

Gender differences in financial risk taking: The role of financial literacy and risk tolerance

- Online appendix -

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1 Introduction

In the main paper, we consider the role of financial literacy for financial risk taking by using a composite, two-part measure of financial knowledge. It contains both an objective measure of actual financial literacy and a subjective measure via a self-assessment of literacy. We create the combined measure by splitting the total group of respondents along the average actual literacy and along the average perceived literacy and then combining the two respective groups with each other. This procedure delivers four distinct groups of respondents with low or high perceived and low or high actual financial literacy. We refer to them with correspondingly denoted dummy variables.

Using this two-part measure of financial literacy in the regressions allows to unveil the subtle and interrelated effects of the two dimensions of financial literacy that we report in the main paper. However, employing such group-dependent dummy variables also reduces the statistical power of our tests. To assess the robustness of our findings, we therefore conduct additional tests where the two dimensions of literacy enter as individual covariates. The results are reported in this online appendix.

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2 Results

2.1 Individual financial literacy covariates

Table 1 reports the results from a regression on the decision to invest in standard assets where actual and perceived literacy enter as individual covariates that take on discrete values between 0 and 9 (for actual literacy) or between 1 and 7 (for perceived literacy). As can be seen, both men’s and women’s standard investment decisions are positively related to their actual financial literacy, but only men’s decisions are also positively associated with perceived financial literacy. This confirms the results of the main paper.

Table 2 displays the results from a regression on the sophisticated investment decision. While we observe a positive relation of men’s sophisticated investments with their perceived financial knowledge, there is no such relation for women. Rather, we find a positive association with their actual financial knowledge. At first sight, this appears to contradict the findings in our main paper. There, we observed a strong relation between perceived financial literacy and sophisticated investment decisions for women. It should be noted, however, that this relation is particularly strong if actual financial literacy is below-average (Table 4, group I, in the main paper), as the two-part nature of the financial literacy measure in our main paper always links specific levels (above or below average) of actual and perceived literacy with each other. Hence, our results in the main paper point to subtle interrelations between the two dimensions of literacy that remain undetected in the current analysis.

Table 1: Standard investments with individual literacy covariates

The table reports OLS estimates of the effects of actual and perceived financial literacy and several control variables on standard investments. The dependent variable is `d_standardinvestments`. Column 1 reports effects for all respondents, column 2 (3) only for male (female) respondents.

	All (1)	Male (2)	Female (3)
Actual financial literacy	0.0311*** (0.0037)	0.0300*** (0.0058)	0.0327*** (0.0048)
Perceived financial literacy	0.0094 (0.0065)	0.0194* (0.0110)	-0.0010 (0.0081)
Above-average risk tolerance	0.0945*** (0.0212)	0.1097*** (0.0315)	0.0776*** (0.0268)
Female	-0.0307 (0.0191)		
Age	0.0004 (0.0007)	0.0010 (0.0011)	0.0001 (0.0008)
Education dummies			
Intermediate level	0.0416* (0.0217)	0.0675** (0.0334)	0.0109 (0.0277)
High level	0.0819*** (0.0311)	0.1067** (0.0446)	0.0416 (0.0411)
Married	-0.0068 (0.0220)	-0.0512 (0.0359)	0.0214 (0.0264)
Number of children	-0.0019 (0.0064)	0.0003 (0.0107)	-0.0027 (0.0083)
Ln(household income)	0.0490** (0.0230)	0.0278 (0.0319)	0.0834*** (0.0250)
Second wealth quartile	0.0858*** (0.0240)	0.0703* (0.0389)	0.1001*** (0.0311)
Third wealth quartile	0.1450*** (0.0256)	0.1862*** (0.0412)	0.0965*** (0.0305)
Fourth wealth quartile	0.1972*** (0.0297)	0.2283*** (0.0463)	0.1591*** (0.0384)
$d_{university}$	0.0140 (0.0396)	0.0513 (0.0573)	-0.0481 (0.0555)
Parents' financial education	0.0011 (0.0052)	-0.0020 (0.0080)	0.0061 (0.0064)
Observations	1955	933	1022
R^2	0.1632	0.1586	0.1684

Note: Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Sophisticated investments with individual literacy covariates

The table reports OLS estimates of the effects of actual and perceived financial literacy and several control variables on sophisticated investments. The dependent variable is `d_sophisticatedinvestments`. Column 1 reports effects for all respondents, column 2 (3) only for male (female) respondents.

	All (1)	Male (2)	Female (3)
Actual financial literacy	0.0079 (0.0078)	-0.0033 (0.0120)	0.0151* (0.0082)
Perceived financial literacy	0.0215* (0.0115)	0.0261* (0.0148)	0.0180 (0.0181)
Above-average risk tolerance	0.0848*** (0.0281)	0.1469*** (0.0388)	-0.0051 (0.0390)
Female	0.0102 (0.0275)		
Age	0.0007 (0.0010)	-0.0003 (0.0013)	0.0022 (0.0015)
Education dummies			
Intermediate level	0.0286 (0.0342)	0.0415 (0.0473)	-0.0238 (0.0519)
High level	-0.0181 (0.0364)	-0.0389 (0.0496)	-0.0180 (0.0585)
Married	-0.0379 (0.0357)	-0.0015 (0.0428)	-0.0523 (0.0542)
Number of children	-0.0110 (0.0130)	-0.0347** (0.0152)	0.0222 (0.0192)
Ln(household income)	0.0245 (0.0190)	0.0247 (0.0184)	0.0107 (0.0607)
Second wealth quartile	0.0963*** (0.0339)	0.0460 (0.0467)	0.1573*** (0.0547)
Third wealth quartile	0.0515 (0.0322)	0.0440 (0.0457)	0.0985* (0.0557)
Fourth wealth quartile	0.1258*** (0.0357)	0.1533*** (0.0522)	0.1103* (0.0618)
$d_{university}$	0.0776* (0.0465)	0.0578 (0.0576)	0.1327 (0.0852)
Parents' financial education	-0.0010 (0.0090)	-0.0029 (0.0112)	-0.0030 (0.0146)
Observations	519	297	222
R^2	0.0710	0.1455	0.0797

Note: Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

2.2 Financial literacy in quantiles

In order to assess the relation between financial literacy and financial risk taking in more detail, it seems necessary to account specifically for different levels of the two dimensions of literacy. We therefore rerun the above regressions but consider actual and perceived financial literacy in quantiles. In order to make the results comparable to the ones displayed in the main paper, we **reverse the response scales of our two main variables so that the omitted categories correspond to the highest values of each dimension of literacy**. In the following, we report the results for actual and perceived financial literacy in terciles.

Table 3 shows again a positive association between actual and perceived financial literacy and standard investment decisions for men. I.e., lower financial literacy goes along with a decrease in standard investments. There is also a positive relation of actual financial literacy with standard investments for women, but not of perceived financial literacy. Again, this confirms directly the results from our main paper. It is also interesting to see that the larger is the drop in literacy, the stronger is the corresponding reduction in investment: Coefficients are largest in absolute size **at the lowest level of literacy (third tercile)**.

Table 4 reports the results for the decision to invest in sophisticated assets. Here, we see that men’s investment decisions are indeed weakly reduced if perceived financial literacy decreases and that the effect is relatively homogeneous over the literacy terciles. There is no significant relation of men’s sophisticated investments with their actual literacy. For women, in contrast, we see a significant association between sophisticated investment decisions and both perceived and actual literacy. For both, however, it is only **the drop from the highest to the intermediate level of literacy that is significant**. This may explain why the continuous version of the perceived literacy variable did not show a significant coefficient in Table 2: The effect is strong only for a specific part of the total distribution of the variable. Moreover, Table 4 shows that the statistical significance of the investment relation with perceived literacy is much stronger than with actual literacy. These results are robust with respect to the choice of quantiles. In order to not let the number of observations per quantile become too small, however, we decided to report only the results for terciles.

3 Conclusions

The additional tests indicate that there is an intricate relation between financial literacy and investment decisions that cannot be fully uncovered by examining the linear relation between the individual literacy scores and the respective investment choices. Rather, it appears to be relevant to take level effects and the interrelation between the two dimensions of financial literacy into account. Both aspects are incorporated in the composite, two-part measure of literacy that we employ in the main paper, as such delivering the most comprehensive view of our findings.

Table 3: Standard investments with financial literacy in quantiles

The table reports OLS estimates of the effects of actual and perceived financial literacy and several control variables on standard investments. The dependent variable is `d_standardinvestments`. Column 1 reports effects for all respondents, column 2 (3) only for male (female) respondents.

	All (1)	Male (2)	Female (3)
Second actual literacy tercile	-0.1383*** (0.0254)	-0.1265*** (0.0361)	-0.1476*** (0.0355)
Third actual literacy tercile	-0.2010*** (0.0229)	-0.1811*** (0.0354)	-0.2191*** (0.0294)
Second perceived literacy tercile	-0.0332 (0.0225)	-0.0755** (0.0340)	0.0069 (0.0286)
Third perceived literacy tercile	-0.0471** (0.0229)	-0.1015*** (0.0379)	0.0045 (0.0284)
Below-average risk tolerance	-0.0904*** (0.0209)	-0.1032*** (0.0310)	-0.0763*** (0.0267)
Female	-0.0258 (0.0190)		
Age	0.0004 (0.0007)	0.0009 (0.0011)	0.0002 (0.0008)
Education dummies			
Intermediate level	0.0423* (0.0216)	0.0667** (0.0330)	0.0109 (0.0277)
High level	0.0777** (0.0311)	0.1069** (0.0444)	0.0339 (0.0410)
Married	-0.0087 (0.0220)	-0.0487 (0.0357)	0.0181 (0.0264)
Number of children	-0.0012 (0.0064)	0.0013 (0.0106)	-0.0026 (0.0083)
Ln(household income)	0.0471** (0.0228)	0.0252 (0.0319)	0.0826*** (0.0251)
Second wealth quartile	0.0902*** (0.0241)	0.0716* (0.0387)	0.1049*** (0.0308)
Third wealth quartile	0.1471*** (0.0254)	0.1873*** (0.0414)	0.0990*** (0.0302)
Fourth wealth quartile	0.1944*** (0.0293)	0.2232*** (0.0454)	0.1565*** (0.0379)
$d_{university}$	0.0196 (0.0396)	0.0575 (0.0570)	-0.0465 (0.0554)
Parents' financial education	0.0013 (0.0052)	-0.0030 (0.0079)	0.0070 (0.0064)
Observations	1955	933	1022
R^2	0.1728	0.1703	0.1796

Note: Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Sophisticated investments with financial literacy in quantiles

The table reports OLS estimates of the effects of actual and perceived financial literacy and several control variables on sophisticated investments. The dependent variable is `d_sophisticatedinvestments`. Column 1 reports effects for all respondents, column 2 (3) only for male (female) respondents.

	All (1)	Male (2)	Female (3)
Second actual literacy tercile	-0.0778*** (0.0296)	-0.0550 (0.0391)	-0.0736* (0.0417)
Third actual literacy tercile	-0.0343 (0.0465)	0.0439 (0.0762)	-0.0649 (0.0501)
Second perceived literacy tercile	-0.1023*** (0.0283)	-0.0781* (0.0423)	-0.1355*** (0.0381)
Third perceived literacy tercile	-0.0221 (0.0434)	-0.0788* (0.0429)	-0.0124 (0.0675)
Below-average risk tolerance	-0.0837*** (0.0280)	-0.1396*** (0.0382)	0.0015 (0.0390)
Female	0.0137 (0.0275)		
Age	0.0007 (0.0010)	-0.0004 (0.0013)	0.0024 (0.0015)
Education dummies			
Intermediate level	0.0313 (0.0347)	0.0456 (0.0467)	-0.0087 (0.0507)
High level	-0.0108 (0.0370)	-0.0289 (0.0505)	-0.0065 (0.0568)
Married	-0.0355 (0.0353)	0.0001 (0.0439)	-0.0537 (0.0528)
Number of children	-0.0102 (0.0129)	-0.0348** (0.0150)	0.0236 (0.0186)
Ln(household income)	0.0226 (0.0198)	0.0256 (0.0189)	0.0199 (0.0591)
Second wealth quartile	0.0999*** (0.0350)	0.0446 (0.0448)	0.1826*** (0.0626)
Third wealth quartile	0.0556 (0.0344)	0.0459 (0.0473)	0.1198* (0.0628)
Fourth wealth quartile	0.1256*** (0.0370)	0.1517*** (0.0521)	0.1224* (0.0687)
$d_{university}$	0.0750 (0.0460)	0.0557 (0.0573)	0.1272 (0.0847)
Parents' financial education	-0.0018 (0.0089)	-0.0027 (0.0111)	-0.0037 (0.0141)
Observations	519	297	222
R^2	0.0847	0.1525	0.1070

Note: Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$