Scientific conference

“Economic awareness and education – importance and measurement”

Book of abstracts

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Economic awareness and education – importance and measurement

Book of abstracts
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Conference theme

The issue of economic awareness and education has, in recent years, become a subject of lively scientific debate in the economic field in Poland and all over the world. The results of research carried out by various scientific centers show that a high level of economic awareness may be a key determinant of effective economic decisions, and thus act as a protector of the financial stability of households (both at the micro and macro level). In particular, reducing the level of financial imbalances of household budgets, decreasing the excessive exposure to debt, increasing the level of accumulated savings, and/or contributing to lower vulnerability of households to poverty.

One of the most popular forms of intervention, aimed at raising economic awareness are economic education projects. Unfortunately, many studies cast doubt on the effectiveness of financial education programs, emphasizing the need to seek more systematic and holistic approach to building economic awareness. Also, there is an observed lack of methodological studies that would have defined the concept of economic awareness, placing it in the stream and disciplines of economic sciences, structuring its components, and thus allowing it to generate effective methods, techniques and tools to measure economic awareness.

Besides the theoretical value, methodological studies regarding research in the field of economic awareness in the face of low effectiveness of economic education programs, could also have practical value, resulting in education programs more suited to the needs of clients.
**Scientific dilemma**

Research scope, scientific questions, methods and techniques of studying economic awareness, the results of empirical research on the effectiveness of economic education projects.

**Scientific aim**

Developing objectives of the research program in the field of economic awareness, and formulating main directions for further studies and research methods, as well as guidelines for successful economic education projects.

**Scientific committee:**

**Chairman:** Prof. dr. Krzysztof Opolski  
Prof. dr. Leszek Dziawgo  
Prof. dr. Stanisław Flejterski  
Prof. dr. Anna Giza-Polesczuk  
Prof. dr. Małgorzata Iwanicz-Drozdowska  
Prof. dr. Krzysztof Jajuga  
Prof. dr. Alfred Janc  
Prof. dr. Barbara Liberda  
Prof. dr. Monika Marcinowska  
Prof. dr. Wiesława Przybylska-Kapuścińska  
Prof. dr. Jan Szambelańczyk  
Dr. Łukasz Hardt

**Organizing Committee:**

Dr. Jarosław Górski  
Dr. Agata Kocia  
Dr. Tomasz Potocki
9:00 - 11:00 Opening plenary session

9:00 - 9:10 Opening of the conference
  Prof. dr. Jan J. Michałek, Dean of the Faculty of Economics, University of Warsaw
  Prof. dr. Krzysztof Opolski, Chair of the Department of Banking, Finance and Accounting, Faculty of Economics, University of Warsaw

9:10 - 9:40 Keynote speech: Educational Activities as One of the Pillars of the Warsaw Stock Exchange
  Prof. dr. Małgorzata Zaleska, President (CEO) of the Warsaw Stock Exchange

9:40 - 10:00 The Role of Economic Literacy in the Context of Risk
  Prof. dr. Krzysztof Opolski, Dr. Jarosław Górski, KBFiR WNE UW

10:00 - 10:20 Methodological aspects of definition and measurement tools of financial capabilities in Poland
  Dr. Tomasz Potocki, UR

10:20 - 10:45 Discussion

10:45 - 11:00 Coffee break
11:00 - 12:45 Parallel sessions

English session, chairperson: Prof. dr. Małgorzata Iwanicz-Drozdzowska

1. The Effects of Peer-to-peer Financial Education: Evidence from Lower Secondary Schools, Dr. Panu Kalmi, University of Vaasa, Department of Economics

2. Supporting Transfer of Economic Concepts in Secondary Education, Dr. Roel Grol, Prof. dr. Esther-Mirjam Sent, Dr. Bregje de Vries, Han University of Applied Sciences, Faculty of Education

3. Financial and Insurance Awareness in Poland, Dr. Marcin Kawiński, Szkoła Główna Handlowa Warszawie, Wydział Ubezpieczeń Publicznych; Dr. Piotr Majewski, Wyższa Szkoła Bankowa w Toruniu, Wydział Finansów i Rachunkowości


5. Individual vs Collective Thought – the „Islands” Experiment, Dr. Tomasz Kopczewski, Dorota Celińska, Uniwersytet Warszawski, Wydział Nauk Ekonomicznych

6. How to Teach People More Effectively? A Case of Co-operation with Students, Jacek Lewkowicz, Dr. Tomasz Kopczewski, Uniwersytet Warszawski, Wydział Nauk Ekonomicznych

7. Know Thyself – Students as Subjects in an Ad-Hoc Research, Dr. Tomasz Kopczewski, Uniwersytet Warszawski, Wydział Nauk Ekonomicznych

8. The Use of the Experimental Method to Study the Possibility of Improving Secondary School Pupils’ Awareness of Further Economic Education and Labor Market Prospects, Edyta Welter, Dr. Przemysław Kusztelak, Uniwersytet Warszawski, Wydział Nauk Ekonomicznych

Polish session, chairpersons: prof. dr hab. Krzysztof Opolski, dr Jarosław Górski

1. Diversification of Research in Awareness and Economic Education of Poles, Dr. Ewa Cichowicz, Szkoła Główna Handlowa w Warszawie, Instytut Gospodarstwa Społecznego; Dr. Agnieszka K. Nowak, Szkoła Główna Handlowa w Warszawie, Instytut Finansów

2. Financial Capability: Do Students Know What They Need to Know?, Prof. dr. Anna Rzeczycka, Dr. Ewa Mazurek-Krasodomska, Dr. Gabriela Golawska-Witkowska, Politechnika Gdańska, Wydział Zarządzania i Ekonomii

3. Programs of Economic Education of Central Bank – Considerations on the Basis of Initiatives of the Polish National Bank and Selected Central Banks, Prof. dr. Alfred Janc, Dr. Anna Warchlewska, Uniwersytet Ekonomiczny w Poznaniu, Wydział Ekonomii

4. Enhancing Financial Literacy Experiment, Prof. dr. BeataŚwiecka, Prof. dr. Marta Musiał, Wydział Zarządzania i Ekonomiki Usług, Uniwersytet Szczeciński
5. Financial Education Gen Y – Alternative Forms of Financing, Dr. Ewa Aneta Waszkiewicz, Szkoła Główna Handlowa w Warszawie, Kolegium Gospodarki Światowej

6. To Code or Not to Code? The Usefulness of Programming Skills in Studying Economics, Dr. Mateusz Kopyt, Dr. Tomasz Kopczewski, Uniwersytet Warszawski, Wydział Nauk Ekonomicznych


12:45 - 13:00 Coffee break

13:00 - 14:30 Closing plenary session

Debate on economic education with the participation of members of the Scientific Committee and the participants of the conference. The discussion will cover the following topics:
1. What are the effective (both substitutive and complementary) ways to raise economic literacy?
2. In 2010 Poland declared the start of work on the National Strategy for Financial Education. Unfortunately, to date, little has been achieved in this regard. What measures should be undertaken to accelerate the process? What should be included in such a strategy?
3. After the recent financial crisis there has been a rapid increase in the number and variety of methodologies of measuring economic literacy (both in Poland and in the world). What conditions should a well-designed tool to measure economic literacy meet? What should and can be done to develop a high quality standard for measuring economic literacy?
4. Given the need and opportunity to create an interdisciplinary research project on the importance and measuring of economic awareness, what kind of a joint project can be undertaken? (objectives, scope, method?)

Summary and closing of the conference

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Organizational committee:
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Faculty of Economic Sciences, University of Warsaw
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e-mail: swiadomosc@wne.uw.edu.pl
THE ROLE OF ECONOMIC LITERACY IN THE CONTEXT OF RISK

Authors:
Prof. dr. Krzysztof Opolski (kopolski@wne.uw.edu.pl),
Dr. Jarosław Górski (jgorski@wne.uw.edu.pl), University of Warsaw, Faculty of Economic Sciences

Purpose:
The aim of this article is to present the subject of economic (including financial) knowledge and literacy from the perspective of risk management theory.

Design/methodology/approach:
The text is a literature-review and conceptual elaboration. The nature and importance of economic education and economic literacy (capabilities) are shown from the perspective of the theory of risk management.

Findings:
The authors indicate the reasons and benefits of promoting economic education and outlines a selection of dilemmas related to the concept and measurement of economic literacy. The authors pose the thesis that rise in economic awareness of individuals can improve optimization of risk appetite of households. Economic awareness improvement may result in rationalization of financial risk exposure. The authors draw attention to the impact of economic awareness on the ability of individuals to manage their own economic risks (including financial risks) as well as the intergenerational transfer of economic risk. The article includes an attempt to define the notion of economic literacy.

Originality/value:
The value of the study is firstly, the attempt to define the concept of economic literacy, and secondly, the analysis of the importance of the economic literacy on the basis of the theory of risk management.
**JEL codes:** D10, D80, G02, I25

**Keywords:** economic literacy, financial literacy, financial capabilities, economic education, risk management, risk exposure

**References:**
CONCEPTUALIZATION AND OPERATIONALIZATION OF FINANCIAL CAPABILITIES

Author:
Dr. Tomasz Potocki, University of Rzeszów, Faculty of Economics

Purpose:
Conceptual proposal of financial capabilities and its practical evaluation based on low income households from the rural regions of Poland

Design/methodology/approach:
Firstly, integrated informational basis for financial capabilities was designed. Secondly, the operationalization of the proposed framework was conducted (which includes interviews in the place of residence using a standardized technique of interview questionnaires on a random sample of households with a low level of income and the highest risk of poverty of Podkarpacie voivodship). Thirdly, the interpretation of results was based on descriptive and multivariate models.

Findings:
Firstly, financial literacy among poor households is very low which may result in incapability to use full range of financial opportunities. Secondly, the poor are quite capable of managing their modest financial budget and this is mainly due to the fact that they are underbanked. Thirdly, financial capabilities in general show high level of accountability but lack of long-term planning and misunderstanding of the real risk associated with unemployment, illness or disability. Fourthly, there is a need for more multidimensional and interdisciplinary framework for financial capabilities assessment including findings from personal finance as well as from Capability Approach.

Originality/value:
• Proposing cultural adoption to the poor population of financial capabilities framework,
• Proposing the new meditating variable (Financial capabilities) in the existing research of financial decisions under poverty,
• Methodological integration of empirical informational database by using different financial concepts (financial literacy, financial capabilities, financial potential) in one questionnaire.

**JEL codes:** R20, D12, D14, I25, I32

**Keywords:**
financial capabilities, financial literacy, financial decisions, personal finance, Sen’s Capability Approach, poverty, rural regions.

**Acknowledgments, if necessary.** The author would like to note and appreciative the help and advice which has received from Statistical Office in Rzeszów, especially during sampling procedure, conduct of individual interviews and data transcription.

**References:**
THE EFFECTS OF PEER-TO-PEER FINANCIAL EDUCATION: EVIDENCE FROM LOWER SECONDARY SCHOOLS

Author:
Dr. Panu Kalmi, Professor of Economics, University of Vaasa, Finland

Purpose:
To study the effects of a peer-developed web-based learning environment on economic knowledge and savings behavior in a sample of lower secondary school students, who are in their last year of mandatory schooling.

Design/methodology/approach:
It consists of pre- and post-tests based on a questionnaire. Over 900 responses in both periods were collected. The effects of the intervention are compared to a comparison group that did not receive treatment. The analysis is based on difference-in-difference estimations.

Findings:
We find evidence that economic knowledge improves as a results of the program. However, we do not find evidence that the intervention would improve savings behavior. We also find that boys have higher economic knowledge before the intervention, but girls learn more during the education period. However, this seems to be a general effect of education, rather than an impact of the specific program. We also find that those students who have higher economic knowledge save more.

Originality/value:
This is the first study that evaluates the effects of a peer-developed web-based learning environment on economic knowledge and behavior.
**JEL codes:** A21, D14

**Keywords:**
financial education, peer learning, web-based education

**References:**
SUPPORTING THE TRANSFER OF ECONOMIC CONCEPTS

Authors:
Dr. Roel Grol, roel.grol@han.nl
Prof. dr. Esther-Mirjam Sent
Dr. Bregje de Vries

Purpose:
To explore to what extent economic classroom experiments can promote the ability of secondary school students to identify, formulate, and illustrate the structural similarity between situations that differ with respect to their surface characteristics.

Design/methodology/approach:
Schools for secondary education were randomly assigned to one out of two research conditions. Students in the Experiment-condition (n = 43) first participated in an economic experiment and thereafter read two stories. Students in the Story-condition (n = 24) read three stories. Then, all students were asked to compare and contrast the three situations they were provided with.

Findings:
Transfer of economic concepts does not seem self-evident in everyday life (Klapper, Lusardi, & Panos, 2012; Salemi, 2005). This study explored how near transfer could be taught and learned in economics class. It was hypothesized that participating in an economic classroom experiment would be more beneficial for near transfer than only reading stories would be. Students were explicitly asked to compare and contrast the three situations with which they were provided. Contrary to initial expectations, results show that students who were enrolled in the Stories-condition were significantly better at replacing specific terms by more abstract ones, at verbally formulating the overarching equilibrium concept, and at graphically illustrating this concept than were the students in the Experiment-condition.

One could argue that all teaching/learning activities in the Stories-condition (individually reading three stories) took place at the same social context level (cf. Barnett & Ceci,
Students in the Experiment-condition, however, first had to participate in a market experiment, and thereafter individually read two stories.

Another explanation could be that experiment participation in itself might have triggered more concrete observations and experiences by the students. These could have activated Experiment-students to write down more concrete terms when they were asked to describe the three situations. Following this line of thought, the absence of concrete experiences in the Stories-condition might have made students in this condition to formulate terms at a higher level of abstraction.

**Originality/value:**
The present study elaborates the analogical reasoning research tradition (e.g. Gick & Holyoak, 1983) by using economic classroom experiments. These experiments can be regarded as controlled interactive learning exercises targeting the comprehension of a specific economic concept in an inductive way.

**JEL codes:** A21, D00

**Keywords:**
analogical reasoning, economic classroom experiment, secondary education, transfer.

**References:**
FINANCIAL AND INSURANCE LITERACY IN POLAND

Authors:
Dr. Marcin Kawiński, Warsaw School of Economics (corresponding author)
mkawin@sgh.waw.pl; Dr. Piotr Majewski, WSB University in Toruń

Purpose:
The aim is to present critical analysis of different concepts related to financial literacy.

Design/methodology/approach:
Discussion of usefulness of standard questions on financial literacy

Findings:
Data on the first Polish research of standard questions on financial literacy compared with selected countries.

Originality/value:
Presenting questionnaire for insurance literacy and findings from Polish research.

JEL codes: D14, D83, G11, G21, G22, I20

Keywords: financial literacy, financial education, financial knowledge, insurance literacy

References:


Kawiński, M., P. Majewski, 2015. *Badanie wiedzy i umiejętności ekonomicznych i ubezpieczeniowych Polaków – Research on economic and insurance knowledge and skills among Poles*. General Polish population 18+ layered according to gender, age, level of education and place of living; N=1000; 25-29/03/2015; quota-random sampling, CATI.


WHAT IS DRIVING FINANCIAL LITERACY OF 15-YEAR-OLDS IN POLAND – GOOD MATHEMATICS SKILLS OR FINANCIAL EDUCATION?

Authors:
Dr. Maciej Jakubowski, University of Warsaw, Faculty of Economic Sciences and The Evidence Institute, mjakubowski@uw.edu.pl
Marek Muszyński, The Evidence Institute, murek.muszniseki@evidenceinstitute.pl

Purpose:
The paper concentrates around the question about the source of Polish pupil financial literacy skills. Is relatively high level of financial literacy among 15-year-olds driven by good mathematics skills that help them solve tasks that are rich in mathematics content? Are schools that spend more time on teaching financial literacy across different subjects performing better, which would suggest that the role of school in financial education is important? Are pupils learning financial skills outside schools?

Design/methodology/approach:
The paper analyses Polish results of the OECD PISA 2012 Financial Literacy international assessment and uses regression and multilevel models to address research questions. Financial literacy is explained using individual pupil characteristics, measures of opportunities to master financial literacy. The pupil and school background characteristics and mathematics achievement are used as controls in the regression model. Multilevel models are used to decompose financial literacy outcomes into individual and school-level effects.

Findings:
Polish 15-year-olds performed above the OECD average despite that there is no direct exposure to teaching of financial literacy in lower secondary schools they attend. Pupils could develop financial literacy through cross-curricular tasks covered in several subjects, but in their own opinion these occasions are relatively rare. The results provide a complex
picture with some suggestions for strengthening both measurement and education of financial literacy.

**Originality/value:**
This is the first attempt to build a more complex model explaining the level of financial literacy among Polish pupils and to picture financial education in Poland. Our work provides additional insights into how mathematical skills and financial literacy are interrelated.

**JEL codes:** A2 Economical Education and Teaching of Economics, A21, J24, H75, I21

**Keywords:**
financial literacy, financial education, mathematics skills, human capital, education, PISA 2012, multilevel models

**References:**
INDIVIDUAL VS COLLECTIVE THOUGHT – THE “ISLANDS” EXPERIMENT

Authors:
Dorota Celińska, University of Warsaw, Faculty of Economic Sciences, dcelinska@wne.uw.edu.pl
Dr. Tomasz Kopczewski, University of Warsaw, Faculty of Economic Sciences, tkopczewski@wne.uw.edu.pl

Purpose:
Microeconomics based on the homo oeconomicus model reduced the economic decisions to individual choices. Such approach eliminates component of a vast importance in economic life, that is the human ability to collective action. The lack of consideration of this factor in the didactics of microeconomics is a mistake rooting from the domination of economic orthodoxy. Hardly can one find in handbooks a description of a problem mentioned by Hayek: How to utilize human knowledge when it is not and cannot ever be given to anyone in its totality. The basic assumptions of microeconomics (perfect information and rationality of the agents) impede analyses of such problems. Moreover, assuming individual rationality sufficient to make the optimal choice may lead the students to believe that collective work creates little added value.

Design/methodology/approach:
In this article we will present the results of an experiment in which the students competed with the algorithm. The problem to be solved evolved from a simple experiment, aimed at demonstrating the importance of differences in trade-offs in international trade. Students, acting as smugglers, traded 2 goods while traveling between 2 lands. In newer versions of the experiment islands replaced lands, there were more goods and the incomplete graph with given travel costs defined the route. Eventually, the students could travel at most 20 times, having to visit all of 10 islands, starting and ending on the same one. There were 4 tradeable goods with different and constant prices on each island. A directed graph of 20
edges defined possible directions and the costs of travelling among islands. In the graph, there were 288 132 107 paths of length at most 20 starting on the initial island. Out of them, 1 043 773 paths visited all the islands and finished on the initial island. On every island one could purchase 4 goods (or none of them), which means that the number of possible purchase decisions was $5^{20} = 95 367 431 640 625. The experiment was conducted in two groups. In the first one, the students worked online as a collective. The second group consisted of students working individually. The payoff in the form of the credit points depended on the difference between the proposed solution and the optimal solution provided by the algorithm.

**Findings:**
Collective results were close to the algorithm’s optimal solution. Individual students scored lower, even order of magnitude. Aggregated solutions of both groups included the optimal route, therefore we cannot reject the hypothesis of the existence of the collective intelligence phenomenon.

**Originality/value:**
The experiment makes an interesting didactic tool. On one hand, one can use it to teach the basics of economics, for example, during the online classes in introduction to economics for the students in non-economic majors. On the other hand, it constitutes an interesting optimization problem for the classes in advanced microeconomics. It proves the force of collective work, which can lead to questioning the economics' methodology and the principle of rationality (Varnon Smith). It also encourages students to work collectively. The article includes the guidelines how to conduct such an experiment. The source code made in R-CRAN enables quick modification and visualization of a new version of the proposed experiment.

**JEL codes:** A23,D79,C92,C61

**Keywords:** experiment, collective intelligence, tradeoff relations, np-hard problems

**References:**
HOW TO TEACH PEOPLE MORE EFFECTIVELY?
A CASE OF CO-OPERATION WITH STUDENTS

Authors:
Jacek Lewkowicz, University of Warsaw, Faculty of Economic Sciences,
jlewkowicz@wne.uw.edu.pl
Dr. Tomasz Kopczewski, University of Warsaw, Faculty of Economic Sciences,
tkopczewski@wne.uw.edu.pl

Purpose:
This paper is devoted to the effectiveness of teaching sphere. In our work, we examine students’ preferences regarding different systems of grading and their overall performance within the academic course.

Design/methodology/approach:
We do the literature review focused on the issues linked with this topic, which reveals a number of perspectives and diversified outcomes. In order to analyze possible ways of raising the effectiveness of teaching, we conduct an experiment that exhibits some patterns among selected groups of students. We invited students to vote on the system of grading their activity within the dedicated discussion group on advanced MA course in economics. Students had an opportunity to choose between zero points for discussion groups grading, grading system that had positive-linear character and systems based on diminishing or raising returns to scale.

Findings:
We state that people, who have a real impact on the grading criteria, usually heighten their interest in the course. Students, who performed best during the exam, were at the same time the most active participants of the discussion groups and voted mostly on the diminishing returns to scale. The least preferred option was raising returns to grading scale system and we interpret it as students’ will to avoid raising competition among them.
as well as forum posts’ quality inflation. Additionally, some interactive discussion groups may serve as an incentive to learn collectively and share student’s knowledge.

**Originality/value:**
The main value added of the paper is the extension of economic theory regarding economics of education (effectiveness of teaching) by an empirical approach – by conducting and then analyzing the experiment.

**JEL codes:** A23, C90, D71

**Keywords:**
educational economics, effectiveness of teaching, economic experiment

**References:**
Authors:
Dr. Tomasz Kopczewski, University of Warsaw, Faculty of Economic Sciences, tkopczewski@wne.uw.edu.pl

Purpose:
This paper shows the method of applying the ad hoc created research to the needs of micro-economic activities. These studies in the teaching process serve as a tool which creates the scientific curiosity on the basis of self-curiosity. In this method the students before classes participated in the on-line reactive survey or experiment with the passive role of subjects. Before this survey, they should not have any knowledge on the subject. Shortly after the survey, they were informed that the results of the study will be used to provide microeconomic models, and they were encouraged to try to answer the questions whether their decisions or answers were consistent with the economic theory, optimal or efficient, and how these decisions could affect the welfare of others. In this way, the teacher created an information gap among students, a sense of deprivation – unsatisfied need for knowledge on the decisions taken. There appears the scientific curiosity that can be addressed during the lectures and / or explored by the students themselves.

Design/methodology/approach:
Author’s teaching experience is being confronted with the history of economic thought as well as with the methodology of education. This leads to the coherent new approach to teaching economics.

Findings:
The article presents potential benefits associated with the introduction of the ad hoc research to the educational process. The second part presents the scheme for ad hoc research and the third parts show the IT tools designed to support all stages of the use of this method in teaching economics.
Originality/value:
The coherent new approach to teaching economics. This is a combination of methods used in the Interactive Lecture Demonstrations (ILD) and blended learning.

JEL codes: A2, B4, C6

Keywords:
microeconomics, e-learning, experimental economics, data analysis

References:
Authors:
Dr. Przemysław Kusztelak, University of Warsaw, Faculty of Economic Sciences, pkusztelak@wne.uw.edu.pl
Edyta Welter, University of Warsaw, Faculty of Economic Sciences, ewelter@wne.uw.edu.pl

Purpose:
The choice of higher education path is the most important decision that secondary school pupils should make. Their educational choices often turn out to be wrong. Pupils choose a specific field of study and then, after just one year, drop out of university or change their major completely. This phenomenon seems to be a serious economic problem, both for candidates and state institutions financing higher education. The wrong educational decisions may stem from pupils’ ignorance of the situation on the labor market or their erroneous expectations about the subject of study. That is why we decided to examine experimentally whether there is a possibility of improving candidates’ conditions of decision-making.

Design/methodology/approach:
We verified two hypotheses:
H1: Pupils have incomplete information about the characteristics of potential educational paths and labor market prospects after graduation.
H2: There is a possibility to enhance pupils’ level of awareness by a one-time educational workshop designed to provide them with some set of information.

To verify the hypotheses, we conducted an experimental study. We invited 30 schools from all over the country to take part in the project. A sample of 1,541 high-school pupils was divided into three sub-groups (control, labor market workshop, experimental
economics workshop). The members of the control group received no treatment, and the participants from the two other groups took part in the workshop mentioned above. Then, using a survey, we checked in what way the workshop changed the knowledge of pupils about studying and the current situation on the labor market.

**Findings:**
The impact of the incentives was surprisingly strong, both in the short and in the long run. The level of initial information was assessed as low and insufficient. The participation in the workshop significantly increased pupils’ level of knowledge and their conditions of decision making.

**Originality/value:**
We examined every pupil twice, so our analysis is based on panel data. It helps to assess not only short term impact of incentive, but its long time influence as well.

**JEL codes:** A21

**Keywords:**
economic education, tertiary education, experimental economics, decision making

**References:**
DIVERSIFICATION OF RESEARCH ON ECONOMIC AWARENESS 
AND EDUCATION OF POLES

Authors:
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ewa.cichowicz@sgh.waw.pl
Dr. Agnieszka K. Nowak, Warsaw School of Economics, Institute of Finance,
anowak1@sgh.waw.pl

Purpose:
The diversity of research on economic awareness and education of Poles was considered to be an extremely important research problem. As a starting point it was adopted to answer the question, what are the consequences of diversity of research, referred to in the text. Due to the adverse consequences of such disparities, the main goal of this study was to determine what issues were selected for multiple research carried out in the twenty-first century and how wide is the scale of differences between the areas of economic knowledge and awareness of Poles, reviewed in these studies.

Design/methodology/approach:
At the beginning, a review of the literature was performed resulting in, among others, outlining areas of conceptual terms crucial for the research. The main material were study reports on the economic awareness and education of Poles based on analyses carried out in the last dozen years.

Findings:
The most important feature, which then affects the evaluation and interpretation of the results, is the great diversity of research leading to a very wide range of study areas and conducted analyses. The review allows the following hypothesis to be formed: The nature of some research is relatively superficial. Similarly a large number of questions concerning the same issues are somehow mirrored by entities carrying out the studies. Some questions
also cast doubt as they are answered only in a declarative manner. Due to adoption of different research methodologies, and above all – other structures of the posed questions, there are numerous discrepancies in the respondents’ answers concerning the same issues. This makes it impossible to use comparisons, and more importantly, in-depth analysis of studies carried out by different entities.

**Originality/value:**
The comparison and analysis of selected studies on the economic awareness and education of Poles, in which the assessment of this knowledge and awareness in Poland was either included in the study within the larger group of countries (international scope) or the study was conducted only in Poland. Analysis of studies showed a large variation that affects the evaluation and interpretation of the results. The review allows for the hypothesis on a relatively superficial nature of part of the research to be formed.

**JEL codes:** A20, C83, I21, I25

**Keywords:**
economic awareness, economic literacy, economic education

**References:**
FINANCIAL CAPABILITY: DO STUDENTS KNOW WHAT THEY NEED TO KNOW?

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Purpose:
This paper reports a survey aimed at assessing students’ financial awareness and knowledge in the fields of banking and personal, corporate and public finance.

Design/methodology/approach:
The survey on the financial capability of students at the Gdansk University of Technology employed a questionnaire containing 64 questions. It lasted 6 months (June – November 2015) and involved 414 students. It was designed to collect comprehensive information regarding financial capability including knowledge, skills, attitudes and behaviours.

Findings:
The present study has shown that the greatest shortcomings of students’ financial knowledge are in the areas of personal finance and corporate finance and they lack satisfactory skills in the fields of public finance and corporate finance. This means that we should now pay attention to the associated learning outcomes. Furthermore, university policy should be geared toward encouraging employers to notify universities of their expectations. On this basis, universities can change their programmes to help engineers make the right financial decisions.
Originality/value:

This study conducted among the students at the Gdansk University of Technology has allowed us to take a comprehensive look at many issues which could also be the subject of study in other socioeconomic groups. On the basis of this study we are able to indicate some proposals for desirable changes of direction in the field of research concerning the financial knowledge, skills and awareness of students, and also the possibility of implementing them in educational programmes.

JEL codes: D14, D19, A23

Keywords:
financial capability, financial knowledge, financial skills, financial awareness

References:
Potocki, T., Opolski, K., 2016. Metody podnoszenia świadomości finansowej wśród osób zagrożonych wykluczeniem społecznym, [in:] Studia Prawno-Ekonomiczne, t. XCVIII.
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Purpose:
Intensification of central banks’ activities to improve the state of economic knowledge manifests itself in ongoing economic educational programs. Dissemination of knowledge about basic mechanisms of the market, as well as developing entrepreneurial attitudes and developing skills in economic way of thinking, have become important areas in their activities. The aim of the article is to present the essence of and the need for implementation of economic educational programs both nationwide and at local level and to point out their significance for equal educational opportunities.

Design/methodology/approach:
The essay attempts to present comprehensive data on economic educational programs of the National Bank of Poland and some priorities in educational activities of selected central banks. Moreover, results of the own research on the level of knowledge of general economic and finance categories has been presented. The research aimed at diagnosing the problem of financial exclusion on a local scale.

Findings:
Analysis of the central bank’s ongoing initiatives presents high concentration of implementation of their own and external projects. Based on the results of own research it should be pointed out that the lack of knowledge of the names of financial institutions, including
the name of the bank, does not determine a decision on having a bank account. Subjective assessment of the level of knowledge of the range of services offered in the banking sector was assessed by respondents as basic and sufficient.

**Originality/value:**
In the article the authors try to answer the question of whether educational programs of the NBP on national and local levels affect fundamentally the state of economic knowledge. Conclusions point out the usefulness of both national programs and of those prepared for local communities. The challenge for central banks is, therefore, a continuation of parallel initiatives, with repeated and continuous actions and initiatives directed towards people at risk of poverty and financial exclusion.

**JEL codes:** D10, D12, I22, I25, E58.

**Keywords:** economic education, financial education, financial exclusion, economic awareness, economic education programs, central bank, National Bank of Poland.

**References:**


ENHANCING FINANCIAL LITERACY EXPERIMENT

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Purpose:
The goal of the paper is to assess whether a short course in financial education has a positive impact on subjective and objective assessments of financial knowledge.

Design/methodology/approach:
We present the results of the financial literacy experiment, which was conducted at University of Szczecin in 2016. The experiment is the effect of international cooperation with Italian scientists, which allowed for the comparison of the Italian and Polish results. The experiment covers three topics: basic level interest compounding, inflation and risk diversification.

Findings:
Based on a sample of university students, we provide evidence that, also in Poland, a small scale training intervention has both a statistically and economically significant effect on subjective and objective assessments of financial knowledge.

Originality/value:
The article describes financial knowledge and financial education which are significant issues for the European Union policy. Moreover, the article contains a international comparison of results.

JEL codes: D14, G11, I20

Keywords:
financial education, financial literacy, planning, investment attitudes
References:


FINANCIAL EDUCATION AND FINANCIAL LITERACY IN GEN Y – ALTERNATIVE FORMS OF FINANCING

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Purpose:  
The purpose of this study is to evaluate the financial literacy of Polish Gen Y as future entrepreneurs. Particular attention was focused on innovative forms of capital raising like crowdfunding due to its dynamic development in the world, but also because crowdfunding seems to correspond to the needs of Generation Y.

Design/methodology/approach:  
In this paper we used both quantitative and qualitative research. Quantitative research was conducted and designed to test knowledge of the financing forms and knowledge of the development of innovative funding methods. Qualitative research was used to indicate the needs of the Millennials as to the possibility of obtaining financial knowledge as well as to identify the future challenges of Polish financial education.

Findings:  
The main findings demonstrated a gap in education for innovative funding methods but also indicated recommendations for potential changes in the education of Generation Y.

Originality/value:  
This paper revealed a low level of financial literacy among Polish students especially on innovative forms of financing. It means that current financial education in Poland does not take into account the dynamics of change in the financial markets and also the characteristics and needs of Generation Y as future entrepreneurs in digital financial world.
**JEL codes:** A14; A20;D.12;D.83; O33

**Keywords:** financial education, financial literacy, Gen Y, Millennials, crowdfunding

**References:**


TO CODE OR NOT TO CODE? THE USEFULNESS OF PROGRAMMING SKILLS IN STUDYING ECONOMICS

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Purpose:
The study of economics at the advanced level may require mastery in at least one of the computer software requiring programming/coding skills (e.g. R-CRAN, SAS, Matlab, C++, Maxima, Mathematica). The review of the literature and current discussions in this matter (and also of the idea if Computational Thinking) lead to ask important questions:
1) Does teaching of coding makes sense in economic sciences? 2) How to use computer software in studying economics to improve the students’ economic intuition and “the way of thinking like an economist” (not to use such software as pre-programmed calculators)?
3) Can we find advantages of programming in the future career of students of economics?
4) Finally, if the evidence of usefulness of programming skills in “maturation” of economists may be supported, how to teach and learn such abilities effectively with minimal effort?

Design/methodology/approach:
We propose to combine the results of a survey prepared for graduates in economics, who used elements of programming in the classroom with the application of linguistic corpus analysis to the codes created in the Maxima computer algebra system (CAS) for educational purposes mostly in the field of microeconomics and finance. The survey allows us to determine outcomes on the cognitive, behavioural and affective level as well as on the practical level (i.e. output) and analyse efforts (i.e. input) used to learn coding. The second proposed approach leads to treatment of programming languages in similar way as foreign languages and to use linguistic corpora tools to improve the efficiency of teaching and learning coding for economic purposes.
**Findings:**
The literature and current discussions about usefulness of coding in economic (but not only) education do not give a definite answer. We have found that there is a lack of empirical and quantitative research in this matter especially at the university level. One of our achievements is to propose the form of the survey which covers the cognitive, behavioural, affective and practical aspects of programming in economic education (the results are still on the way). The main result of proposed linguistic approach is to identify the key, i.e. the most common commands (words) of the Maxima language used for economic and financial purposes (in the form of Word Cloud), and also to investigate the distribution of these commands in the light of the so-called (Estoupf-)Zipf law, which binds the frequency of individual words with their rank – the relationship commonly identified in natural languages. All this allows the authors to identify the minimum but necessary set of commands needed to apply the chosen software to solve economic and financial problems which is in line with achieving the intended educational purpose.

**Originality/value:**
The novelty of our work comes from applying the well known linguistic tools (used for natural languages) to the analysis of (artificial) programming language (coding). The expected results from the proposed survey will be an important empirical research in the subject. The practical application arises from possibility of applying proposed method to sets of codes used by other educators thus to receive similar analyses in their field and help in teaching processes.

**JEL codes:** A20, C80, C88

**Keywords:**
programming codes, economic education, linguistic corpus, Zipf law, effectiveness of teaching, computational thinking

**References:**
Fartag, B., 2016. Please don’t learn to code, retrieved from: https://techcrunch.com/2016/05/10/please-dont-learn-to-code/(15.08.2016)


UNDER-REPORTING OF CORPORATE R&D EXPENDITURE IN POLAND – CONSEQUENCES FOR VERIFYING POSSIBLE CROWDING-OUT EFFECT OF PRIVATE INVESTMENT BY PUBLIC SUBSIDIES. EVIDENCE FROM POLISH PHARMACEUTICAL SECTOR

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Purpose:
The article aims to address the problem of R&D miss-measurement in Polish pharmaceutical sector due to under-reporting of R&D expenditures by the companies themselves. Based on presenting the accounting treatment of R&D expenses and literature review concerning R&D disclosure practices in other countries, we recognize the implications of R&D under-reporting for evaluation of effectiveness of public innovation policy. We focus on the difficulties with verifying the presence of crowding-in/crowding-out of private R&D investment by public subsidies, when companies do not report R&D expenditures in their financial statements.

Design/methodology/approach:
To confirm the problem of R&D under-reporting in Polish pharmaceutical sector, we focus on cases, when company has patents in absence of reported R&D spending. We verify if companies that own patents for their R&D outcomes, also disclose any information on R&D expenses capitalized in the intangible assets. We also compare recognition of R&D expenses with amounts of subsidies received. This study is based on data for 135 private pharmaceutical companies over the period 2010-2014. We use comparative analysis and the tobit panel estimation of corporate decision on recognition of R&D expenditures and their relation to public subsidies.
Findings:
Our results show that the lack of information of R&D expenses in financial statements of pharmaceutical companies in Poland does not necessarily indicate a lack of their R&D activity. 67% of our research sample are firms that have not recognized the capitalized expenditures on R&D outcomes in the assets, while their R&D activity resulted in patents registered in the Polish Patent Office or/and World Intellectual Property Organization. We confirm that Polish system of support for innovative pharmaceutical companies, which is based on R&D grants with marginal use of tax incentives until 2016, has not provided incentives for proper recognition of R&D expenditures.

Originality/value:
As far as we know this is the first study that analyses possible consequences of R&D under-reporting by beneficiaries of subsidies for evaluation of effectiveness of public innovation policy in Poland, particularly in the pharmaceutical sector.

JEL codes: G38, M41, O38

Keywords:
R&D, subsidies, crowding-out effect, pharma

References: