

# Financial Literacy and Financial Biases: Experimental Evidence

(Extended Abstract for IAREP-SABE Virtual Conference 2021)

**Gizem Turna Cebeci**

Istanbul Bilgi University, Bilgi Economics Lab of İstanbul (BELİS)  
gizem.turna@bilgi.edu.tr

## 1. Introduction

People often fail to make rational decisions because they lack sufficient knowledge/skills, or various psychological/behavioural/emotional factors interfere in their decision-making process. The behavioural economics and finance literature shows that deviations from rational behaviour, namely biases, are systematic and, therefore, predictable. In the realm of finance, biases lead to suboptimal outcomes for individuals and even crisis in markets that might be limited to a single economy or can spread throughout the economies worldwide due to the globally integrated financial markets. In the last decade, many countries have adopted education and/or training programs to increase financial literacy as attempts to improve individuals' financial knowledge and skills.

Although there is a consensus about the importance of financial literacy, there is a debate about its sufficiency for attaining rational decisions. Braunstein (2008) argues that financial literacy is the first step, but there must be an effective regulatory system that responds to the changes in financial markets. Bell et al. (2010) discuss that improved knowledge alone does not necessarily change behaviour. Huston (2010) claims that behavioural biases and external conditions may impact the financial decision-making process as well. Willis (2011, 2013) draws attention to the complexity of today's investment instruments which require detailed knowledge and even specialization. Given the limited capacity of financial literacy training for providing a sufficient level of knowledge about these instruments, the large budgets allocated by governments and organizations to financial literacy training becomes questionable.

Willis (2011, 2013) proposes alternative methods to avoid irrational investment decisions by individuals. These methods are: (i) providing financial consultancy under government control that is accessible to all people in order to ensure that they make rational decisions and (ii) informing individuals about when and how they can benefit from them. Similarly, West (2012) points out the necessity of regulations to protect investors from confusing and ambiguous financial products. It also recommends that financial literacy programs should focus on not only to educate people about the financial market and products but also to create awareness about psychological biases and limitations.

On the other hand, there are some studies which suggest that financial education programs or courses may have a negative impact on financial behaviour and outcomes. For example, Bell et al. (2009) find worse budgeting behaviour by soldiers with financial education than ones without. The findings by Braucher (2001) highlight the negative effect of financial education on the bankruptcy plans of debtors. Mandell (2008) shows that young individuals with financial knowledge exhibit less frugal behaviour than their peers without financial education. Mandell and Klein (2009) find that a personal finance course taken in high school does not lead to better financial behaviour in the future. Cole and Shastry (2008) observe that individuals who take personal finance courses in public high school do not perform better in subsequent years than other individuals who do not take such courses. Moore (2003) shows that the victims of financial fraud are more financially knowledgeable than others.

## 2. Research Questions and Methodology

Given the aforementioned findings in the literature, the effectiveness of financial literacy in implementing rational financial behaviour remains to be further investigated. This study aims to experimentally investigate the problem by addressing the following research questions:

- 1) Does financial education lead to financial literacy?
- 2) Compared to financial illiterates, are financially literate people less likely to have biases? What is the role of economic preferences (i.e., time and risk preferences) in this context?
- 3) Are financial biases correlated?

In the literature, a directional link is assumed (i) from financial education to financial literacy, (ii) from financial literacy to financial behaviours, and (iii) from financial behaviours to financial well-being. Our first research question refers to the link between financial education and financial literacy. We investigate whether improved financial literacy makes people suffer less from financial biases through our second research question. If financial literacy is insufficient in implementing rational decision-making, granting huge funds to financial training becomes controversial. If financial literacy alone fails to implement rational behaviour, psychological training modules for overcoming the biases can be designed and incorporated in financial training. Our third research question aims to analyze the correlations between financial biases. Pompian (2011) classifies financial biases into two categories, i.e., cognitive biases and emotional biases; however, it does not rule out interactions among the biases of different categories. To our knowledge, this study is the first attempt to uncover the correlation map of biases.

This study employs a controlled laboratory experiment to answer the research questions. The laboratory experiment was conducted with undergraduate students at İstanbul Bilgi University. It contains both incentivized and hypothetical investment decisions in our aim to detect financial biases. We measure financial literacy level through an incentivized financial knowledge test developed by the OECD (Atkinson et al., 2016). We also elicit risk and time preferences using the methodology of Falk et al. (2018) and daily financial behaviours and attitudes. We determine undergraduate students' financial education level based on economics and finance courses they have taken. We also collect socio-demographic data on gender, age, parents' education level, scholarship status, expenditure habits, etc.

## 3. Findings

We use economics or finance courses as a proxy for financial education. Our data support that the students who have taken these courses are found to be financially more literate than others who have not. The impact of the courses taken on the level of financial literacy is more significant in the case of finance courses than of economics courses.

We find that more financially literate people suffer less from only two out of twelve biases that we consider in this study. In addition, we show that more risk-averse people are those who suffer less from the illusion of control bias, suffer more from seller-based anchoring bias and those who are more loss averse. Also, we find that more patient people are those who suffer less from buyer-based anchoring, affinity, and probability-sensitive conservatism bias.

We can say that the biases do not markedly reflect the classification in the literature through the findings from the experimental study. We have twelve biases in total, including the different versions of the same biases in this study. Four of them are emotional biases, while the remaining

eight are cognitive biases such that half of them belongs to the belief perseverance sub-category, and the other half belongs to the information processing sub-category. As a result, we can say that these three groups of four components are not clearly separated from each other but rather interrelated.

In addition, if we measure any particular bias with different methodologies, we can find differences in the correlation of this bias with other biases. For example, conservatism bias measured with a fixed incentive mechanism (hypothetical conservatism) is correlated with affinity and endowment effect (emotional biases) biases. However, the probability-sensitive conservatism measured by a real incentive is negatively correlated with two types of anchoring bias (information processing sub-category of the cognitive biases). Furthermore, framing is observed to be the most uncorrelated bias.

#### 4. References

- Atkinson, A., Monticone, C., & Mess, F. A. (2016). OECD/INFE International survey of adult financial literacy competencies. Technical Report, OECD.
- Bell, C. J., Gorin, D. R., & Hogarth, J. M. (2009). Does Financial Education Affect Soldiers' Financial Behavior? Networks Financial Institute Working Paper.
- Bell, C. J., Gorin, D., & Hogarth, J. M. (2010). What makes a good money manager good? Insights from an evaluation of a financial education initiative. *Consumer Interests Annual*, 56, 61-71.
- Braucher, J. (2001). An empirical study of debtor education in bankruptcy: Impact on chapter 13 completion not shown. *Am. Bankr. Inst. L. Rev.*, 9, 557.
- Braunstein, S. F. (2008). Financial literacy: testimony before the Committee on Financial Services, US House of Representatives, April 15, 2008 (No. 381). Board of Governors of the Federal Reserve System (US).
- Cole, S. A., & Shastry, G. K. (2008). If you are so smart, why aren't you rich?: The effects of education, financial literacy and cognitive ability on financial market participation. Cambridge, MA: Harvard Business School.
- Falk, A., Becker, A., Dohmen, T., Enke, B., Huffman, D., & Sunde, U. (2018). Global evidence on economic preferences. *The Quarterly Journal of Economics*, 133(4), 1645-1692.
- Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs*, 44(2), 296-316.
- Mandell, L. (2008). Financial literacy of high school students. In *Handbook of consumer finance research* (pp. 163-183). Springer, New York, NY.
- Mandell, L., & Klein, L. S. (2009). The impact of financial literacy education on subsequent financial behavior. *Journal of Financial Counseling and Planning*, 20(1).
- Pompian, M. M. (2011). Behavioral finance and wealth management: how to build investment strategies that account for investor biases (Vol. 667). John Wiley & Sons.
- West, J. (2012). Financial literacy education and behaviour unhinged: Combating bias and poor product design. *International Journal of Consumer Studies*, 36(5), 523-530.
- Willis, L. E. (2011). The financial education fallacy. *American Economic Review*, 101(3), 429-34.
- Willis, L. E. (2013). Financial education: Lessons not learned & lessons learned. *Life-Cycle Investing: Financial Education and Consumer Protection*, 125.