More on gender differences and directions for future research

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Beyond Knowledge:
Confidence and the Gender Gap in Financial Literacy

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What do we know?

- Survey experiment of Bucher-Koenen et al. (2024) motivated by women frequently answering “do not know” (DNK) to financial literacy questions
  - Gender gap substantially smaller without DNK: confidence and knowledge are both relevant for financial literacy
  - Confidence and knowledge associated with financial behavior
  - But: taxing method – relies on two waves and LCM

This paper extends & simplifies earlier approach:

- Survey experiment: “Big 3” & 2 debt literacy questions, follow-up on confidence
- Design: between subjects instead of within-subjects
- Adjust for guessing => no latent class model to estimate “true knowledge”
- Provide simple & cost-efficient, applicable in cross-sectional studies

Setup

- *Between-subjects experiment*
- Randomized online survey experiment in Germany, 4,927 respondents aged 30+, interviewed Oct–Dec 2020
- "Big-3" financial literacy questions & two debt literacy questions (Lusardi & Mitchell, 2011; Lusardi & Tufano, 2015)

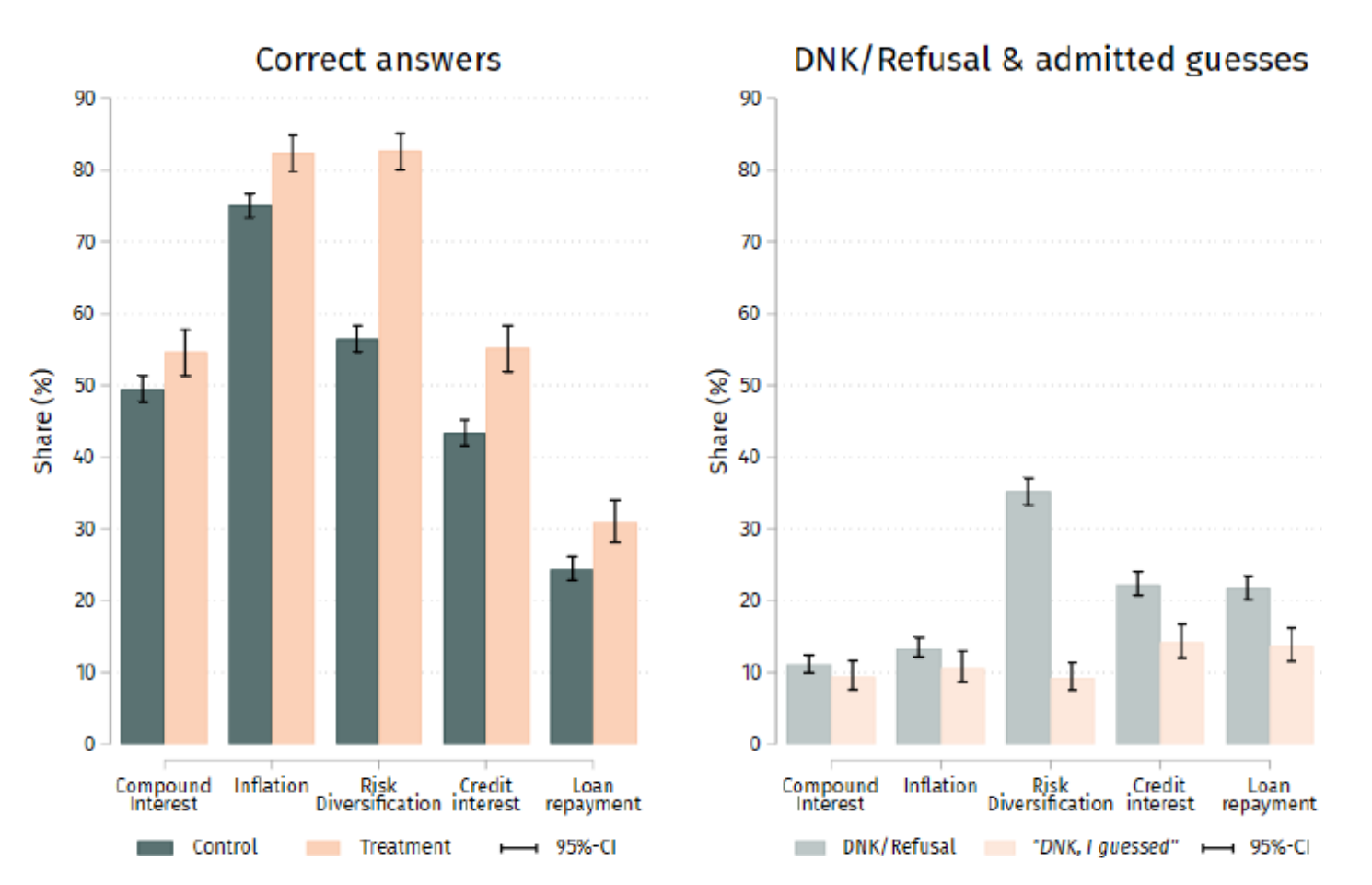
Control (75%)

- Standard mode, incl. "do not know" (DNK) and refusal

Treatment (25%)

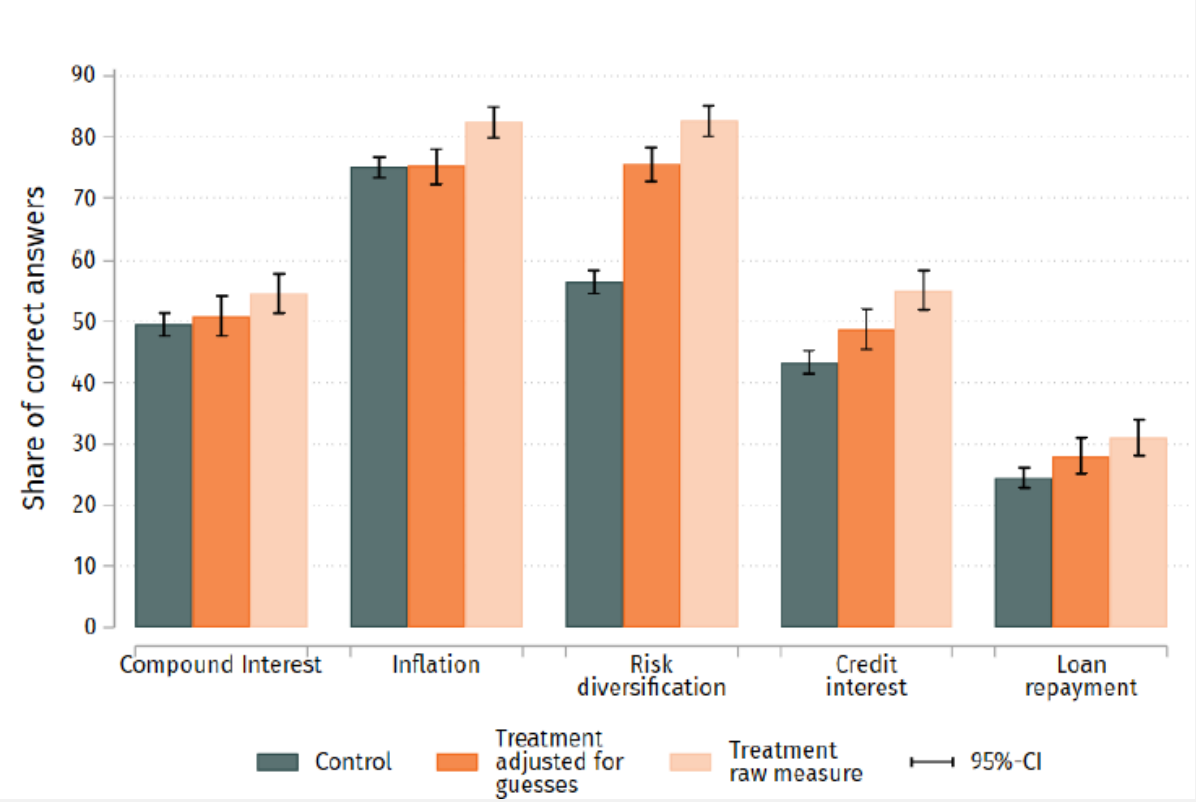
- Forced answers: no DNK or refusal
- Follow up: *"How confident are you about your answer?"* (11-point scale) + *"I don't know, I guessed"*

Results



- More correct answers in treatment
- Less admitted guessing than DNK/Refusal
- But: forced answers include noise in treatment

Results



	(1) Big-3 (raw)	(2) Big-3 (adj.)	(3) All FL (raw)	(4) All FL (adj.)
Female	-0.402***	-0.402***	-0.723***	-0.723***
	(0.0301)	(0.0302)	(0.0443)	(0.0443)
Treatment	0.191***	0.0750	0.330***	0.137*
	(0.0401)	(0.0431)	(0.0614)	(0.0657)
Female × Treatment	0.248***	0.147*	0.303***	0.180*
	(0.0548)	(0.0596)	(0.0806)	(0.0873)
Socioecon. controls	YES	YES	YES	YES
N	4927	4927	4927	4927
Adj. R2	0.176	0.164	0.215	0.202

Note: Robust SEs in parentheses, $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$. Socioeconomic controls incl. number of children, marital status, age, education, income, homeownership and region.

- Remove noise: adjust for **guessing**
- More correct answers for 3 out of 5 questions

- Treatment effect is stronger for women comapred to men

Conclusion

- Results confirm financial literacy gender gap, but standard methodology may overstate difference
- Confidence contributes to gender gap, explanatory power for financial behavior above & beyond fin. knowledge
- Our approach: disentangle knowledge & confidence, simple & efficient, applicable in cross-sectional studies

More methodological papers and issues

Similar results with different samples and (slightly) different experimental designs:

- Tranfaglia et al. (2024)
- Hospido et al. (2024): Multi-arm RCT which among others includes incentives for correct responses and information treatment about women selecting DKN response.

Oberrauch et al. (2024): Gender differences are smaller in PISA, where the methodology was more nuanced in the direction of a problem solving task

The research front

Some facts about the gender gap:

- Gender differences **emerge early** and have been documented among teenagers, see e.g. Lührmann et al. (2015), Driva et al. (2016), Bottazzi and Lusardi (2021), Blaschke (2022)
- Gender differences **exist around the globe**, see Bucher-Koenen et al. (2017), Lusardi and Klapper (2020)
- **Large part of the gender gap in financial knowledge and confidence remains unexplained** (see e.g., Aristei and Gallo 2022).
- Gender differences in financial literacy and confidence are **related to but exist above and beyond gender differences in numeracy/math ability** (e.g. Driva et al. 2016).

Open questions part I – What drives the gender differences?

Personality, non-cognitive skills, motivations/interest

- Women are on average more risk averse (e.g. Crosson and Gneezy 2009, Dohmen et al. 2011)
- Women are less interested /less motivated to deal with in finance.

Gender roles /norms /culture

- Classical role models within the household (Hsu 2016, Ke 2021)
- Roles of women in society:
  - Bottazzi and Lusardi (2021): girls living in regions with more gender equality score better in financial literacy
  - Davoli and Rodgrigues-Planas (2025): A smaller gender gap in financial literacy, more patience and less altruism in the country of ancestry are related with higher financial literacy among women in the US
- Interesting! no gender differences in financial literacy in matrilineal society (Rink et al. 2021)

Open questions part I – What drives the gender differences?

Beliefs / Stereotypes

- Coffman (2014): lower willingness to engage in tasks that are outside of the gender-specific domain
- Driva et al. (2016): female teenagers' financial knowledge deteriorates as the bias in their gender-specific beliefs increases, while male performance increases with self-affirming beliefs
- Tinghög et al. (2021): men outperform women on test tasks related to financial topics even if non-numerical; they can attribute a significant indirect effect of gender on financial literacy through financial anxiety => stereotype threat

Parental background / behavior and childhood experiences

- Mothers' with a managerial/finance jobs have appositive impact on girls' financial literacy (Bottazzi and Lusardi, 2021)
- Socialization and family preferences (Dossi et al. 2017)
- Itzkowitz et al. (2023): Women and girls get less encouragement for stock investment in the form of vouchers; effect is driven by expectation about interest in stock investing

Open questions part I – What drives the gender differences?

Gender differences in math and STEM abilities

- Adamecz et al. (2023): Large gap in self-assessed math abilities between boys and girls (even larger than actual difference in abilities); 25% of the gap is related to stereotypical parental assessment (similarly: large impact of stereotypical teacher assessments Carlana, 2019)
- Battisti et al. (2023): Despite convergence in education achievements, there is still a gender gap in numeracy especially at the top of the wage distribution
- Conte et al. (2024): confidence in math increases probability of answering financial literacy questions

Open questions part II – What can we do?

How can we increase financial literacy, in particular among women?

Closing the gender gap is hard, because we still have not fully explained where it stems from and norms/culture are very hard to overcome.

Some approaches:

- Increase financial knowledge / confidence:
  - Kaiser et al. (2022): Financial education on average works (also for the women)
  - Alan and Ertac (2018): more sustained effects of financial literacy /time preference intervention on 9-10 year old girls compared to boys
  - We need to know more about “What works” and especially “What works for women”.
- Jha and Shayo (2024): Experience with stock market trading within an experiment increases financial knowledge, confidence, risk tolerance, and subsequent stock market participation especially among women
- Confront gender stereotypes / self-stereotyping (e.g. Tinghög et al. 2021, Driva et al. 2016)