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**ANALYSIS OF REALIZED MEASUREMENTS
OF FINANCIAL LITERACY**

Abstract. Financial literacy is an extremely complex and complex subject that can never be captured. It is always necessary to focus on a certain part and examine it. Measuring financial literacy aims at targeting a particular group or the whole population, and the questions asked must match that. Current measurements are very demanding not only in terms of time and financially, but also the need to carry out these measurements correctly and to address the issues in question.

The issue of financial literacy is a very broad term that has to be analyzed in some way to answer research questions. From the changes that affect and even deepen financial literacy, it can be assumed that financial literacy will be increasingly considered. This is already recognized by both global organizations and state representatives, and together, they are trying to prevent bad consequences and actively prevent people from having to deal with these bad consequences due to low financial literacy.

This thesis based on analyses of literature review illustrates and aims to define financial literacy, ways of its measurement, and identification of influencing factors. The results also describe how current ways of measurement and evaluate if those can define them sufficiently.

Keywords: Financial pedagogy, financial knowledge edificatio.

In this chapter, past measurements of the financial literacy of different age groups are being implemented. Measurements were selected from the year 2015, as well as the older, to demonstrate the development that measurement has taken over the years. As measurements are selected from different groups to reflect the level of financial literacy presented in Chapter 2, these measurements cannot be compared comparatively. Therefore, the comparison is not the primary goal of identification a analysis of these measurements. The whole work was not primarily focused on the results of the measurement, but rather on the context of how the measurement is taking place and, above all, on the broader context that affects the resulting level. Therefore, in this chapter, there is no information in the chapter on the measurement of which age group has the highest level, for international comparisons it is not stated which state has the highest / lowest level, what language the participants are talking about, what gender is or what is their age.

Measurements, most often referred to by literature searches, were selected for the analysis, as well as differences that could be used for further analysis. Measurements have been deliberately chosen that have been implemented for different age categories, some of them operating internationally, some only for a given country. Although there are a lot of measurements, only some seem to be different. This is because some entities (predominantly OECD) create measurements that can be considered as optimal and therefore make them available to other operators who use them in practice. Measurements are often very similar, so processing more research for this analysis would not bring more benefits.

The result of the chapter is an understanding of the development of individual years, the framework of what the subjects in the measurement are oriented to, what they have, what experience they have experienced over the years, which complications they encounter, which can be used in the coming years, which can result in continuous improvement in measuring financial literacy. On the basis of the theoretical research, it was outlined that the financial literacy results were not taken into account in this thesis, and the

focus of the policies and all the attention on the contexts that affect how individuals, groups or states behave financially is more important. Even a financial literacy test with a very good result it may not necessarily be financially literate in reality, and may be influenced or influenced by others. Therefore, attention is also paid to how the questions are conceived, to what extent they are concerned, to whether they correspond to a reality that is far more important to a person than a test result.

Already in 2005, the OECD published an important report that underlined the lack of financial literacy in many countries of the world (OECD, 2005). Given the information, research carried out and their outputs, financial education in schools was evoked as one of the highest priorities. One of the causes of finding a uniform measurement of financial literacy among adolescents was the lack of data. That is why a measurement was created that became part of the OECD's International Student Assessment Program (Lusardi, 2015).

PISA by its abbreviation *The Program for International Student Assessment* is an international assessment of students. It takes place in three-year cycles (Czech School Inspectorate, 2016a) and evaluates 15-year-old students. The first measurement was made in 2000 on the basis of knowledge of mathematics, reading and science. In the next wave, 510,000 students from a total of 65 world economies took part in the measurement in 2012. Primarily, the measurement focuses on the students and the outcome of the tests, but very often they involve the head-teacher and someone else from the school management. In some cases receive specialized questionnaires and parents of children (Lusardi, 2015).

Although it may seem at first sight that the results are merely comparisons between countries, and depending on which, country lists are published with information about which country is at its best, which gender has better financial literacy, etc. these facts represent half of the truth. Data processors are able to produce outputs that reveal how students are able to use what they have already learned, are able to continue learning through life. The programs also try to uncover the influences that affect financial literacy (Lusardi, 2015).

Given the importance of financial literacy OECD created its own organization whose job description is only a financial literacy, therefore it can be the organization to pay any attention. Of which reason founded the organization *International Network on Financial Education (INFE)*. This organization is in charge of all the financial literacy agenda. Because it acts as a central organization, the OECD can collect the information it receives from the subject, and pass it on to the needy (Atkinson and Messy, 2011). INFE is an international network for financial education, aiming to create a framework for OECD member countries to share information, gather evidence, develop analytical work, and political instruments in key priority areas of financial education. This network was founded in 2008 (Lusardi, 2015).

PISA is an international assessment of students based on selected knowledge, which changes with each measurement. As mentioned above, it runs in three-year cycles (Czech School Inspectorate, 2016a). One of the goals is to evaluate how effective the education systems in each country are. This goal is being evaluated through the measurement of knowledge and skills of a selected group of students (OECD, 2016). Although officially the term of fifteen-year-olds is used, the age of students is in fact between 15 years and 3 months and 16 years and 2 months. Another condition is the termination of at least 6 years of formal schooling (OECD, 2014b).

In 2012, 510,000 students from 65 economies in the world took part in financial literacy for the first time. These students represented a total of 28 million students who are at this age and meet OECD requirements (OECD, 2014b). Another measurement, which took place in 2015, was attended by students from more than 70 economies in the world, and in particular PISA focused on science this year (OECD, 2016). The 2015 assessment also contributed to the assessment of changes since the first measurement (OECD, 2014b). As a result of these changes, it was also possible to monitor how the implemented concepts work, and in addition how effective policies are to improve financial literacy. Based on the data already gathered from different years, a prediction can be identified, and even with the experience gained, measurement and everything else derived from the results can still be improved, resulting in more accurate results and enabling more effective policies and strategies.

Although measurements have already taken place in 2015, the results will not be available until the end of 2016 (Czech School Inspectorate, 2016c). March 14 - 18, 2016, the first meeting of the national coordinators of the international survey PISA 2018 took place in Prague, attended by 81 representatives of countries from all over the world (Czech School Inspectorate, 2016b).

The current changes that the world is facing require investment in education and citizens' development, as they are increasingly responsible for their lives. Development and education of citizens represents the key to making it possible to increase the productivity of individual countries. Improving the economy through financial education of citizens in the present time represents one of the few ways to help citizens adapt to current changes (OECD, 2014b).

In order to measure the financial literacy of pupils finishing compulsory education, the PISA concept framework 2012 defines financial literacy so, that *financial literacy includes knowledge and understanding of financial concepts and risks, as well as the skills, motivation and self-confidence needed to apply this knowledge and understanding to make effective decisions in various financial-related situations, improve the financial standing of an individual or society as a whole, and engage in economic life* (Czech School Inspectorate, 2014; p. 4).

Although finances may not seem to be part of the life of fifteen-year-olds, and some may argue that they are using maximum pocket money at this time, it's not entirely true. While these people do not yet use loans, they do not apply for loans, but they can already use bank accounts at this age, and since they are mostly leaving school, they are faced with the decision to go to. In some cases, they must think well over this, how this education properly funded. Given the gradual involvement in financial life, it is necessary to assess at the outset what financial knowledge and skills students have and whether they are able to use these qualities to participate fully in modern society (OECD, 2014b).

Equally important, what they learn in this age will be used and developed in their future lives. That is why education goes the way of teaching access to money, and so organizations like the OECD focus on it. Leading young people into accountability and access to finance is one of the basic things, such as reading and counting. The OECD (2014b) is aware that knowledge without application in specific situations is only and only knowledge that an individual can have at a high level. However, if it is not able to properly apply what it has learned in the given situations, the output of the measurement will be at a lower level because PISA not only evaluates the knowledge but also the application and management of the processes in different situations.

The student assessment results are three main categories:

1. *basic indicators providing a basic profile of pupils' knowledge and skills.*
2. *indicators that show how skills relate to important demographic, social, economic and educational variables.*
3. *trend indicators that show changes in performance and relationships between variables.*
4. *such as student level, school level and outcomes* (OECD, 2014b, p. 22).

The basic measurement was done by completing a paper test for which students had 2 hours. In some countries, another 40 minutes have been set aside to complete a second test through a computer. Tests were designed to address a wide range of daily situations. Students could and could really face these situations. Thus, they did not take the main part of theories and mere knowledge, but forced the students to combine what they themselves know, what they learned, and an answer that would actually represent their actual behavior. The answers had to be later merged with the student's context. This information was obtained through a further questionnaire that contained information about student homes, school and study responsibilities. In addition to students, school principals were also asked how satisfied they were with the school system in the country, the conditions for teaching in the school, etc. Some countries also offered answers to the questionnaires by their parents. Parents commented on how they support children in the studio, what they think about their school and its activities. In addition, questions were also focused on how students are studying, whether they have stopped their studies or how they are preparing for their future profession (OECD, 2014b).

Demographic and socio-economic influences that influence the outcome of financial literacy tests were also considered during the survey. The identified factors that resulted in different results include:

1. *pupil's sex*
2. *the influence of the family's economic wealth*
3. *the influence of the family's cultural wealth and the number of books in the home*
4. *the impact of educational resources in the home,*
5. *the influence of the profession of parents*

6. *Parent education*

7. *the origin of the pupil and parents and the language the pupil speaks at home*

8. *the influence of the size of the municipality where the school is located* (Czech School Inspectorate, 2014; p. 14).

Based on the results of the tests, students are assigned to 5 groups, each group has a defined point range (Czech School Inspectorate, 2014). PISA 2012 Financial Literacy Awareness Results have shown that students, regardless of the country they live in, need to increase financial literacy (OECD, 2014b).

This tool was first used in 2010. From 2011 to 2014, it has been used in more than 30 countries to measure financial literacy, policy making or national strategies. Over the years, it has been slightly updated, but the core issues used to generate financial literacy scores and financial inclusion measures have been preserved. To collect data on financial literacy and financial inclusion, a questionnaire was developed to allow countries to compare internationally (OECD INFE, 2015). This questionnaire is intended to assist all interested parties in the collection of data on the basis of which:

1 *Identify national levels of financial literacy, set benchmarks and set benchmarks for national strategies or specific programs*

2 *Describe the levels of financial literacy of the main socio-demographic groups and explanatory variables that will identify the needs of the population, the groups with the greatest needs and identify the gaps in provision.*

3 *identify changes over time*

4 *to compare financial literacy levels across countries* (OECD INFE, 2011, p. 3).

The individual parts of the questionnaire were mainly updated on the basis of a pilot survey. Reflected but also various workshops, conferences and backward linkages (OECD INFE, 2015). Although INFE falls within the competence of the OECD as well as PISA, a different definition is still used for this measurement. Financial literacy is defined as the *combination of awareness, knowledge, skills, attitudes and behavior that is necessary to create sound financial decisions and ultimately achieve individual financial well-being* (OECD INFE, 2015, p. 5). As noted, the definition of financial literacy represents One of the major problems, why not create a standardized approach measurement. Each organization, before a measurement methodology, is a definition of financial literacy to measure. Indeed, measurement must include the very essence of the definition. Thus, OECD INFE (2015) has set out on this basis how the questionnaire is to be designed to collect international data. Therefore, it must include questions about the following terms:

- *behavior, attitudes and knowledge of the adult population*
- *information covering a wide range of financial literacy topics related to maintaining a financial overview, which includes longer-term financial planning (including retirement savings) and product selection,*
- *information on product knowledge and possession with the aim of financial inclusion,*
- *the level of financial well-being,*
- *sociodemographic information* (OECD INFE, 2015, p. 5).

People from 18 to 79 should participate in the survey. Participants outside this age group may also be included, but the sample size must be increased to ensure sufficient representativeness. The current time allows interviewing through personal or telephone interviews, but also through online questionnaires (OECD INFE, 2015). Although personal interviews brings many benefits and most importantly creates a relationship between the two sides, according to Lusardi et al (2007b) introduces and interviews via the Internet certain positive aspects, for example, can be a good judge of how well respondents understand the questions and how they tend to guess the answers.

In order to generalize a representative sample and analyze it for major socio-demographic factors, it is necessary that the sample contains at least 1,000 respondents for the entire country. However, based on experience, it is recommended that the sample be scheduled for a minimum of 1,700 respondents, as there is no 100% probability that all questionnaires will be fully answered. In order to ensure the utmost impartiality, it is necessary that interviewers avoid all situations where there may be some influence on the respondents and thus their response. This is true throughout the interview, not just for the interview, but also for the pre-interview section (OECD INFE, 2015).

Because of the internationality of this measurement, it is necessary that the translation does not create barriers to the meaning content. Questions should have the same meaning in all countries involved. It is recommended that more translators participate in the translation. These people should communicate with each other and discuss inconsistencies in case they become known. In order to make sure that the text is sufficiently clear, understandable and understandable, it is first necessary to try a translation of such a modified translation with a certain group of people. In this case, questions can be captured that could cause a problem in case of actual measurement and frustrate all efforts. In view of the issue, people can be expected not to be too willing to answer these, in essence, intimate questions. This problem needs to be minimized as much as possible using appropriate interviewers (OECD INFE, 2015).

Before the survey itself, it is advisable to contact potential participants and raise their interest in participating in important research. To ensure that the interviewees are evenly distributed, you must contact the person who failed the first attempt. It may happen that some groups will be more and some very few, which could result in distortion of results. Contacting should be carried out at different times of the day to increase the likelihood of reaching those in need (OECD INFE, 2015).

Obtained data is included in software (especially Microsoft Excel), or in terms of international comparison, it is necessary to use special coding in order to include this data in the international analysis. Great emphasis is also placed on ensuring that all data manipulation is in accordance with applicable national, international, and data protection guidelines (OECD INFE, 2015).

ALP is a nationwide representative panel (module) that has over 6,000 members. It enables regular questioning via the Internet for research purposes. All researchers have unpaid access to all data. It is in essence a service that provides a field (terrain) for questionnaires or experiments. It allows you to combine your own survey with over 400 surveys so far collected. In this way, carry out surveys and *UMICH*, specifically in the panel study *Health and Retirement Study – HRS* (ALP, 2016; UMICH, 2016).

In 2010, the Ministry of Finance and the Czech National Bank commissioned quantitative research on the financial literacy of the population of the Czech Republic by STEM / MARK (Ministry of Finance, 2012). This company is a full-service marketing agency. It helps its clients not only formulate their research assignment, but also collect data, process the results, and then personally present them. It deals with both qualitative and quantitative research. For simplicity, the following table summarizes the research (STEM / MARK, as 2016).

Table 10 - Summary of research areas offered

	Qualitative research ("why")	Quantitative research ("how much")
	Personal individual in-depth interviews	Different Methods (CATI, CAPI, CAWI, PAPI)
	Newsgroups (Focus)	Regular OMNIBUS survey
	Marketing experiment	Specific inquiry techniques
Source: STEM / MARK, as (2016)		

Mapping of adult financial literacy was done in terms of objective knowledge in finance, then its use in routine practice, as well as mapping attitudes and behavior in family finance, savings and hedging (Ministry of Finance, 2012).

Depending on Chapter 2, where the level of financial literacy and its impact was focused on three main groups (pupils / students, adults, seniors), the chapter analyzing the realized financial literacy measurements analyzes the measurements for these three groups, plus the measurements made in the Czech Republic. Republic (Ministry of Finance, 2012). For pupils / students it is the PISA (OECD, 2016) conducted by the OECD, for adults it is the INFE measurement that deals with the measurement of financial literacy and inclusion (OECD INFE, 2015), also carried out by the OECD and for the elderly it is an HRS study (UMICH, 2016) which has been chosen deliberately in order to evaluate the shift as the measurements evolved over the years. The presented measurements show the years 2004, 2010, 2012 and 2015.

For each measurement, it is always necessary to define financial literacy in order to create test questions or interview guidelines, as questions need to reflect the elements of the definitions. Each organization or author can use different definitions that correspond to their subjective views they have

developed over years of practice, research, and experience. As the definitions change, the focus of questions in tests or the direction in which interviews are conducted is changing. Each data collector has, in order to create suitable conditions for data collection, prepared a sufficiently large representative sample suitably divided by characters to represent all categories equally (gender, age, education, etc.) and to evaluate the data appropriately using statistical methods (Hradil, 2010). Great emphasis is placed on correctly grasping the information at the outputs, comments and recommendations of individual authors, because the results must be placed in the contexts that the researcher should know.

In essence, these measurements cannot be compared because they are oriented to different age groups, which also corresponds to the compilation of questions that differ in content. Although these groups may overlap, measurements are compiled for specific differences that are typical of these groups. Each group is asked about other questions that correspond to their current situation in the world of finance, but also show their past or planned future.

Although PISA has been held since 2000, for the first time in 2012, it dealt with financial literacy as such (OECD, 2016). The concept and measurement of financial literacy is a long-discussed term worldwide, so even though the measurement was first held, it had to be prepared at a very high level. Not only because it is the first year participated in many states and measurements had to be internationally comparable, but also because, that financial literacy among young people puts great emphasis.

Although PISA deals with the financial situation of young people, the questions do not only concern the time that reflects the life of the young, but also the financial situations that do not fully apply to the time. The measurement takes into account all the knowledge that students can meet, as well as future-oriented questions (Czech School Inspectorate, 2012b). In addition to the level of financial literacy, she tries to find out if the level of financial literacy is different with respect to age, gender or socio-demographic conditions (Hradil, 2010).

The analyzed measurements cannot be compared because of how many respondents are taking measurements and how many people they actually represent. Specifically, in PISA, 510,000 students from 65 world economies represent a total of 28 million students (OECD, 2014b). Not even individual countries can compare, each has its own specifics. OECD averages can be the solution to this where every participating country can find in the leaderboards. With this issue, however, it cannot be said that the country achieves optimal results in the measurement. What is the optimal result in this context? Financial literacy will never reach its ultimate goal. Appropriate points on which financial literacy can be compared is a year-on-year comparison of individual measurements (whether there is an improvement / deterioration), a growing / decreasing life satisfaction of the population, or an impact on the country's overall economy. Although financial literacy is measurable due to tests, it is not measurable in its nature.

Measuring students' financial literacy responds to changes in the world that have already been presented in theoretical research (eg. risk transfer to individuals, complexity of services, linking the world, etc.) (OECD and US TREASURY, 2008).

Another measurement is also based on the OECD, it is also an international comparison, but this time it focuses on a group of people between 18 and 79 years old. This example shows that these measurements have been updated and refined during the years of measurement. For the first time the measurement took place in 2010 and during its existence it has not only improved, but also the information for execution has received a detailed description. It is precisely determined which methods of data collection have yielded optimal results, how difficult it is to transform text into national languages, or that respondents must be encouraged (OECD INFE, 2015).

The questions in this questionnaire are broader in nature than the previous measurement because of the age range. There, the students were at the beginning of their *financial* life in relation to holding a bank account, but the test was more about the real life of questions such as how much to spend on vacation, whether it is more convenient to buy strawberries on the scales or in the bath or we get our first paycheck and we have 3 things we have to solve, so which one has priority and has to be paid first (Czech School Inspectorate, 2012b). In terms of the awareness of people aged 18-79, who have been staying in the real world for decades, the scale needs to be more widespread. Questions must be designed so that everyone can answer them.

The oldest of the analyzed measurements dates back to 2004 and has been deliberately chosen to excel in the development of measurements over the past 10 years. As the study focuses on the older

generation, which is on the way to transition from work to retirement, the issues are completely different. Although financial literacy is measured predominantly in the areas of retirement savings, retirement care, and how much one should be investigated for this time, Lusardi et al also asked about basic information about financial mathematics. Already in 2004, they were surprised by the results of the study, which motivated them to focus on financial literacy as overall and financial literacy became their main focus, taught at American universities today (UMICH, 2016).

The latest research is the measurement of financial literacy in the Czech Republic, which was commissioned in 2010. It was chosen to demonstrate that, although it is a national qualitative and quantitative research, OECD research issues are being implemented in this research. These questions are incorporated into the individual questions to which the respondents are asked. As it is a national measurement, it is not only aimed at young people or seniors, but overall at the population over 18 (STEM / MARK, as, 2010; Hradil, 2010).

During the years of financial literacy researchers, it has been determined what definitions of financial literacy exist or what profile a literate person should have. Individual measurements are not very different from each other. On the basis of the test questions, it was determined which of the options is the correct answer to *measure* financial literacy, to generalize the results to the whole population and to classify the respondents of the country in question. Rather than comparing financial literacy between countries, it seems more optimal to compare country measurements over time, because even if an international average is measured (for example, the average of the countries measured), what will the states indicate? Financial literacy is desirable to constantly increase with any results obtained.

Measurements are made, among other things, to create appropriate strategy papers on this basis, to develop national strategies to improve financial literacy, financial education. These strategies can then be implemented (Knoll, 2010). Recently, other factors that may have an impact on financial literacy, not just education, age or gender, have also received attention (Murphy, 2013). Scientists already know that the family, friends, or the environment in which one is active is primarily influential (Huston, 2010). Some questions about these influences are also incorporated into additional questions or questionnaires, but they are not given the attention they deserve (OECD, 2014b). The number of respondents who have to ask in person or through a test and the time constraints that accompany these activities are barriers that will not allow individual measurements to be taken more deeply.

It is precisely because of the primary focus on financial literacy measurement that gaps and inadequate information on what specifically affects financial literacy. Some influences, such as education, family or age, are found in literature (Murphy, 2013), but there is no closer identification of these influences, their effects on each other, or in a broader context. Based on the described measurements and literature search, a group of pupils / students was selected for which a more detailed analysis of the mapping of these influences through thought maps was performed (see Chapter 4).

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Қаржылық сауаттылықтың іске асырылған өлшемдерін талдау

Аннотация. Қаржылық сауаттылық - бұл өте күрделі және күрделі тақырып, оны ешқашан ұстауға болмайды. Әрқашан белгілі бір бөлікке назар аударып, оны зерттеу керек. Қаржылық сауаттылықты өлшеу мақсаты белгілі бір топқа немесе бүкіл халыққа бағытталған, сондықтан қойылған сұрақтар бұған сәйкес келуі керек. Ағымдағы өлшеулер тек уақыт пен қаржы тұрғысынан ғана емес, сонымен бірге осы өлшеулерді дұрыс жүргізу және қарастырылып отырған мәселелерді шешу қажеттілігімен ерекшеленеді.

Қаржылық сауаттылық мәселесі өте кең термин, оны зерттеу сұрақтарына жауап беру үшін қандай да бір жолмен талдау қажет. Қаржылық сауаттылыққа әсер ететін және тіпті тереңдететін өзгерістер негізінде қаржылық сауаттылық барған сайын қаралады деп болжауға болады. Мұны жаһандық ұйымдар да, үкімет өкілдері де мойындайды және олар бірлесіп жаман салдардың алдын алуға және қаржылық сауаттылықтың төмен болуына байланысты адамдарға осы жаман салдарларды жеңуге белсенді түрде кедергі жасауға тырысады.

Бұл тезис, әдебиеттер шолуына жасалған талдау негізінде қаржылық сауаттылықты, оны қалай өлшеуге болатынын және әсер етуші факторларды анықтауға бағытталған. Нәтижелер сонымен қатар өлшеудің және бағалаудың қазіргі әдістерінің, оларды жеткілікті түрде анықтай алатындығының да сипаттайды.

Түйін сөздер: Қаржылық педагогика, қаржылық білім.

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АНАЛИЗ РЕАЛИЗОВАННЫХ ИЗМЕРЕНИЙ ФИНАНСОВОЙ ГРАМОТНОСТИ

Аннотация. Финансовая грамотность является чрезвычайно сложным и сложным предметом, который никогда не может быть пойман. Всегда необходимо сосредоточиться на определенной части и изучить ее. Целью измерения финансовой грамотности является нацеливание на конкретную группу или все население, и задаваемые вопросы должны соответствовать этому. Текущие измерения очень требовательны не только с точки зрения времени и финансов, но также и необходимости правильного выполнения этих измерений и решения рассматриваемых вопросов.

Вопрос финансовой грамотности - это очень широкий термин, который необходимо каким-то образом проанализировать, чтобы ответить на вопросы исследования. Исходя из изменений, которые влияют и даже углубляют финансовую грамотность, можно предположить, что финансовая грамотность будет рассматриваться все чаще. Это уже признано как глобальными организациями, так и представителями государства, и вместе они пытаются предотвратить плохие последствия и активно препятствуют людям справляться с этими плохими последствиями из-за низкой финансовой грамотности.

Этот тезис, основанный на анализе обзора литературы, иллюстрирует и направлен на определение финансовой грамотности, способов ее измерения и выявления влияющих факторов. Результаты также описывают, как текущие способы измерения и оценки, могут ли они определить их в достаточной степени.

Ключевые слова: Финансовая педагогика, назидание финансовых знаний

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