

# *Survey of Hungarian High School Students' Financial Literacy in the Last 10 Years Based on the Econventio Test*

Péter Kovács

*University of Szeged*

kovacs.peter@eco.u-szeged.hu

Éva Kuruczleki

*University of Szeged*

kuruczleki.eva@eco.u-szeged.hu

Tamás Attila Rácz

*University of Szeged*

racz.tamas@eco.u-szeged.hu

Lilla Lipták

*University of Szeged*

liptak.lilla@eco.u-szeged.hu

---

**SUMMARY:** The Econventio Association in cooperation with the Faculty of Economics and Business Administration of the University of Szeged has been developing the financial literacy of high school students since 2011. In our study, we summarize the main findings of surveys over the past 10 years, based on a total of 110,000 responses. Our findings show high school students to have inadequate and superficial financial knowledge. The results show that high school students have low financial literacy levels. Financial knowledge is positively related to long-term oriented thinking, the opinion formed about self-sufficiency and self-care, and the general attitude towards finances. In addition to the ever-increasing role of digital financial information sources, high school students draw their financial knowledge mainly from what they see at home, which influences test scores in a negative way, while at the same time financial literacy education has a positive effect on students' financial literacy. As age and experience increase, the level of financial knowledge increases too, especially in the topics of labour market, credits and loans and insurance, however, the problematic areas remain the same over time, both for high school students and the adult population: calculating interest, compound interest, the meaning of expressions 'at least' or 'at most', or comparing different financial offers.

**KEYWORDS:** financial literacy, Econventio test, financial awareness

**JEL-CODES:** G53, A20, D14, H24, J32

**DOI:** [https://doi.org/10.35551/PFQ\\_2021\\_2\\_1](https://doi.org/10.35551/PFQ_2021_2_1)

Improving the financial literacy of young people is essential to establish financial stability in adulthood, since at this age, young people are still more receptive to development, and the shortcomings which appear during adolescence are harder to remedy during adulthood. The Econventio Association in cooperation with the Faculty of Economics and Business Administration of the University of Szeged started to examine and develop the financial literacy of high school students in 2011. In our study, we summarise the experience and main findings of surveys over the past 10 years. The relevance of the topic is supported by multiple factors in addition to the anniversary, such as the pandemic and the economic crisis emerging along with it, which also tests the financial resilience of Hungarian families, and the constantly emerging new digital financial services, which bring fundamental changes to our financial habits. The Econventio Association is one of the entities conducting financial surveys and trainings with the widest reach in Hungary. Over the past years, more than 110 thousand people participated in the financial literacy surveys and the development programmes of the association. Owing to the large number of participants, the results provide a detailed picture of the financial knowledge and habits of Hungarian high school students (Németh, Vargha, Domonkos, 2020a). The main target group of our analysis was high school students, who have to navigate the labyrinth of various digital financial services in a world of dynamically developing finances, while they also have to prepare for making financial decisions which determine their future. These young people were already born in the age of computers, telecommunication devices and the internet, and technology has been present in their lives since they were small children. Compared to the earlier generations, this transformed their view of the world significantly, and it affected the devel-

opment of their financial literacy as well. On the other hand, they have access to an ever-increasing range of financial services, and choosing the right instruments from this wide selection is becoming more and more challenging for them. Our study presents the key results and findings of the financial literacy surveys conducted by Econventio among high school students in the last ten years.

## LITERATURE OVERVIEW

Financial literacy affects all age groups, since we have to make financial decisions in our day-to-day lives, and as a member of a family or household, the day-to-day financial decisions have a significant impact on our lives. In addition, news and reports related to finance and the economy appear in the media every day, the understanding of which requires an appropriate level of financial, economic knowledge.

The majority of the adult population had not received any financial or economic education either during their school studies or later (Horváthné, Széles, 2014), or even if they did, several financial products that exist today did not exist when they pursued such studies, since – as stated by *Béres and Huzdik* (2012) – the development of financial markets is faster than the growth of the financial literacy of individuals. The reduction of the gap requires, naturally, the continuous development of financial literacy, which can be achieved through education and practical studies.

### The definition of financial literacy

Although our study is not intended to present the definition of financial literacy in detail, is it essential for the foundations of our analysis model to mention the most important

definitions concerning the topic. According to the OECD, the most frequently cited definition of financial literacy is the following: *‘Financial literacy is a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing’* (Atkinson, Messy, 2012, p. 14). The complexity of the definition and the decision-making process described by it (from the collection of information, the sorting thereof, to the decision making) require complex, multidisciplinary approach in the course of the empirical examinations.

The definition by the Central Bank of Hungary which appeared in 2008 fits the conceptual definition. According to the Central Bank of Hungary, financial literacy is *‘a level of financial knowledge and skills that enables individuals to identify the fundamental financial information required to make conscious and prudent decisions, and following the acquisition of such information, to construe it and use it to make decisions, assessing potential future financial and other consequences of their decisions’* (Central Bank of Hungary – Hungarian Financial Supervisory Authority, 2008, p. 1.) Therefore, individuals *‘are able to assess the risks and any uncertainty in their decision’* (Huzdik, Béres, Németh, 2014, p. 445). An important element of the definition is the result of the decisions, which was not included in some of the definitions mentioned above.

Due to the complexity of the definition of financial literacy, it is advisable to use complex models for its analysis. The literature is mostly unanimous in respect of the areas to be examined, however, the means of measuring are not consistent. Some researches analyse less issues, since they rather focus on certain groups of issues. In order to provide a complex picture of financial literacy, it is advisable to cover the majority of the topics.

## Adult financial literacy

Before the analysis of the financial literacy of high school students, it is worth examining the particularities regarding the financial literacy of the adult population, since – as it will be shown later – the financial literacy of today’s youth is determined largely by their experience at home, as most of them gain their finance-related knowledge from their families and what they see at home (OECD, 2020a).

The results of the Hungarian researches conducted among the population (for example, Botos et al., 2012; Béres, Huzdik, 2012; Huzdik, Béres, Németh, 2014; Kovács, Kuruczleki, 2017; Zsótér, Németh, Luksander, 2017; Németh, Zsótér, Béres, 2020b) show a relatively low level of the use of financial knowledge.

According to the survey of S&P (Klapper, Lusardi, Oudheusden, 2015) conducted in 144 countries, the rate of financial illiteracy was 65 percent among the respondents and 45 percent among Hungarians. In the course of the survey, a total of five questions are asked in each of the four topics (diversification, calculation of interest, compound interest, inflation), and the responders who answer at least three questions correctly are considered financially literate. With this result, Hungary was placed 19th among the countries examined. Worldwide, 35 percent of the participants can be considered financially literate, the rate of financially literate men is 10 percentage point higher than that of women. This gender gap is present worldwide; not only the S&P survey but also numerous international surveys show that men are usually more informed, therefore they achieve significantly better results compared to women, regardless of the country or the socio-economic background. In parallel, although women perform slightly worse on financial knowledge tests compared to

men, in countries where the rate of financially aware men is higher, the rate of women who are financially aware is also higher compared to other countries (Hasler, Lusardi, 2017). According to the S&P survey, the case is not so clear in Hungary: 53 percent of men and 55 percent of women can be considered financially experienced, which is probably due to the definition and the small number of questions used in the survey.

In its latest survey in 2018, the OECD examined the financial knowledge, skills and attitudes of the adult population in 26 countries – including Hungary – with nearly 126 thousand participants. The survey shows the low level of financial literacy of the Hungarian population: on average, the participants answered 61 percent of the questions that tested their knowledge correctly (OECD, 2016; OECD, 2020a). The highest average result was achieved by Hong Kong adults (71 percent), while the lowest average result was reached by Italy (53 percent). With regard to their knowledge, compound interest calculation caused the most problem for the participants, however, their performance was significantly better compared to the average concerning interest calculation and inflation, which could also be seen in previous years. Hungarian responders performed exceptionally well in the same areas in the 2015 OECD survey and the survey conducted by Standard&Poor's in 2014 (OECD, 2016; Klapper, Lusardi, Oudheusden, 2015). With regard to their financial behaviour, Hungarian adults achieved the second worst result, outperforming Italy only by a narrow margin and falling behind Montenegro. The exact opposite was true for their attitude: Hungarians were among the best, achieving the same average score as Indonesia, and they achieved the third highest score, performing only slightly worse than Thailand and Slovenia (OECD, 2020a).

The 2018 OECD introduces the concept of financial resilience as a new element: this includes – among others – financial planning, regular monitoring of the financial status, debt management and bankruptcy awareness, and furthermore building up savings, a ‘cash cushion’. In most of the areas, Hungarian adults showed quite a low level of resilience, which means that they were below the average. However, more interestingly, 34.8 percent of Hungarian adults who participated in the survey had savings enough for merely one week, in the event that their income ceased. This could also indicate the lack of long-term orientation or improper management of savings among the adult population (Klapper, Lusardi, 2020; Lusardi, Hasler, Yakoboski, 2020; OECD, 2020a).

It is essential to present one more concept, which is becoming more and more prominent in the international literature as well. This is financial vulnerability (Németh, Zsótér, Béres, 2020b), which is worth discussing, because vulnerability has adverse effects not only on the financial status of households and individuals, but through that also on the standard of living overall. Financial vulnerability can be linked to numerous demographic factors, as elaborated by *Németh et al.* (2020b): in terms of sexes, women are more vulnerable, while those with low educational attainment and those with the lowest income can be considered the more vulnerable groups. This is in line with the results of several international surveys, and these findings are usually applicable to Hungary, too (Klapper, Lusardi, Oudheusden, 2015; Németh, Zsótér, Béres, 2020b).

### The financial literacy of high school students today

In 2015, the OECD established a framework for the financial literacy of young people, which

specifies the key competences determining the financial literacy of young people between the ages of 15 and 18, while taking into consideration their characteristics particular to their age, their constantly expanding view of the world, and their preparation for higher education, the labour market and independent life. The framework sets out the most important knowledge, attitudes and behaviour elements in four topics: money and transactions, financial planning and management, risk management, and the financial landscape. Within these, a number of topics are identified that may be important to a young person, such as topics related to different sources of income and financial instruments, long-term financial orientation, and the importance of education and continuous self-development (OECD, 2015).

As part of their Programme for International Student Assessment (the PISA survey), organised every three years, the financial competences of 15-year-olds were assessed for the third time in 2018, and although Hungarian young people have not participated in this module of the survey yet (since participation in the financial literacy assessment was voluntary), the survey provides an overview of the financial competencies of today's young people. The results of the most recent (2018) PISA survey – which involved approximately 117,000 high school students in 20 countries – show that there are rather significant differences in the financial literacy of the high school students of different countries. Students from countries with better socio-economic status (such as Estonia or Canada) scored significantly higher than students from more disadvantaged countries (such as Indonesia or Georgia). This can be attributed, among others, to the state of development of the countries, the range of financial services available there and the quality of education,

moreover, differences can be observed not only among but also within the countries (OECD, 2020b). The results show that young people acquire their financial knowledge mainly from their parents, but the role of the internet is hardly negligible compared to the parents. Overall, young people do not perform exceptionally well in the field of digital finances, and they are not very confident when it comes to deciding on their finances or using services in the digital space. Young people who have a more positive attitude to digital finances, performed better overall in the financial-economic module of the survey, therefore openness to digital finances may be accompanied by learning additional information and higher levels of knowledge (OECD, 2020b).

In addition to the OECD surveys, a number of other studies examine the financial literacy of high school students. A common element of all these surveys is that young people are usually characterised by an extremely low level of financial literacy (Lusardi, Mitchell, & Curto, 2010) and significantly lower financial knowledge and awareness compared to adults, which can be attributed to the shortcomings of the education and their age, and the lack of financial experience that results from these factors. Although, due to their young age, we do not know their financial skills and behaviour in many areas (Harputlu, Kendirli, 2019; Mondres, 2019), young people typically have significant knowledge gaps and, though they have very little knowledge of their finances, they do recognise and acknowledge their shortcomings and worry about their financial future (Beck, Garris, 2019; Mondres, 2019). They are aware of their shortcomings and are open to improving their financial literacy, however, not necessarily in the framework of the traditional school-based education, but – for example – through online trainings (Beck, Garris, 2019).

## The role of financial literacy education in high schools

The improvement of the financial literacy of young people – either as part of school education or as an extracurricular activity – has an increasingly important role both internationally and in Hungary. In their survey, *Amagir et al.* (2017) examined the effectiveness of the financial literacy improvement programmes of several countries (e.g., USA, Italy, Spain, Ghana, South Africa, etc.), which targeted children, high school students and young adults (college students) specifically. Their results showed that trainings were important, as they increased the level of financial literacy of young people significantly in most cases. Although the trainings had less effect on their behaviours and attitudes compared to their experiences gained at home, they still help young people in becoming more responsible citizens by being more conscious about their finances. The authors identified this as the concept of ‘*economic citizenship*’, which is not only relevant at the individual level but can also have important national economy consequences. Their results show that in most countries, almost the same topics emerge in financial literacy courses organised for young people, such as the management of personal finances, savings and investments, bank services, work and income, moreover, the topics of pensions and self-sufficiency also appear even in the case of very young people. Another important finding of the study is that gender gaps occur already at a very young age: boys usually performed significantly better than girls in most financial literacy tests which were completed before the training, merely because teen girls in general are simply less interested in finances than boys. However, it was the girls for whom the trainings were more effective: their financial knowledge improved significantly, and they became more curious

about the topic. Therefore, the trainings were effective not only in improving students’ financial literacy in general but they can also play a key role in reducing gender gaps (Amagir et al., 2017) among students and the adult population (Hasler, Lusardi, 2017).

Enhancing the financial literacy of young people is a priority area of the National Financial Awareness Strategy and the related action plan. The first objective of the strategy is related specifically to the improvement of financial literacy within public education, but it also sets goals for the enhancement of the financial resilience and the financial awareness of the adult population (Kovács, Sütő, 2020). The strategy includes – among others – the integration of financial awareness into the National Core Curriculum, as a result of which the textbooks titled ‘Missions in the World of Money’, intended for elementary school students, and ‘Compass for Finances’, intended for high school students, were published (Kovács, 2018).

Numerous organisations are involved in the implementation of development programmes aimed at young people and educators. In 2016 and also in 2020, Németh et al. (2020a) surveyed how different governmental and non-governmental financial literacy development programmes were realised. Their results show that there is a demand for financial literacy development, and the various organisations try to meet this demand. The number of people the trainings and programmes have reached out to has tripled compared to 2016, and this growth was even more considerable in the case of young people. According to the 2020 survey, the programmes managed to reach out to more than 1.1 million young people over the last four years. The detailed analysis published by the authors states that young people are significantly over-represented in these trainings, which means that the improvement of the students’ financial

literacy is continuous, as shown by the above results, both in and beyond the school system, through themed activities and events.

The series of events called PÉNZ7 ('Money Week') – which has been organised yearly since 2015 – provides the latest financial and entrepreneurial information to several hundreds of thousands of students through themed lectures every year (Kovács, 2018; Kovács, Terták, 2019; Kovács, Sütő, 2020).

Overall, training is crucial at this age, since owing to their young age, primary and high school students are much more open to new knowledge, in addition to learning faster and easier than adults. Naturally, adult education cannot be neglected either, however, the younger the students are when they are taught financial consciousness, the more responsible they will be as adults.

## THE ECONVENTIO TEST

The main goal of Econventio and its partner organisations is to ensure the research-based development of the financial and economic knowledge of high school students, i.e. to identify the problem areas of knowledge with the help of annual surveys, to examine the causes of problems and to work out development activities. In this chapter, we first present the theoretical background of the analysis model, and then the methodological features of the survey, i.e. the Econventio test.

We examine the three aspects identified along the economic rationality of the actor – information gathering (knowledge, channels, experiences), preferences (attitudes, values, personal financial situation, future plans), decision making (choice between alternatives) – in a more in-depth way, through six vertical dimensions. Taking into consideration the recommendation of *Hogarth, Hilgert, Beverly* (2003), the following topics related to

the vertical dimensions were included in the analysis:

① general banking, financial knowledge (account management, transaction costs, bank card use, bank system, services),

② investments, savings (forms of investments, goals, time periods, difference between interest and yield, relationship between yield and interest),

③ credits and loans (student loan, other types of credits and loans, the characteristics thereof),

④ the world of work (student work, education, taxes, undertakings),

⑤ insurance, pension (self-sufficiency, pension system, characteristics of different types of insurances),

⑥ general economic knowledge (inflation, government debt, taxation).

The Econventio test and its questions consist of two parts: 10 questions related to attitude and a 30-question knowledge test. During the test, all six testing dimensions shape the model with equal weight. In other words, each testing dimension includes five knowledge test questions, four questions designated to test knowledge and awareness, and one question is related to calculations and consideration of different financial offers. In addition, at least one attitude-related question appears in each topic to which there is no correct answer. The knowledge tests – which also include the testing of the financial knowledge and numeracy skills – concentrate primarily not on defining concepts but on practice-based issues. There are four answer choices per question, one of which is correct. This principle is not applied if a question is selected from an international mean of measuring, for the sake of international comparability, or if the respondent has to choose between two options. Since in many cases (e.g. credit card, stock market) students do not have sufficient experience, the question arises whether the

answers really reflect the knowledge of high school students or are just random guesses. In order to reduce the impact of this distorting factor, the answers to the knowledge test include an *'I don't know'* option as well which the students can choose if they have no idea about the correct answer.

The respondents must answer a total of 40 questions, not including the general demographic questions, since those must be provided during the registration. The Econventio test can be completed subject to prior registration on the Econventio Association website ([www.econventio.hu](http://www.econventio.hu)), in the spring of every year. The following data must be provided during the registration: the respondent's type of class, type of school, programme (economic, non-economic), sex, age and year. The data subjected to data processing are already anonymous. In the course of completing the test, the respondent sees only one question at a time on the interface, and has a total of 30 minutes to answer the questions. The online test was completed by the students of the 200 schools in the Econventio school network during class.

Although the test questions change over the years, we ask questions about the same group of topics within the main model. Since a dimension cannot be examined comprehensively with merely five knowledge tests, the points and lines of development can be determined by combining the results of recent years, so that a more complex picture is given for each dimension, which can be examined and analysed in more depth.

## METHODOLOGY

The Econventio test, which was launched in 2011, has a database of the financial literacy of high school students dating back 10 years. The test was completed every year by more than

ten thousand high school students on average, resulting in a total of 104,758 completed tests. Considering that it takes 4–4.5 minutes to read the questions and answer options, in the course of our current analyses, we disregarded those individuals who had a completion time of less than 5 minutes, which most likely contain only randomly, blindly completed tests.

In recent years, the students' average performance on the test has ranged from 40 to 55 percent every year, meaning that on average, they can answer 12 to 16 of the 30 questions of the knowledge test correctly. We carried out our analyses in two dimensions, and we divided our results in two larger groups as well. On the one hand, we examined the relationships between different attitude questions and performance delivered on the test on an annual basis, and on the other hand, we examined the demographic factors that occurred consistently on the test every year, in contrast to annually changing attitude and knowledge questions. These demographic factors are questions related to sex, age group, type of school and form of education.

One- and multi-way variance analyses (ANOVA) were used for the analyses.

The one-way model can be specified in a linear form:

$$y_{ij} = \bar{y} + a_j + e_{ij} \quad (1)$$

Where

$y_{ij}$  is the performance delivered in the knowledge test, the number of correct answers,

$\bar{y}$  is the grand mean, the average performance,

$a_j$  is the categorical variable effect,

$e_{ij}$  is the random error.

In the multi-way model, in addition to the main effects of the categorical variables, the interaction effects between them also appear.

In the case of two categorical variables (Denis, 2016):

$$y_{ijk} = \bar{y}_{..} + a_j + b_k + (ab)_{jk} + e_{ijk} \quad (2)$$

Where

$y_{ijk}$  is the performance delivered in the knowledge test,

$a$  is the number of correct answers,

$\bar{y}_{..}$  is the grand mean, the average performance,

$a_j$  is one of the categorical variable effects,

$b_k$  is the other categorical variable effect,

$(ab)_{jk}$  is the interaction effect of the categorical variables,

$e_{ijk}$  is the random error.

If the variance analysis includes more than two categorical variables, then the interaction effects can be calculated by removing the duplications of the main effect and the other effects included in the interaction. No more than three categorical variables appear in this study.

In the case of the F-tests, we decided to reject the hypotheses in case of 5 percent significance level, and we examined the deviations of the group means with the help of Post Hoc tests, which compares the differences of the group averages pair-by-pair, with the help of t-tests adjusted by the number of comparisons. In the course of the interpretation of the results, we always indicated the value of the correlation measuring indicator, and we also included the p-value deduced from the tests. We used Excel spreadsheets and the IBM SPSS statistics software for the analysis of the results of the questionnaires in all cases.

## RESULTS

Due to the large number of tests completed, we were able to make countless statements about Hungarian high school students based

on the Econventio test every year. These findings could explain the differences in their financial knowledge. In this study, we tried to highlight the most important correlations and general conclusions.

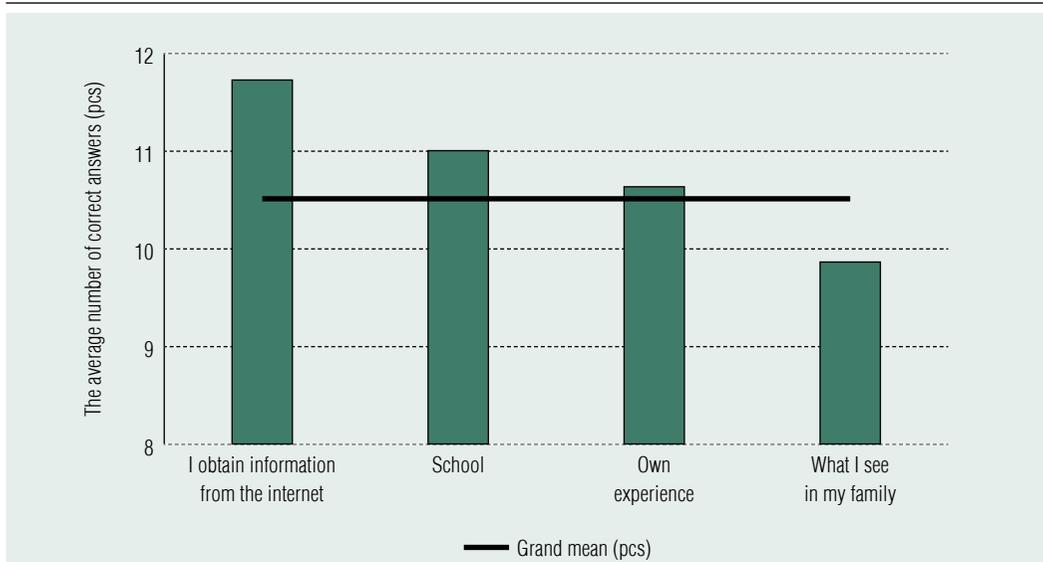
### The role of awareness

With the help of the tests, we tried to assess the correlation between the awareness and financial knowledge of high school students. According to international research (see OECD, 2020b), information obtained from parents, the so-called family pattern, can have a significant impact on the financial knowledge of high school students. We found evidence implying this in all years in which this matter was analysed. The students identified four main sources of financial information. Things they see at home (45.6 percent), what they learned at school (20.9 percent), information sources on the internet (10.3 percent) and their own experience (12.3 percent). In line with OECD (2020b) studies, the gradually increasing use of internet sources since 2015 can be observed, in addition to the leading role of the patterns seen at home. The respondents indicated the primary role of internet sources with almost the same ratio as the information acquired at school.

Depending on the main sources of information, there are significant differences in the average performance of students. As shown in *Figure 1*, the respondents who relied primarily on internet resources were able to answer significantly more questions correctly. They were followed by those for whom school is the primary source of information, and then by those who relied on their own experience, and finally, respondents who indicated family as the main source of their information had the worse average performance.

Figure 1

**THE AVERAGE NUMBER OF CORRECT ANSWERS BASED ON THE QUESTION  
‘WHAT IS YOUR MAIN SOURCE OF FINANCIAL INFORMATION?’  
(2012, N = 8007, H = 0.204, P-VALUE<0.001)**



Source: own edited

**The correlation between values and financial knowledge**

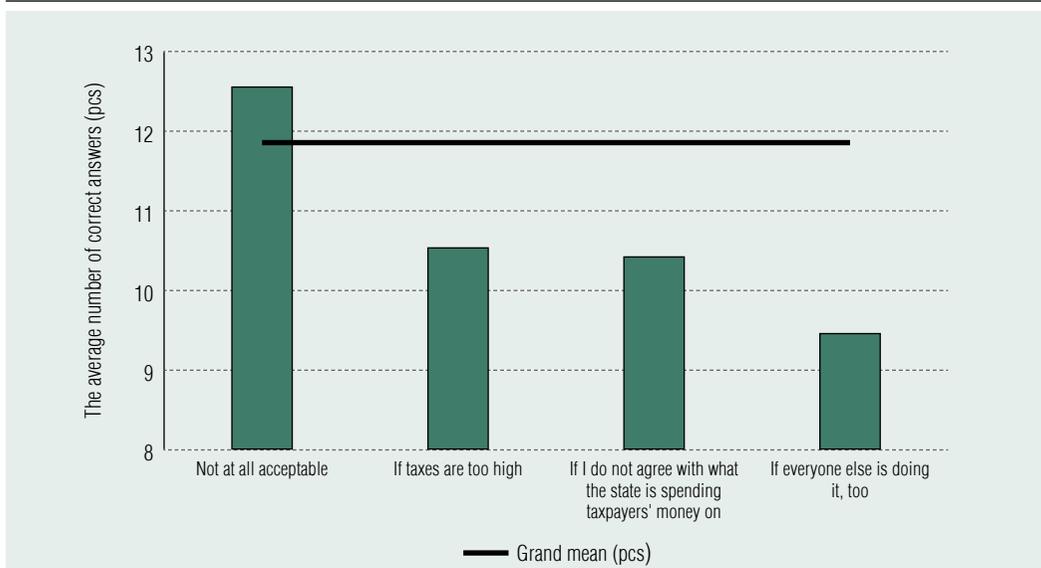
With the help of questions related to the attitude to finances, we were able to show a significant correlation between the knowledge test performance and attitude, according to which larger disinterest could induce significantly weaker performance. This can be illustrated best by questions related to tax evasion and corruption. Based on the results of the 2013 test, the majority of high school students (72.6 percent) thought that tax evasion was not acceptable at all. Out of those who did not think so, 42.9 percent said that it was acceptable if taxes were too high, while 38.8 percent stated that tax evasion was acceptable if they did not agree with what the state was spending taxpayers’ money on, and 18.3 percent thought that tax evasion was acceptable if everyone else was

doing it, too. However, based on the results, those who unambiguously reject this type of activity achieved significantly better results (Figure 2).

The 2017 and 2019 tests provided similar results. In the course of those tests, we asked students about their attitude to corruption. In 2017, 44.1 percent of respondents unambiguously distanced themselves from such act, 38.3 percent did not condemn it, and 17.6 percent stated that they did not care about it. It was true in both years that those who firmly condemned corruption performed significantly better on average on the knowledge test (Figure 3). However, negative changes could be observed in respect of this question over the last two years. In 2019, only 36.0 percent stated that corruption did not fit into their moral standards. Similarly to 2017, nearly a third of the respondents did not condemn corruption, although, the

Figure 2

**THE AVERAGE NUMBER OF CORRECT ANSWERS BASED ON THE QUESTION  
‘IN WHICH CASE DO YOU THINK TAX EVASION IS ACCEPTABLE?’  
(2013, N = 10627, H = 0.248, P-VALUE<0.001)**



Source: own edited

Figure 3

**THE AVERAGE NUMBER OF CORRECT ANSWERS BASED ON THE QUESTION  
‘WHAT DO YOU THINK ABOUT CORRUPTION?’  
(2017, N = 10929, H = 0.322)**



Source: own edited

proportion of those who did not care about this issue increased.

### The significance of financial planning

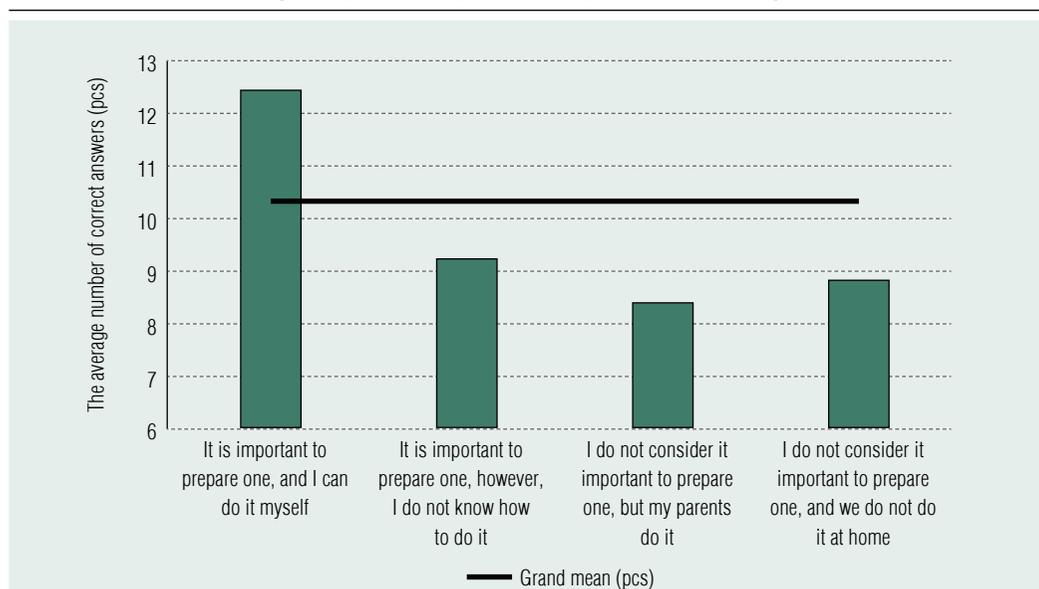
The tests regularly show that students who plan ahead of time and consider the process of financial planning important usually perform better on the knowledge tests. Although 77.0 percent of students deemed it essential to keep a record of incomes and expenses in the family, only 53.3 percent of them were able to prepare such financial balance sheet on their own. According to 23.0 percent of the respondents, financial planning was not important, moreover, the majority of students (65.7 percent) said that no such balance sheet was prepared at home. Based on the results, as clearly shown in *Figure 4*, those who thought financial planning was

important or were even able to prepare such balance sheet performed significantly better on average on the test.

With regard to financial planning, in 2018 and 2020, we were interested in the opinions of high school students on saving for retirement. In 2018, a low percentage of students (9 percent) thought it was not necessary to save for their retirement years. This means that the majority of them acknowledge the importance of saving for old age, but at the same time, they have different opinions on when they should start saving. According to 43.7 percent of the respondents, it was necessary to start saving for retirement years as early as from the first regular salary. 37.6 percent of the respondents thought that it was sufficient to start saving 20 to 30 years before retirement, 11.5 percent stated 10 years, while 7.2 percent said that it was not necessary at all. Based on the results of the 2020 test, these ratios

Figure 4

**THE AVERAGE NUMBER OF CORRECT ANSWERS BASED ON THE QUESTION  
'WHAT ARE YOUR THOUGHTS ON THE FAMILY FINANCIAL BALANCE SHEET?'**  
(2014, N = 9400, H = 0.322, P-VALUE<0.001)



Source: own edited

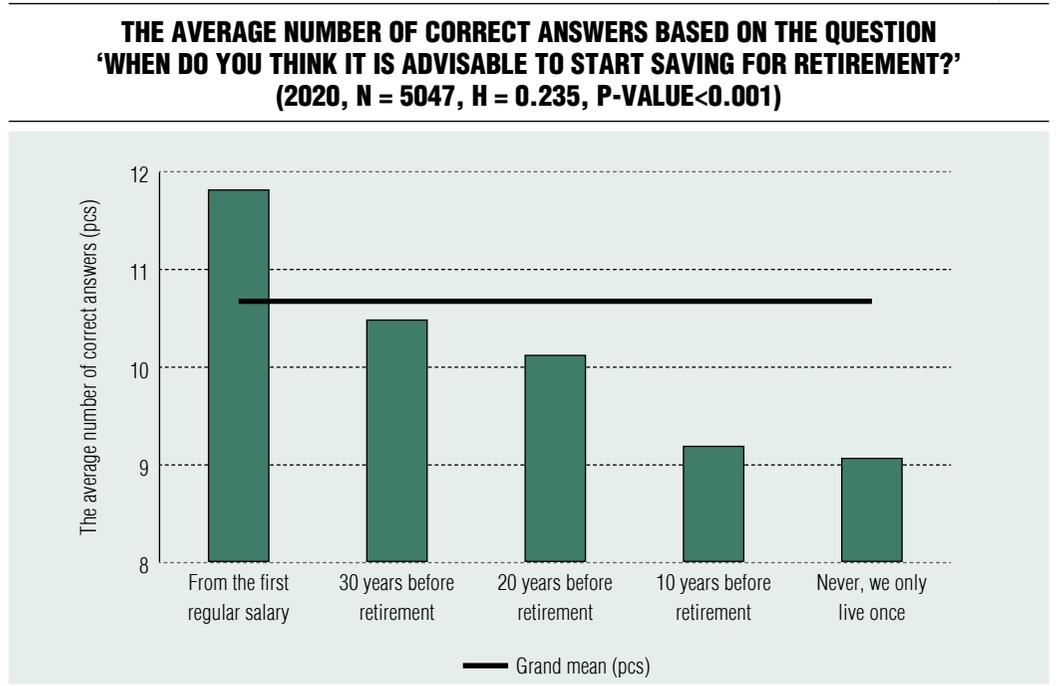
did not change significantly. However, it is worth noting that there is also a correlation forming between the willingness to save for retirement and the results of the knowledge test. Based on the results of the Post Hoc test of the question for the year 2020, in terms of the average number of correct answers, those who thought it was advisable to start saving right from the first year performed significantly better. In contrast, those who said it was sufficient to start saving 10 years before retirement or did not consider it necessary at all performed significantly weaker on average (Figure 5).

### Disparities observed across demographic factors

In addition to being informed and the attitude to finances, financial knowledge can be influ-

enced significantly by other, demographic factors, too. On the one hand, in line with international studies, a roughly similar difference can be found between the average test results of men and women ( $p$ -value < 0.001). Compared to the annual average of each knowledge test, men performed better than women by 6.72 percentage points on average over the past nine years. However, it is worth noting that the number of test questions should be taken into consideration when interpreting these differences. In the case of the Econventio test, which has 30 questions for testing knowledge, a difference of 6.72 percentage points means that out of the 30 questions, men answer 2 more questions correctly on average. In general, if the mean of measuring contains  $k$  number of questions, then the weight of 1 question in the ratio of correct answers is  $100/k$ . Significant correlation can be observed between

Figure 5



Source: own edited

age and the test results as well ( $\bar{H}=0.256$ ,  $p$ -value  $< 0.001$ ). Older students were usually able to answer more questions correctly than their younger peers. During the period examined, respondents in the group 18 years or older outperformed the 14–15-year-olds by 28.13 percentage points on average, which can be explained by the increase in practical experience. In addition, there was a significant difference between the types of institution of secondary education ( $\bar{H}=0.160$ ,  $p$ -érték  $< 0.001$ ), and the test performance of students who pursue economic studies and the students who do not ( $\bar{H}=0.114$ ,  $p$ -érték  $< 0.001$ ). Compared to the average test scores of the years concerned, secondary grammar school students gave more correct answers by 15.48 percentage points on average compared to vocational school (before 2016: trade school) students. Meanwhile, high school students who studied economics outperformed their peers who did not receive any economic education by 11.94 percentage points on average. In addition to the measures of the relationships being significant, the measures indicated weak or medium-strength relationship between the test performances and the demographic factors, which implies that the relationship of these factors is otherwise relevant, however, it would be worth it to analyse the differences in performance while taking into consideration the combination of these and the cross-effects.

### Disparities can be reduced significantly through economics trainings

Significant cross-effects can also be observed between the above-mentioned phenomena related to demographic factors. In order to show these, we used multi-way variance analysis, which included sex, age and the type of education together. These analyses were carried out for each year, and applied for nine

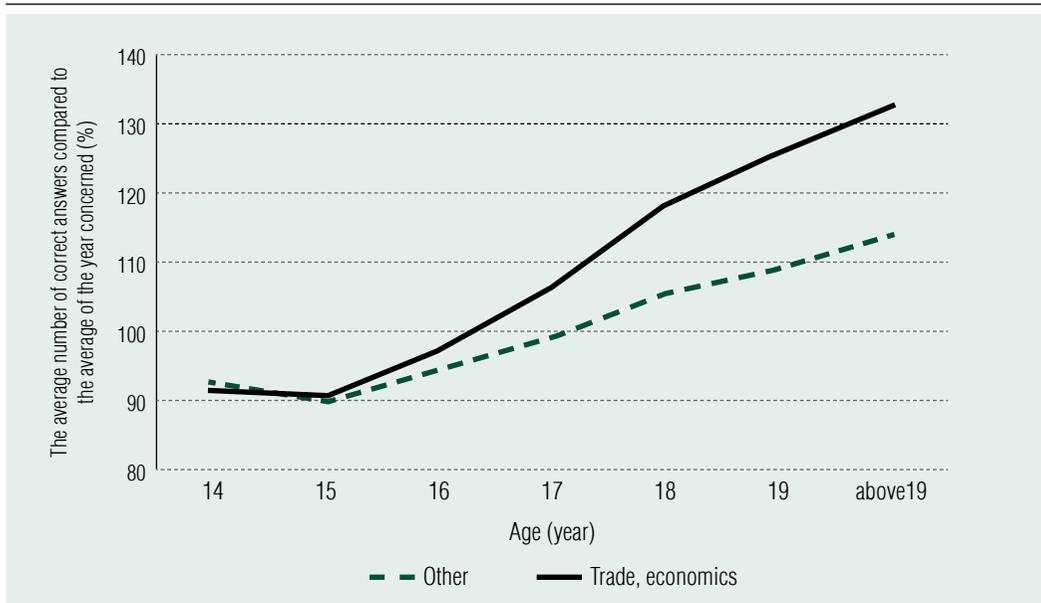
years in total. We did not deem it reasonable to include the questions related to school and type of class in these analyses due to the changes in the name and duties of vocational schools that occurred halfway through the period analysed, in the 2016/2017 academic year. The results of the multi-way variance analysis highlight that the disparities in financial knowledge observed can be reduced significantly through financial and economic training.

The main effects (sex, education, age group) and double cross-effects proved to be significant, however, the combined interaction of the three factors was not significant. It can be established that the knowledge of students receiving economic education develops at a significantly faster pace than that of high school students who receive non-economic education. *Figure 6* also demonstrates clearly that while in the younger, 14–15-year-old age group, there was no significant difference between the average performance of students receiving the two types of education, from the age of 16, this difference became significant and increased continuously with age. In the 19-year-old age group, the average difference compared to the average was 16.56 percentage points between the two types of education. The reason behind this is that there is only one basic economics subject at the start of the economic education, while the scientific core material appears typically from year 11, and, simultaneously, the performance gap between the two groups increases in favour of students who study economics.

It can be observed that the gender gap in performance was significantly lower in the case of students who receive economic education. Naturally, this was also influenced to a large extent by the nature of the questions the high school students were asked in different years, but at 5 percent significance level, this effect occurred in five out of the nine years. Based on the results of the recent period, *Figure 7* also shows that while there was a sig-

Figure 6

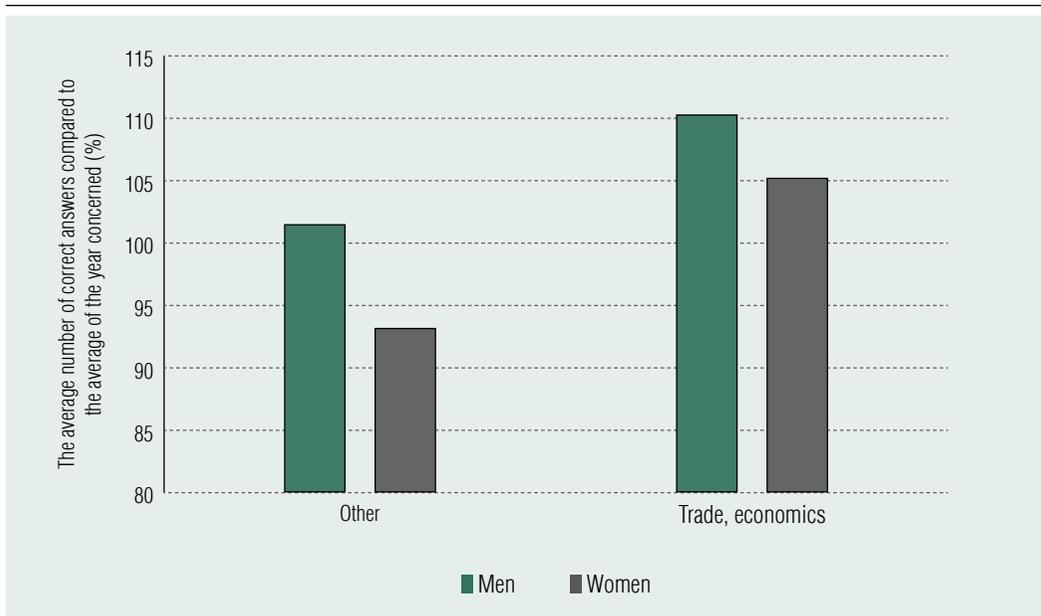
**THE AVERAGE NUMBER OF CORRECT ANSWERS ACCORDING TO TYPE OF EDUCATION AND AGE**



Source: own edited

Figure 7

**THE AVERAGE NUMBER OF CORRECT ANSWERS DEPENDING ON SEX AND THE TYPE OF EDUCATION**



Source: own edited

nificant difference of 8.72 percentage points on average between the average performance of men and women not receiving economic education, this ratio was 5.15 percentage points lower among students who studied economics.

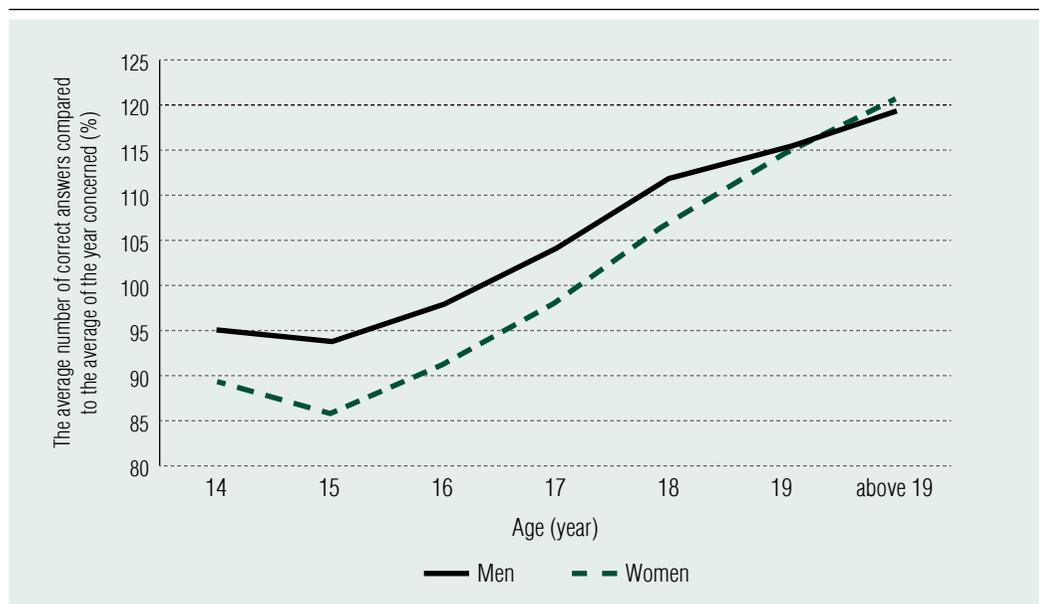
In addition, it can also be established that although the level of financial knowledge increases significantly with age, sex inequality also decreases slightly. This is also implied by the significant cross-effect that can be discovered between the sexes and the age group concerning several of the years analysed. As shown in *Figure 8*, in the 15-year-old age group, there is a difference of 7.9 percentage points between the average performance of men and women compared to the average, while this difference disappears almost entirely in the case of 19-year-olds.

This convergence can be explained, on the one hand, by financial experience, since as

they get older, and especially after they reach the age of 18, all high school students – regardless of their sex – have to deal with general finances concerning adulthood. However, this convergence is usually stronger to some extent in the case of high school students who receive economic education. While the gender gap among 15-year-olds who do not receive economic education is 8.15 percentage points, which drops to 6.1 percentage points by the age of 19, these two figures are 3.1 and 0.2 percentage points in the case of students who do receive economic education. It should be noted here that on an experimental basis, on 4 occasions, the Econventio test was carried out with an adult control group, with a sample size of 1500–2000 people. Not surprisingly, due to their practical experience, the average performance of adults in the case of all questions was better than that of high school students. At

Figure 8

**THE AVERAGE NUMBER OF CORRECT ANSWERS DEPENDING ON SEX AND THE TYPE OF EDUCATION**



Source: own edited

the same time, examining the order of the correct response rates, we found rank correlation coefficients higher than 0.8 in each and every case, which implies that, considering the ratio of correct answers, the order of the questions was the same in case of both the students and the adults. This means that whatever causes problems for young people will cause problems for adults as well. Conversely, if practical education of financial or economic information becomes part of public education, then these topics are expected to be less problematic in adulthood.

## SUMMARY

The goal of our study was to summarise the main results and findings of the last 10 years of the Econvntio test. Our results show that young people are not necessarily aware of the processes in the world that surrounds them, and, similarly to international results, the financial knowledge of Hungarian high school students (especially those in vocational schools and vocational high schools) is extremely low, falling behind the financial knowledge of the adult population. Their attitudes and behaviour towards digital financial services are in line with those described in the scientific literature.

Financial knowledge is related to the opinion on self-sufficiency. Those who think for the long-term, and who start to save money for retirement have higher levels of financial knowledge. We established results similar to the international studies regarding that the attitude of high school students to finance has significant correlation with their level of financial knowledge, thus proving that not only knowledge but also attitude has to be developed. Those who are not interested in financial news have lower financial knowledge, which also supports that not only

financial information should be provided, but emphasising the importance of such information and raising the interest could be especially crucial as well.

The results of the last 10 years show that high school students acquire their financial knowledge mainly at home. This is followed by school and the internet. In the case of economic courses, the ratio of students who try to use the knowledge they acquired at school in their finances increases among seniors. At the same time, regardless of the year, only 10 percent of those who receive non-economic education try to apply what they learned in school to their finances. Following the imperfect pattern from home is reflected in the test results: those who try to rely on what they learned in school are the ones who perform better on the financial knowledge test. Having examined the knowledge level of students who receive and who do not receive economic education, it can be established that there is no significant difference between the two groups in terms of everyday, practical questions, nevertheless, the higher the year, the larger divergence is concerning the theoretical knowledge level of the two groups. At the level of secondary education, it can be established that the level of financial knowledge of students in vocational schools falls behind that of students in specialised high schools and secondary grammar schools. Many of the students graduating from vocational schools will provide retail services as skilled entrepreneurs, in connection with which they must be able to issue an invoice, i.e. they must have financial and entrepreneurial knowledge as well. In this respect, it is especially important to reduce the falling behind of vocational school students.

As one ages and gains practical experience, the level of financial knowledge increases. The same financial questions are answered correctly by a higher ratio of adults compared

to high school students, however, the same questions and topics prove to be more difficult for both adults and high school students. In addition, consistently with international results, percentage calculation, the calculation of compound interest, managing the terms ‘at least’ and ‘at most’, and the comparison of different financial offers causes problems.

As digitalisation spreads, more and more electronic financial services are available, but a higher level and safe use of these requires the improvement of financial awareness. Phishing texts, emails aimed at obtaining our financial data, and one of the results of the 2019 Econventio test, which found that more than half of high school students did not know that online stores cannot request credit card information via email, also point to the fact that in addition to financial knowledge, the conscious use of digital financial instruments should also be taught. Due to the ra-

pid development of financial services and solutions, in the future, we will also come across solutions that are still unknown today, and which do not appear in current education and trainings. For this reason, it is necessary to continuously improve our financial and economic knowledge, and to teach students to have the need for such improvement.

Overall, our studies support the necessity of the objectives set by the Financial Awareness Strategy. Based on the last ten years, it can be established that teaching economic knowledge has an impact on students’ financial knowledge and awareness, however, there is need for the practical education of financial-economic information, and the joint development of skills and attitude elements. In today’s complex world, it is necessary to develop the different competences (financial, economic, statistical, digital etc.) jointly and in a comprehensive manner. ■

---

#### NOTE

- <sup>1</sup> The study was supported by the EFOP-3.6.2-16-2017-00007 project titled ‘The Aspects of Development of the Intelligent, Sustainable and Inclusive Society: Social, Technological and Innovation Networks in Employment and the Digital Economy’. The project is implemented with the support of the European Union, co-finances by the European Social Fund and the budget of Hungary.

---

#### REFERENCES

- AMAGIR, A., GROOT, W., MAASSEN VAN DEN BRINK, H., WILSCHUT, A. (2018). A Review of Financial-literacy Education Programs for Children and Adolescents. *Citizenship, Social and Economics Education*, 17(1), pp. 56–80, <https://doi.org/10.1177/2047173417719555>
- ATKINSON, A., MESSY, F. (2012). Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study OECD Working Papers on Finance, Insurance and Private Pensions No. 15, OECD Publishing
- BECK, J. J., GARRIS, R. O. (2019). Managing Personal Finance Literacy in the United States: A Case Study. *Education Sciences*, 9(2), p. 129, <https://doi.org/10.3390/educsci9020129>

- BÉRES D., HUZDIK K. (2012). A pénzügyi kultúra megjelenése makrogazdasági szinten. *Pénzügyi Szemle* [Financial Literacy and Macro-economics. *Public Finance Quarterly*], 57(3), pp. 298–312
- BOTOS K., BOTOS J., BÉRES D., CSERNÁK J., NÉMETH E. (2012). Pénzügyi kultúra és kockázattalálás a közép-alföldi háztartásokban. *Pénzügyi Szemle* [Financial Literacy and Risk-Taking of Households in the Hungarian Central Great Plain. *Public Finance Quarterly*], 57(3), pp. 267–285
- DENIS, D. J. (2016). *Applied Univariate, Bivariate, and Multivariate Statistics*. Wiley, New Jersey
- HARPUTLU, S. M., KENDIRLI, S. (2019). *An Assessment on the Financial Literacy Level of Generation Z*. In: Uçak, H. (edit.). Proceedings Book 3rd International Conference on Economic Research, 24–25th October pp. 56–61, Alanya, Turkey, ISBN: 978-605-81058-2-9
- HASLER, A., LUSARDI, A. (2017). The Gender Gap in Financial Literacy: A Global Perspective. Global Financial Literacy Excellence Center, The George Washington University School of Business
- HOGARTH, J. M., HILGERT, M. A., BEVERLY, S. G. (2003). Patterns of Financial Behaviors: Implications for Community Educators and Policymakers. No 883, Proceedings, Federal Reserve Bank of Chicago
- HORVÁTHNÉ KÖKÉNY A., SZÉLES Zs. (2014). Mi befolyásolja a hazai lakosság megtakarítási döntéseit? *Pénzügyi Szemle* [What Influences the Savings Decisions of the Hungarian Population? *Public Finance Quarterly*], 59(4), pp. 425–443
- HUZDIK K., BÉRES D., NÉMETH E. (2014). Pénzügyi kultúra versus kockázattalálás empirikus vizsgálata a felsőoktatásban tanulóknál. *Pénzügyi Szemle* [An Empirical Study of Financial Literacy versus Risk Tolerance Among Higher Education Students. *Public Finance Quarterly*], 59(4), pp. 444–456
- KLAPPER, L., LUSARDI, A. (2020). Financial Literacy and Financial Resilience: Evidence from Around the World. *Financial Management*, 49(3), pp. 589–614, <https://doi.org/10.1111/fima.12283>
- KLAPPER, L. F., LUSARDI, A., VAN OUDHEUSDEN, P. (2015). Financial Literacy Around the World: Insights from the Standard & Poor's Ratings Services Global Financial Literacy Survey.
- KOVÁCS, L., TERTÁK, E (2019). Financial Literacy, Werlag Dashöffer
- KOVÁCS, L. (2018). A pénzügyi kultúra és tudás fejlesztése. In: Pál, Zs. (szerk): *FINTELLIGENCE Tudományos Pénzügyi Kultúra Körkép* [The Development of Financial Literacy and Knowledge. In: Pál, Zs. (Ed.): *FINTELLIGENCE Scientific Financial Culture Overview*], pp. 39–56
- KOVÁCS L., SÜTŐ Á. (2020). Megjegyzések a pénzügyi kultúra fejlesztéséről. *Gazdaság és Pénzügy* [On Improving Financial Literacy. *Economy and Finance*], 7(1), pp. 131–140, <http://doi.org/10.33908/EF.2020.1.6>
- KOVÁCS P., KURUCZLEKI É. (2017). A magyar lakosság pénzügyi kultúrája. In: Veresné S. M., Lipták K. (szerk) “Mérleg és Kihívások” X. Nemzetközi Tudományos Konferencia Konferenciakiadvány: A közgazdászok elindításának 30. évfordulója alkalmából. Miskolc-Egyetemváros, Magyarország, Miskolci Egyetem Gazdaságtudományi Kar [Financial Literacy in Hungary. In: Veresné S. M., Lipták K. (Ed.): “Balance and Challenges” X. International Scientific Conference: Conference publication: For the 30th Anniversary of the Launch of the Economist Program.] Miskolc-Egyetemváros, Hungary, University of Miskolc, Faculty of Economics, pp. 302–309
- LUSARDI, A., HASLER, A., YAKOBOSKI, P. J. (2020). Building up Financial Literacy and Financial Resilience. *Mind & Society*, pp. 1–7

- LUSARDI, A., MITCHELL, O. S., CURTO, V. (2010). Financial Literacy Among the Young: Evidence and Implications for Consumer Policy. *CFS Working Paper*, No. 2010/09. Center for Financial Studies
- MONDRES, T. (2019). How Generation Z is Changing Financial Services. *ABA Banking Journal*, 111(1), p. 24
- NÉMETH E., VARGHA B. T., DOMOKOS K. (2020a). Pénzügyi kultúra. Kik, kiket és mire képeznek? Összehasonlító elemzés 2016–2020. *Pénzügyi Szemle* [Financial Literacy. Who, whom and what are they Training for? Comparative Analysis 2016–2020. *Public Finance Quarterly*], 65(4), pp. 554–583, [https://doi.org/10.35551/PFQ\\_2020\\_4\\_7](https://doi.org/10.35551/PFQ_2020_4_7)
- NÉMETH E., ZSÓTÉR B., BÉRES D. (2020b). A pénzügyi sérülékenység jellemzői a magyar lakosság körében az OECD 2018-as adatainak tükrében. *Pénzügyi Szemle* [Financial Vulnerability of the Hungarian Population. *Public Finance Quarterly*], 65(2), pp. 284–311, [https://doi.org/10.35551/PFQ\\_2020\\_2\\_8](https://doi.org/10.35551/PFQ_2020_2_8)
- ZSÓTÉR B., NÉMETH E., LUKSANDER A. (2017). A társadalmi-gazdasági környezet változásának hatása a pénzügyi kultúrára. *Pénzügyi Szemle* [The Impact of Changes in the Socio-Economic Environment on Financial Literacy. Comparison of the OECD 2010 and 2015 Research Results. *Public Finance Quarterly*], 62(2), pp. 250–265
- OECD (2013). PISA 2012 Assessment and Analytical Framework. PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy. OECD Publishing
- Central Bank of Hungary – Hungarian Financial Supervisory Authority (2008). Cooperation Agreement for the Improvement of Financial Literacy. Online: <https://www.mnb.hu/letoltes/0415mnbpszfamegallpodas-penzugyi-kultura-fejleszte.pdf>. Downloaded: 10 September 2017
- OECD (2015). OECD/INFE Core Competencies Framework on Financial Literacy for Youth. OECD Publishing
- OECD (2016). OECD/INFE International Survey of Adult Financial Literacy Competencies. OECD Publishing
- OECD (2020a). OECD/INFE 2020 International Survey of Adult Financial Literacy. OECD Publishing
- OECD (2020b). PISA 2018 Results (Volume IV): Are Students Smart about Money? PISA, OECD Publishing, Paris