

Financial literacy in Austria: a survey of recent research results

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This article summarizes the main findings of recent studies based on OECD data on adults' financial literacy and the Austrian Survey of Financial Literacy (ASFL). The ASFL is the Austrian contribution to the OECD's financial literacy data exercise, which has a broad focus covering aspects of financial knowledge, behavior and attitudes. The results of recent studies show that (1) Austria scores above the OECD country average in terms of overall financial literacy, mostly due to a favorable behavior score; (2) cross country differences in financial literacy can be explained by a combination of endowment effects, experience effects and institutional factors; (3) financial education pays off in the sense that there is strong evidence for a direct link between better financial knowledge and more favorable financial behavior; and (4) women's larger knowledge gaps result from differences in individual characteristics such as education attainment and lower financial involvement, but are partly compensated by their particularly prudent financial behavior. For policymaking, these results indicate promising pathways for financial education with regard to the complex financial decisions that households have to make.

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Among other socio-economic determinants, financial literacy has been identified as an important ingredient for the economic and financial decision-making of consumers and investors. Previous research documents that financial literacy is of relevance both for the asset and debt side of households' balance sheets and matters for overall economic stability (see e.g. Jappelli, 2010; Lusardi and Mitchell, 2014). Moreover, in a recent study, Lusardi et al. (2017) illustrate that financial knowledge might have a role in explaining wealth inequality among households. The authors estimate that according to their model as much as 30% to 40% of retirement wealth inequality is attributable to differences in financial knowledge.

Supporting financial literacy is part of the mission statement of the Oesterreichische Nationalbank (OeNB), given that financial literacy is expected to contribute substantially to safeguarding price stability and financial stability. The OeNB has been an active provider of financial education and one of the major stakeholders of financial education in Austria for many years. Designing targeted measures requires a thorough understanding of the level and distribution of financial literacy among the Austrian population. In this context, it is especially important to identify gaps and potential needs with regard to financial literacy.

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In autumn 2014, the OeNB therefore conducted a financial literacy survey among around 2,000 individuals in Austria², the Austrian Survey of Financial Literacy (ASFL). This survey was part of a broad cross-country data exercise at the initiative of the OECD's International Network on Financial Education (INFE)³. Silgoner and Weber (2015), Silgoner et al. (2015) and Greimel-Fuhrmann et al. (2016) describe the major findings of the ASFL.

The aim of this article is twofold: first, to summarize the main findings on cross-country differences in financial literacy based on the recent OECD/INFE microdata; second, to present recent research⁴ conducted on the financial literacy gaps of the Austrian population. More specifically, we answer the following questions:

- How does the Austrian population score in financial literacy compared with the population of other countries?
- What explains cross-country differences in financial literacy?
- What can explain the gender gap in financial literacy?
- Is there a link between financial knowledge and financial behavior?

The paper is structured as follows: section 1 describes the OECD's approach to measuring financial literacy, the construction of financial literacy scores and their distribution across countries. Section 2 discusses factors that help explain cross-country dispersions in financial literacy. Section 3 briefly summarizes the main findings of the OeNB's contribution to the OECD's survey, i.e. the ASFL, and sheds some light on the gender gap identified in financial literacy. Section 4 shows some evidence on the causal link between financial knowledge and financial behavior based on the OECD/INFE microdata. Section 5 concludes by drawing policy conclusions from an OeNB perspective.

1 The OECD/INFE international survey of adult financial literacy competencies

Until recently, research on financial literacy was either limited to individual (or small sets of) countries or, alternatively, to cross-country exercises that use just a very small number of questions to assess the level of financial literacy. A benchmark in this respect are the three questions designed by Lusardi and Mitchel (2008) that have been extensively used in cross-country comparisons.⁵ Lusardi and Mitchell (2014), Fonseca et al. (2012) and Hastings et al. (2013) provide comprehensive

² The survey comprised 1,994 computer-assisted personal interviews (CAPIs) conducted from October to November 2014. The non-response rate was about 30%. If not indicated differently, we use survey weights to produce descriptive population statistics throughout the paper. The weights consist of a combination of sampling and/or design weights and poststratification weights based on external population statistics on age and gender at the level of the Austrian provinces.

³ The INFE was set up in 2008 to create an international forum for public authorities with an interest and expertise in financial education. Currently, 120 countries participate; around 71% of them are non-OECD countries.

⁴ Some of the papers mentioned in this article are still works in progress or in their working paper stage. Any comments or suggestions on this preliminary work is thus highly welcome.

⁵ These three questions are: (1) Suppose you had USD 100 in a savings account and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow: more than USD 102; exactly USD 102; less than USD 102; do not know; refuse to answer; (2) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, would you be able to buy: more than, exactly the same as, or less than today with the money in this account; do not know; refuse to answer; (3) Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund": true; false; do not know; refuse to answer.

surveys on financial literacy studies carried out around the globe over the last decades.

The OECD's INFE working group started a new initiative in 2008 to collect data on financial literacy in a wide range of countries, using a broad definition of financial literacy and striving to achieve a comparable basis. After a pilot exercise in 2010 (Atkinson and Messy, 2012), the OECD (2015) provided a guide on how to design national financial literacy surveys. The OECD's survey format has the advantage that it is explicitly designed to work in countries of different levels of development. It includes an extended set of questions, covering the areas of financial knowledge, attitudes and behavior. This corresponds to the OECD's definition of financial literacy as "a combination of financial awareness, knowledge, skills, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial well-being" (Atkinson and Messy, 2012).

The OECD/INFE data project provides a unique data source. Between 2014 and 2017, financial literacy surveys were conducted in more than 30 OECD and non-OECD countries. The main results were summarized in OECD (2016).⁶ From the answers to the individual survey questions, the OECD extracted three subscores, which were then added up to derive a total financial literacy score (for details, see OECD, 2016, annex 2):

- The *financial knowledge score* ranges from 0 to 7 and is calculated as the number of correct answers to seven financial knowledge questions that deal with respondents' understanding of economic and financial concepts such as inflation, interest, interest plus principal, compound interest, risk diversification and the link between return and risk.
- The *financial behavior score* ranges from 0 to 9 and is based on ten questions related to household budgeting, active participation in financial decisions, savings behavior, financial housekeeping and planning, and product comparison before taking financial decisions.
- The *financial attitude score* ranges from 1 to 5 and, on the basis of three questions, describes whether respondents would rather save for the future or spend their money right away.
- The *total financial literacy score* takes a maximum value of 21. It is calculated by simply adding up the three subscores. This fits in with the OECD/INFE idea that all three factors in the end contribute to financial well-being.

The three subscores for each country are presented in chart 1 (OECD, 2016). Total financial literacy scores differ widely across countries. On the one hand, countries such as France or Finland reached a fairly high overall financial literacy score (almost 15 out of a maximum of 21). On the other end of the distribution, countries such as Russia, Brazil, Croatia, Belarus or Poland achieved a total financial literacy score of only 12. Section 2 sheds more light on these cross-country differences.

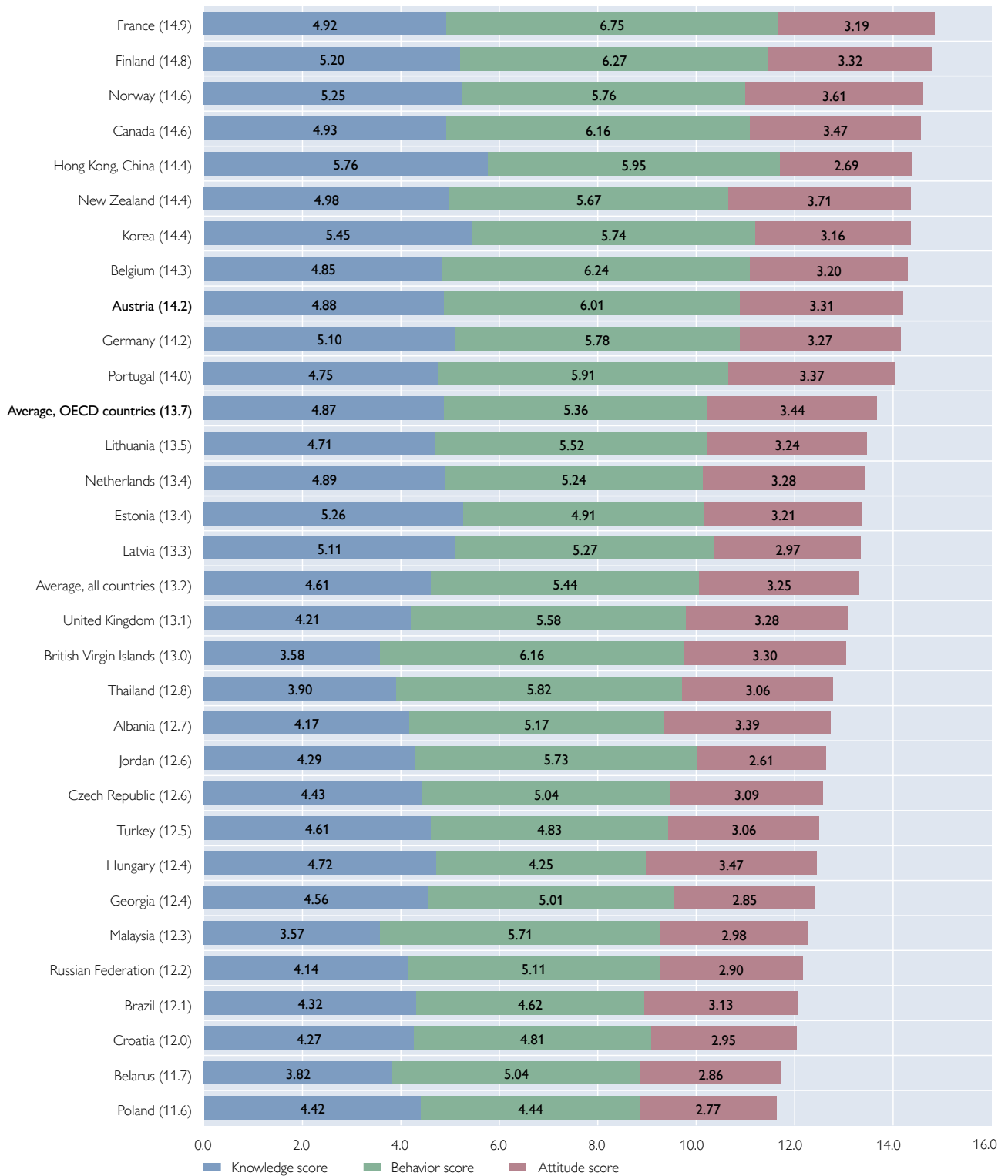
Austria achieved a *financial knowledge score* of 4.9; this means that, on average, respondents correctly answered about five out of the seven questions relating to financial knowledge. This score is equal to the average of all participating OECD countries. The OECD defines a minimum target score of five (or more) correctly

⁶ After the survey results were published in OECD (2016), a number of other countries performed an OECD/INFE-style financial literacy survey. Some of their results have been published in OECD (2017).

Chart 1

Financial literacy across countries

Mean score



Source: OECD (2016), Deutsche Bundesbank: OeNB calculations.

Note: OECD country averages do not contain Germany.

answered questions. In Austria 66% of respondents reached the minimum target score compared with an average of 62% across OECD countries (OECD, 2016). When interpreting these scores, we should keep in mind that all survey questions refer to economic concepts that are relevant for dealing with standard financial products.

Austria scored considerably above the OECD average when it comes to financial behavior. Its *financial behavior score* is 6.0 and thus markedly higher than the OECD average of 5.4. 95% of respondents in Austria declared that they are alone or jointly responsible for day-to-day financial decisions of their household, which is high by OECD standards.

At 3.3, the *financial attitude score* reached by respondents in Austria is slightly below the OECD country average of 3.4. Summing up the three subscores, Austria reached a *total financial literacy score* of 14.2 and thus came in ninth among all participating countries. Thanks to Austria's favorable financial behavior score, its total score is higher than the OECD country average of 13.7.

2 What is behind the cross-country differences in financial literacy?

Cupak et al. (2018) shed light on the potential factors driving the observed cross-country differences in financial literacy scores (OECD, 2016) by focusing on the financial knowledge score. Broadly speaking, there may be two types of reasons for cross-country differences in financial literacy:

First, surveyed respondents may systematically differ across countries in their individual characteristics such as gender, age, family status, education, employment status, etc. For example, respondents in country A may, on average, have a higher level of education than respondents in country B. Since Silgoner et al. (2015) identified respondents' level of education as one of the relevant factors for their level of financial knowledge, one would thus expect that country A reaches a higher financial knowledge score. In the literature, this effect is usually called the *endowment effect*, since it refers to a given distribution of personal characteristics within a population.

Second, countries may differ in terms of the economic environments relevant for financial literacy. Jappelli (2010) presents a list of relevant country-level indicators such as comprehensiveness of the welfare state, dissemination of Internet use or school enrolment ratios. If, for example, the welfare state is rather comprehensive in country A compared to country B, the need to invest in private pension or insurance products may be less pressing in country A, which could in turn translate into a lower need for individuals to invest in their financial literacy (e.g. Jappelli and Padula, 2013). This factor may be summarized as the influence of *institutional differences*.

In Cupak et al. (2018), the authors decompose cross-country differences in financial knowledge scores along the two dimensions discussed above, following standard decomposition approaches (Fortin et al., 2011). To do so, they employ microdata from 12 countries⁷ that by summer 2017 had provided access to their national survey data for research purposes.

⁷ Austria, Brazil, Canada, Croatia, Finland, Germany, Hong Kong, Hungary, Jordan, the Netherlands, the United Kingdom and Russia. Finland serves as a benchmark.

Cupak et al. (2018) find that on average only about one-third of the cross-country variation in financial knowledge scores can be explained by varying individual characteristics (endowments). The authors argue that the remaining (larger) part of the variation (which can neither be explained by basic individual characteristics nor by characteristics capturing experience with finance) can be attributed to institutional differences between countries. These are measured by country-level indicators such as life expectancy, Internet use, the school enrolment ratio, market capitalization as a proxy for the financial deepening of the economy and social contributions as a measure of welfare state activity. The results suggest that differences in economic environments across countries are an important source of differences in financial literacy.

3 Financial literacy in Austria

Results on the financial literacy of Austrian households from the OeNB's representative Household Survey on Financial Wealth 2004 were first available in 2007. Fessler et al. (2007) highlighted the importance of financial experience for financial behavior. Furthermore, the authors found that younger people tend to have lower financial literacy than older people do. Not many households in Austria were found to own risky financial products, and even these households said they usually relied on advice from their respective banks.

All these results are confirmed by the results of the ASFL (Silgoner et al., 2015), which is based on the OECD (2015) toolkit but uses an extended set of eleven financial knowledge questions, covering e.g. the link between interest rates and bond prices or the impact of currency depreciation on the outstanding value of foreign currency loans.⁸

Silgoner and Weber (2015), Silgoner et al. (2015) and Greimel-Fuhrmann et al. (2016) describe the ASFL's main results, which confirm the common finding of national and international surveys that major financial knowledge gaps exist in the population. Many respondents are not familiar with very basic economic concepts such as inflation or interest rates. A regression analysis in Silgoner et al. (2015) shows that financial knowledge gaps are larger for women than for men, bigger in the youngest and oldest age cohorts than in the cohorts in between, and most pronounced among respondents with low educational attainment and low incomes. All these findings are in line with international experience, as summarized in Lusardi and Mitchell (2014).

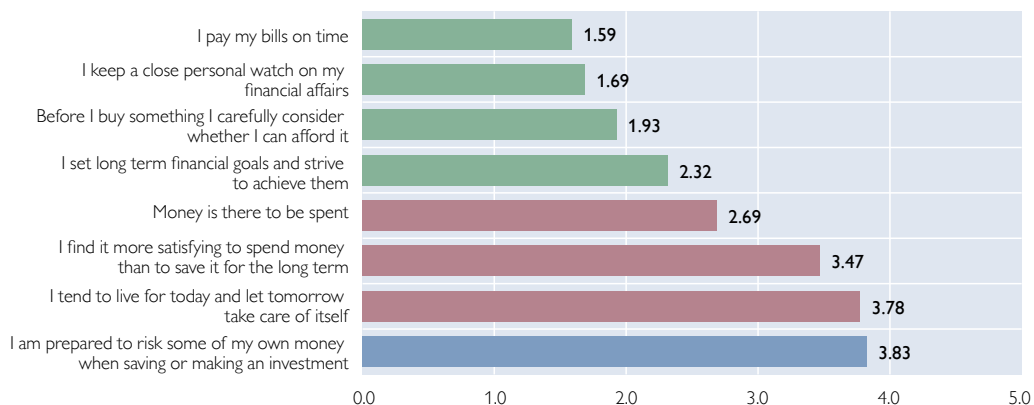
Basing their analysis on the ASFL, Silgoner and Weber (2015) also show that most individuals are rather prudent, forward oriented and risk averse. Most respondents agreed with the statement that they paid their bills on time, kept a close watch on their financial affairs and carefully considered purchases (chart 2). In all cases, the share of respondents who (rather) agreed with the above statement was higher than the OECD average. Most people in Austria disagreed with the statement that they preferred to spend money rather than to save it or that they were prepared to risk some of their money when saving or investing.

⁸ The full list of questions is reported in Silgoner et al. (2015), box 1, or in Greimel-Fuhrmann et al. (2016), table 16.1.

Chart 2

Financial behavior and attitudes

Mean score



Source: OeNB.

Note: 1 = completely agree, 5 = completely disagree. Statements with green bars are used for the calculation of the financial behavior score, those with red bars are used for the financial attitude score.

Table 1 shows that in Austria, men outperform women in terms of financial knowledge,⁹ but score worse in financial behavior and attitudes. Financial knowledge and behavior both improve with the level of education. Respondents with tertiary education also achieve the highest financial attitude scores. With regard to the performance of individual age groups, it is striking that all three subscores show markedly lower results for the youngest group of respondents, probably because of their missing or scant experience with working life and financial markets.

Table 1

Financial literacy scores according to sociodemographic subgroups

		Knowledge score	Behavior score	Attitude score	Literacy score
Mean score					
Gender	Male	5.1	5.8	3.5	14.4
	Female	4.7	6.1	3.8	14.5
Education	Primary	4.7	5.7	3.7	14.0
	Secondary	5.0	6.2	3.6	14.8
	Tertiary	5.6	6.4	3.8	15.8
Age category	18–29	4.7	5.4	3.3	13.4
	30–44	4.8	6.1	3.8	14.7
	45–59	5.0	6.0	3.7	14.6
	60–79	5.0	6.1	3.8	15.0

Source: OeNB.

⁹ Table 1 refers to the OECD score methodology. The financial knowledge score presented here is therefore based only on the set of seven financial knowledge questions used by the OECD.

The finding that, on average, women score worse in financial knowledge than men is common in the literature, as documented in the literature survey of Lusardi and Mitchell (2014)¹⁰. Several explanations have been put forward for this gender gap:

First, men and women may differ in important individual characteristics such as income or education. Greimel-Fuhrmann and Silgoner (2017a) show that the gender gap coefficient declines markedly when moving from a univariate to a multivariate regression with controls such as income, education or employment status, but it remains significant. In other words, women's and men's financial knowledge differs even if their socioeconomic characteristics are comparable.

Second, the financial knowledge gender gap may reflect the fact that in survey settings women behave differently from men (Brown and Graf, 2013; Bucher-Koenen et al., 2016). Greimel-Fuhrmann and Silgoner (2017b) show that for each of eleven financial knowledge questions in the ASFL, more women answer "I don't know" than men. Women may be more risk averse and thus admit that they are not sure of something instead of just making the most probable guess. This behavior may add to their lower share of correct answers.

Third, within households women may be less involved in financial decision-making because of the prevailing division of tasks. As a result, women would benefit less from learning-by-doing effects. Actually, Greimel-Fuhrmann and Silgoner (2017a) confirm that there is no significant gender gap when the sample is restricted to widowed or divorced individuals or to people living alone as these need to take care of their own finances and thus accumulate financial knowledge. The authors conclude that financial involvement is crucial for building financial knowledge through learning-by-doing. By contrast, Bucher-Koenen et al. (2016) and Grohmann (2016) observe a gender gap in financial knowledge not only for married but also for single or widowed individuals. Moreover, Fonseca et al. (2012) find no strong support for the division of tasks between genders for the U.S.A.¹¹

Table 1 shows that while men outperform women in terms of financial knowledge, women score higher in financial behavior and attitudes. Actually, the total financial literacy score is almost identical across genders. In their analysis, Greimel-Fuhrmann and Silgoner (2017b) use a proxy for financial well-being and show that, with regard to well-being, there is no significant difference between men and women. There are obviously several ways of achieving the same level of financial well-being. Women may compensate for their lack in financial knowledge by extra-prudent or forward-looking financial behavior and attitudes.

4 Does financial education pay off?

A fundamental assumption behind financial education initiatives is that people who have a better understanding of financial terms and economic concepts also show a more "favorable" economic behavior over their lifetimes. As an important financial education provider, the OeNB regularly assesses the effectiveness of financial education measures, both with feedback forms completed by participants

¹⁰ Interestingly, the gender gap is much smaller or even insignificant in formerly communist countries (Bucher-Koenen and Lamla, 2014).

¹¹ Cultural factors may add to this list. Grohmann (2016) argues that the gender gap is smaller in countries where women are integrated better into the labor market and where gender income inequality is smaller.

in financial education measures and via impact assessments.¹² In addition, the OeNB is highly interested in gathering more universal evidence of the link between financial knowledge on the one hand and financial behavior and financial attitudes on the other, i.e. of the effectiveness of financial education measures.

The definition of “favorable” behavior is of course normative. From the way the OECD scores are calculated, we can conclude that the OECD finds it desirable that people run a household budget, keep watch of their financial affairs, have long-term financial goals and try to achieve them, and that they take well-informed financial decisions. National goals may of course deviate from this concept.

Several studies have investigated the link between financial literacy and financial behavior. They have shown, for example, that financial knowledge promotes retirement planning (e.g. Lusardi and Mitchell, 2007; Skimmyhorn, 2016), the accumulation of financial assets (Fort et al., 2016) or stock market participation and the diversification of household portfolios (Van Rooij et al., 2011; von Gaudecker, 2015). Brown et al. (2016) show that financial education at the high school level decreases reliance on nonstudent debt and improves repayment behavior. Numerous experimental studies go even further by quantifying the causal links between financial knowledge and financial behavior (e.g. Drexler et al., 2014; Bruhn et al., 2016; Carpena et al., 2017 and Bover et al., 2018).

In a meta-analysis, Fernandes et al. (2014) summarize the empirical literature in this field, including observational studies based on the control of observables, instrumental variables, quasi experiments and randomized trials. They find a significantly positive effect of financial literacy on financial behavior, which is however rather small in the most trustworthy case of randomized trials. Kaiser and Menkhoff (2017) also perform a meta-analysis and confirm that financial education significantly affects financial literacy and ultimately financial behavior. Financial education is, however, less effective for low-income participants and in low- to lower-middle-income economies. For the effectiveness of education measures, it is essential to catch the “teachable moment” when teaching is directly linked to immediate financial decisions. Both Kaiser and Menkhoff (2017) and Miller et al. (2015) indicate that it is easier to influence people’s savings behavior than their borrowing behavior.

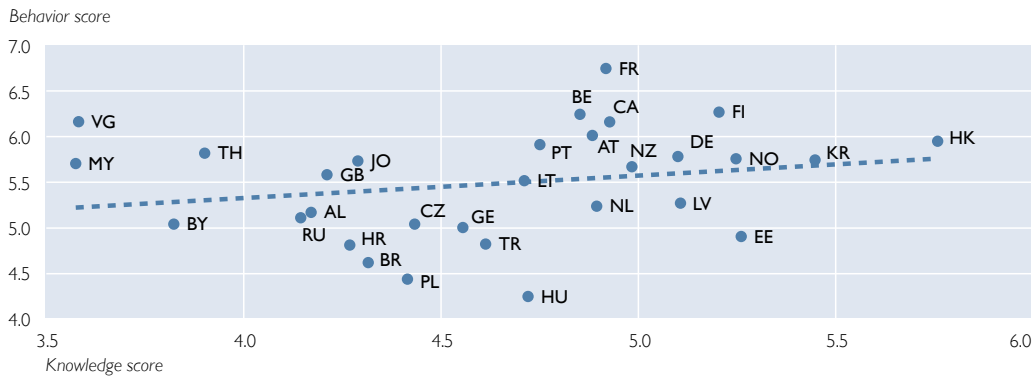
Recently, Fessler et al. (2017) used the OECD/INFE data for Austria to investigate whether respondents with high financial knowledge scores outperform those with lower knowledge in terms of financial behavior and attitudes, using the three respective OECD scores. Chart 3 illustrates the link between the financial knowledge and the financial behavior scores for 30 countries. While the chart indicates a positive correlation, we need to take a potential endogeneity or selection bias problem into account when drawing conclusions about causality. The OECD’s financial behavior score e.g. includes a question on whether respondents tried to compare across providers and looked for information or advice before choosing a financial product. Even if those with a higher financial knowledge score show a higher tendency of comparing offers, we could not conclude that there was a causal link between financial knowledge and financial behavior. Causality may actually

¹² To further investigate financial knowledge transfers, the OeNB cooperates with the Vienna University of Economics and Business in an ongoing research project.

(also) run the other way round, as people acquire financial knowledge while comparing various offers of financial products.

Chart 3

Scatter plot of knowledge score versus behavior score



Source: OeNB based on OECD (2016) data. Germany: OeNB calculations.

Fessler et al. (2017) use an instrumental variable approach to identify a causal link between financial knowledge and financial behavior. They use a novel instrument to analyze financial knowledge, based on (economic) newspaper reading habits. The authors find significant evidence for a causal link between higher financial knowledge and more favorable financial behavior. The effect is actually stronger when the instrument is used in their analysis, which points toward a negative selection bias. This bias might be due to a measurement error or nonobservable characteristics. Furthermore, their study also shows that financial attitudes play an important role in shaping people's financial behavior. In fact, a mediation analysis indicates that about 13% of the total effect of financial knowledge on financial behavior is mediated via financial attitude.

5 Conclusions

After decades of peace and growth in Western Europe after World War II, households have accumulated substantial wealth. As an alternative to holding this wealth in relatively safe assets, investors have been increasingly confronted with complex financial decisions and sophisticated financial products. With the emergence of high-quality microdata on household balance sheets and on measures of the financial literacy of consumers, empirical evidence on household finances and on financial literacy has recently made substantial progress.

This article summarizes major findings of several studies based on the recent OECD/INFE survey on adults' financial literacy and its Austrian contribution, the ASFL, investigating the following questions:

- (1) How do respondents in Austria score in financial literacy compared to the population of other countries?
- (2) What explains cross-country differences in financial literacy?
- (3) What explains the gender gap in financial literacy?
- (4) Is there a direct link between financial knowledge and financial behavior?

According to the OECD's methodology, Austria achieved a total financial literacy score of 14.2, which is slightly above the OECD average. The total financial literacy score is calculated by adding up the financial knowledge, financial behavior and financial attitude subscores. Among these three subscores, Austria reached a particularly high score in financial behavior. None of the other countries in the survey comes even close to the maximum possible score of 21, with France achieving the highest score of 14.9.

In their recent paper, Cupak et al. (2018) show that, mostly, the observed gaps in financial literacy scores across countries are not purely attributable to varying levels of individual characteristics but rather to differences in institutional factors impacting financial literacy at the country level (measures of market capitalization, welfare state activity or the general level of education). Policy measures taken in an international context (e.g. by the OECD/INFE) to upgrade countries to institutional best practice could help reduce the remaining differences in financial literacy. The OeNB is an active supporter of OECD/INFE initiatives to foster the coordination of (inter)national financial literacy research and policy measures.

Recent research based on OECD/INFE data (e.g. Fessler et al., 2017) also provides evidence of a causal link between higher financial knowledge and better financial behavior. As a result of financial education, we may thus expect consumers to be active savers and planners and to be more mature in their financial decision-making. This finding serves as a strong argument for promoting financial education measures. The OeNB is an active stakeholder in financial education.

While the focus of the OeNB's financial literacy activities used to be on traditional central bank core tasks and goals (price stability, monetary policy, financial stability, cash and payment services), it has recently been shifting toward questions of how to use and manage money in a responsible way.

In 2015, the OeNB started a financial education initiative¹³ aimed at enhancing the financial literacy, capability and awareness of future consumers and targeting specifically primary and secondary school students aged 6 to 18 as well as the general public. Under this initiative, the OeNB offers a broad range of educational programs such as student workshops (both at the OeNB and at schools), teaching materials, teacher seminars, lectures, cash handling trainings, interactive online tools, videos, competitions and contests.

Financial stability essentially rests on the interplay of stable financial institutions, comprehensive financial supervision and regulation as well as consumer protection and a financially literate public. Financial education alone will not be able to prevent the pitfalls of sophisticated financial products or financial innovations where risks are shifted toward the individual. Rather, it will require a combination of regulation, consumer protection and educational approaches. In this sense, financial literacy is not a substitute but rather a complement to financial regulation and consumer protection. Informed consumers take better decisions, but are also more accessible for regulation.

Financial education has become critically important in the wake of the financial crisis and in view of the ongoing digitalization and increasing complexity of our

¹³ For further details, see www.eurologisch.at (in German only).

financial and economic system. Risks associated with financial decisions have become more relevant to individual consumers than they used to be. The OeNB's financial literacy program aims at empowering individuals to make informed judgments and sounder financial decisions based on solid financial and economic knowledge.

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