Effects of actual and perceived financial literacy skills on financial well-being at retirement

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THE AIMS OF THE PAPER
Studies have not explained fully how financial literacy, decision making skills and the diverse forms of financial literacy overconfidence interact with each other to explain households’ actual and perceived financial well-being at retirement. This study aims to map the interactions among these constructs within the elderly population.

METHODOLOGY
In the framework of a larger assessment on subjective well-being and its antecedents at retirement, three hundred retired people between the age of 65 and 85 filled out a questionnaire in their home in Hungary in March 2019.

MOST IMPORTANT RESULTS
Elderly people are overconfident in their financial literacy skills both on absolut and relative levels. Perceived financial literacy is a better predictor of financial situation than actual financial literacy. However, financial literacy overconfidence relative to others harms elderly people’s financial situation. Subjective financial well-being is mainly driven by the actual financial situation. Decision making skills play an important role in the calibration of financial literacy skills and have an additional direct effect on the subjective level of financial well-being. Our outcomes reinforce that it is indeed worth promoting programs helping elderly people acquiring domain-specific financial knowledge. These programs may lead to better financial situation and higher self-efficacy. Moreover, our findings imply that it would be worthwhile for programs to concentrate on the calibration of financial knowledge vis-á-vis others.

RECOMMENDATIONS
To complement the mainstream literature, the study examines the forms of overconfidence and their effects on financial well-being separately and concentrates on the elderly population.

Keywords: financial literacy skills, financial well-being, overconfidence, retirement

Acknowledgements: The project was financed by the European Social Fund: Comprehensive Development for Implementing Smart Specialization Strategies at the University of Pecs (EFOP-3.6.1.- 16-2016-00004). Declarations of interest: none.

DOI: 10.15170/MM.2021.55.02.01
INTRODUCTION

Over their life course, most of the adult population are challenged by a broad range of financial decisions varying in their complexity and difficulty. We can say that these financial challenges are answered optimally if their outcomes are in-line with the self-interest of the decision-maker; i.e. her perceived financial and general well-being increases. In the literature, objective financial situation and perceived financial well-being are both considered important antecedents of subjective general-well-being (Dolan & White 2008, Netemeyer et al. 2017). Hence, the ability to make and undertake optimal financial decisions is an essential aspect of the independent living and subjective well-being of elderly adults and a pressing concern of the ageing societies. Solving complex financial tasks require financial literacy skills and the ability to apply those skills consistently in compliance with self-interest (Carpenter & Yoon 2015, Bruine de Bruin et al. 2012, Hershey et al. 2015). For the latter, general decision making skills and a well-calibrated view on related knowledge and skills seem to be critical (Bruine de Bruin et al. 2012, Ajzen 2002, Alba & Hutchinson 2000, Cokely et al. 2018, Kahneman 2011). At the same time, the general decline in cognitive abilities in advanced age fuels worries about the abilities of elderly adults to make good financial decisions (Korniotis & Kumar 2011). However, so far, studies have failed to fully explain how perceived and actual financial literacy and decision making skills interact with each other to explain the financial well-being of households, especially in the case of elderly people (Netemeyer et al. 2017, Anderson et al. 2016). In this study, we try to map these relationships.

Financial knowledge and basic numeracy skills, often referred to in the literature as financial literacy, are arguably the basic pillars of financial behavior and outcomes (Hershey et al. 2015, Lusardi et al. 2017, Smith et al. 2010, Banks et al. 2010). Financial literacy was estimated to explain about 30-40 percent of retirement wealth inequality in the United States (Lusardi et al. 2017). The literature on the relationship between age and financial literacy is typically informed by the theory of fluid and crystallized intelligence and the general decline in cognitive abilities (Finke et al. 2016, Gamble et al. 2014, 2015, Boyle et al. 2013, Lichtenberg et al. 2018). In contrast, some researchers argue that any decline in cognitive abilities is negligible compared to the benefit of specialized knowledge, skills and practice in decision making that may come with age (Cokely et al. 2018, Li et al. 2013, Ericsson 2006, Hershey et al. 2003). For financial abilities, numeracy skills are interesting not only because these skills are antecedents of financial literacy but because the ability to understand and process numerical information seems to affect general decision making skills too (Lipkus et al. 2001, Peters et al. 2006, Reyna et al. 2009). Decision making skills stand for the quality of decision making across domains. High decision making skills are linked to good, normatively superior decision outcomes in the field of financial decisions (Finke et al. 2016, Bruine de Bruin et al. 2007). Numeracy skills are linked to fluid intelligence and working memory but unlike fluid intelligence, they solicit domain-specific knowledge and crystallized intelligence as well (Peters et al. 2006, Barrouillet & Lépine 2005). Decreased numeracy, like decreased fluid intelligence, was associated with older age (Smith et al. 2010, Galesic & García-Retamero 2010, Winman et al. 2014).

An important constituent of decision making skills is the correct estimation of knowledge and skills (Kahneman 2011, Bruine de Bruin et al. 2007, Costa et al. 2017). Empirical research illustrates that the self-confidence trait is indeed different from the actual ability factor in the case of financial literacy (Gamble et al. 2014, Agnew & Szykman 2005, Johnson & Fowler 2011, Stankov & Crawford 1996). In general, people are overconfident. In fact, in the field of decision bias research, overconfidence is considered the most prevalent and damaging among the observed decisional biases (Baron 2000, Lichtenstein et al. 1981, West & Stanovich 1997). Unfortunately, only a handful of studies have examined the consequences of getting older in confidence calibration and its effects (Strough et al. 2011). Still, the results are remarkably heterogeneous. More accurate metaknowledge among older adults was observed by some studies (Forbes 2005, Kavé & Halamish 2015). On the other hand, studies also observed greater overconfidence in financial decision making skills among older adults (Finke et al. 2016, Gamble et al. 2014). Studies argued that is why elderly adults do not ask for help when their financial decision skills decline (Anderson et al. 2016, Gamble et al. 2014).

Still, in the field of financial behavior, recent results show that the self-assessed domain knowledge positively influences the saving behavior for retirement (Cokely et al. 2018, Anderson et al. 2016, Chen et al. 2018, Parker et al. 2012, Hadar et al. 2013). Therefore, we think that the term overconfidence should be dismantled to get a clear picture of its effect. The phrase overconfidence
is typically used and assessed as a trait-like, unified construct, even though the psychology literature recently started distinguishing its three forms affecting the behavior at different times and ways (Moore & Schatz 2017). The first form of overconfidence, overestimation, is believing that someone is better than reality justifies. In general, people tend to overestimate the outcome of complex tasks while underestimating their performance in very easy ones (Lichtenstein & Fischhoff 1977). According to motivational theories, such as the Theory of Planned Behaviour (Ajzen 2002, Fishbein & Ajzen 2011), behavior and behavioral intention are partially guided by beliefs on skills and abilities that may support or hamper the expected performance. The second and the most common form of overconfidence, overplacement, is the distorted belief that someone is better than others (Chamorro-Premuzic 2011). According to social comparison theories, comparing ourselves to others may reduce the uncertainties linked to knowledge and skill calibration (Festinger 1954, Goethals et al. 1991, Neff 2011). The third form of overconfidence, overprecision, manifests itself in the excess sureness that someone knows the truth. In this study, we concentrate on overplacement and overestimation as those two forms of overconfidence represent levels of knowledge beliefs. Also, recent studies suggest that the diverse forms of overconfidence may be domain-dependent (Muthukrishna et al. 2018). Nevertheless, we found only two studies measuring at least one form of overconfidence based on the belief distribution of financial literacy scores (Anderson et al. 2016, Pikulina et al. 2017).

In sum, so far, studies failed to explain fully how financial literacy, decision making skills and the diverse forms of financial literacy overconfidence interact with each other to explain households’ actual and perceived financial well-being. Also, the cognitive/metacognitive changes coupled with aging justify the examination of the elderly population separately. Based on the literature review, we argue that financial literacy and decision making skills associate with the objective financial situation of households. Additionally, based on motivational theories, the level of perceived financial literacy is hypothesized to be a better predictor of financial situation than objective financial literacy. Besides, studies suggest that overconfidence may be responsible for not asking for financial advice and not seeking help when actual financial literacy is low. However, none of the studies examined overplacement separately, by comparing the belief distribution of own and other’s financial literacy. We argue that the false belief of being better than others may result in reluctance to accept help and be negatively linked to financial situation. Additionally, we hypothesize that households’ financial situation directly influences perceived financial wellbeing. Therefore, we formulate the following four hypotheses:

H1: Financial literacy, overplacement, overestimation and decision making skills all affect households’ financial situation.

H2: Overestimation is positively linked to financial well-being. Therefore, perceived knowledge is a better predictor of households’ financial situation than actual financial literacy skills.

H3: Overplacement is negatively linked to households’ financial situation.

H4: Financial situation is directly associated with perceived financial well-being.

**MATERIALS AND METHODS**

In the framework of a larger assessment on subjective well-being and its antecedents at retirement, three hundred retired people between the age of 65 and 85 filled out a questionnaire (Appendix A.) in their home in Hungary in March 2019 (see details on the questionnaire under 2.1 Data and applied variables). After deleting test-takers with missing data, the results of 267 respondents were analyzed for this study. Random sampling was applied to choose respondent in a way to represent the regional, settlement-type, age, and gender composition of the retired population in Hungary. Respondents were informed about the aim of the data collection, that participating in the study is voluntary and they can skip any question. Respondents’ oral consent was obtained and no incentives were offered for the participation.

**Data and applied variables**

**Decision making skill (DMS)**

Researchers argue that statistical numeracy predicts decision making skill better than fluid and crystallized intelligence because it simultaneously assesses mathematical competency, metacognition, deliberation, affective numerical intuition, intuitive understanding and self-regulated learning (Cokely et al. 2018, Sinayev & Peters 2015). We evaluated subjects’ decision making ability by the three-minute-long version of the Berlin Numeracy Test (Cokely et al. 2012). Because in general, the results were very low, by a median split, we divided participants into two groups (Table A.1).
Financial literacy (FL)

Our financial literacy test consisted of 8 questions adapted from the Health and Retirement Study (Finke et al. 2016) or the study of Pikulina et al. 2017. The questions concerned different aspects of financial literacy skills, such as compound interest, money illusion, inflation, investment risk assessment and diversification, long period returns, and interest rates. Participants’ financial literacy score is equal to the sum of the correct answers.

Overestimation (OE) and overplacement (OP)

Overestimation and overplacement were evaluated as suggested by Prims and Moore, 2017. Thus, the full Subjective Probability Interval Estimates (SPIES) distribution of own estimated scores and the estimated scores of a randomly chosen other respondent were elicited. Subjects were asked to sum up their probability distribution to 100. The answers were proportionally adjusted to 100 if the sum was a different amount. Based on the SPIES, we computed the expected value of own performance and the expected value of the randomly chosen other. Overestimation was calculated as the difference between the expected value of own performance and the actual performance on the financial literacy test. Overplacement was assessed as the difference between the perceived FL and the estimated performance of the randomly chosen other adjusted by the actual overachievement of the given respondent. As empirical results suggest that knowledge and task difficulty influence overconfidence, an expert group of four researchers divided the literacy questions into two categories: easy (questions 1-4) and hard (questions 5-8). SPIES were elicited on those two sets of questions separately.

Financial situation

Objective financial situation was assessed in a yes/no (No=2; Yes=1) format by two questions on the ability to cover unexpected expenses “Would you be able to cover an unexpected expense of 50 000?” (F1) and “Would you be able to cover an unexpected expense of 300 000 EUR?” (F2).

PERCEIVED FINANCIAL WELL-BEING (PFWB)

Our perceived financial well-being score was developed based on Netemeyer et al., 2017. It consisted of three 11 point Likert scale questions (1) “I am good at mathematics”; (2) “I am good at managing money”; (3) “I have enough savings”- and a five-point subjective income perception question ranging from “My income allows me a very comfortable life” to “I have difficulties in financing everyday expenses”. After reversing and weighing the last scale by 1.25, the four PFWB scores were summed up to create our measure (Cronbach’s Alpha=0.591).

RESULTS

First, we tested if overestimation and overplacement scores in the different conditions comply with the tendencies suggested by the literature review. The differences between participants’ results in the different conditions were mostly tested by paired samples t-tests. Second, the connections between the predecessors of finances –overconfidence measures, decision making skills and financial literacy- were tested. Finally, a binary logistic regression with forwarding conditional entry was used to test the effect of the hypothesized predecessors of financial situation and linear regression modeling with stepwise entry method was employed to investigate our hypotheses on PFWB. Whenever a model contained several scale variables, z scores were calculated. Gender (binary code: Male=1; Female =2), educational attainment (binary code: below high school=1; high school and above=2) and subjective health condition (0-10 Likert scale) were entered as covariables in all the regression models. Table 1 contains the descriptive statistics of the variables used in the analyses.
Table 1. Descriptive Statistics

|       | Minimum | Maximum | Mean  | Std. Deviation |
|-------|---------|---------|-------|----------------|
| PFWB  | 6.000   | 39.000  | 22.391| 6.933          |
| DMS   | 0.000   | 5.000   | 1.570 | 1.156          |
| FL total | 0.000 | 8.000   | 4.240 | 1.786          |
| FL easy | 0.000 | 4.000   | 2.450 | 1.242          |
| FL hard | 0.000 | 4.000   | 1.790 | 0.985          |
| PFL easy | 0.000 | 4.000   | 2.558 | 0.783          |
| PFL hard | 0.000 | 4.000   | 2.483 | 0.869          |
| PFL total | 0.800 | 8.000   | 5.042 | 1.468          |
| OE easy | -3.000 | 3.000   | 0.109 | 1.138          |
| OE hard | -2.000 | 3.000   | 0.693 | 0.992          |
| OP easy | -2.623 | 4.377   | 0.254 | 1.321          |
| OP hard | -3.263 | 2.737   | 0.181 | 1.094          |

Source: own calculation

A paired samples t-test indicated that subjects performed significantly higher on the financial literacy test \( (t (266)=7.956, p<0.001) \) in the easy than in the hard condition. With 21% giving a perfect estimate of their performance in the easy condition, test-takers estimated their knowledge well \( (t (266)=-1.560, p>0.1) \). Contrarily, subjects overestimated their knowledge in the case of hard financial literacy questions \( (t (266)=-11.419, p<0.001) \). As a consequence, respondents overestimated their overall financial knowledge but overestimation was more important in the hard than in the easy condition \( (t (266)=-6.475, p<0.001) \). Overestimation was also more typical among subjects \( (McNemar-Bowker Test=26.257, p<0.001) \) in the hard condition. Additionally, subjects predicted their own performance better than the performance of their counterparts \( (t (266)=-3.695, p<0.001) \). On the average, the magnitude of overplacement was statistically equal in both conditions \( (t (266)=0.778, p>0.1) \). However, overplacement was more typical among the subjects in the easy condition \( (Cochran’s Chi-Squared (1) = 4.101, p<0.05) \). Thus, the results are in line with the outcomes of studies on overestimation, overplacement, and their relationships with knowledge and task difficulty. Moreover, according to our results, financial literacy and decision making skills influence overestimation of financial literacy score both in the easy \( (M1 F (2, 264) =238.733 p<0.001, R^2=0.644) \) and hard conditions \( (M2 F (4, 262) =93.248 p<0.001, R^2=0.414) \). The results showing that decision making skills positively relate to overestimation back the idea that overestimation may be useful (Table 2). More knowledge was associated with less overplacement in the easy \( (M4 F (2, 264) =291.087 p<0.001, R^2=0.688) \) and hard conditions \( (M5 F (2, 264) =123.435 p<0.001, R^2=0.483) \). Decision making skills and financial literacy are both negatively associated overplacement \( (M6 F (2, 264) =8.131 p<0.001, R^2=0.058) \) (Table 3).
Table 2. Parameter estimates of the models on OE

| DV                  | IV          | Unstandardized Coefficients | Standardized Coefficients | t     | Sig. |
|---------------------|-------------|-----------------------------|---------------------------|-------|------|
|                     |             | B                           | Std. Error                |       |      |
| M1 OE hard          | (Constant)  | 1.657                       | 0.103                     | 16.120| 0.000|
|                     | FL hard     | -0.638                      | 0.048                     | -13.381| 0.000|
|                     | DMS         | 0.388                       | 0.094                     | 4.124 | 0.000|
| M2 OE easy          | (Constant)  | 1.795                       | 0.094                     | 19.034| 0.000|
|                     | FL easy     | -0.758                      | 0.035                     | -21.821| 0.000|
|                     | DMS         | 0.370                       | 0.086                     | 4.286 | 0.000|
| M3 Abs OE total     | (Constant)  | 2.268                       | 0.162                     | 14.015| 0.000|
|                     | DMS         | 0.028                       | 0.128                     | 0.222 | 0.824|
|                     | FL total    | -0.217                      | 0.036                     | -6.071| 0.000|

Source: own calculation

Table 3. Parameter estimates of the models on OP

| DV                  | IV          | Unstandardized Coefficients | Standardized Coefficients | t     | Sig. |
|---------------------|-------------|-----------------------------|---------------------------|-------|------|
|                     |             | B                           | Std. Error                |       |      |
| M4 OP easy          | (Constant)  | 2.372                       | 0.102                     | 23.160| 0.000|
|                     | DMS         | 0.169                       | 0.094                     | 1.804 | 0.072|
|                     | FL easy     | -0.897                      | 0.038                     | -23.761| 0.000|
| M5 OP hard          | (Constant)  | 1.509                       | 0.106                     | 14.182| 0.000|
|                     | DMS         | 0.131                       | 0.097                     | 1.342 | 0.181|
|                     | FL hard     | -0.776                      | 0.049                     | -15.709| 0.000|
| M6 Abs OP total     | (Constant)  | 2.166                       | 0.174                     | 12.451| 0.000|
|                     | DMS         | -0.103                      | 0.038                     | -2.672| 0.008|

Source: own calculation

Financial situation was assessed by two questions on the ability to cover unexpected expenses of 50 000 HUF (F1) and 300 000 HUF (F2). Of all test-takers, 67.8% declared that they could afford unexpected expenses of 50 000 HUF, while only 30% affirmed the feasibility of covering 300 000 EUR unexpected expenses. First, we regressed F1 on FL, the diverse overconfidence scores and decision making skill. Our model was highly significant, explaining about 21% of the variations of the answer (M7 Chi-square (4) =44.129, p<0.001, Nagelkerke R²=0.213). Men and healthier individuals with higher financial literacy and overestimation are more likely to experience financial health according to our measure. Results were akin with F2 (M8 Chi-square (4) =33.032, p<0.001, Nagelkerke R²=0.165). In that model, the same predictors were significant (Table 4). As both the financial literacy score and its overestimation were significant predictors in both of the cases (F1 and F2), we have tested a model with...
the PFL scores. According to our results, perceived financial knowledge is a better predictor of financial situation than actual knowledge (M9 F1: Chi-square (5) = 50.278, p < 0.001, Nagelkerke $R^2 = 0.240$ and M10 F2: Chi-square (4) = 31.672, p < 0.001, Nagelkerke $R^2 = 0.159$). Moreover, according to M9, overplacement – falsely believing that one is better than others – may harm households’ financial situation (Table 4). As a consequence, H1, H2, and H3 are approved. To investigate what individual differences play a role in PFWB, we regressed PFWB on financial situation and its predecessors (Table 5). Linear regression showed that F1, subjective health and decision making skills together explain about 36% of changes in subjective financial well-being (M11 F (3, 263) = 50.942 p < 0.001, $R^2 = 0.367$). We got comparable results with F2 (M12 F (4, 262) = 42.820 p < 0.001, $R^2 = 0.395$). Hence, H4 is approved.

Table 4. Parameter estimates of the models on F1 and F2

| DV   | IV       | B    | S.E.  | Wald | df | Sig. | Exp(B) |
|------|----------|------|-------|------|----|------|--------|
| M7 F1| Gender   | 0.644| 0.297 | 4.712| 1  | 0.030| 1.904  |
|      | Health   | -0.470| 0.147 | 10.240| 1  | 0.001| 0.625  |
|      | FL       | -0.880| 0.199 | 19.626| 1  | 0.000| 0.415  |
|      | OE total | -0.439| 0.189 | 5.385| 1  | 0.020| 0.645  |
|      | Constant | -1.900| 0.506 | 14.076| 1  | 0.000| 0.150  |
| M8 F2| Gender   | 0.653| 0.289 | 5.087| 1  | 0.024| 1.920  |
|      | Health   | -0.513| 0.155 | 11.007| 1  | 0.001| 0.599  |
|      | FL       | -0.671| 0.193 | 12.051| 1  | 0.001| 0.511  |
|      | OE total | -0.407| 0.185 | 4.804| 1  | 0.028| 0.666  |
|      | Constant | -0.042| 0.461 | 0.008| 1  | 0.928| 0.959  |
| M9 F1| Gender   | 0.724| 0.305 | 5.648| 1  | 0.017| 2.062  |
|      | OP total | 0.401| 0.152 | 6.911| 1  | 0.009| 1.493  |
|      | Health   | -0.357| 0.153 | 5.420| 1  | 0.020| 0.700  |
|      | School   | -0.622| 0.312 | 3.986| 1  | 0.046| 0.537  |
|      | PFL      | -0.582| 0.156 | 13.986| 1  | 0.000| 0.559  |
|      | Constant | -1.136| 0.638 | 3.168| 1  | 0.075| 0.321  |
| M10 F2| Gender  | 0.670| 0.288 | 5.395| 1  | 0.020| 1.954  |
|      | Health  | -0.508| 0.153 | 10.984| 1  | 0.001| 0.602  |
|      | PFL     | -0.495| 0.150 | 10.919| 1  | 0.001| 0.609  |
|      | Constant| -0.076| 0.458 | 0.028| 1  | 0.868| 0.926  |

Source: own calculation
### Table 5. Parameter estimates of the models on PFWB

| DV   | IV       | Unstandardized Coefficients | Standardized Coefficients | t     | Sig. |
|------|----------|-----------------------------|---------------------------|-------|------|
|      |          | B                           | Std. Error                | Beta  |      |
| M11 PFWB | (Constant) | 28.784                     | 1.127                     | 25.531| 0.000|
|      | F1       | -5.742                      | 0.752                     | -0.388| -7.639| 0.000|
|      | Zscore Health | 2.064                     | 0.353                     | 0.298 | 5.842 | 0.000|
|      | DMS      | 2.603                      | 0.694                     | 0.188 | 3.751 | 0.000|
| M12 PFWB | (Constant) | 31.337                     | 1.381                     | 22.696| 0.000|
|      | F2       | -5.889                      | 0.757                     | -0.390| -7.777| 0.000|
|      | Zscore Health | 2.011                     | 0.346                     | 0.290 | 5.811 | 0.000|
|      | DMS      | 2.318                      | 0.699                     | 0.167 | 3.317 | 0.001|
|      | Zscore PFL hard | 0.779                     | 0.352                     | 0.112 | 2.211 | 0.028|

Source: own calculation

### DISCUSSION AND CONCLUSION

In sum, based on our results, it seems that decision making skills, overestimation, overplacement and financial literacy all play a crucial role in the financial situation of elderly adults. Consistent with our expectations, perceived financial literacy associates with financial situation more closely than actual financial literacy skills. This result is in line with recent studies showing that perceived financial literacy is more important to predict positive financial behavior than actual financial literacy skills. However, as the number of questions on financial literacy naturally bounded how overconfident someone could be, one should be careful with the interpretation of these results. Overconfidence may be useful until a certain point (see e.g. Pikulina et al. 2017). Future research should address this issue. Additionally, the results imply that overplacement may harm households’ financial situation. Until now, financial literacy overplacement was not separately examined in the literature, but we think that its negative effect on financial situation may be due to the reluctance of asking for help in financial decision making. Help seeking behaviour was studied and linked to general overconfidence by research. Besides, actual financial situation was found to be the most important antecedent of perceived financial well-being.

Financial literacy has been in the focal point of policymakers for a while, particularly since the financial crises. Our outcomes reinforce that it is indeed worth promoting programs helping elderly people acquiring domain-specific financial knowledge. These programs may lead to better financial situation and higher self-efficacy. Besides, general decision making skills are also important aspects of financial decision making. Thus, our findings imply that it would be worthwhile to concentrate on the calibration of financial knowledge too. For researchers, our results show that it is necessary to calculate with decision making skills and analyse the effects of the forms of overconfidence separately when looking for possible causes behind low financial well-being. Finally, we have to mention the limitations of our study. Our analyses concern only people aged between 65 and 85, but changes in the metacognitive and cognitive processes suggest that the findings may not be fully generalizable. It would be interesting to investigate younger adults as well. In addition, this is a descriptive study. Based on our analyses, we can talk only about associations and not causations. Better life outcomes may cause higher overestimation for example. Future studies should concentrate on how the action, motivation, confidence circle unfolds. Also, respondents were not compensated to participate in this study. The very low result on the Berlin numeracy test -the questionnaire that required the most deliberation-reflects the lack of motivation. In sum, the purpose of this research was to map how the interactions
between financial literacy, decision making skills and the different forms of overconfidence shape households’ financial situation and well-being at retirement. Thus, this study contributes to understand what skills and knowledge underwrite financial well-being at retirement.

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APPENDIX A.

Financial Literacy Questionnaire

1. Suppose you had 10,000 HUF in a savings account and the interest rate was 20% per year. After five years, how much do you think you would have in the account if you left the money to grow?  1. More than 20,000 HUF  2. Exactly 20,000 HUF  3. Less than 20,000 HUF

2. Ana has three credit cards (A, B and C) and she owes 100,000 HUF on each of them. The interest rates are 7% for card A, 9% for card B, and 8% for card C. If Ana has 200,000 HUF to pay off her debt, which cards should she pay if she wanted to minimize future interest payments?  100,000 HUF to card B and 100,000 HUF to card C  2. 66,600 HUF to card A, 66,800 HUF to card B and 66,600 HUF to card C  3. 100,000 HUF to card A and 100,000 HUF to card C

3. Imagine that the interest rate on your savings account was 1% per year and the inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?  1. More than today  2. Exactly the same as today  3. Less than today

4. Suppose that next year, your income will double but the prices also double. How much do you get for your salary?  1. More than today  2. Same as today  3. Less than today

5. Comparing to buying a single company stock, if an investor buys stocks from several companies, the risk associated with the investment  1. Grows  2. Decreases  3. Stays the same

6. If the interest rate falls, what happens to the bond prices?  1. Rise  2. Decrease  3. Stay the same

7. Which asset do you think pays the highest returns over a long time period, say 10-20 years or more?  1. Saving accounts  2. Bonds  3. Stocks

8. Shares or bonds are riskier?  1. Shares  2. Bonds  3. Both are equally risky