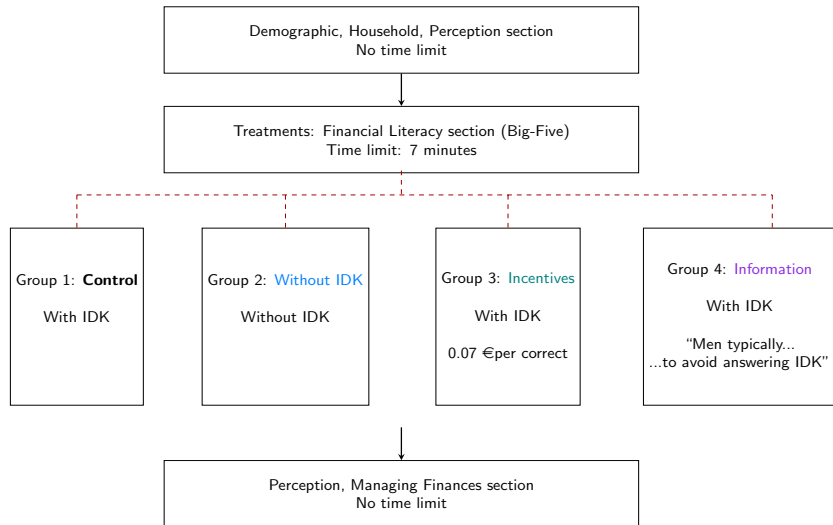
Section 2

Main results:
Big-Five IDK, Correct, and Incorrect answers

Main results: Control group Big-Five answers

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 results: Big-Five "I do now know" answers

	(1)	(2)	(3)
Women	**0.065*****	**0.041*****	**0.041*****
	(0.009)	(0.009)	(0.009)
Without IDK	-0.119***	-0.115***	-0.114***
	(0.006)	(0.006)	(0.006)
Incentives	-0.053***	-0.049***	-0.050***
	(0.009)	(0.008)	(0.008)
Information	-0.062***	-0.063***	-0.060***
	(0.009)	(0.008)	(0.008)
Women x Without IDK	-0.065***	-0.067***	-0.071***
	(0.009)	(0.009)	(0.009)
Women x Incentives	**-0.008**	**-0.015**	**-0.015**
	(0.014)	(0.013)	(0.012)
Women x Information	**-0.036*****	**-0.038*****	**-0.041*****
	(0.013)	(0.012)	(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	0.263

Summary: Big-Five "I do now know" answers

- Main effects:

    - The interventions are effective in reducing the percent of IDK

    - By design, the treatment Without IDK reduces the choice to 0

    - Only the information nudge is able to close the gender gap

Main Result: Big-Five correct answers

	(1)	(2)	(3)
Women	-0.085***	-0.056***	-0.076***
	(0.010)	(0.010)	(0.012)
Without IDK	0.056***	0.052***	0.052***
	(0.012)	(0.011)	(0.011)
Incentives	0.043***	0.040***	0.043***
	(0.013)	(0.012)	(0.011)
Information	0.020	0.021*	0.021*
	(0.013)	(0.012)	(0.011)
Women x Without IDK	0.021	0.021	0.019
	(0.017)	(0.016)	(0.016)
Women x Incentives	-0.031*	-0.021	-0.024
	(0.018)	(0.016)	(0.016)
Women x Information	0.028	0.028*	0.029*
	(0.018)	(0.017)	(0.016)
Men Control	0.577	0.577	0.577
Controls	No	All	Selection
P-value Test: treatments equal for men	0.042	0.077	0.057
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

Summary: Big-Five correct answers

- Main effects:

  - The interventions are effective in increasing the percent of correct for men

  - Without IDK and the information nudge are effective in increasing the percent correct for women

  - Only the information nudge is able to reduce the gender gap in financial literacy

- A simple informational nudge is able to close the gender gap in the percent of IDK and reduce to half the gender gap in financial literacy

Additional Result: Big-Five incorrect answers

	(1)	(2)	(3)
Women	0.021**	0.017*	**0.007**
	(0.009)	(0.009)	(0.011)
Without IDK	0.056***	0.056***	0.054***
	(0.011)	(0.011)	(0.011)
Incentives	0.008	0.006	**0.008**
	(0.011)	(0.011)	(0.011)
Information	0.028**	0.029***	0.027**
	(0.011)	(0.011)	(0.011)
Women x Without IDK	0.048***	0.051***	0.056***
	(0.016)	(0.016)	(0.016)
Women x Incentives	0.034**	0.030*	0.030*
	(0.016)	(0.015)	(0.015)
Women x Information	0.018	0.019	**0.019**
	(0.016)	(0.016)	(0.015)
Men Control	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

Summary: Big-Five incorrect answers

- Main findings:

  - The gender gap in incorrect answers disappears with additional controls

  - Men in the incentives treatment do not increase their incorrect answers

  - All interventions increase women incorrect answers

  - The information nudge does not increase the gender gap

Section 3

Conclusion

Conclusion

- Women are less financially literate than men (6-9 pp gap), but 2/3 of it are from women choosing "I do no know" more often (4-6 pp gap)

- While knolwedge is the same across groups, all treatments impact our measures:

  - Without IDK is effective in reducing IDK (by design) and increasing FL for men and women, there is no impact on FL gender gaps

  - Incentives reduced IDK for both, but is only effective for men in increasing FL

  - Information nudge reduces IDK for both, reducing this gender gap by half or even closing it. It also improves FL, but more for women

- Considering IDK and incorrect answers might be helpful for better assessments and helping guide policy

THANK YOU!

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

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

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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

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

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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

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Treatment 3: 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".

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

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