

SOCIO-ECONOMIC DEVELOPMENT



INTERDISCIPLINARY
ECOSYSTEMS PERSPECTIVE

EDITED BY

MARIA URBANIEC
AGNIESZKA ŻUR

poltext

SOCIO-ECONOMIC DEVELOPMENT

SOCIO-ECONOMIC DEVELOPMENT

INTERDISCIPLINARY ECOSYSTEMS PERSPECTIVE



THE JUBILEE BOOK DEDICATED TO
PROFESSOR KAZIMIERZ ZIELIŃSKI

EDITED BY

MARIA URBANIEC
AGNIESZKA ŻUR

poltext



CRACOW
UNIVERSITY
OF ECONOMICS

The project implemented with Narodowy Bank Polski
under the economic education programme

NBP

Narodowy Bank Polski

The publication is co-funded within the project entitled “Financial Security and Economic Patriotism: Markets, Enterprises, Technological Innovations”. The Project is realized together with Narodowy Bank Polski within the economic education programme in 2020–2021 by the Department of Entrepreneurship and Innovation at the Cracow University of Economics.

The opinions expressed in this publication are those of the authors and do not represent the position of Narodowy Bank Polski.

Scientific Editors:

Maria Urbaniec

Agnieszka Żur

Reviewers:

Robert Bat’a, PhD, Eng.

Izabela Czaja, PhD

Katarzyna Kamińska, PhD

Ewa Kulińska-Sadłocha, PhD

Prof. Elżbieta Skąpska, PhD

Prof. Ian Stone, PhD

Prof. Anetta Zielińska, PhD

Copyright by © Cracow University of Economics, 2020

Copyright by © Authors, 2020 (CC-BY-NC-ND licence)

Copyright © for this edition by Poltext Sp. z o.o., 2020

Warsaw 2020

Publisher: Poltext Sp. z o.o.

Editing: Magdalena Liebner

Proofreading: Ewa Skuza

Cover design: Amadeusz Targoński, targonski.pl

Computer typesetting: Protex

www.poltext.pl

handlowy@mtbiznes.pl

ISBN 978-83-8175-233-6

The blank pages have been deleted from the file.

Table of Contents

Foreword (<i>Maria Urbaniec, Agnieszka Żur</i>)	11
About the Jubilarian	15
Application for the Award of the Honorary Title of Doctor Honoris Causa to Professor Kazimierz Zieliński	19
Granting the Honorary Title of Doctor Honoris Causa to Professor Kazimierz Zieliński	21
I. FINANCIAL AND INSTITUTIONAL ECOSYSTEMS OF SOCIO-ECONOMIC DEVELOPMENT	23
Chapter 1	
What Can We Learn from Economic and Financial Crises? Economic Thoughts on Government Intervention in the Financial Sector (<i>Marek M. Michalski, Sergio Martinez, Jarosław W. Przybytniowski</i>)	25
1. Introduction	25
2. The 1960s: Review of early literature on finance and growth nexus	28
3. The 1970s: The McKinnon-Shaw paradigm	30
4. The 1980s: Critiques of financial liberalization policies: the neostructuralist and microeconomic approaches	31
5. The 1990s: Finance and endogenous growth	32
6. Review of the most recent studies	34
6.1. “The crisis begets reforms” (CBR) hypothesis	34
6.2. Reform and Prudential Regulation hypothesis (RPR)	35
6.3. Crisis Prevention hypothesis (CP)	36
6.4. Financial Repression and Debt	36
7. Conclusion	37

Chapter 2

European Union Actions in Response to the Crisis Caused by the COVID-19 Pandemic (<i>Joanna Kudelko, Karol Wałachowski, Dariusz Żmija</i>)	43
1. Introduction	43
2. The First Stage of EU Actions in Response to COVID-19	45
2.1. Limiting the Spread of the Virus	45
2.2. Ensuring the Provision of Medical Equipment	46
2.3. Promoting Research for Treatment and Vaccines	47
2.4. Supporting Jobs, Businesses and the Economy	48
2.5. Other Measures	50
3. The Second Phase of the EU Response to the COVID-19 Pandemic	51
4. Conclusions	55

Chapter 3

The European Banking Union: Costs and Benefits (<i>Marcel Novák, Dáša Klenková</i>)	59
1. Introduction	59
2. The Legal Foundations of the Banking Union	60
3. Research Methodology	64
4. Results	67
5. Evaluation of the Benefits and Costs of the Banking Union	70
6. Conclusions	72

Chapter 4

Impact of Occupational Risks on Financial Security: Insights from Ukrainian Enterprises (<i>Viacheslav Berezutskyi, Viktoriya Khalil, Natalia Berezutska, Tetiana Stytsenko</i>)	75
1. Introduction	75
2. Socio-Economic Effects of External Threats and Accidents in Ukraine	77
3. Analysis of Financial Security and Occupational Risks in Ukraine	80
4. Occupational Safety Audit and Risk Identification	84
5. The Impact of Occupational Risks on the Economic Development of Ukraine	86
6. Discussion	88
7. Conclusions	89

Chapter 5

Supporting the Internationalisation of Enterprises: The Role of Foreign Economic Policy and Institutions in Export Development (<i>Izabela Sarosiek</i>)	93
1. Introduction	93
2. Motives for the Internationalisation of Enterprises	94
3. The impact of Foreign Economic Policy on International Trade	97
4. Foreign Economic Policy Tools for Polish Exporters	99
5. Conclusions	103

II. ENTREPRENEURIAL AND TECHNOLOGY-BASED ECOSYSTEMS OF SOCIO-ECONOMIC DEVELOPMENT	107
Chapter 6	109
Factors Affecting the Cluster Development: Evidence from the Food Industry in Poland (<i>Roman Chorób</i>)	109
1. Introduction	109
2. Literature Review	110
3. Research Methodology	112
4. Analysis Results	113
5. Discussion and Conclusions	116
Chapter 7	
The Role of Entrepreneurship as a Factor of Regional Development: The Case of Małopolskie Voivodship (<i>Kinga Szmigiel</i>)	123
1. Introduction	123
2. Literature Review	124
3. Research Methodology	126
4. Results and Discussion	128
4.1. The Role of Entrepreneurship in Regional Development in Małopolska Voivodship	128
4.2. Perception Analysis of the Entrepreneurship Development in Rural Communes of Małopolskie Voivodship	132
5. Conclusions	134
Chapter 8	
Challenges for Digital Transformation in the Manufacturing Industry (<i>Serghei Ohrimenco, Grigori Borta</i>)	139
1. Introduction	139
2. Literature Review	140
3. Research Methodology	144
4. Results	146
5. Conclusions	151
Chapter 9	
Coliving as a Co-operative Business Model Innovation (<i>Nina Stepnicka, Paulina Wiączek</i>)	155
1. Introduction	155
2. Theoretical Background of the Coliving Concept	156
3. Selected Coliving Models	157
4. Clipster in Gdańsk as an Example of Coliving in Poland	162
5. Conclusions	163

Chapter 10

Changes in the Recorded Music Market in the Face of the Globalisation Process: Insights from the Visegrad Group Countries (<i>Zbigniew Michalik</i>)	167
1. Introduction	167
2. Literature Review	168
3. Research Methodology	169
4. Results	171
5. Discussion	177
6. Conclusions	178

III. SOCIAL AND ENVIRONMENTAL ECOSYSTEMS OF SOCIO-ECONOMIC DEVELOPMENT 183

Chapter 11

Raw Material Security in the European Union: Towards a Low-Carbon Economy (<i>Robert W. Włodarczyk, Justyna Tomala</i>)	185
1. Introduction	185
2. Development of International Raw Material Markets	186
2.1. The Role and Importance of Raw Material Security	186
2.2. Raw Material Security of the European Union	188
3. Material and Methods	191
4. Research Findings	192
5. Discussion	198
6. Conclusions	199

Chapter 12

Towards Low-Carbon Agriculture in Romania: Theoretical and Practical Challenges (<i>Lavinia Popescu, Adela Sorinela Safta</i>)	203
1. Introduction	203
2. Transition Towards a Low-Carbon Agriculture in Romania	204
3. Research Methodology	207
4. Results	208
5. Discussion and Conclusions	211

Chapter 13

Preventing Occupational Diseases and Injuries in Ukraine: The Socio-Economic Perspective (<i>Natalia Berezutska, Tetiana Stytsenko, Viacheslav Berezutskyi</i>) . . .	215
1. Introduction	215
2. Literature Review	216
3. Research Methodology	217
4. Findings	218
4.1. Accident Analysis	218
4.2. Analysis of Occupational Diseases	221
5. Discussion and Conclusions	222

Chapter 14

Development of the Insurance Market in the Slovak Republic: A Historical Approach (<i>Tomáš Ondruška, Erika Pastoráková</i>)	229
1. Introduction	229
2. The Historical Background of the Insurance Development in the Slovak Republic	230
3. The Development of the Slovak Insurance Market After 1989	234
4. Conclusions	236

Foreword

Economic development is the backbone of our advancement as societies. The two first decades of the 21st century have challenged the neoclassical model of economic development based on the paradigm of economic growth measured in GDP per capita with none or very little attention paid to issues of equality, social justice, human rights and the environment. Until not long ago, the well-being of individuals and societies has not been a part of mainstream discourse. Yet, over the two last decades, we have witnessed growing global awareness of problems associated with the unequal distribution of economic growth outcomes. The works of three Nobel Prize in Economics laureates – Amartya Sen, Joseph Stiglitz and Douglass North – challenge the nature and purposes of economic development as we know it. The changing public discourse initiated by these and other authors highlighted important emerging challenges and new questions in regard to the means and ends of economic development.

Inarguably, economic development defined strictly in terms of economic growth is a thing of the past. Today, we define economic development as the process by which the economic well-being and quality of life of a nation, region, local community or an individual increases. Inclusion and equality become important threads in economic development research. Therefore in this publication, we believe it is more appropriate to use the term ‘socio-economic development’ to acknowledge the fact that economic growth must always be considered jointly with social well-being.

To position socio-economic development and analysis in a wider perspective requires new economic tools, methodology and policy, and the repositioning of the field of economics in relation to other critical fields, such as the environment, society, and politics. Although most questions remain to be addressed, as a society and as academia, we know that socio-economic development must be viewed in a wider context of interdependencies between multiple ecosystems. Hence, within a wide variety of perspectives upon socio-economic development, this publication resides within the ecosystems approach.

The ecosystems theory presents a promising lens for theorising about the determinants and outcomes of socio-economic development. The broad nexus between socio-economic development and ecosystems is a critical area of inquiry in

explaining why social and economic development can vary significantly across countries and regions. In its broadest sense, an ecosystem can be conceptualised as an economic community of interacting actors that all affect one another through their activities, considering all relevant actors beyond the boundaries of a single industry or region. In economics, the ecosystems approach puts much emphasis on understanding how interdependent players interact to create economic value added. Once we acknowledge other disciplines and a wider array of actors, the ecosystems approach will bring us a step closer to understanding the dynamics of socio-economic development.

This monograph addresses this need and brings forward current research findings, hopefully making an interdisciplinary contribution to our understanding of socio-economic development through the ecosystems perspective. It consists of 14 chapters grouped into three parts.

The first part, 'Financial and Institutional Ecosystems of Socio-Economic Development', focuses on the growing role of international institutions and financial systems in driving responsible and accountable socio-economic development. Institutions are critical determinants of economic development as they can impose direct and indirect effects on the economic behaviour of various actors. This part starts with a paper on economic thoughts on government intervention in the financial sector. **Marek M. Michalski and Jarosław W. Przybytniowski** try to answer the question of what can we learn from economic and financial crises? This article provides an overview of the economic thoughts on government intervention in the financial sector from the perspective of the recent economic crises. **Joanna Kudelko, Karol Wałachowski and Dariusz Żmija** present a current evaluation of measures introduced by the European Union in response to the COVID-19 pandemic crisis and outline the instruments and actions that the European Union has introduced to mitigate the negative effects of the crisis and to stimulate socio-economic growth despite its grave consequences. Next, **Marcel Novák and Dáša Klenková** present the costs and benefits of a pivotal European institution, responsible for the new banking order which emerged after the 2008 crisis – the European Banking Union. **Viacheslav Berezutskyi, Viktoriya Khalil, Natalia Berезutska and Tetiana Stytsenko** address the problem of occupational risks and financial security in Ukrainian enterprises, highlighting the role of regulatory institutions. Finally, **Izabela Sarosiek** relates to the institutional ecosystem by discussing the internationalisation of firms and the role of foreign economic policy and institutions in export development.

The second part, 'Entrepreneurial and Technology-Based Ecosystems of Socio-Economic Development', emphasises the role of entrepreneurship and new technologies in creating new value for customers and society as a whole. Entrepreneurship has been acknowledged as an important mechanism for economic development through employment, innovation and progress for years. Next, **Roman Chorób** presents the results of his research within the food industry in Poland in

regard to factors affecting the cluster development. Clusters as an important element of entrepreneurial ecosystems exemplify the growing role of co-operation and integrating economic relations. **Kinga Szmigiel** discusses the role of entrepreneurship as a factor of regional development. Using the example of Małopolskie Voivodship, she shows that entrepreneurship plays an average role in regional development. Unlike general indicators of entrepreneurship most of the indicators relating to innovative SME and start-ups are not available on the communal level and are not separated for rural areas in urban-rural communes, which constitutes a research limitation. Finally, **Sergei Ohrimenco and Grigori Bortapresents** deliver an overview of challenges for digital transformation in the manufacturing industry providing a valuable insight into the transformative aspect of ecosystems brought forth by digitalisation. We then continue the discussion with **Nina Stępnicka and Paulina Wiączek** introducing the concept of coliving, a rapidly growing sector within the sharing economy, also called we-conomy, peer-to-peer economy or rental economy. This new but quickly growing phenomenon is a cooperative business model innovation which may hold the potential of reshaping the social ecosystem into a less carbon intensive. Finally, **Zbigniew Michalik** focuses on changes in the recorded music market in the face of the globalisation process exemplified by the Visegrad Group countries.

The third part ‘Social and Environmental Ecosystems of Socio-Economic Development’ presents selected aspects of a balanced and sustainable socio-economic development, focused on people and planet. **Robert Włodarczyk and Justyna Tomala** open this part of the monograph with an in-depth analysis of raw material security in the European Union. Balancing the constantly growing demand for mineral resources with a low-carbon economy presents a critical challenge for EU member states and their environmental ecosystems. Continuing this thread, **Adela Sorinela Safta and Lavinia Popescu** discuss the challenges of Romanian agriculture transformation to low-carbon. The implications are relevant for all contemporary economies. Then **Natalia Berezutska, Tetiana Stytsenko and Viacheslav Berezutskyi** raise the issue of occupational diseases and injuries as an important aspect of employee well-being and our socio-economic balance. Finally, **Tomáš Ondruška and Erika Pastoráková** outline the development of the insurance market in the Slovak Republic from a historical perspective.

The scope of this monograph enables an overview, analysis and evaluation of selected aspects of our search for new development pathways in complex and dynamic times. As we enter the new decade, we face a complex set of development challenges. The global economy is suffering a significant and widespread slowdown amidst prolonged trade disputes and wide-ranging policy uncertainties. These risks could inflict severe and long-lasting damage on development prospects. The authors and editors of this monograph wish to contribute to the discussion on these challenges which are spread over and affecting our various ecosystems. The potential audience of this monograph includes all those who remain concerned about

future prospects of socio-economic development, but especially academics in relevant fields of inquiry, policymakers and students. Hopefully, the content of this monograph will not only raise awareness of the prevailing challenges, but also spark a positive impulse into the research and practice of socio-economic development.

The publication is a tribute to Professor Kazimierz Zieliński who celebrates his fifty years of academic career at Cracow University of Economics. His work, focused on economic and social policy, represents great merit for the economic sciences. The monograph came into being as a result of a project entitled „*Financial security and economic patriotism: markets, enterprises, technological innovations*” realised by the Department of Entrepreneurship and Innovation at the Cracow University of Economics together with Narodowy Bank Polski within the economic education programme in 2020–2021. We cordially thank everyone who made this publication possible, in particular all the authors for their contribution and the reviewers for their time, commitment and valuable suggestions.

*Maria Urbaniec
Agnieszka Żur*

Cracow, December 2020



Professor Kazimierz Zieliński

About the Jubilarian

Professional Background at the Cracow University of Economics

Professor Kazimierz Zieliński has been associated with the Cracow University of Economics for over 50 years. In 1968, he began studying at the then Faculty of Production Economics at the Cracow Academy of Economics from which he graduated in 1972. After the graduation he was employed by his *alma mater* as a researcher. In 1980, he received a doctorate in economic sciences on the basis of the dissertation *Modelowanie procesu rozwoju rolnictwa na przykładzie makroregionu południowo-wschodniego* (Modelling the Process of Agricultural Development Exemplified by the South-Eastern Macro-region). He was granted his post-doctoral degree in the field of economic sciences in 2002 on the basis of the following publication: *Elastyczność podaży produktów rolniczych w Polsce* (The Supply Elasticity of Agricultural Products in Poland). Both studies were published by the Cracow University of Economics. In 2004, he became a professor at the Cracow University of Economics. In 2015, the President of the Republic of Poland, Bronisław Komorowski, awarded Professor Kazimierz Zieliński the title of Full Professor.

Managerial Functions at the Cracow University of Economics

Professor Zieliński is a person of great merit for the economic sciences and involved in the University. Since 2005, he has held important managerial positions

and participated in numerous committees of strategic importance for the development of the Cracow University of Economics. Between 2005 and 2008, he was the Vice-Dean and between 2008 and 2016 the Dean of the Faculty of Economics and International Relations. He participated in the meetings of the Rector's College, the University Recruitment Committee and the Senate, as well as in many committees for doctoral and post-doctoral degrees, many times as chairman. Since 2010, he has been the Head of the Department of Entrepreneurship and Innovation.

Academic Achievements

An important element of his scientific and research involvement is publishing activity. Professor Zieliński is the author of numerous scientific and educational publications in the field of economic policy, agricultural economics, and social policy, published in Polish and foreign journals, including: "Scientific Annals of the Association of Agricultural and Agribusiness Economists", "Problemy ekonomiczne", "The New Economy", "Problems of Agricultural Economics", "Prace Naukowe AE we Wrocławiu". Moreover, his scientific activity is also confirmed by his systematic editing of scientific monographs. From 2011, he was the scientific editor of 10 monographs, published in nationwide publishing houses, including Wydawnictwo Naukowe PWN and in Difin. More important publications in recent years include:

- *Przedsiębiorczość a nowe technologie*, Difin, Warsaw 2019 (scientific editor)
- *Ekonomia przyszłości: państwo efektywne czy sprawiedliwe?* Fundacja Uniwersytetu Ekonomicznego, Cracow 2018 (scientific co-editor)
- *Finansowe aspekty rozwoju przedsiębiorczości*, Difin, Warsaw 2016 (scientific editor)
- *Problemy wzrostu konkurencyjności przedsiębiorstw*, Wydawnictwo Naukowe PWN, Warsaw 2015 (scientific editor)
- *Formy i przejawy współczesnej przedsiębiorczości w Polsce*, Difin, Warsaw 2014 (scientific editor)
- *Procesy modernizacyjne rolnictwa*, Difin, Warsaw 2014 (author)
- *Makroekonomiczne i sektorowe czynniki rozwoju przedsiębiorczości*, Wydawnictwo Naukowe "Śląsk", Katowice 2013 (scientific editor).

He delivered a number of papers at scientific conferences in Poland (including: Cracow, Międzyzdroje, Rzeszów, Wrocław) and abroad (Baltimore, Bratislava). Currently, he is the Chairman of the Scientific Council of the International Scientific Conference entitled *Financial Security and Economic Patriotism: Markets, Enterprises, Technological Innovations*, organised by the Department of Entrepreneurship and Innovation at the Cracow University of Economics on 15–16 October 2020.

Professor Zieliński is the leader of many research projects financed by the Ministry of Science and Higher Education, the National Science Centre, and the National Bank of Poland (NBP) as well as the City Hall in Cracow. He is also a member of national scientific, economic and social organisations, including the European Association for Security Sciences, the European Association for Security, the Polish Ecological Club, the Polish Economic Society and the Association of Agricultural and Agribusiness Economists. He received internships at universities in Budapest (Hungary), Tilburg (Netherlands) and Minnesota (USA), Bratislava (Slovakia), Kiev (Ukraine).

It is worth mentioning that an important area for Professor Zieliński is the education of students and their development, covering several generations of students. Professor Zieliński is also involved in the development of the academic staff. He is the supervisor of many doctoral students, including Prof. Dariusz Żmija, PhD (Cracow University of Economics) and Roman Chorób, PhD (University of Rzeszów). He was also a reviewer in numerous procedures of granting a post-doctoral degree.

Prizes and Awards

For his achievements in scientific, organisational and educational work, he has been rewarded and honoured numerous times, e.g. the Medal of the National Education Commission (2015) and the Silver Cross of Merit (1994). In addition to these distinctions, he received awards for outstanding scientific and organisational activity from the Rector of the Cracow University of Economics.

National and International Co-operation

As part of his research and teaching work, he actively collaborates with other research centres in Poland (e.g. the Jagiellonian University, the AGH University of Science and Technology, the University of Agriculture in Cracow, the University of Physical Education in Cracow, the University of Białystok, the Warsaw University of Life Sciences, the University of Economics in Poznań, Kielce University of Technology, Jan Kochanowski University in Kielce, University of Economy and Management in Mielec) and with local government institutions and economic organisations.

In addition, he is involved in the development of international co-operation, e.g. with the University of Economics in Bratislava (Slovakia), Hryhoriy Skovoroda State University in Pereyaslav (Ukraine), National Technical University – Kharkiv Polytechnic Institute (Ukraine), University of Economics in Kiev (Ukraine), Academy of Economic Sciences in Chisinau (Moldova). In recognition

of his scientific, organisational and educational achievements, as well as his commitment to the development of Polish-Ukrainian co-operation, on 1 July 2020, Professor Kazimierz Zieliński was awarded an honorary doctorate from Hryhoriy Skovoroda State Pedagogical University of Pereyaslav-Khmelnytsky.

Professor Kazimierz Zieliński is one of the economists and academic teachers who gain respect among students and professors thanks to commitment to research, teaching, promoting doctoral students and organisational activities.

Izabela Czaja
Małgorzata Kosala
Zbigniew Michalik
Rafał Morawczyński
Marcin Piątkowski
Bogdan Rogoda
Maria Urbaniec
Agnieszka Żur

His Magnificence
KOTSUR Viktor Petrovith
Rector

and
Scientific Council

Hryhoriy Skovoroda State Pedagogical University
of Pereyaslav-Khmelnytsky

**Application
for the award of the honorary title
of Doctor Honoris Causa
of the Pereyaslav-Khmelnytsky Hryhoriy Skovoroda
State Pedagogical University
for Professor Kazimierz J. Zieliński**

Dear Magnificence Rector and dear High Council,

The Academic Community of the *EUROPEAN ASSOCIATION for SECURITY* is applying for the award of the title of Doctor Honoris Causa for Kazimierz Zieliński, a professor of economics and Dean of the Faculty of Economics and International Relations at the Cracow University of Economics in Poland.

Kazimierz Zieliński was born in the village of Sarnów in the Podkarpackie Voivodeship in south-eastern Poland on 14 July 1950. After graduating from high school in 1968 and studying at the Faculty of Production Economics at the Cracow University of Economics, and graduating in 1972, he was employed at this university as a research assistant. In 1980, he received the degree of doctor of economics based on the dissertation: *Modelowanie procesu rozwoju rolnictwa na przykładzie makroregionu południowo-wschodniego* (Modelling of the Process of Agricultural Development Exemplified by the South-Eastern Macro-region). In 2002, he was granted a post-doctoral degree in the field of economics based on the book: *Elastyczność podaży produktów rolniczych w Polsce* (The Supply Elasticity of Agricultural Products in Poland). Both publications were published by the Cracow University of Economics.

In 2004, he became Associate Professor at the Cracow University of Economics. In 2005, he was elected Vice-Dean, and in 2008, he was elected Dean of the Faculty of Economics and International Relations at the Cracow University of Economics (he held this function until 2016).

In 1999, he co-founded the University of Economics and Management in Mielec and he was the director of the Institute of Economics and Management until 2004.

In 2015, the President of the Republic of Poland, Bronisław Komorowski, awarded the title of Full Professor to Kazimierz Zieliński.

His major publications are as follows: *Instruments of Agricultural Policy of the European Union Implemented in Poland, European Cohesion Policy and Its Effects in Poland* (co-author), *Adaptation Activities of Polish Enterprises during the Crisis* (editor), *SME Development Strategies. Theoretical and Empirical Approach* (editor), *Macroeconomic and Sectoral Factors Influencing the Development of Entrepreneurship* (editor), and more than 70 articles published among others in scientific journals, e.g.: “Problemy ekonomiczne”, “Zeszyty Naukowe UJ”, “Zeszyty Naukowe AE” (Cracow), “PISM” (Cracow), “Nowe Rolnictwo”, “Więś Współczesna”, “Seminar Papers”, “Problems of Agricultural Economics”, “Życie Szkoły Wyższej” and “Prace Naukowe AE we Wrocławiu”.

He delivered a number of lectures at scientific conferences in Poland (i.a. in Cracow, Międzyzdroje, Rzeszów, Wrocław) and abroad (e.g. Baltimore). He was the supervisor of several dozen diploma papers, master theses and doctoral dissertations, and he was the scientific supervisor of doctoral studies and reviewer of numerous dissertations and scientific articles. He is a member of the *EUROPEAN ASSOCIATION for SECURITY*, the Polish Ecological Club, the Polish Economic Society and the Scientific Society of Organization and Management.

He completed research internships at many universities, e.g. in Budapest (Hungary), Tilburg (Netherlands) and Minnesota (USA).

Professor Kazimierz J. Zieliński belongs to the group of few economists among educators who believe and can convince others that economics can be easy and pleasant, and the market economy can be understandable and socially justified. Nowadays, it seems difficult both in Poland and Ukraine, but Professor Kazimierz J. Zieliński breaks such barriers successfully by winning crowds of admirers and earning the respect of students and professors.

The application for granting Professor Kazimierz J. Zieliński the honorary title of Doctor Honoris Causa of the Pereyaslav-Khmelnysky Hryhoriy Skovoroda State Pedagogical University should be considered as extremely justified.

Leszek Fryderyk Korzeniowski
Nadiya Ivanivna Kotsur
Liubov Vasilivna Lokhvytska

**Granting the honorary title of Doctor Honoris Causa
of the Hryhoriy Skovoroda State Pedagogical University
of Pereyaslav-Khmelnytsky
to Professor Kazimierz J. Zieliński**

On 1 July 2020, Professor Kazimierz Zieliński was awarded the title of doctor honoris causa of the Hryhoriy Skovoroda State Pedagogical University of Pereyaslav-Khmelnytsky in recognition of his scientific, organisational and educational achievements, as well as for his commitment to the development of Polish-Ukrainian co-operation.

During the session of the Scientific Council, Prof. Viktor P. Kotsur, PhD, Rector of the Hryhoriy Skovoroda State Pedagogical University of Pereyaslav-Khmelnytsky, emphasised in his speech:

Professor Kazimierz Zieliński belongs to the group of few economists among educators who believe and can convince others that economics can be easy and pleasant, and the market economy can be understandable and socially justified. Nowadays, it seems difficult both in Poland and Ukraine, but Professor Kazimierz Zieliński breaks such barriers successfully by winning crowds of admirers and earning the respect of students and professors.



Announcement of the resolution of the University Scientific Council by Prof. Viktor P. Kotsur, PhD, Rector of the Hryhoriy Skovoroda State Pedagogical University of Pereyaslav-Khmelnytsky

Prof. Dr h.c. mult. Leszek F. Korzeniowski, PhD,
President of the *EUROPEAN ASSOCIATION for SECURITY*

I.

**Financial and Institutional
Ecosystems of Socio-Economic
Development**

Chapter 1

What Can We Learn from Economic and Financial Crises? Economic Thoughts on Government Intervention in the Financial Sector¹

Marek M. Michalski², Sergio Martinez³, Jarosław W. Przybytniowski⁴

1. Introduction

Our growing appreciation of the complex, competitive, global economy over many centuries has been punctuated by recurring financial crises. In recent years, such crises came to be understood as the preserve of emerging markets. However, mature market economies have become subject to periodic booms and busts, not exactly every decade as some would argue. The recent Covid-19 pandemic throws new challenges and poses many difficult questions about the global economy in general and complex financial transaction in particular.

Should we thus view financial crises as unavoidable? Could our efforts to prevent them seem futile? Or, could we reduce their frequency and impact on the overall interdependent economy? Does government intervention improve financial inclusion, reduce inequality, improve market mechanisms? Can policy makers mitigate unexpected financial upheavals, crises, or provide a set of guidelines and regulations as to the role and the degree to which the government can promote and stimulate economic well-being of the entire society? These are the questions that we need to address and refine the macroeconomic policy framework, so as to prevent sharpest crises while making crisis management more effective.

¹ The earlier version of this study was conducted as a background research for the IMF Working Paper WP/19/211 and a series of lectures that followed.

² The Catholic University of America (USA), e-mail: michalski@cua.edu

³ International Trade Centre (Switzerland), e-mail: 96martinez@cua.edu

⁴ The Jan Kochanowski University of Kielce (Poland), e-mail: j.w.przybytniowski@wp.pl

The number of critical issues and key lessons from previous financial crises are rather straightforward: crises come in different shapes and forms and though are difficult to predict and/or push aside, we are learning to mitigate and moderate the sharpest effects of the crises of recent decades. The lessons from the Global Financial Crisis (GFC) of 2008 and its role in dealing with the aftermath shows the need to better understand and measure aggregate run vulnerability, its composition and consequences. One of the more critical components in evaluating and regulating systemic risk in preventing future crises may essentially entail avoiding excessive concentration of loans in any one sector of the economy. Another is more prudent, predictable and pragmatic macroeconomic policy of government.

Government, central bank authorities as well as regulators need to have more correct, complete and current information at their disposal than their counterparts had at the end of the first decade of the new millennium – in 2008. In particular, the assessment of systemic risk should be improved as well as the design of stress tests. A well-designed risk mitigation structure may favorably influence the fragile balance between profit maximizing and taking risks.

For more than a century, economists have been debating the role of the financial sector in the process of economic development, entrepreneurship and growth. Pioneering work of Schumpeter (1939) put forward arguments that the productivity with innovative methods of reaching customers often originated and grew thanks to a well-developed financial sector. Though Keynes (1936) viewed role of the government as not only useful, necessary but also clearly pivotal. Since then, a considerable amount of theoretical and empirical literature has emerged. Initially this literature focused on the question whether the financial sector plays a causal role in economic development or if, on the contrary, financial intermediaries merely originate from rapid industrialization. There is also a body of literature arguing that crises beget reforms.

During the 1960s leading authors such as Gerschenkron (1962), Goldsmith (1969) and others used basic methods, advanced models and stylized case studies to explore the finance-growth nexus. They discovered certain relationship between financial factors and output. However, they did not present any strong correlations, nor theoretical foundation for the findings. Leonard Silk of The New York Times wrote eloquently on economic, financial and social issues in an interesting and eloquent style as did Friedman and Galbraith.

From the early 1970s McKinnon (1973) and Shaw (1973) developed a theoretical framework that helped to explain the financial savings-growth correlations and, within the paradigm, the growth enhancing effects caused by financial liberalization. They also were the pioneers assessing the costs brought about by financial repression. They argued that a well-functioning and developed financial sector may increase the volume of savings while also enhancing investment's quantity and quality. Their analytical work met initially with skepticism

and empirical results did not yield a clear-cut response on the growth of an economy.

The 1980s literature witnessed a return of critical approaches to the market economy. These were based on micro, or market-failure arguments and macroeconomic, or neostructuralist approach. Experience with financial liberalization policies began to accumulate and more and more studies emerged as a consequence. The neostructuralists predicted that financial liberalization would slow down growth. Their arguments are in the vein of those put forward by Keynes (1936). Stiglitz (1989) and others criticize financial liberalization on the theoretical ground of market failures in financial markets.

In the 1990s, the endogenous growth literature that developed, provided an additional framework to analyze these issues. The most important result of the literature on endogenous growth is that the increase in growth rates can be sustained. It may be useful to recall that the steady-state rate of growth is determined by exogenous factors. In contrast to the school of thought based on physical capital accumulation the rate of technological progress is endogenously determined. This keeps the marginal productivity of capital from declining.⁵ Following Schumpeter, the endogenous growth literature also emphasizes the role of innovation. Financial systems channel savings to their most productive uses and diversify the risks associated with these activities. Fulfilling these tasks, they increase the probability of successful innovation and the speed of technological progress. The implication is that the [efficiency and quality of the] financial sector is not neutral in the long term – it can affect the long-term sustainable rate of growth. Hence, financial repression can have long-lasting effects.

More recent studies have been influenced by the Global Financial Crisis. Some of the more common line of research include: the crises beget reform hypothesis (CBR), the link between reform and prudential regulation (RPR), and crisis prevention (CP) and whether the surge of debt will encourage a return of financial repression. Empirical studies place increasingly more emphasis on financial innovations, simplified access to financing based on technical criteria, among others. Therefore, this study will focus on the answering the question, what can we learn from economic and financial crises?

The main aim of this article is to provide an overview on the economic thoughts on government intervention in the financial sector from the perspective of the recent economic crises. The research methods applied for this study are the critical literature review, the method of historical analysis, and the method of synthesis.

⁵ Levine (1997) summarizes the following basic functions of financial systems that foster capital accumulation and productivity growth: they facilitate the trading, hedging, diversifying, and pooling of risk; they allocate resources; they monitor managers and exert corporate control; they mobilize savings; and facilitate the exchange of goods and services.

We proceed in the following steps: in section 2 we review the early literature on financial development and growth. Section 3 deals with the key ideas of McKinnon and Shaw. In section 4 we assess the critiques of financial liberalization policies, based on macroeconomic foundations (neostucturalists) and those rooted in microeconomic theory. Section 5 examines the literature on finance and endogenous growth. Section 6 discusses the most recent developments in the theory (after 2000, and most notably after the GFC). The final section summarizes our main findings.

2. The 1960s: Review of early literature on finance and growth nexus

The discussion that was pioneered by McKinnon (1973) and Shaw (1973) concentrated on the phenomenon of financial repression, a policy conducted by many governments to generate growth and revenue through artificially low interest rates and inflationary monetary policies. These policies were adopted as part of a wider view, by the followers of the Keynes' works (1936), that the government could accelerate growth by taking an active role in the economy. These ideas based on the theoretical constructs of Keynes (1936) and elaborated by Tobin (1965), advocated government deliberate interference in the credit market. Supporters of capital liberalization argue that it makes financial markets more efficient, but Keynes (1936) maintained that efficient markets (doing things right) were not necessarily effective markets (doing the right things). Keynes (1936) drew a distinction between capital used for productive purposes and capital used for speculation. The story of the years leading up to the crisis and the years since, is that there was too much of the latter and not enough of the former. Another of Keynes' (1936) argument is that risk could be quantified but uncertainty could not, which makes all the algorithms to measure the riskiness of complex financial instruments not always useful.

Keynesian arguments favoring financial repression dominated for decades ever since they were developed not only in academic circles, but also among policymakers. High reserve requirements may also play a role. It was based on the theoretical grounds of the liquidity preference theory propagated by Keynes (1936): The full-employment equilibrium level of the real interest rate, he argued, tended to be lower than the one generated by liquidity preference. So, interest rates had to be lowered in order to avoid a fall in income. For instance, early arguments in the post-war England came from the experience of seeking funds to repay the debts, paying for war. The debate on the relationship between finance and growth was limited to most practical and imminent policy implications. In England, investments needed capital and specialized entrepreneurship. Germany, required investments on a large scale. The banking sector provided both capital and entrepreneurship to drive the industrialization process.

Patrick (1966) focused even more specifically than Gerschenkron (1962) on the question of the causal relationships between finance and growth. He identified two patterns that he dubbed “demand following” and “supply leading” and attributed them to specific stages of the development process. In the first of the two patterns, economic development establishes a demand for financial services, which is passively satisfied by a growing financial sector. If the variance in growth across sectors or industries is great there will be more demand for financial services to transfer savings to the leading sectors. The financial sector channels resources from the traditional to the modern sectors and promotes entrepreneurship in the latter. In the second, supply leading pattern, dominates during the early stages of economic development, and subsequently gradually shifts its leading role to the demand following one. So initially the causality runs from finance to growth, a scenario that should be expected in developing countries. The demand-following pattern should then be expected to establish a causality that runs from growth to finance. With his framework Patrick (1966) provided a clear-cut, and empirically testable hypothesis.

Cameron (1962) argues that financial systems may be both growth-inducing and growth-induced, but he emphasizes the crucial role of the quality of its services and the efficiency with which they are provided. Financial intermediation serves as a vehicle for channeling funds from risk-averse savers to less risk-averse people with entrepreneurial skills. Financial intermediation also provides incentives to investors. Declining costs of borrowing encourage entrepreneurs to make larger investments. An expanding financial sector should reduce the dispersion of interest rates among users, regions, and over periods of seasonal fluctuation improving the efficiency of the allocation of capital. Thus, financial institutions create possibilities for a more efficient allocation of capital. Thus, financial institutions create possibilities for a more efficient allocation of unproductive stock of initial wealth, especially in the early stages of industrialization.

McKinnon (1973) and Shaw (1973) raised arguments against policies of financial repression. The latter one emphasized the role of the financial sector in increasing the volume of savings by creating appropriate incentives. The former stressed the important role of the government as a stabilizing agent as well as a potential catalyst of economic growth through consumption. In order to reach higher savings and investment rates, they recommended governments to abolish interest rate ceilings and advised them to give up raising seigniorage through inflationary monetary policies. As a result, real interest rates should rise to market clearing values, thus raising increased savings. An important feature of the McKinnon-Shaw models is that they explain only temporarily higher growth rates. Many governments in developing countries followed their policy advice and achieved significant accelerations in growth rates, but sometimes also excessively high and volatile real interest rates.

3. The 1970s: The McKinnon-Shaw paradigm

A critique of financial repression is the main focus of the McKinnon-Shaw school. They assert that this policy is harmful for long-run growth because it reduces the volume of funds available for investment. In these studies, financial repression is defined as the combination of indiscriminate nominal interest rate ceilings and high and accelerating inflation.

Fry (1995) states that financial repression is a severe and unintended form of financial restriction, which he considers as a second-best policy for governments with low tax-raising power. In the case of financial restriction, financial institutions and instruments are given a priority treatment if the government can relatively easily extract seigniorage from them. Reserve requirements, obligatory holdings of government bonds, or interest rate ceilings help the authorities in diverting savings to the public sector at low or zero costs. The banking and credit sector is most appropriate for that because it is more difficult to extract seigniorage from the private equity and bond market.

While the supply of savings increases with the real interest rate, demand for investment declines. In turn, the real interest rate is driven down by either accelerating inflation or a decrease in the nominal interest rate. The shift in savings from bank accounts to land ownership drives land prices up faster than the general price level. The induced wealth effect causes an increase in consumption, and, accordingly, a decline in investment. Risk taking behavior of banks is affected negatively, because risk premiums cannot be charged. Credit allocation is to some extent subject to randomness, which is another factor of distortion. The policy prescription proposed by McKinnon (1973) and Shaw (1973) is therefore to abolish institutional constraints on nominal interest rates and to reduce inflation.

Even though McKinnon (1973) and Shaw (1973) essentially come to the same conclusions, their theoretical approaches feature some differences. McKinnon's model rests on the assumptions that all economic units are limited to self-finance and that there are important indivisibilities in investment. McKinnon's complementarity hypothesis and Shaw's debt-intermediation view, however, do not necessarily contradict each other, because investment may be financed both externally and internally. McKinnon (1989) refers rather to developing countries whereas Shaw's analysis describes the scenario of more advanced economies with sophisticated financial systems.

In the aftermath of the McKinnon-Shaw debate, a number of studies have emerged that extend the original framework in specific ways. Fry (1989) develops formal macroeconomic models, in which financial repression is exerted by national authorities through fixing the deposit rate of interest below its market clearing value. Money demand depends on the (fixed) nominal interest rate and on inflation. Inflation reduces growth because households are induced to hold unproductive inflation hedges instead of financing productive investment through deposits.

Accelerating inflation reduces real money demand. The banks' liabilities contract in real terms and consequently also other assets, which reduces the supply of credit for investment.

Kapur (1976) introduces a specific type of financial repression: Even if interest rates are not subject to ceilings, the same effect may be reached by reserve requirements. Even without inflation, a fixed required reserve ratio creates a wedge. Inflation increases the wedge between loan and deposit rates even further. Reducing reserve requirements increases the demand rate for deposits and the credit supplied by the financial sector. In all models of the McKinnon-Shaw type the deposit rate that maximizes growth results from a free-market equilibrium. The authors recommend: to abolish interest rate ceilings, to give up selective or directed credit programs, to reduce reserve requirements, and, very importantly, to ensure competitive conditions in the financial sector. Apart from exerting a positive effect on long-run growth, financial liberalization reduces the contractionary effects of monetary stabilization programs.

4. The 1980s: Critiques of financial liberalization policies: the neostructuralist and microeconomic approaches

The mixed experiences with early financial liberalization reforms in the 1970s inspired a critique from the so-called neostructuralist school, which criticized financial deregulation from a macroeconomic point of view. Taylor (1983) and van Wijnbergen (1982) most prominently put forward two arguments, one of which is specific to developing economies. In the presence of curb, or unorganized money markets. If an increase in the real deposit interest rates leads to a shift of assets from the unorganized to the formal credit market, the existence of reserve requirements in the latter will lead to a decline in financial intermediation. In the unorganized money market reserve requirements do not exist. The extent of the contractionary effect on credit supply is determined by the degree to which assets are substituted out of inflation hedges or out of the curb market. The second argument is based on cost-push inflation resulting from increased interest rates, which may lead to a collapse of effective demand. Neostructuralists argue that high interest rates increase inflation in the short run through cost-push effects and decelerate economic growth as a result of a reduced real credit volume. These theoretical considerations are, however, complemented by policy requirements in developing countries. Moreover, by increasing the propensity to save, higher interest rates may weaken effective demand even more.

The neostructuralist models, however, rest on the assumption that unorganized money markets are competitive which may not be the case. Another problematic feature of these models is that they consider the aggregate credit and investment volume and not investment efficiency, which may increase credit costs. The mi-

croeconomic critique on the other hand, focused on these aspects and most notably on the link between asymmetric information, interest rates and the solution of good investment projects.

Stiglitz and Weiss (1981) showed that disequilibria in the credit market may have causes other than government intervention. As a result of an adverse selection, high and market clearing interest rates may attract bad borrowers. There are also incentive effects that (stemming from the limited liabilities of borrowers) induce borrowers to undertake more risky investment projects when rates are high. Consequently, borrowers are more likely to default when interest rates are high. This may lead banks not to raise the interest rate to its market clearing level. As a result, credit rationing may occur where only large size loans are allocated. Similarly, excess supply equilibria are conceivable. These adverse outcomes stem from intrinsic failures of the market allocation of credit. If credit markets are intrinsically not efficient then properly designed financial “repression” can in principle achieve a second-best efficient outcome.

Mankiw (1986) discusses the problem of financial collapse in this context. He showed that if the pool of loan applicants is too risky to give the banks their required return the credit market may collapse. Moreover, restrictive monetary policy may in extreme cases even cause financial crisis. A related strand of the literature emphasizes the role of banks in overcoming information asymmetries between lenders and borrowers. In the costly state verification approach (Diamond, 1984) financial intermediaries can verify the success of investment only at a monitoring cost, which they try to minimize. Information asymmetries and moral hazard may lead to capital misallocations and monitoring costs. As shown by Williamson (1987), the latter may cause equilibrium credit rationing even in the absence of other market failures. Banks overcome these problems by investing in costly monitoring of borrowers in place of savers/depositors, who could not afford these costs. Moral hazard is an issue often discussed with respect to deposit insurance schemes. Originally designed to correct negative externalities running from banks’ business activities to their customers, deposit insurance may encourage excessive risk taking by bank managers.

5. The 1990s: Finance and endogenous growth

In the 1990s research on the relationship between financial development and long-run growth received new impulses from the new theory of endogenous growth, which focuses on productivity as the key factor driving growth in the long term. A branch of this stream analyzed whether financial conditions could explain sustained growth in per capita GDP. The central argument is that finance enhances aggregate investment efficiency, which offsets the structural/secular decrease in the marginal product of capital. Financial intermediaries and secu-

rities markets enable particular entrepreneurs to undertake innovative activity, which enhances productivity. Financial systems affect entrepreneurial activities in four ways: They evaluate entrepreneurs, pool resources, diversify risk and value the expected profits from innovative activities. Better financial systems increase the probability of successful innovation. Some studies consider the role of stock markets.

Bencivenga and Smith (1991), for instance, present a model where the existence of financial intermediaries shifts the composition of assets towards the more-risky one and therefore increases growth. Individuals face uncertainty about their future liquidity needs and therefore hold two types of assets: a liquid one, which is safe but unproductive, or an illiquid one with high productivity and risk. Bank intermediation allows investors to adjust the composition of their assets towards the illiquid growth-enhancing ones.

Berthélemy and Varoudakis (1996) introduce a learning-by-doing endogenous growth framework with reciprocal externalities between the financial sector and the real sector. The financial sector channels savings to more productive uses by collecting and analyzing information about investment opportunities. In turn, the expansion of the real sector causes an increased volume of savings. The increased size of the financial market induces more competition and technical efficiency through learning-by-doing in the financial sector. This two-way causality gives rise to a cumulative process, which may exhibit multiple equilibria. Countries with insufficient financial development may be trapped in low growth equilibrium.

Some studies along these lines, addressed the issues of government interventions in the credit market. They noted that distortions like deposit rate ceilings or high reserve requirements reduce the rate of innovation. Roubini and Sala-i-Martin (1995), for instance, re-examine financial repression in the context of an AK model of endogenous growth with non-decreasing returns to capital. In their model governments might opt for policies of financial repression in order to generate easy inflationary revenues. Financial repression induces individuals to carry a larger stock of nominal money, which is the base for the inflation tax.

In another article by Romer (1986) production is based on constant return to scale technology. A determinant of growth is the level of monitoring costs of financial institutions – a parameter representing the efficiency of the intermediation system. This parameter is approximated by the spread between lending and borrowing rates. High monitoring costs are assumed to reduce the rate of economic growth, i.e. spreads and growth are expected to be negatively correlated.

A significantly large number of studies have been written about the importance of stock markets for the development process. They partly yield different results and show that banks and securities markets provide different services. In Atje and Jovanovic (1993) for instance, the stock market insures investors against idiosyncratic risk and creates more information about investment projects. In return

growth fosters the development of stock markets. As a result of these intermediations, there are no diminishing returns to capital.

Much empirical support has been found for the “finance promotes growth” view, but time-series evidence is less clear-cut than broad cross-section analysis. Some of studies, conclude that finance induces growth in early stages of economic development and vice versa – in more advanced stages.

6. Review of the most recent studies

Interest has thus focused on (a) whether crises encourage financial reforms, (b) whether financial liberalization should be accompanied by prudential reforms to contain the risk of crisis, (c) whether financial liberalization reduces or increases the risk of crisis, and (d) whether the large surge of public debt in the wake of the crisis may encourage a return of financial repression. The most recent research has thus focused on the impact, prevention, and aftermath of financial crisis. Key messages emerging from the most recent literature can be grouped in the following categories:

6.1. “The crisis begets reforms” (CBR) hypothesis

A large body of literature discusses the relationships between crisis and policy reform. The central argument of these studies is that crises promote financial liberalization. Financial crises can damage macroeconomic conditions and result in severe, long-lasting recessions. That may lead to calls for reforms in financial sectors to avoid or remedy such crises. After a financial crisis, restructuring policies and institutional reforms are needed. Thus, a crisis is an instigator of reform, reflecting the crisis-begets-reform hypothesis. Historically, many countries have experienced crises and then the regulatory responses to these crises, supporting the view that crises accelerate reforms (Lora and Olivera, 2004).

Rodrik (1996) notes that a nation falls into a crisis when its policy fails and thus government reforms are necessary because the previous policy has proven unsuccessful. Bruno (1993) suggests that an economic crisis is essential for a major reform (which rarely occurs without crises) and Bates and Krueger (1993) contend that reforms are not needed under good economic conditions and are undertaken more often when economic conditions deteriorate.

Hlaing, Su Wah, and Makoto Kakinaka (2018) analyzed the financial crises within the policy reform process. They distinguish between various types of financial crises and financial policy reform. Their results support the crisis-begets-reform argument by showing that all types of financial crises promote financial liberalization. Financial policy reforms however, subsequent to financial crises do not generally result in the strengthening of prudential regulation. Given the argu-

ment that financial liberalization without prudential regulation often causes financial instability or crises, their findings emphasize that policy makers should pay attention not only to financial liberalization but also to prudential regulation.

Masciandro and Romelli (2017) state that financial crises are associated with reforms that increase the involvement of central banks in the supervision of entire financial sectors, and Hallerberg and Scartascini (2017) emphasize the role of banking crises in the timing of tax reforms. Other studies have looked at more specific types of reforms. For instance, Wiese (2014) maintains that a debt crisis is one of the main triggers of healthcare financing privatization. A few studies have examined how the origin of a financial crisis relates to financial policy reform and its various dimensions. Waelti (2015) examines whether crisis origins matter for the relationship between financial crises and financial reforms. The results find that a financial crisis promotes financial liberalization, but not more effective prudential regulation, i.e., the reforms following a crisis are ‘incomplete’.

6.2. *Reform and Prudential Regulation hypothesis (RPR)*

This line separates regulations aimed at strengthening financial stability (the so-called prudential) from those that enable direct government intervention in the financial sector. A series of studies has thus examined the relation between financial liberalization and prudential regulation, especially considering that without appropriate prudential safeguards, liberalization could lead to, or increase in instability.

Several studies suggest that financial liberalization and prudential regulation are equally important, noting that financial liberalization without prudential regulation leads to a dangerous combination of financial policies that could give rise to financial distress (Rosenbluth and Schaap, 2003). Thus, prudential regulation should be viewed as a necessary precursor of financial liberalization. Other studies, including De Haan and Sturm (2017), use the data of Gwartney et al. (2016) relating to economic freedom in the financial sector as an alternative measure of financial policy reform. Abiad et al. (2008) extend the approach developed by Abiad and Mody (2005) by adding indexes of securities market policy and prudential regulation policy⁶. Their dataset is highly comprehensive and internationally comparable and has rather significant advantages over other datasets. First, their dataset has greater country and time coverage than other datasets, encompassing 91 countries and spanning the period from 1973 to 2005. In addition, their reform indicators cover seven specific financial policy reform measures (credit controls, interest rate

⁶ Abiad and Mody (2005) create six dimensions of financial policy reform using six measures of financial sector repressiveness (credit controls, interest rate controls, entry barriers, operational regulations, privatization, and capital controls), considering 35 economies during the 1973–1996 period.

controls, entry barriers, privatization, international capital flows, securities market policy, and banking supervision) plus an aggregate index.

6.3. *Crisis Prevention hypothesis (CP)*

The question whether liberalization reduces risks or crises is still open for debate. Crises have occurred in the past, and if history truly is only a prologue, they highly likely continue to occur. The quest is still on for pragmatic and reasonable set of policies, which may mitigate their risk, lower its scope, while reducing the undesirable consequences. While liberalization may initially increase the probability of a crisis, the prospect of a crisis drops significantly at higher level of financial openness. Moreover, the benefits of liberalization across several metrics outweigh the risks of these intermediate stages.

Loizos (2018) underlines the importance of both the theory and policy of economic growth. The author argues that in the post-Keynesian financial repression-liberalization debate, there is a great stress on institutions in mitigating crises. The author, using the framework of supervision and bank regulation, argues that flexible institutions can provide a synthesis between stability and innovation. Loizo's approach to financial reform calls for incorporating sociological accounts of how developing economies have been formed with empirical and testable models. Much empirical support has been found for the "finance promotes growth" view, but time-series evidence is less clear-cut than broad cross-section analysis.⁷ Some of studies, conclude that finance induces growth in early stages of economic development and vice versa – in more advanced stages. Lee, Lin and Zeng (2016) assess the impact of financial liberalization on the likelihood of currency/systemic banking crises. Their results show that financial liberalization reduces significantly likelihood of currency/systemic banking crises and that insurance development decreases the probability of crises.

6.4. *Financial Repression and Debt*

Since financial repression reduces debt through seigniorage, does recent increase in debt encourage return of financial repression? Reinhart and Sbrancia (2015), in the paper "The Liquidation of Government Debt" argue that public debt can be reduced through financial repression, a tax on bondholders and savers via negative

⁷ The development of panel datasets on financial policy reform, enables to analyze the links between financial policy reform and macroeconomic conditions, including financial crises (Waelti, 2015). Kaminsky and Schmukler (2008) construct three indexes of financial reform, namely, domestic banking industry liberalization, capital account liberalization, and domestic stock market liberalization, for 28 countries between 1973 and 2005. Moreover, Gwartney et al. (2016) develop five broad areas of economic freedom (size of the government; the legal system and property rights; soundness of the monetary system; freedom to trade internationally; and regulation) using forty-two distinct variables.

or below market real interest rates. This occurred, most notably, in the period after Second World War, when capital controls and regulatory restrictions forced “captive” investors to enhance government debt at low cost. Financial repression is most effective when combined with inflation. Authors suggest that financial repression can become a part of the tools deployed to cope with the most recent surge in public debt in advanced economies. Financial repression may be necessary but probably not sufficient to restore debts to more manageable levels. It is best viewed as a complement to restructuring not a substitute for it. Reinhart (2012) argues that advanced countries do not need to resort to the standard toolkit of emerging markets, including various forms of financial repression, contradicted by the historical experience. Financial repression measures have been an integral part of the resolution of large debt burden.

7. Conclusion

Over the past dozen years, global and national policymakers have strengthened regulatory framework governing banks’ solvency and liquidity. However, while strengthening national financial system helps, the flow of liquidity within banking groups needs pragmatic adjustments to ensure that liquidity risks continue to be managed effectively. Regulators need to address liquidity mismatches through more disclosure, uniform standards, stress tests, and prudent resolution planning. Here are some of the lessons in somewhat generic outline:

- *Manage Risk Proactive:* Conventional wisdom tells us that the financial crises are precipitated by risks hidden in our regular sight. The building blocks for successful navigation of the better scrutiny in the post-crisis regulatory environment requires a comprehensive, effective risk management program. Senior management team needs to be accountable, and implement effective risk oversight. Risk management (as is of paramount importance) must also ensure that it is operating effectively from the top down ensuring instant feedback and communication across the institution.
- *Heigh Expectations for the Boards:* Regulators’ expectations of boards are now higher than ever. Even boards of institutions not subject to express guidance must be held accountable for comprehensive oversight of the institution’s business. Boards need to monitor management’s response to red flags or problems. Boards may be held responsible for establishing and maintaining compliance systems over an increasingly broad range of areas, including market conduct, securities disclosure, cybersecurity, financial crimes, antitrust, privacy/data, and other.
- *Emphasis on Culture:* The financial crisis created distrust to regulators, political leaders, and the public around the globe. The institutional culture led to enormous risks and high misconduct. Desired conduct needs to be rewarded, and bad behavior discouraged, punished.

- *Stronger Control Mechanisms*: When control functions become lax, the businesses they are entrusted to may not function as desired. For that reason, a centralized structure with audits, risk management and compliance systems is necessary for transparency.
- *Technology Facilitating Compliance*: Innovations in regulatory technology allow us to make it faster, simpler and more effective. The recent advances in AI, can harness big data analytics to point to violations or potential risks. Investment in these technologies are proven effective and most efficient.
- *Cyber Risks and Data Privacy*: Policymakers and regulators become more concerned about risks, threats, and vulnerabilities due to new advances in technology. These advances raise new issues. In the case of reliance on computers and connectivity to the internet, the risk is cybercrime or leaks of information.

Let us conclude with a short overview of broader lessons dealing with financial crises:

- *A small doze of prevention is better than giant cure*. We must improve the macroeconomic policy framework, so as to make it more robust and resistant to a financial crisis.
- *Construct an early warning signal of imminent financial distress*. Develop macro prudential instruments to mitigate systemic risk; and ensuring that monetary policy is credible in the pursuit of price stability over the medium term.
- *A well-designed macroeconomic policy framework of financial crises can be developed and presented*. We need to prepare for such crises, even while we aim to avoid them. Policymakers must maintain a continuous state of alertness.
- *Crisis management requires agility and innovation* to meet specific crisis, but at the same time *respect for well-established principles* to guide decisions in uncharted territories.
- *Central banks must maintain credible alertness*, which would permit to counter at any time any unexpected threat to price stability and so contribute to a solid anchoring of inflation expectations.

References

- Abiad A., Mody A. (2005). Financial Reform: What Shakes It? What Shapes It? *American Economic Review*, Vol. 95(1), pp. 66–88.
- Abiad A., Oomes N., Ueda K. (2008). The quality effect: Does financial liberalization improve the allocation of capital? *Journal of Development Economics*, Vol. 87(2), pp. 270–282.
- Atje R., Jovanovic B. (1993). Stock markets and development. *European Economic Review*, Vol. 37(2-3), pp. 632–640.
- Bencivenga V.R., Smith B.D. (1991). Financial Intermediation and Endogenous Growth. *Review of Economic Studies*, Vol. 58(2), pp. 195–209.

- Berthelemy J.-C., Aristomene V. (1996). Economic Growth, Convergence Clubs, and the Role of Financial Development. *Oxford Economic Papers*, Vol. 48(2), pp. 300–328.
- Bruno M. (1993). *Crisis, Stabilization, and Economic Reform: Therapy by Consensus*. OUP Catalogue, Oxford: Oxford University Press.
- Cameron R. (Ed.) (1972). *Banking and Economic Development*. New York: Oxford University Press.
- De Haan J., Sturm J.-E. (2017). Finance and income inequality: A review and new evidence. *European Journal of Political Economy*, Vol. 50(C), pp. 171–195.
- Diamond D.W. (1984). Financial Intermediation and Delegated Monitoring. *The Review of Economic Studies*, Vol. 51(3), pp. 393–414.
- Fry M.J. (1989). Financial Development: Theories and Recent Experience, *Oxford Review of Economic Policy*, Vol. 5(4), pp. 13–28.
- Fry M.J. (1995). *Money, Interest, and Banking in Economic Development*. Baltimore, MD: The Johns Hopkins University Press.
- Gerschenkron A. (1962). *Economic Backwardness in Historical Perspective: A Book of Essays*. Cambridge, Mass.: Harvard University Press.
- Goldsmith R.W. (1969). *Financial Structure and Development*. New Haven, CT: Yale University Press.
- Hallerberg M., Scartascini C. (2017). Explaining changes in tax burdens in Latin America: Do politics trump economics? *European Journal of Political Economy*, Vol. 48(C), pp. 162–179.
- Hlaing S.W., Kakinaka M. (2018). Financial crisis and financial policy reform: Crisis origins and policy dimensions. *European Journal of Political Economy*, Vol. 55(C), pp. 224–243
- Kaminsky G., Schmukler S. (2003). Short-Run Pain, Long-Run Gain: The Effects of Financial Liberalization. World Bank Working Paper No. 2912, IMF Working Paper No. 0334, NBER Working Paper No. w9787.
- Kapur B.K. (1976). Alternative Stabilization Policies for Less-Developed Economies. *Journal of Political Economy*, Vol. 84(4), pp. 777–795.
- Keynes J.M. (1936). *The General Theory of Employment Interest and Money*. London: Macmillan.
- Lee C.-C., Lin C.-W., Zeng J.-H. (2016). Financial liberalization, insurance market, and the likelihood of financial crises. *Journal of International Money and Finance*, Vol. 62(C), pp. 25–51.
- Levine R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, Vol. 35, pp. 688–726.
- Loizos K. (2018). The financial repression-liberalization debate: taking stock, looking for a synthesis. *Journal of Economic Surveys*, Vol. 32(2), pp. 440–468.
- Lora E., Olivera M. (2004). What makes reforms likely: Political economy determinants of reforms in Latin America. *Journal of Applied Economics*, Vol. 7(1), pp. 1–37.

- Mankiw N.G. (1986). The Allocation of Credit and Financial Collapse. *Quarterly Journal of Economics*, Vol. 101(3), pp. 455–470.
- Masciandaro D., Romelli D. (2017). Twin Peaks And Central Banks: Economics, Political Economy And Comparative Analysis. BAFFI CAREFIN Working Papers 1768, Centre for Applied Research on International Markets Banking Finance and Regulation. Milano: Università Bocconi.
- McKinnon R.I. (1973). *Money and Capital in Economic Development*. Washington D.C.: Brookings Institution.
- McKinnon R.I. (1989). Financial Liberalization and Economic Development: A Reassessment of Interest Rate Policies in Asia and Latin America. *Oxford Review of Economic Policy*; Vol. 5(4), pp. 29–54.
- Patrick H. (1966). Financial development and Economic Growth in Underdeveloped Countries. *Economic Development and Cultural Change*, Vol. 14 (2), pp. 74–189.
- Reinhart C. (2012). The Return of Financial Repression. *Financial Stability Review*, Issue 16, pp. 37–48.
- Reinhart C., Sbrancia M.B. (2015). The Liquidation of Government Debt. IMF Working Papers, No. 2015/007, International Monetary Fund.
- Rodrik D. (1996). Understanding Economic Policy Reform. *Journal of Economic Literature*, Vol. XXIV, pp. 9–41.
- Romer P. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, Vol. 94, pp. 1002–1037.
- Rosenbluth F., Schaap R. (2003). The Domestic Politics of Banking Regulation. *International Organization*, Vol. 57(2), pp. 307–336.
- Roubini N., Sala-i-Martin, X. (1995). A growth model of inflation, tax evasion, and financial repression. *Journal of Monetary Economics*, Vol. 35(2), pp. 275–301.
- Schumpeter J.A. (1939). *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*. New York: McGraw-Hill.
- Shaw E.S. (1973). *Financial Deepening in Economic Development*. New York: Oxford University Press.
- Stiglitz J.E. (1989). Financial Markets and Development. *Oxford Review of Economic Policy*, Vol. 5(4), pp. 55–68.
- Stiglitz J.E., Weiss A. (1981). Credit Rationing in Markets with Imperfect Information. *American Economic Review*, Vol. 71(3), pp. 393–410.
- Taylor L. (1983). *Structuralist Macroeconomics: Applicable Models for the Third World*. New York: Basic Books
- Van Wijnbergen S. (1982). Stagflationary Effects of Monetary Stabilization Policies: A Quantitative Analysis of South-Korea. *Journal of Development Economics*, Vol. 10(2), pp.133–169.
- Waelti S. (2015). Financial crisis begets financial reform? The origin of the crisis matters. *European Journal of Political Economy*, Vol. 40(PA), pp. 1–15.

- Wiese R. (2014). What triggers reforms in OECD countries? Improved reform measurement and evidence from the healthcare sector. *European Journal of Political Economy*, Vol. 34(C), pp. 332–352.
- Williamson S.D. (1987). Financial Intermediation, Business Failures, and Real Business Cycles. *Journal of Political Economy*, Vol. 95(6), pp. 1196–1216.

Chapter 2

European Union Actions in Response to the Crisis Caused by the COVID-19 Pandemic

Joanna Kudelko¹, Karol Wałachowski², Dariusz Żmija³

1. Introduction

The European Council, along with other European Union (EU) institutions, since the beginning of the outbreak of the pandemic, has monitored the ongoing developments and taken appropriate measures by passing relevant laws, co-ordinating the exchange of information with member states on the current situation and the needs of particular countries, and ensuring the coherence of the EU actions in response to the pandemic. The imposed restrictions aimed to contain the pandemic have led to enormous changes in the economies of particular countries. Economic life has recorded an unprecedented decrease in its pace, practically coming to a stop. There have been serious disruptions in production and supply chains, leading to trade problems. Consumption and investment expenditures have reached record low levels. The combined impact of these factors has resulted in a rapid slowdown of EU economies, and the scope of losses is unprecedented.

According to the European Commission's estimates, the EU economy faces a decrease in its 2020 GDP by more than 7%, and the most pessimistic scenario predicts a decrease by as much as 16%. The EU economy is expected to embark on a growth path in 2021, but both citizens and enterprises are likely to feel the effects of the COVID-19 crisis. Unemployment rates in the European Union may reach the level of 9%, and the effects will be the most severe³ for young people, un-

¹ Cracow University of Economics (Poland), ORCID: 0000-0002-8430-2377, e-mail: kudelkoj@uek.krakow.pl

² Cracow University of Economics (Poland), ORCID: 0000-0002-7421-8534, e-mail: walachok@uek.krakow.pl

³ Cracow University of Economics (Poland), ORCID: 0000-0002-4084-8968, e-mail: zmijad@uek.krakow.pl

qualified workers and those with temporary employment as well as poorer households (Komisja Europejska 2020a).

The crisis will increase poverty and social inequality. The economic effects of the COVID-19 pandemic will vary, depending on the economic sector. The crisis will mainly affect companies which provide direct services to customers or whose functioning is based on the work of many people within limited spaces. The European Commission's estimates also indicate that in the second quarter of 2020, the sectors threatened by a decline of about 70% include tourism, social economy, and creative and cultural ecosystems. The effects of COVID-19 may also be severe in textiles, transport, and energy-intensive industries. It is expected that the effects of the economic decline in some sectors will be delayed, while such sectors as production, retail trade or health services, characterised by consumers' higher level of trust, are likely to recover more quickly. The effects of the pandemic are not likely to be spatially symmetric. As the case of Silesia indicates, heavily urbanised and industrialised regions may be more vulnerable to the social and economic effects of the crisis (Krzysztofik, Pietraga, Spórna 2020).

The scale and range of the economic decline caused by the crisis and the economy's ability to recover are undoubtedly affected by a given country's demographic and economic structure. Countries with a larger number of micro-, small and medium-sized businesses are much more vulnerable to the crisis, but a lot depends on companies' ability to survive the related shocks and these companies' response, as well as on the effectiveness of support offered by the state. Therefore, the differences in recession in some countries can reach the level of 10% of their GDP, whereas estimates for other countries are at the level of 6–7.5%. At the current stage of the crisis, it is not possible to estimate its impact and, consequently, the amount of money required to take necessary measures. Nevertheless, according to the European Commission's estimates, the implementation of the programme of the sustainable rebuilding of the European economy in 2021–2022 will require additional investments both in the public and private sectors worth at least EUR 1.5 billion (Komisja Europejska 2020b, pp. 3–4).

The article aims to identify the current measures of the EU intervention in response to the COVID-19 pandemic. It presents a detailed description and systematisation of the EU actions aimed at rescuing the economies of member states, including the measures related to the fourth industrial revolution, i.e. the digital transition implemented in all EU industries and societies, and the creation of a data-based economy – the driving force of innovation. The work is based on documents published by different EU institutions, and a scientific analysis entitled 'Instruments for Supporting a Regional Economy Under the Conditions of the COVID-19 Crisis', co-written by the authors of this paper.

This article is structured as follows: besides the introduction, further analysis presents two steps in the European Union's response to the COVID-19 pandemic. The first stage of activities concerned, i.e. limiting the spread of the virus, provid-

ing medical equipment, promoting research in treatment and vaccines, supporting jobs, business and the economy. The second phase of EU action includes financial support for economic recovery, by increasing the importance of a range of other EU-funded programs to address the challenges and consequences of the COVID-19 pandemic. The last section summarises the most important conclusions, as well as indicates the practical implications and further research directions.

2. The First Stage of EU Actions in Response to COVID-19

Since the COVID-19 outbreak, the European Commission and member states have introduced a number of regulations aimed to protect human lives and maintain the sources of income for their citizens. At the meetings held on 17 and 26 March, EU leaders set the priorities in connection with COVID-19: public health, travel and transport, research and innovation, economy, crisis management and solidarity, and education (Goniewicz et al. 2020:3). The European Union resorted to budget and state aid flexibility instruments, and initiated creating a new instrument for temporary Support to mitigate Unemployment Risks in an Emergency (SURE) (European Commission 2020a). These measures were part of the first response package aimed to support employees, small companies and the economies of member states. Apart from the measures taken by the European Central Bank, EU actions aimed to offer assistance to the most disadvantaged countries. In response to the pandemic, EU actions focused on four priorities (Rada Europejska 2020):

- Limiting the spread of the virus
- Ensuring the provision of medical equipment
- Promoting research for treatment and vaccines
- Supporting jobs, businesses and the economy.

The EU measures were also related to the repatriation of EU citizens staying outside of their countries, and fighting COVID-19 disinformation.

2.1. Limiting the Spread of the Virus

In order to confine the virus in a co-ordinated way, unnecessary travels to the European Union were restricted. EU citizens were also advised against leaving the EU territory. Simultaneously, guidelines related to border management aimed to protect health and ensure the availability of goods and essential services and goods, adopted by the European Commission on 16 March 2020, were based on the principle that all EU internal borders should stay open to freight and that the functioning of supply chains for essential goods must be guaranteed. Therefore, in the event of the existence or introduction of internal border controls, member states were requested to designate internal border-crossing points as part of the TEN-T net-

work (and, if necessary, additional border crossings), performing the function of privileged corridors open to all freight vehicles.

In the case of the movement of people, the European Union faced the choice between the right to privacy and free movement and the protection of public health. Much controversy was caused by the identification of infected persons and tracing those in physical contact with them. The European Commission regards the protection of public health to be more significant than the right to privacy, allowing member states to determine the scope of restrictions (van Kolfshoeten, de Ruijter 2020). The restrictions in the movement between countries, imposed by member states, may have contributed to a considerably slower spread of the virus (Linka et al. 2020).

To ensure a co-ordinated response of EU member states to COVID-19, the Council activated the Integrated Political Crisis Response (IPCR) mechanism for co-ordinating the EU response to the crisis at the political level. Under this mechanism, weekly meetings were to be called, attended by the representatives of EU institutions, experts from EU agencies and representatives of member states, while the chairman of the European Council was to organise videoconferences attended by EU leaders. In addition to that, the European Commission and the Council supported relevant national bodies in maintaining contacts and co-ordinating activities under the conditions of the pandemic. To ensure up-to-date information on epidemiological threats in particular member states, the European Centre for Disease Prevention and Control (ECDC) published risk assessment analyses and updates for EU citizens.

2.2. Ensuring the Provision of Medical Equipment

The second significant area of intervention was ensuring the provision of medical equipment. In line with this, EU institutions and member states undertook common actions aimed to ensure the provision of individual protection devices and medical equipment for the territory of the European Union. This programme was based on public procurements for EUR 1.5 billion worth of masks and other individual protection devices, the implementation of which was made possible by a voluntary joint procurement agreement with member states (including the United Kingdom and Norway). In case of joint procurements, the European Commission acted as a co-ordinator, while the purchases of products were made by member states (Komisja Europejska 2020d).

The COVID-19 outbreak required co-operation between European manufacturers, and the European Commission aimed to increase the production capacity of the individual protection device sectors. Also, efforts were undertaken to harmonise and provide easy access to European medicine standards, enabling companies to increase their production capacity. The Commission and European stan-

standardisation organisations agreed, by way of exception, to grant free-of-charge access to relevant harmonised standards. They will be available for all interested companies from the European Union and other countries, supporting them in the manufacture of necessary equipment in compliance with EU health and safety standards. The Commission also made a decision with regard to harmonised standards, enabling manufacturers to launch high-quality medical devices. In addition to that, guidelines were made available to manufacturers, allowing them to increase the output of essential medical equipment and materials (e.g. individual protection devices, including masks, waterless handwash agents and hand sanitisers, as well as 3D printing devices). The guidelines for medical products in the context of COVID-19 were designed to help manufacturers and market supervision bodies in ensuring the effectiveness of products and their compliance with basic safety standards. The sufficient supply of medical equipment in all member states was also supported by relevant regulations on the export of individual protection devices from the European Union and the areas of transport by designating traffic lanes facilitating the free movement of goods and people at borders between countries.

Under the Civil Protection Mechanism, the European Union co-ordinated the transfers of medical teams to the most affected areas, provided additional protection devices (especially masks), activated the Emergency Response Coordination Centre, and established a new common emergency reserve of medical equipment comprising respirators, masks and other individual protection devices, vaccines, medications and laboratory equipment for disadvantaged countries (RescEU), fully financed from EU funds.

At an early stage of the pandemic, the European Commission called for greater solidarity and adherence to community laws in connection with the exchange of medical equipment. It was the effect of Germany's ban on the export of these products in early March (Nienaber 2020), followed by similar decisions made by the Czech Republic and France (Anderson, Mckee, Mossialos 2020). The Commission's Communication called for supplying medical equipment to the most needy regions, based on the principle of solidarity (Bénassy-Quéré et al. 2020).

2.3. Promoting Research for Treatment and Vaccines

In order to promote research for treatment and vaccines, the European Union allocated additional funds for developing treatment and vaccines, including (European Commission 2020a):

- funds from the Horizon 2020 programme in the amount of EUR 48.25 million for 18 projects related to vaccines and treatment
- funds from public and private sources in the amount of EUR 117 million for medicines and diagnostics, activated through the Innovative Medicines Initiative (IMI).

Additionally, the European Union reallocated EUR 164 million into SMEs and start-ups for innovations fighting COVID-19, making these funds available through the Accelerator Programme of the European Council for Innovation; the amount of EUR 122 million was made available under an urgent call for strengthening the potential in the area of the manufacture and implementation of new solutions and the broadening of knowledge about the pandemic. Under the joint initiative of the European Union and the European Investment Bank, up to EUR 80 million will be allocated to CureVac – a highly innovative company engaged in research for vaccines. It will take the form of an EU-guaranteed loan from the European Investment Bank. For the purpose of the swift collection and dissemination of research data, the European Union, in co-operation with several European partners, provided access to a data portal concerning COVID-19.

2.4. Supporting Jobs, Businesses and the Economy

The European Union and all member states are engaged in large-scale activities aimed to minimise the impact of COVID-19 on the economy. As early as on 9 April 2020, an emergency support package in the amount of EUR 540 billion was announced for supporting jobs, employees and businesses in member states. Two weeks later, on 23 April 2020, the proposal was approved by EU leaders who requested that the package be prepared by 1 June 2020. The support package offers support based on three different funds:

- The SURE scheme – *Support to Mitigate Unemployment Risks in an Emergency*, designed for employees
- Funds provided by the European Investment Bank (EIB), designed for SMEs
- Loans under the European Stability Mechanism (ESM).

The SURE plan, initiated by the European Commission, will enable member states to gain access to loans under favourable terms in the amount of EUR 100 billion for covering part of the costs of creating or expanding national mechanisms for the preservation of employment (Komisja Europejska 2020a). As a result, the member states will receive financial assistance from the European Union for covering public expenditure in the event of its sudden and rapid increase. Additional funding covers expenses borne since 1 February 2020 for, among others, national mechanisms for reduced working hours (also for self-employed people) and for selected health protection agents during the pandemic, especially in workplaces. The funds are designed to ensure employees' income and preserve employment in companies which, in the absence of public support, would be forced to cut jobs or reduce working time (Komisja Europejska 2020e). In order to ensure the favourable terms of assistance, the Commission, on behalf of the European Union, will acquire funds on international capital markets. Loans under SURE will be supported by the EU budget and guarantees extended by

member states corresponding to their share in the EU gross national income, amounting to EUR 25 billion. The SURE scheme will start functioning as soon as the member states extend their guarantees, and it will operate until 31 December 2022. The availability of the instrument can be extended – each time by a period of six months – if the pandemic continues to cause serious economic disturbances.

The support package is also offered to the SME sector. The European Investment Bank, under the Pan-European Guarantee Fund, will appropriate EUR 200 billion to a loan-based support programme for SMEs in the entire European Union (European Funds Portal 2020). Simultaneously, the European Stability Mechanism will offer emergency support in response to the pandemic, based on cautious credit lines in the form of loans for Euro zone countries in the amount of 2% of their GDP (EUR 240 billion) (Komisja Europejska 2020e).

In response to the pandemic, the European Union amended its 2020 budget, pledging an additional amount of EUR 3.1 billion to combat the crisis. It will be allocated to the following actions (Komisja Europejska 2020b):

- Purchase and distribution of medical products, including protection devices and respirators
- Increased production of COVID-19 tests
- Construction of field hospitals
- Transport of patients for treatment in other member states
- Repatriation of EU citizens stuck abroad.

In addition to that, the European Union conducted a swift reallocation of its funds to support member states under the conditions of the crisis:

- EUR 37 billion from the EU budget for supporting health care systems, SMEs and labour markets under the investment initiative in response to COVID-19
- Up to EUR 28 billion from structural fund national pools for 2014–2020, not as yet assigned to projects
- Up to EUR 800 million from the EU Solidarity Fund for countries hit hardest by the pandemic, which was made possible by the inclusion of public health crises into the Fund's objectives.

In response to the crisis, the European Union introduced maximum exemptions from its regulations on state aid for businesses and employees, as well as from regulations on public finance and fiscal policies, thus allowing for extraordinary expenditure. In order to support jobs and businesses, the European Union adopted temporary, much more flexible regulations on state aid, enabling member states to offer direct financial assistance to companies hit hardest by the pandemic and to those facing bankruptcy. The temporary framework for state aid, which identifies five types of aid, was approved on 19 March:

1. Direct grants (or tax advantages) up to EUR 800,000 per undertaking
2. State guarantees for bank loans
3. Subsidised interest rates for public and private loans

4. Use of banks' existing potential to grant loans as a support channel for businesses, in particular SMEs. This form of support is directly offered to bank customers, not to banks
5. Additional flexibility, when the need arises, in state short-term export credits.

The above funds aim to guarantee companies' survival on the market or the possibility of temporary suspension of business activities without an adverse impact on their long-term growth outlook. It should be noted that the new legal framework supplements other existing forms of state aid available to member states.

Moreover, the European Commission, for the first time in its history, activated the general escape clause under the Stability and Growth Pact, allowing for taking prompt action in response to the COVID-19 pandemic. Following the Council's approval of the general escape clause, member states can take necessary measures in response to the crisis and be temporarily exempted from meeting European budgetary requirements, which will enable them to effectively support national economies.

Also, the European Union introduced more flexible principles for the use of structural funds. As a result, member states can transfer funds between one another according to their needs and reallocate funds to regions hit hardest by the crisis, and as of 1 July 2020, apply for full refund from the EU budget of programmes launched in response to the pandemic until 30 June 2021 (Komisja Europejska 2020e).

With regard to the monetary policy, measures were taken by the European Central Bank, which announced the Pandemic Emergency Purchase Programme – PEPP in the amount of EUR 750 billion in 2020. The Programme relates to the purchase of public and private sector assets. It is designed to cover various categories of assets, including treasury bills. The Programme is temporary and will be implemented until the crisis phase is over (European Central Bank 2020).

2.5. Other Measures

The European Union has also undertaken steps to protect communities and citizens against disinformation and misleading news. In the context of the increasing amount of disinformation about the COVID-19 pandemic, EU institutions make efforts to disseminate knowledge about the threats posed by disinformation and promote access to reliable sources. As early as on 30 March, a special website was launched (Fighting Disinformation), offering reliable information about the epidemic. Moreover, the European Union encouraged online platforms to participate in fighting fake news and misleading information and to remove illegal or false content (Komisja Europejska 2020f).

The European Union offered assistance to citizens stuck in third countries. Its Delegations co-operated with the embassies of member states to co-ordinate the repatriation of their citizens. EU member states offered joint consular assis-

tance, retrieving their citizens stuck in third countries. Repatriation flights could be financed by the EU budget up to 75%. The embassies of the member states and EU Delegations offered consular assistance to EU citizens in the countries in which their own country did not have diplomatic missions (Komisja Europejska 2020c).

3. The Second Phase of the EU Response to the COVID-19 Pandemic

Various possibilities of financial support for economic recovery in particular EU member states pose a risk of inequalities in rebuilding the EU economy and wider gaps in the socio-economic development of particular countries and regions. Making the recovery programme dependent on the potential of particular member states can make this process incomplete, unequal and unjust. To tackle this problem and to create favourable conditions for a better future, the European Commission proposed a new support instrument – Next Generation EU, with financial firepower of EUR 750 billion, which will be acquired in financial markets in 2021–2024, as well as a targeted increase in the EU’s long-term budget for 2021–2027 (Komisja Europejska 2020b).

Funds from Next Generation EU are to be allocated on the basis of three pillars. Under the first pillar, *Supporting Member States in Investment and Reforms*, the European Commission proposed an instrument called the Recovery and Resilience Facility. It aims to support member states in implementing investment projects and reforms which are indispensable to their sustainable recovery. Member states are to develop improvement plans based on the priorities in the field of investment and reforms under the European Semester and in accordance with national plans with regard to energy and climate, as well as the plans of just transition and agreements on partnership and operational programmes under EU funds. Funds under the Recovery and Resilience Facility will be available to all member states, particularly countries hit hardest by the crisis. Another initiative under Pillar 1 of Next Generation EU is REACT-EU, which will support the cohesion of member states (European Commission 2020b). Funds will be available as of 2020, and they will be distributed in accordance with the new allocation criteria based on the effects of the crisis. The initiative will support employees and SMEs, as well as health protection systems and green and digital transitions. It will be available to all sectors in EU countries, particularly countries and regions hit hardest by the crisis, giving consideration to the economic and social impact of the pandemic, including youth unemployment rates and relative wealth levels in EU member states. The European Commission’s proposals also relate to activities aimed to achieve climate neutrality. For this purpose, the Commission proposes increasing financial support for the Just Transition Fund, as well as increasing the budget of

the European Agricultural Fund for Rural Development. Additional funds will support rural areas in introducing necessary structural changes under the European Green Deal. They will also contribute to achieving objectives related to a strategy for biodiversity and the Farm to Fork Strategy.

Under Pillar 2, *Kick-Starting the Economy and Helping Private Investment*, the European Commission proposed the Solvency Support Instrument. Its objective is to ensure capital support for profitable businesses from all economic sectors hit by the crisis, allowing them to tackle solvency-related problems resulting from the COVID-19 pandemic and to achieve the objectives of the green and digital transition. This form of support is available to all EU member states, in particular those hit hardest by the crisis and those which cannot rely on national aid in the most affected sectors. Under Pillar 2, the Commission intends to allocate additional funds for the EU major investment programme – InvestEU and its Strategic Investment Facility, aimed to create strong, resilient and independent value chains related to such issues as critical infrastructure, ecological and digital strategies, and health care systems.

Under Pillar 3, *Learning the Lessons from the Crisis*, the European Commission proposed to create a new and independent EU health programme (Komisja Europejska 2020f). This programme will comprise investment in EU health protection systems, with special attention given to health safety and the ability to respond to crisis, long-term disease prevention and epidemiological supervision, access to health care services, diagnostics and treatments, as well as transborder co-operation in the area of health protection. The new health programme will correspond to the division of competences between the European Union and member states. The Commission's proposals include expanding the EU mechanism for human protection, rescEU, which will ensure better preparedness for future crises and adequate response through creating systems of transport for medicines, doctors and patients within the European Union or systems for bringing them over from outside of the EU. Moreover, the budget of Horizon Europe is to be increased and support European research and innovation in the area of health and climate. Support to global partners will be strengthened by the Neighbourhood, Development and International Cooperation Instrument, the European Fund for Sustainable Development, and the Humanitarian Aid Instrument (Komisja Europejska 2020e).

A significant area of intervention is the digital transition, implemented in all EU economic sectors and communities. Priority is given to investment projects which contribute to more accessible and modern connectivity, increasing the European Union's strategic autonomy, and it is also designed to increase the share of EU entities in the strategic components of a digital supply chain. Another assumption of the planned investment projects is the development of a data-based economy, which will act as a driving force of innovation and contribute to job creation and a more competitive position of the European Union in global economy of the

21st century. In the context of the experience gained during the current crisis, which points to the increasing popularity of online business models, the last step in the support programme will consist in creating a more just environment for business activities based on digital technologies. The priorities in this area include improvements in the legal framework for digital services, the digitalisation of public procurements, and the development of cybersecurity strategies (Kudelko, Wałachowski, Żmija 2020:48–65).

The European Commission proposed to increase the significance of a number of other programmes financed by the EU budget, enabling them to increase their role in building the European Union's resilience and to meet the challenges posed by the COVID-19 pandemic and its effects. It concerns, among other things, the common agricultural policy and the European Maritime and Fisheries Fund in the context of increasing the resilience of agriculture, the food industry and fisheries, as well as the European Union's Single Market Programme and programmes supporting co-operation in the area of taxes and customs duties. Investment in modern and effective transport infrastructure will be based on additional funds in the amount of EUR 1.5 billion, made available by the Connecting Europe Facility, and additional funds of EUR 3.4 billion will be allocated to the Erasmus+ Programme, that is for investment in young people. The European Commission also proposes the strengthening of the Creative Europe programme (the cultural and creative sector), the Digital Europe programme (the European Union's greater ability to combat cyberattacks and support the digital transition), the Asylum and Migration Fund, the Integrated Border Management Fund (strengthening co-operation in managing external borders), and strengthening asylum and migration policies. Additional funds will strengthen the Internal Security Fund and the European Defence Fund (support to European strategic autonomy and security), and additional pre-accession aid will be offered to the Western Balkans countries (Komisja Europejska 2020e).

EU leaders attending the European Council meeting held from 17 to 21 July 2020, approved the EU budget for 2021–2027, and made decisions with regard to the recovery plan for Europe. Finally, a total package of EUR 1,824.3 billion was agreed, which combines the multi-annual financial framework with the emergency instrument, Next Generation EU.

It was agreed that the long-term financial framework for 2021–2027 amounts to EUR 1,074.3 billion, which will allow the European Union to achieve its long-term goals and sustain the full potential of the recovery plan. The multi-annual financial framework comprises such issues as the single market, innovation and digital economy, cohesion, resilience and values, natural resources and environment, migrations and border management, security and defence, neighbourhood and the world, and European public administration.

With regard to Next Generation EU, it was agreed that the European Commission could borrow the amount of EUR 750 billion on the markets for back-to-

back loans and expenses related to the multi-annual financial framework. The capital acquired on the markets is to be repaid by 2058, and funds made available by Next Generation EU will be allocated to seven programmes (Komisja Europejska 2020e):

- The Recovery and Resilience Facility: EUR 672.5 billion (loans: EUR 360 billion, grants: EUR 312.5 billion)
- REACT-EU: EUR 47.5 billion
- Horizon Europe: EUR 5 billion
- InvestEU: EUR 5.6 billion
- Development of rural areas: EUR 7.5 billion
- The Just Transition Fund: EUR 10 billion
- RescEU: EUR 1.9 billion.

According to the plan, funds from the Recovery and Resilience Facility will be allocated to the most affected countries and sectors, with 70% of grants used in 2021 and 2022, and the remaining 30% in 2023. On principle, a maximum value of loans per one member state will not exceed 6.8% of its GNI. Allocations in 2021–2022 will be determined in accordance with the Commission's following criteria: living standards in a given member state, its size and unemployment rates. In the allocation criteria for 2023, unemployment rates in 2015–2019 are replaced – in equal proportions – by the loss of real GDP recorded in 2020, and the total loss of real GDP reported in 2020–2021. Relevant calculations will be conducted by 30 June 2022.

The extraordinary summit meeting of the European Council agreed the Single Margin Instrument which allows for financing specific unexpected expenditure resulting from liabilities and corresponding payments which could not be financed in a different way. The annual threshold of this instrument is to be at the level of EUR 772 million (2018 prices). In addition to that, three special thematic instruments were approved which ensure additional financing means to respond to unforeseen events:

- The post-Brexit adjustment fund to support member states and sectors affected hardest by Brexit (EUR 5 billion)
- The European Globalisation Adjustment Fund to support workers who lose their jobs in restructuring events linked to globalisation (EUR 1.3 billion)
- The Solidarity and Emergency Aid Reserve (SEAR) to respond to emergency situations resulting from major natural disasters in member states and accession countries, and for rapid response to specific emergency needs in third countries (EUR 1.2 billion). Member states, in accordance with the rules of good governance, are to develop national recovery and resilience plans for 2021–2023. The plans should comply with country-specific recommendations and support green and digital transitions. The plans will be verified in 2022, and their assessments will be approved by the European Council by the qualified majority on a proposal from the European Commission. The disbursement of grants will take

place only if the agreed milestones and targets set out in the recovery and resilience plans are fulfilled.⁴

It should be noted that 30% of the total expenditure from the multi-annual financial framework as well as from Next Generation EU should be allocated to climate-related projects, and the expenditure must comply with the EU objective of achieving climate neutrality by 2050, as well as EU 2030 climate targets and the Paris Agreement. The European Council also stresses the significance of respect for the rule of law by EU member states, and in order to protect the budget and the Next Generation EU instrument, it introduces a regime of conditionality.⁵ The Special European Council also agreed on the new sources of EU revenue (including a plastic levy and a digital levy), enabling the European Union to repay funds borrowed under Next Generation EU.

4. Conclusions

The crisis caused by the COVID-19 pandemic, because of its global range and great impact on societies and the economy, has distorted the lives and functioning of countries and regions on an unprecedented scale. It enforced taking immediate emergency measures in the form of temporary assistance, but also revealed the necessity to consider long-term undertakings aimed to achieve economic recovery and enhance resilience to disturbances in development processes.

The EU response to the COVID-19 crisis during the first phase of support measures is not satisfactory. The current crisis differs from all crises of the past, and its effects are unpredictable. Also, EU member states differ considerably in terms of their ability to recover. Therefore, the European Commission proposed a new support instrument, Next Generation EU, as well as an increased EU budget for the period between 2021 and 2027.

Most funds from Next Generation EU are to support public investment as well as major structural reforms in EU member states. They are earmarked for the areas affected hardest by the crisis and those whose resilience needs to be strengthened. The creation of appropriate conditions for the process of economic recovery requires private investment in the key sectors and technologies of crucial significance to green and digital transitions.

The COVID-19 crisis revealed the significance of European co-operation and pointed to the necessity of increasing the European Union's resilience and ability to swiftly and effectively respond to various shocks in the future. Because finan-

⁴ If, exceptionally, one or more member states consider that there are serious deviations from the satisfactory fulfilment of the relevant milestones and targets, they may request that the President of the European Council refer the matter to the next European Council.

⁵ <https://www.consilium.europa.eu/pl/meetings/european-council/2020/07/17-21/> (accessed on 15 August 2020).

cial means under Next Generation EU are exclusively allocated to specific undertakings in particular countries, the instrument can be regarded not only as a tool for recovery, but also as a means for the reconstruction of the EU economy under the green and digital transition. The supported actions promote economic transformations in response to the ongoing changes of the era of the fourth industrial revolution.

The financial means under Next Generation EU should be used for a just economic recovery which encourages social inclusion and territorial cohesion and gives consideration to disparities and inequalities revealed during the crisis. The degree of the use of appropriated funds by particular member states will depend on their ability to fulfil relevant recommendations. Undoubtedly, the use of funds should contribute to transforming their economies, which, in the long run, will lead to long-lasting structural changes in social and economic life.

Acknowledgement

This paper is a part of a research project supported by the Ministry of Science and Higher Education of the Republic of Poland within “Regional Initiative of Excellence” Programme for 2019–2022 (Project no.: 021/RID/2018/19).

References

- Anderson M., Mckee M., Mossialos E. (2020). Covid-19 Exposes Weaknesses in European Response to Outbreaks. *The BMJ*, Vol. 18(368). doi: 10.1136/bmj.m1075.
- Bénassy-Quéré A., Marimon R., Pisani-Ferry J., Reichlin L., Schoenmaker D., di Mauro B.W. (2020). COVID-19: Europe Needs a Catastrophe Relief Plan. Available online: <https://voxeu.org/article/covid-19-europe-needs-catastrophe-relief-plan> (accessed on 11 March 2020).
- European Commission (2020a). A European Instrument for Temporary Support to Mitigate Unemployment Risks in an Emergency (SURE). Available online: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/financial-assistance-eu/funding-mechanisms-and-facilities/sure_en (accessed on 17 August 2020).
- European Commission (2020b). Europe’s Moment: Repair and Prepare for the Next Generation, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions of 27 May 2020, COM(2020) 456 final, Brussels.
- European Central Bank (2020). ECB Announces €750 Billion Pandemic Emergency Purchase Programme (PEPP). Available online: https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200318_1~3949d6f266.en.html (accessed on 5 June 2020).

- Goniewicz K, Khorram-Manesh A., Hertelendy A.J., Goniewicz M., Naylor K., Burkle F.M. Jr (2020). Current Response and Management Decisions of the European Union to the COVID-19 Outbreak: A Review. *Sustainability*, Vol. 2(9), No. 3838.
- Komisja Europejska (2020a). 100 mld euro na ratowanie miejsc pracy. Available at: https://ec.europa.eu/poland/news/200402_sure_pl (accessed on 5 June 2020).
- Komisja Europejska (2020b). Budżet napędza plan odbudowy dla Europy. Available at: https://ec.europa.eu/info/sites/info/files/2020.2136_pl_02.pdf (accessed on 5 June 2020).
- Komisja Europejska (2020c). Działania w zakresie pomocy państwa. Available online: https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/jobs-and-economy-during-coronavirus-pandemic_pl#dziaania-w-zakresie-pomocy-pastwa (accessed on 5 June 2020).
- Komisja Europejska (2020d). Koronawirus – reakcje UE. Zdrowie Publiczne. Available at: https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/public-health_pl#health-crisis-management (accessed on 5 June 2020).
- Komisja Europejska (2020e). Najważniejsze instrumenty wspierające plan odbudowy UE. Available online: https://ec.europa.eu/info/sites/info/files/about_the_european_commission/eu_budget/2020.2138_pl_02.pdf (accessed on 5 June 2020).
- Komisja Europejska (2020f). Walka z dezinformacją. Available online: https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/fighting-disinformation_pl (Accessed on 5 June 2020).
- Krzysztofik R., Kantor-Pietraga I., Spórna T. (2020). Spatial and Functional Dimensions of the COVID-19 Epidemic in Poland. *Eurasian Geography and Economics*. doi: 10.1080/15387216.2020.1783337.
- Kudelko J., Wałachowski K., Żmija D. (2020). Instrumenty wsparcia gospodarki regionalnej w warunkach kryzysu COVID-19. Ekspertyza naukowa opracowana w ramach prac Krajowego Centrum Badań nad Politykami Publicznymi Uniwersytetu Ekonomicznego w Krakowie, Cracow.
- Linka K., Peirlinck M., Sahli Costabal F., Kuhl E. (2020) Outbreak Dynamics of COVID-19 in Europe and the Effect of Travel Restrictions. *Computer Methods in Biomechanics and Biomedical Engineering*, Vol. 23(11), pp. 710–717.
- Nienaber M. (2020). Germany Bans Export of Medical Protection Gear Due to Coronavirus. Available online: <https://www.reuters.com/article/health-coronavirus-germany-exports/germany-bans-export-of-medical-protection-gear-due-to-coronavirus-idUSL8N2AX3D9> (accessed on 5 July 2020).
- Rada Europejska (2020). Coronavirus Outbreak and the EU Response. Available online: <https://www.consilium.europa.eu/pl/policies/covid-19-coronavirus-outbreak-and-the-eu-s-response> (accessed on 5 June 2020).

- Sekretariat Generalny Rady (2020). Pandemia Covid-19. Available at: <https://www.consilium.europa.eu/pl/policies/coronavirus> (accessed on 5 June 2020).
- Van Kolschooten H., de Ruijter A. (2020). COVID-19 and Privacy in the European Union: A Legal Perspective on Contact Tracing. *Contemporary Security Policy*, Vol. 41(3), pp. 478–491.

Chapter 3

The European Banking Union: Costs and Benefits

Marcel Novák¹, Dáša Klenková²

1. Introduction

The crisis has revealed serious shortcomings in the regulatory framework for the recovery and resolution of banks and other financial institutions, as well as supervisory structures. There was a need to create a new, more sophisticated system of regulation and supervision, especially in those European Union (EU) countries which have adopted the euro as their currency, as these countries are more interconnected and interdependent. Given the internal division of the European Union, participation in the Banking Union has become binding in euro area countries with the possibility of voluntary entry by other member countries. However, these European governments are reluctant to transfer their powers and, to a certain extent, sovereignty to a transnational level. This raises the question of whether the decision to participate in the Bank Union is an economic or political decision.

The aim of this paper is to evaluate the costs and benefits of the Banking Union. In this article, the analysis addresses the effectiveness of resolution mechanisms and the potential positive or negative effects on the economy of a country being a member of the Banking Union by using a model quantifying the benefits of countries from transnational bank recapitalisation. The Banking Union is a new, unique and ambitious project. The topic of its effectiveness and efficiency has been relevant for a long time, and there has been more intense debate in the last few years.

In recent months, voices have increasingly been heard, warning of the next financial crisis. So, does the Bank Union have the prerequisites to sufficiently mitigate or eliminate the risks which can be brought about by another major banking crisis? Although remarkable progress has been made in recent years, there are still

¹ University of Economics in Bratislava (Slovak Republic), e-mail: marcel.novak@euba.sk

² University of Economics in Bratislava (Slovak Republic), e-mail: dasa.klenkova@gmail.com

some challenges and doubts about the efficiency and effectiveness of the banking sector. Historically, the European Union has survived many crises, whether economic or political, and there is a good chance that we will see another crisis sooner or later. However, an important question is how the European Union is prepared for other adverse circumstances in such a way as to reduce the risk as much as possible and thus reduce the likelihood or magnitude of the crisis.

2. The Legal Foundations of the Banking Union

The banking sector represents a key area of the state's financial market and is one of the sectors with the highest degree of regulation. As mentioned above, the main objective of banking regulation and supervision is to prevent market failures and protect the stability of the banking system. The main reasons for market failure include information asymmetry, unfavourable selection and moral hazards. It was indicated in the literature that the development of European banking regulation and supervision did not really begin until after the adoption of the Single European Act in 1986 (Kapstein 1989; Schoenmaker 2013). The ambitious plans put forward by the Commission in the 1960s and early 1970s were rushed and failed as a whole.

The European Economic Community (EEC) was not financially integrated in the 1960s and its member states' banking systems were different. The most important directives in this field were adopted after 1986. In 1957, the financial and banking market in the European Union underwent many changes. Nevertheless, one of the first major changes was made in 1977 by the First Banking Directive, followed by others (Directive 77/780/EEC). Its aim was to unify the conditions and rules for issuing banking licences. However, it introduced only minimum requirements for the granting of a banking licence and the principle of home banking supervision of banks.

In 1985, the European Commission issued a White Paper containing the measures needed to complete the internal market. Subsequently, the Single European Act was signed in 1986. It was intended to remove the obstacles which still existed so that the completion of the common market could be completed by 1992. The White Paper measures also included proposals, which were subsequently transposed into Directive 89/646/EEC in 1989, the second Banking Directive. It is this directive that has brought about greater integration of the financial sector. It implemented realistic procedures and allowed banking institutions to set up branches and provide services in other member states without requiring a new authorisation in those member states. This procedure was the introduction of the single banking licence (ECB 2002). The adoption of Directive 94/19/EC of 1994 on Deposit Guarantee Schemes was a principle of minimum harmonisation and ensured at least a minimum level of protection for all deposits in the EU, irrespective of their state.

In essence, the third Banking Directive from 1995 included amendments to the previous two Directives. In addition to regulating and supervising banks, it also focused on other financial market institutions, and introduced the prudential principle (e.g. the treatment of confidential information), as well as complemented and clarified the conditions necessary for obtaining a single banking licence (Reveda et al. 2012). The adoption aim of the Financial Services Action Plan in 1999 was to speed up the integration of the financial sector and contained 42 legislative measures aimed at removing regulatory and market barriers. The slow implementation of the Action Plan prompted the establishment of the Committee of Wise Men headed by Alexander Lamfalussy in 2000. The Committee consisted of experts in the field of economics and monetary policy. In a final report published in February 2001 in Stockholm, he presented a proposal to change the legislative process, which allows the simplified and rapid implementation of legislative standards (Synkule 2010). He introduced a system of national regulatory authorities, the European Commission and the newly established Supervisory Committee. The basis is the planning of implementing measures for framework legislation through specially established committees, such as the European Banking Committee, the European Insurance and Occupational Pensions Committee, the European Securities Committee (European Commission 2000).

In 1974, the governors of the 10 central banks (G10) established a banking supervisory authority, known as the Basel Committee on Banking Supervision. Although the Basel Agreements adopted by the Basel Committee are not binding, many countries adhere to them. The European Union has applied a few measures proposed by it through directives to the European legal order and the last of the three Basel agreements has become the basis of the common rules of the new Banking Union project (Cipra 2002). In 1988, the first Basel Capital Agreement, Basel I, was established, focusing primarily on the need to remove/mitigate credit risk. Market risk was supplemented in 1996. As a credit risk solution, it defined capital adequacy, also known as the Cooke ratio. This ratio represents the most appropriate ratio of bank capital to risk-weighted assets needed to cover unexpected losses.

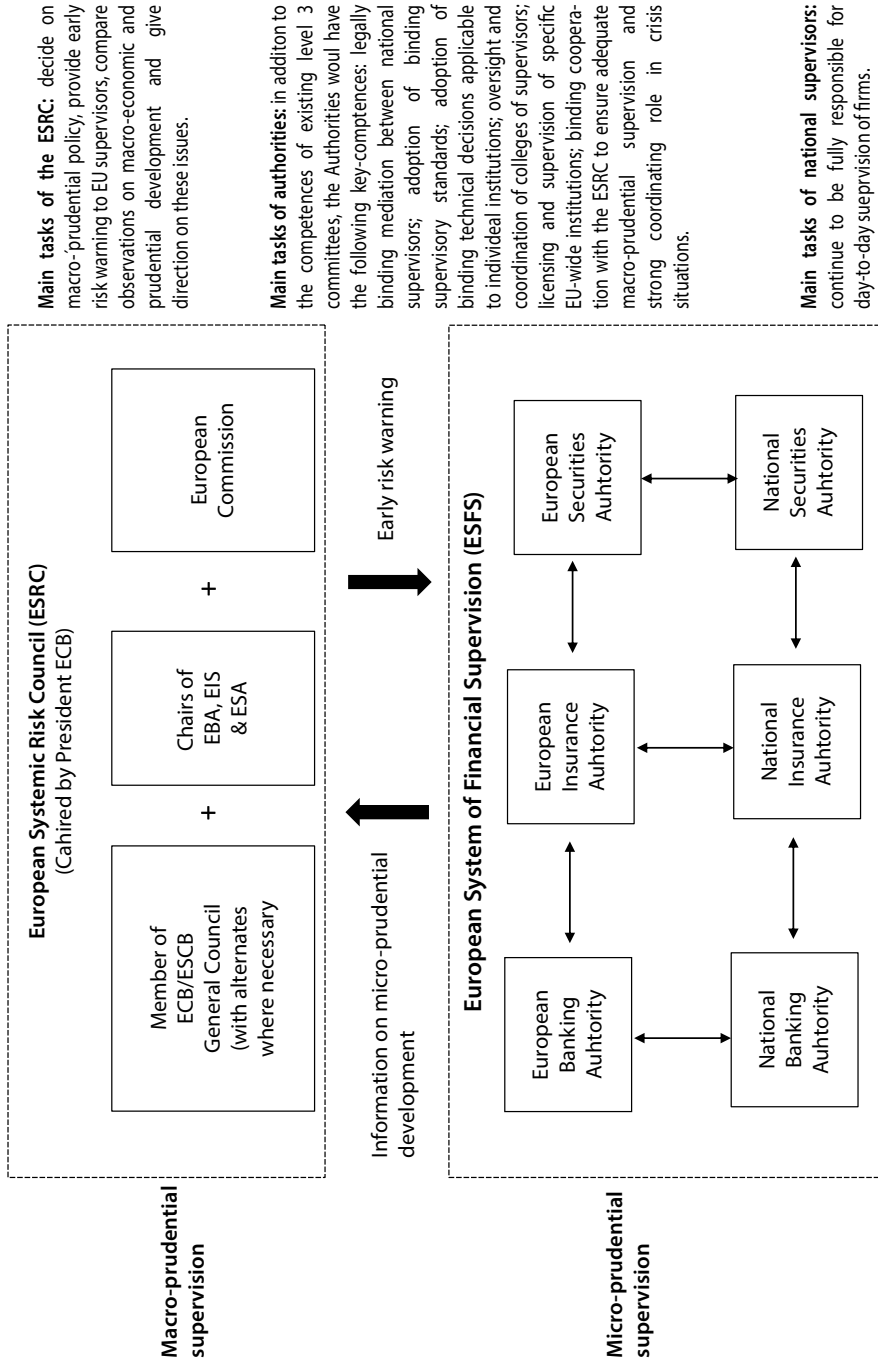
The European Union adopted two directives in response to the adoption of the Basel I. Directive 89/299/EEC of 1989 on Own Funds (OFD) and the Solvency Ratio Directive (SRD), 89/647/EEC. With the adoption of these directives, the Basel I agreement was applied to European legislation and subsequently put into practice. In 1993, the Capital Adequacy Directive (CAD I) was adopted and in 1998, it was amended into CAD II (Cipra 2002). In 2007, the new Basel Capital Agreement (Basel II), was adopted as a result of constant changes in the financial markets, emerging problems and criticism of the first agreement. The agreement focuses on more appropriate risk measurement and management. It is a 'three-pillar system' consisting of minimum capital requirements, a supervisory and transparency process and market discipline. This agreement was incorporated into the Eu-

European law in 2006 by the Capital Requirements Directive (CRD), 2006/48/EC. It was later replaced by CRD II and CRD III (Mejstrik et al. 2008).

New rules in banking area were published by the Basel Committee on Banking Supervision on 16 December 2010 under the title *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems*. It is currently the latest agreement. The Basel III applied to the European legislation through Directive 2013/36/EU (CRD IV) and CRD Regulation 575/2013. The introduction of the new rules was a response to the ongoing financial crisis and frequent violations of established rules in the financial sector. The Basel III constitutes the basis for the common rules of the emerging Bank Union. The capital adequacy requirements and the rules of the riskiness of banks' assets are tightened, the countercyclical activity of banks, the leverage ratio and the stabilisation of bank liquidity management are strengthened. The definition of capital is tightened. Basel II has divided the bank's capital into three tiers: Tier 1, Tier 2 and Tier 3. Basel III deletes Tier 3 capital and defines Tier 1 as Common Equity Tier 1 capital (CET 1) 28 + additional Tier 1 capital. In order to cover losses after the termination of the bank's activities, capital buffers are being introduced (capital buffers are being created in good times for the crisis period), banking supervision is intensified and improved, with an emphasis on transparency and disclosure. Under the Basel III rules, the overall minimum capital requirement remains initially unchanged at 8% of the assessment base (risk-weighted assets). However, the Basel III changes the structure of this capital so that it increases the requirement to minimum the Common Equity Tier 1 capital from 2%, as was the case with the Second Basel Agreement, to 4.5% and the total Tier 1 capital is changed from 4% to 6%. Additional Tier 1 capital and Tier 2 are not defined by the minimum limit, but the sum of Tier 1 (CET 1 + Additional Tier 1) and Tier 2 is minimum 8%. The Basel III was introduced gradually from 1 January 2013 until 1 January 2019. This allowed banks to adapt to the new rules. From 1 January 2019, the total mandatory capital requirements reach 10.5%. The Basel III introduces the obligation to create three types of capital reserves 'pillows', such as the capital conservation buffer, the countercyclical capital buffer, capital for systemically important banks. The latest Basel agreement regulates liquidity rules and introduces new indicators, such as the liquidity coverage ratio and the net stable funding ratio. Both indicators should be larger than one (BIS 2017).

In February 2009, the Governor of the French central bank, Jacques de Larosière, presented a report dealing with the analysis of the causes of the financial crisis and recommended the introduction of political, regulatory and supervisory changes. The report identifies the main causes of the financial crisis and its catastrophic impact across the European Union. It points to serious regulatory, supervisory and crisis management failures (De Larosière et al. 2009). The solution to these problems was to reorganise the existing system and create a new supervisory framework to avoid similar problems in the future. This report has become an important basis for the reorganisation of the supervisory structure in the EU.

Figure 1. The new European Framework for Safeguarding Financial Stability



Source: De Larosière et al. (2009).

The model is based on two main pillars and is based on the division of supervisory powers into micro-prudential (European System of Financial Supervision) and macro-prudential (European Systemic Risk Board) (Figure 1).

However, the debt crisis in the European Union following the financial crisis in 2010–2011 also highlighted the shortcomings of this new reorganised system. Countries with a common currency, the euro, have been shown to be interdependent, interconnected and prone to the rapid and hard-to-control spread of failures between states. Many major banks have encountered financial problems. Because of their size and significance for the financial system, it was necessary to save them. The rescue measures were frequently largely funded by the non-failed countries. The effort to prevent such a situation culminated in the presentation of a proposal for a new, more sophisticated integrated banking supervisory regulation system – the Banking Union (Boyer and Ponce 2012). In the following sections, we will try to analyse the advantages (benefits) and disadvantages (costs) of the Banking Union.

3. Research Methodology

The importance of the Banking Union can be assessed in several respects. We will attempt to assess its importance for the country by moving the bank recapitalisation solution from the national level to the supranational level. We will point out the benefits of this transfer and the costs to be incurred. The benefits of transnational recapitalisation, through the Banking Union, will be quantified, using the Schoenmaker and Siegmann model of bank recapitalisation (Schoenmaker and Siegmann 2013). By cost determining, we will focus on liabilities arising from subscribed capital under the Banking Union Resolution Mechanism. The financing of the Single Resolution Fund is secured by contributions from the banking sector. It is these contributions which constitute the main cost of moving the bank recapitalisation solution from national to supranational. We will compare the benefits and costs of transnational recapitalisation. The analysis will evaluate the benefits of shifting bank recapitalisation in difficulty.

As already mentioned, the quantification of the benefits of transnational recapitalisation is based mainly on the Schoenmaker and Siegmann model and the data found by Hodula (2014). The improvement in the effectiveness of rescue mechanisms is best observed at times with different economic performance. Therefore, the following years – 2005, then 2007 as the peak of expansion, 2009 as the crisis year and finally for 2012, the post-crisis period – were chosen to analyse the benefits of the CA's introduction. This time span can give one an answer to the question whether the values of improving the efficiency of regulation vary in different areas of the economic cycle. The model contains the 27 largest European banks from nine EU countries by asset level. Small and medium-sized banks were excluded from the analysis because we assume that they are more oriented towards domestic clients.

Table 1. IMP values for the 27 selected EU banks (%)

BANKS	2005			2007			2009			2012		
	D_j^{dom}	D_j^{BU}	IMP	D_j^{dom}	D_j^{BU}	IMP	D_j^{dom}	D_j^{BU}	IMP	D_j^{dom}	D_j^{BU}	IMP
HSBC Holdings (UK)	3.00	1.94	35.29	3.17	1.70	46.23	2.70	1.27	52.93	1.78	1.04	41.45
Deutsche Bank (DE)	2.57	0.56	78.13	2.23	0.64	71.28	2.33	0.59	74.83	2.23	0.56	74.73
Credit Agricole (FR)	0.20	0.09	57.54	0.67	0.16	75.58	0.61	0.18	71.21	0.27	0.08	71.68
BNP Paribas (FR)	0.82	0.32	61.40	1.08	0.27	75.46	1.22	0.27	78.25	1.08	0.23	78.35
Barclays (UK)	1.00	0.52	48.48	1.17	0.64	45.54	1.56	0.82	47.69	1.94	0.67	65.66
Royal Bank of Scotland (UK)	0.30	0.19	36.23	0.85	0.39	54.35	0.79	0.33	57.58	0.67	0.47	29.41
Banco Santander (ES)	1.50	0.52	65.66	1.56	0.52	67.06	2.23	0.64	71.28	2.70	0.52	80.95
Societe Générale Group (FR)	0.75	0.28	62.61	0.69	0.19	72.59	0.79	0.20	73.93	0.27	0.08	71.68
Lloyds Banking Group (UK)	0.11	0.05	52.63	0.01	0.00	100.00	0.09	0.04	52.08	0.14	0.05	61.40
Groupe BPCE (FR)	1.50	0.15	90.04	0.30	0.08	74.80	0.30	0.22	26.51	0.39	0.18	54.62
UniCredit Group (NL)	3.17	0.04	98.68	1.50	0.02	98.64	1.44	0.54	62.58	1.27	0.04	96.73
ING Group (NL)	3.35	0.92	72.43	2.33	0.79	66.33	1.33	0.25	81.14	1.33	0.22	83.44
Rabobank Group (NL)	0.37	0.15	59.60	0.33	0.12	62.92	0.54	0.27	50.63	0.37	0.19	48.50
Nordea Bank (SE)	3.00	0.00	100.00	2.70	0.00	100.00	3.76	0.09	97.69	3.17	0.12	96.10
Intesa Sanpaolo (IT)	0.09	0.01	88.38	0.30	0.06	78.63	0.27	0.02	92.32	0.27	0.06	75.99

Table 1. Continued

BBVA (ES)	1.50	1.33	11.63	0.89	0.85	3.94	1.44	1.33	7.88	0.82	0.52	37.04
Commerzbank (DE)	0.41	0.04	89.80	0.32	0.04	86.81	0.39	0.09	77.64	0.96	0.23	75.59
Credit Mutuel (FR)	0.00	0.00	0.00	0.06	0.01	84.18	0.08	0.04	44.64	0.19	0.08	60.48
Standard Chartered Group (UK)	9.00	7.33	18.52	6.69	5.67	15.33	5.67	5.67	0.00	6.69	4.26	36.30
ABN AMRO Group NV (NL)	1.94	0.56	71.02	0.82	0.09	89.37	0.19	0.04	78.13	0.25	0.09	65.22
La Caixa (ES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	100.00
Dexia (BE)	0.96	0.14	85.81	1.00	0.27	73.42	1.78	0.20	88.48	1.56	0.23	85.00
Landesbank B-W (DE)	0.22	0.03	85.91	0.12	0.01	91.83	0.23	0.03	86.81	0.39	0.09	77.64
Financiero y de Ahorros SA (ES)	0.02	0.00	100.00	0.05	0.00	100.00	0.04	0.01	75.76	0.04	0.00	100.00
Bayerische Landesbank (DE)	0.28	0.09	69.17	0.27	0.11	58.20	0.19	0.10	48.08	0.25	0.18	29.41
KBC Group (BE)	1.00	0.27	73.42	1.17	0.27	77.36	1.13	0.20	81.84	0.59	0.19	67.57
Bank of Ireland (IE)	0.67	0.06	90.43	0.82	0.05	93.57	0.56	0.03	94.50	0.25	0.01	95.96

Source: Own calculations based on the data from Hodula (2014).

In selected years, these banks own more than half of the total banking assets within the European Union. The benefits and effectiveness of the transnational solution will also depend on the cross-border activity of individual banks. If the bank's assets are located primarily in the European Union, then rescue is likely to be highly beneficial. The costs are shared within the Banking Union and the benefits depend on the volume of activity in the participating states. However, if the bank's activities are mainly concentrated in countries outside the European Union, costs are shared only by the Banking Union countries, with the result that the benefits flow to non-participating countries. Improving efficiency will therefore be most pronounced in countries whose banking systems are most cross-border-oriented. However, a significant proportion of assets outside third countries outside the European Union could reduce the effects of improvement. The results of the analysis are shown in Table 1.

To determine the effectiveness of the resolution mechanisms, the distance between the national and supranational regulatory systems is calculated for each bank in a sample of 27 banks (Figure 2, grey area).

4. Results

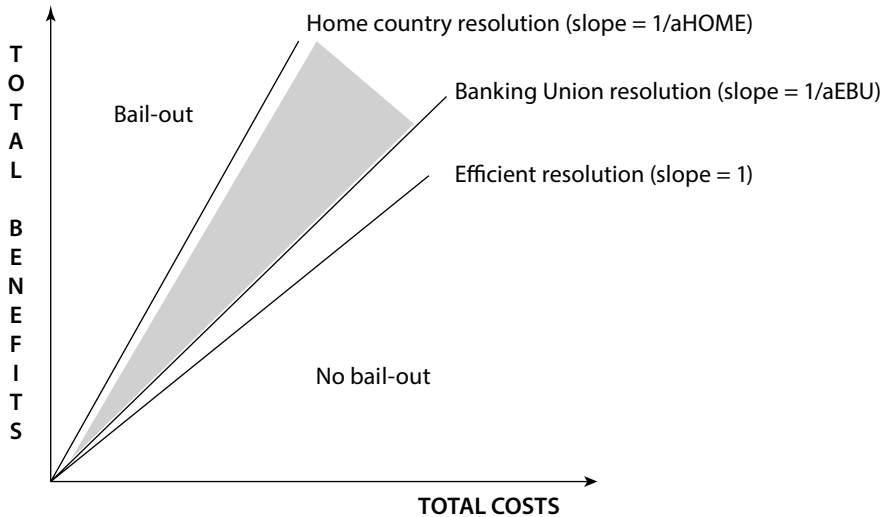
When deciding to recapitalise banks at the level of the Banking Union, the condition is that the supranational authority will maximise the benefits if: the effectiveness of the Banking Union solution is also strongly influenced by the cross-border activity of individual banks. If the bank's assets are located primarily in the Banking Union, then rescue is advantageous. The costs are shared within the Banking Union and the benefits depend on the volume of activity in the participating states. However, if the bank is primarily active in countries outside the Banking Union, the costs are shared only by the Banking Union countries, and there is an outflow of benefits to non-participating countries. The following Figure 2 shows the most effective solution (Efficient resolution) where the benefits are equal to the cost, $B = C$ at slope 1. If we are below this line, the total revenue is less than the total cost, and therefore bail-out is not advantageous.

The improvements in the effectiveness of rescue mechanisms are best seen in times of different economic performance. We chose the years 2005, then 2007 as the peak of expansion, 2009 as the crisis year and finally year 2012, therefore the post-crisis period, to analyse the benefits of the Banking Union. It is this time span that can give us an answer to the question whether the values of improving the efficiency of regulation are various in different areas of the economic cycle.

In selected years, these banks own more than half of the total banking assets within the European Union. On average, the domestic market share of banks was around 58% in 2005 and 60% in 2012. No significant changes in the structure of assets can be seen. However, one can notice the average change in the share of

non-EU bank assets between 2007 and 2009. We can see a change in the transfer of assets to third countries just in recession. The country should achieve more significant benefits when moving from a national to an international regulator during an expansion period. At this time of the economic cycle, banks tend to expand their cross-border interests. Conversely, in a period of recession, the primary concern is the stabilisation of the parent company. The results suggest that countries benefit from the strengthened stability of the banking sector within the Banking Union. Efficiency improvements are particularly noticeable for countries participating in the Currency Area (CA), as the recapitalisation of a domestic bank in difficulty is paid collectively, thus reducing the share of total recapitalisation costs for each country. The home country will only pay its part which will be based on the subscribed capital under the resolution mechanism.

Figure 2. The different view access to recapitalisation



Source: Schoenmaker and Siegmann (2013).

The results of the model suggest that a transition from a national to a supra-national regulator system would increase resolution mechanisms in all countries under review. Improvements occurred for the euro area countries as well as non-member countries (United Kingdom, Sweden). It can be assumed that other non-euro area countries whose banking systems are more open and whose banks are largely owned by foreign entities within the European Union would also achieve efficiency gains (Czech Republic, Estonia, Hungary, Latvia, and Romania). In particular, the stability of the parent companies of their banks would bring benefits to these states. However, the results have to be interpreted with caution, as the largest banks of only nine countries were examined. This indicates a high concentra-

tion of the banking sector within the European Union. However, some countries, especially from Central and Eastern Europe, are almost entirely dependent on foreign banks.

In addition to administrative fees to cover the costs necessary for the functioning of the new institutional framework, the credit institutions of the countries participate financially in the common resolution mechanism in the event of a bank failure. The amount and method of payment of administrative fees are determined jointly (Table 2) under an agreement between the euro area countries and member states which voluntarily participate in the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM).

Table 2. Overview of banks fees and contributions entering to the Banking Union

	Pillar I (Supervision)	Pillar II (Resolution)	Pillar III (Deposit Scheme)
Administrative fees	<ul style="list-style-type: none"> • Supervisory fee to the ECB • Supervisory fee to the NSA 	<ul style="list-style-type: none"> • Administrative fee to the SRB • Administrative fee to the NRA 	<ul style="list-style-type: none"> • Administrative fee to the NDGS
Contributions to funds	n/a	<ul style="list-style-type: none"> • Contributions to the SRF • Contributions to the NRF 	<ul style="list-style-type: none"> • Contributions to the NDGS
	National bank levies		

Source: NBS (2015).

The Joint Resolution Fund (SRF) was set up to solve the problems of banks when all other financial rescue possibilities were exhausted. The financing of this is secured by contributions from the banking sector. These contributions constitute the costs of moving the bank recapitalisation solution from the national to the supranational level. The SRF is funded *ex ante* by contributions paid annually on an individual basis by all credit institutions and certain investment firms established in the 19 participating member states within the Banking Union. The Fund will be built over the first eight years (2016–2023) and will reach a target level of 1% of the total covered deposits of all credit institutions within the Banking Union by 31 December 2023. During this eight-year period, the amount of countries' annual contributions should be adapted to the phases of the business cycle, and other effects of pro-cyclical measures and the financial situation in the country. The Single Resolution Board (SRB) is responsible for calculating the amount of *ex ante* contributions. The contributions of banks are calculated in proportion to their liabilities in relation to the total liabilities of all credit institutions in the Banking Union's member states. The contributions shall also be adjusted for the risks undertaken by the institution.

National resolution authorities and member states are responsible for collecting them through national funds and subsequently transferring contributions to the SRF. These national funds should gradually merge over an eight-year period. The transfer and merging of the National Resolution Funds is governed by the intergovernmental agreement (IGA) on the single resolution fund. The SRB set the 2018 target level at 1/8 of 1.15% of the average amount of covered deposits of all credit institutions authorised in the euro area in 2017. The target level for 2018 is EUR 8.1 billion. The financial institutions' contributions at individual level consist of 49% of small institutions paying a flat-rate contribution, 28% of medium-sized institutions, 21% of large institutions subject to a risk-adjusted contribution, and others have a specific calculation method according to their business model.

5. Evaluation of the Benefits and Costs of the Banking Union

For political and economic reasons, the member states of the European Union have different views on whether to join the Banking Union. There are many benefits for the member states from participating in it. Banking supervision may be improved, national regulators will gain more access to information, and the credibility of national banking institutions may be increased. The Vienna 2 Initiative shows that joining the CA could lead to better and more credible co-ordination of relations at international level by centralising supervisory activities at the ECB (Vienna 2 Initiative 2013). At the same time, supervision could become more independent and of good quality, which could be positively reflected in the higher harmonisation and consistency of the regulations implemented by the SSM (Darwas and Wolff 2013). Some countries are considering entering the CA, while others are refusing it directly. They often point out, for instance, that non-euro area states would not have sufficient say in the SSM decision-making process.

Many countries want to wait and see how the Banking Union will be completed and whether it will succeed. The waiting position is often motivated by the idea that joining the Banking Union could also bring about the adoption of the euro as the common currency. However, in the long term, the banking sector's definitive justification is linked to cross-border banking in the common market that goes beyond the single currency. Another disadvantage of entering the Banking Union is a certain loss of state sovereignty over their banking systems, which countries outside the Banking Union can continue to maintain. However, the transfer of this sovereignty to another entity is also a manifestation of state sovereignty because it is a free decision of that state. It is therefore up to each state to assess the loss of this sovereignty in the area of regulation and supervision as unfavourable. From the analysis of the benefits of the recapitalisation solution, we found that non-Bank-

ing Union countries could benefit from joining the Banking Union, as their entry would ensure their financial stability.

The Banking Union brings an integrated approach to supervision and resolution mechanisms (Darvas and Merler 2013). The results of the Schoenmaker and Siegmann model indicate that in the event of a transition from a national to a supranational regulator, the effectiveness of the resolution mechanisms in all the economies under review will improve. This applies not only to the euro area member states, but also to non-member countries. It has also been shown that the positive effects of involvement in the Banking Union are higher in times of economic expansion, in which banks tend to expand their cross-border activity. For countries where banks are largely owned by foreign entities within the European Union, joining the Banking Union would bring more benefits and efficiency gains, even if those countries do not plan to adopt the common currency soon. The benefit for these countries is primarily the stability of the parent companies of their banks.

As pointed out in the previous section, accession to the Banking Union also entails certain costs. In addition to administrative fees, the member states' credit institutions participate financially in a joint resolution mechanism. A system of national supervision and crisis management, when confronted with strong cross-border banking, may entail greater costs for the home state precisely because such a state bears all the costs. In the event of the recapitalisation of a failing bank in the Banking Union, these costs are shared among the participating countries in the form of contributions to special purpose funds. The effectiveness of the transnational solution therefore depends mainly on the cross-border activity of individual banks. If the bank's assets are located primarily outside the home country, then it is highly likely that entry into the Banking Union is beneficial for that country.

Although remarkable progress has been made in the banking sector in recent years, there are still some challenges and doubts about the efficiency and effectiveness of the Banking Union. The first problematic part, frequently discussed in literature, and the challenge for the CA, is the work of the ECB as the main supervisory body within the SSM. It is in the context of the ECB's new enhanced role that there is some doubt that there may be a potential conflict of interest between monetary policy and banking supervision; price stability and financial stability (Slager 2005). New supervisory competences may jeopardise the independence of the ECB and increase the risk of the ECB becoming a certain policy instrument. The second challenge, within the SRM, is the extent of the SRF and its ability to absorb shocks in the event of a new financial crisis. This is a key criterion for the Banking Union's success. The planned final size of the SRF is not the result of economical-theoretical studies, but it is based on empirical experience of the financial crisis and political compromises. The capacity of the SFR is currently planned at EUR 55 billion, and it will only be used in shocks where losses exceed bail-in capital. The third challenge is the ability to cope with risk factors, especially political factors. Opposition to the 'European project' has grown consider-

ably since 2012 and, as mentioned by the ECB, has identified the geopolitical situation as the main risk factor for 2019.

6. Conclusions

This paper was focused on the analysis of the benefits and costs of the Banking Union. Accession to the Banking Union entails both benefits and certain costs. In addition to administrative fees, the member states' credit institutions participate financially in a joint resolution mechanism. A system of national supervision and resolution if such a system is confronted with strong cross-border banking may entail greater costs for the domestic state precisely because such a country bears all the costs. In the event of the recapitalisation of a failing bank in the Banking Union, these costs are shared among the participating countries in the form of contributions to special purpose funds.

The effectiveness of the transnational solution therefore depends mainly on the cross-border activity of individual banks. If the bank's assets are located primarily outside the home country, then it is highly likely that entry into the Banking Union is beneficial for that country. Regulation and supervision in the European Union have made great progress in recent years. However, the Banking Union is far from complete and the banking sector remains largely divided by national lines. Further improvement and further harmonisation of the rules is necessary to improve this situation. Countries should seek to reach agreement on the final form of the third pillar.

As Konrad Adenauer, Chancellor of the Federal Republic of Germany, who initiated the creation of the European Union, said: 'The unity of Europe was a dream of several, which became the hope of many. Today, however, it has become a necessity for all of us'. From our point of view, it is essential if we want a single Europe and a stable financial market to approach the problems responsibly together. The financial integration and completion of the BAN project should be a priority for legislators and competent authorities.

Acknowledgement

This paper was supported by the Grant Agency VEGA under its project No. 1/0356/19 *Macroeconomic and Microeconomic Aspects of Indebtedness of Countries and Economic Subjects in the European Union*.

References

BIS (2017). *Basel III: Finalizing Post-crisis Reforms*. Available online: <https://www.bis.org/bcbs/publ/d424.pdf> (accessed on 13 April 2019).

- Boyer P., Ponce J. (2012). Regulatory Capture and Banking Supervision Reform. *Journal of Financial Stability*, Vol. 8(3), pp. 206–217. <https://doi.org/10.1016/j.fs.2011.07.002>.
- Cipra T. (2002). *Kapitálová primeranosť vo financiách a solventnosť v poisťovníctve*. Prague: Ekopress.
- Darvas Z., Wolff G.B. (2013). Should Non-Euro Area Countries Join the Single Supervisory Mechanism? IEHAS Discussion Papers from the Institute of Economics No. 1323. *Centre for Economic and Regional Studies*. Available online: <http://econ.core.hu/file/download/mtdp/MTDP1323.pdf> (accessed on 13 April 2019).
- Darvas Z., Merler S. (2013). The European Central Bank in the Age of Banking Union. Bruegel Policy Contribution Issue 2013/13, October 2013. Available online: https://www.bruegel.org/wp-content/uploads/imported/publications/pc_2013_13_ECB.pdf (accessed on 13 April 2019).
- De Larosière J. et al. (2009). The High-Level Group on Financial Supervision in the EU Report. Brussels, 25 February 2009. Available online: https://ec.europa.eu/economy_finance/publications/pages/publication14527_en.pdf (accessed on 13 April 2019).
- Dermine J. (2003). *Banking in Europe: Past, Present and Future*. In: V. Gaspar, P. Hartmann, O. Sleijpen (Eds), *The Transformation of the European Financial System*. Frankfurt am Main: European Central Bank. Available online: <https://www.ecb.europa.eu/pub/pdf/other/transformationeuropeanfinancialsystemen.pdf> (accessed on 13 April 2019).
- Hodula M. (2014). *Efficiency Measurement of Regulation Systems of Chosen EU Countries: Effects of Banking Union Implementation*. <https://doi.org/10.25142/aak.2014.066>. Available online: <https://bit.ly/2Uje0oV>. (accessed on 13 April 2019).
- Kapstein E.B. (1989). Resolving the Regulator's Dilemma: International Coordination of Banking Regulations. *International Organization*, Vol. 43(2), pp. 323–347. <https://doi.org/10.1017/S0020818300032938>.
- Mejstřík et al. (2008). *Základné princípy bankovníctva (Basic Principles of Banking)*. Prague: Karolinum, ISBN 9788024615004.
- NBS. (2015). *Financial Contributions and Bank Fees in the Banking Union*. Munich Personal RePEc Archive. MPRA Paper No. 64643. Available online: <https://mpra.ub.uni-muenchen.de/64643> (accessed on 13 April 2019).
- Revenda Z. (2012). *Peňažná ekonómia a bankovníctvo*. Praha: Management Press.
- Slager A. (2005). Internationalization of Banks: Strategic Patterns and Performance. *The European Money and Finance Forum*. Vienna. Available online: https://www.suerf.org/docx/s_2ba596643cbbbc20318224181fa46b28_957_suerf.pdf (accessed on 13 April 2019).
- Schoenmaker D. (2013). *Governance of International Banking: The Financial Trilemma*. Oxford: University Press. Available online: <https://bit.ly/2Z9jqpZ> (accessed on 13 April 2019).

- Schoenmaker D., Siegmann A. H. (2013). Efficiency Gains of a European Banking Union. Discussion Paper No. 13-026/IV/DSF51. *Tinbergen Institute*. <http://papers.tinbergen.nl/13026.pdf> (accessed on 13 April 2019).
- Synkule M. (2010). Proces tvorby evropské legislativy na příkladu směrnice o trzích finančních nástrojů. Available online: <https://bit.ly/2KCgkaL> (accessed on 13 April 2019).
- Vienna 2 Initiative. (2013). *Working Group on the European Banking Union and Emerging Europe*. Available online: <https://www.imf.org/external/np/sec/pr/2013/pdf/pr13149b.pdf> (accessed on 13 April 2019).

Chapter 4

Impact of Occupational Risks on Financial Security: Insights from Ukrainian Enterprises

*Viacheslav Berezutskyi¹, Viktoriya Khali², Natalia Berezutska³,
Tetiana Stytsenko⁴*

1. Introduction

The unstable economic situation in Ukraine is characterised by the unpredictability of the ongoing economic processes, the frequent change of economic ups and downs, the negative dynamics of functioning which as a result poses a threat to the financial security of the state and business entities. The transition to market relations determines the increasing role of finance. Market instruments are mainly elements of the financial mechanism are part of the financial system and stand out in an independent segment of the economy. On the basis of their dominant position, the modern economy can be characterised as an economy that is managed through financial mechanisms using leverage, and financial incentives for financial purposes. Therefore, the issue of ensuring the appropriate level of financial security of the enterprise requires special attention, the study of all its components (Luppol and Ermolenko 2016).

Currently, financial security as a whole is considered by scientists from various fields of science and is considered an interdisciplinary category at the junction

¹ National Technical University «Kharkiv Polytechnic Institute», Kharkiv (Ukraine), ORCID: 0000-0002-7318-1039, e-mail: viaberezuc@gmail.com

² O. M. Beketov National University of Urban Economy in Kharkiv, Kharkiv (Ukraine), ORCID: 0000-0003-0222-7519, e-mail: viktorykh610@gmail.com

³ National Technical University «Kharkiv Polytechnic Institute», Kharkiv (Ukraine), ORCID: 0000-0003-2573-9031, e-mail: natalia.berezutskaya@nure.ua

⁴ National Technical University «Kharkiv Polytechnic Institute», Kharkiv (Ukraine), ORCID: 0000-0003-4530-0253, e-mail: tatiana.stytsenko@nure.ua

of economics, management, sociology, political science, jurisprudence which allows it to be widely interpreted. Among experts, there is no consensus on the nature of the financial security of the enterprise. From all the above, we would like to single out resistance to external and internal threats in the conditions of necessity and the ability to independently develop and implement a financial strategy. It should be noted that in Ukraine, many universities train specialists in the field of enterprise economics, but the state of the economy is very poor. Scientists in the field of economics distinguish the following tasks of the financial security of the enterprise (Gukova and Anikina 2016):

- Ensuring the continuous development of enterprises
- Ensuring sustainable cash flows
- Elimination of the negative impact of financial, economic crises and deliberate actions of competitors on the development of enterprises
- Neutralisation of conflicts in the distribution of financial resources of enterprises
- Ensuring the possibility of using various sources of financing.

All these tasks are solved in order to ensure the effective functioning of all elements of the financial system of the enterprise.

In the current economic conditions, it is not enough to use traditional methods of assessing financial security. It is necessary to use an international system for assessing all kinds of business risks. The statistics that are given in the book *Injury Prevention and Environmental Health* indicate a financial threat to business on a global scale. Despite great strides in improving OSH during the past century, an estimated 317 million non-fatal occupational injuries and 321,000 occupational fatalities occur globally each year, i.e. 151 workers sustain a work-related accident every 15 seconds. The authors point out that the main reason for this are poor working conditions. Poor workplace safety and health place a substantial economic burden on individuals, employers, and society. Estimates from the International Social Security Association (ISSA) suggest that costs associated with non-fatal workplace accidents alone amount to approximately 4% of world gross domestic product (GDP) each year (Abdalla et al. 2017). On its website, BeSafe argues that implementing health and safety in the workplace helps to assess potential risks and identify significant hazards. It also allows one to take action to protect people and the environment in every organisation. By implementing health and safety as much as possible and working with regulatory officials, time and company's money can be saved in the long run (Besafe 2020).

Compensation insurance reimburses part of the income lost by an employee due to his or her disability. However, there are hidden costs to the organisation associated with each injury, such as reduced efficiency, replacement costs and increased overtime. This effect is especially noticeable in small businesses. Employees must be trained to recognise risks and report them to the appropriate person so that the hazard can be eliminated as soon as possible. Job requirements related

to safety should take precedence over any others (Insurance Information Institute 2020). The study presented by Seokho et al. (2015) looked at 9,358 accidents in the US construction industry between 2002 and 2011. The results of the analysis explained that the roles of safety managers are critical to mitigate risks to people, particularly the inappropriate assessment of hazardous situations, through safety training and education, proper use of safety devices, and proper safety controls.

The financial security of the enterprise should ensure its development and sustainability which guarantees the protection of the financial interests of the enterprise. According to the risk management methods, it is necessary to perform the following (Berezutskyi and Adamenko 2016): (1) identify possible threats (risks) to the enterprise; (2) determine the criteria for financial security of the enterprise; (3) develop a system for monitoring financial security and measures to ensure the financial security of the enterprise; (4) analyse the implementation of measures and make adjustments. One of the prerequisites for successful financial risk research is the application of methods and methodologies for risk research, which are presented in the international standards OHSAS 18000 and ISO 31000.

The aim of this study is to analyse the dependence between the financial security of small and medium-sized enterprises and the state of occupational security of employees. To achieve the goal, the following tasks were set:

- Analysing the historical development of dangers in Ukraine and the consequences of their impact on economic development
- Analysing the impact of accidents and disasters on their financial security of production; considering the state audit of labour protection and the identification of risks (internal threats)
- Establishing the impact of professional risks on the economic development of Ukraine
- Performing a theoretical analysis and make practical proposals for improving financial security, taking risks into account.

The main research method used is the analysis of statistical public information presented in the open press and its processing using the standard Microsoft Excel software package. Moreover, the research methodology includes the use of risk management methods, which are presented in the international standards OHSAS 18000 and ISO 31000. One of the main steps in these methods is risk identification.

2. Socio-Economic Effects of External Threats and Accidents in Ukraine

The importance of external threats to the Ukrainian economy is demonstrated by the statistics of accidents and disasters which resulted in huge financial losses. Such accidents include (Information Resource Today 2015):

- Fire at the tank farm BRSM-Nafta (Kiev region)
- Kurenevsky flood (Kiev)
- Accident at the Chernobyl nuclear power plant
- Accident at the coal mine Zasyadko (Donetsk region)
- Phosphoric accident (Lviv region).

On March 13, 1961, in the area of Kurenyovka (Kiev), a dam broke through that blocked Babi Yar, where 10-year production waste (pulp) from nearby plants was dumped. According to the official report, 68 residential and 13 administrative buildings were destroyed as a result of the accident. 298 apartments and 163 private houses, in which 353 families of 1,228 people lived, turned out to be unsuitable for housing. The death toll was approximately 1.5 thousand people.

On the night of 26 April 1986, an explosion occurred at the fourth unit of the Chernobyl nuclear power plant, which completely destroyed the reactor. The building of the power unit partially collapsed. A fire started in various rooms and on the roof. The accident resulted in the release of radioactive substances into the environment, including isotopes of uranium, plutonium, iodine-131 (half-life – 8 days), caesium-134 (half-life – 2 years), caesium-137 (half-life – 30 years), strontium-90 (half-life – 28 years). As a result of the accident, about 5 million hectares of land was taken out of agricultural circulation, a 30-kilometre exclusion zone was created around the nuclear power plant, hundreds of houses in small towns were destroyed and buried (buried with heavy equipment). The Chernobyl accident is regarded as the largest of its kind in the entire history of nuclear energy, both in terms of the estimated number of people killed and affected by its consequences, and in terms of economic damage.

Since 1999, at the coal mine Zasyadko (Donetsk region), there was a number of major accidents which claimed the lives of hundreds of miners. The total number of victims was 106 people. It was decided that the mining operations would be closed and the mine would be flooded (3 December 2007). On 16 July 2007, a railway accident occurred near the village of Ozhidov in the Busky district of the Lviv region. On the 12-kilometre stretch of Ozhidov-Krasnoe, the train that went from Kazakhstan to Poland went off the rails, 15 cars with yellow phosphorus turned over, and six of them caught fire. As a result, 50 metres of the railway track, 100 metres of the contact network and three supports were damaged. During the extinguishing of the fire, a toxic cloud of combustion products formed with an affected area of 90 square kilometres. The evacuation of the population began. 16 people were poisoned with varying degrees of severity. There were no fatalities. On the evening of 8 June 2015 near Kiev, a fire broke out at the BRSM-Nafta oil depot, and containers with oil products caught fire. On 9–11 June, several explosions occurred. Firefighters managed to localise the fire. According to the latest data, 5 people died. According to the adviser to the head of the Ministry of Internal Affairs, Anton Gerashchenko, 14 thousand tons of fuel burned at a tank farm worth about USD 14 million.

In addition, it is necessary to note the financial risks (threats) associated with the occupation of Crimea, Donetsk and Lugansk regions of Ukraine. These are billions of losses in money and more than 15 thousand fatalities and millions of immigrants. The financial losses of Ukraine as a result of the aggression of the Russian Federation were calculated by Anders Oslund, senior researcher at the Eurasia Center of the Atlantic Council. He noted that as a result of the Russian occupation of Crimea and Donbass, Ukraine and its territories temporarily lost enterprises, energy resources, infrastructure, etc. The total GDP of Ukraine before the attack of the Russian Federation in 2013 amounted to USD 179.6 billion. In this regard, the loss from the occupation, according to Oslund, is about USD 98.8 billion (Independent Edition DonPress 2018).

Financial risks also depend on the condition of the transport 'arteries', namely the roads along which lorries and cars move. Their condition in Ukraine is unsatisfactory and provokes road traffic accidents, personal injuries, loss of goods and others. The annual financial losses of Ukraine associated with the deaths and injuries of people on the roads amount to about USD 5 billion (League Business 2010), (Business portal Uaprm.info 2016). This was stated today by a leading health specialist at the World Bank's Human Resources Development Department (ECSHD), Patricio V. Marquez, commenting on the World Bank's road safety report. According to the World Bank, globally, the costs associated with deaths and injuries on roads are estimated at about 1% of GDP in low-income countries, 1.5% of GDP in middle-income countries and 2% of GDP in high-income countries.

In Ukraine, in 2019, 160 thousand accidents occurred, in which about 4 thousand people died, another 36 thousand were injured. In addition, the accident caused damage to the Ukrainian economy by UAH 70 billion. This was announced by the Minister of Infrastructure Vladislav Krikli during his speech at the presentation of Ukravtodor 'UA 2020 Road'. According to him, road accidents are not only casualties among the population, but also significant losses for the Ukrainian economy (Pristanskaia 2020).

Large financial losses and risks are represented by fires in Ukraine. For 12 months of 2019, 95,915 fires were registered in Ukraine. Compared to 2018, there is a significant increase in the number of fires by 22.0%. The number of people killed in fires decreased by 3.3%, the number of those injured in fires increased by 0.2%. Direct losses from fires increased by 1.3%, collateral losses – by 39.9%; there were 2.0% more destroyed and damaged buildings and structures, 4.7% more destroyed and damaged equipment, and 2.1 times more domestic animals died, 21.2% more tons of feed were destroyed, 44.5% more hectares of standing grain were destroyed; poultry died 17.2% less. Material losses from fires amounted to UAH 10 billion 622 million 337 thousand (of which direct losses amount to UAH 2 billion 223 million 326 thousand, and incidental losses – UAH 8 billion 399 million 11 thousand) (Ukrainian Civil Protection Research Institute 2020).

3. Analysis of Financial Security and Occupational Risks in Ukraine

The main stage of the analysis of financial security is the stage of the identification of threats (risks). For its implementation, all specialists of the enterprise should be involved and this analysis should be comprehensive, taking not only external, but also internal threats into account. The internal threats include, for instance, intentional or incidental errors of managers in the field of financial management of an enterprise. These threats are related to payments to employees during equipment downtime and the absence of output as a result of an accident, fire or other emergencies, injury or illness of the employee, etc. The external threats include the purchase of shares, debts of the enterprise by unwanted partners; significant financial obligations of the enterprise; imperfection of the mechanisms of forming the state economic policy, an unstable economic situation. However, this is also the state of the environment, and military or terrorist campaigns, the criminal situation, etc.

Thus, if one omits the above positions in the identification and assessment of threats, monitoring the level of the financial security of the enterprise will be incomplete. Consequently, the most important components of the mechanism for ensuring its financial security will be missed, and, as a result of such errors, the conditions for achieving the stability, success and long-term functioning of the enterprise will not be created even in a stable economic situation. In line with this, the state of the economic development of Ukraine in terms of gross domestic product (GDP) growth in Ukraine is to be analysed (Ministry of Finance 2019). Figure 1a presents changes in GDP from 2002 to 2019.

Figure 1b shows the indicators given on the official website of the Department of State Labour in the Chernihiv region of Ukraine, characterising the change in occupational injuries over this period of time in terms of C_f , which, as mentioned above, represents an internal financial threat. C_f is the coefficient of the frequency of general injuries per 1,000 workers. It is determined as the ratio of the number of victims to the average number of employees multiplied by 1,000 (State Labour Office in Chernihiv region 2018). A similar dependence of the reduction in C_f is in other regions of Ukraine. The obtained curves are described by trends with the following polynomial equations for equal periods of time:

- GDP, billion (in UAH): $R^2 = 0.9957$

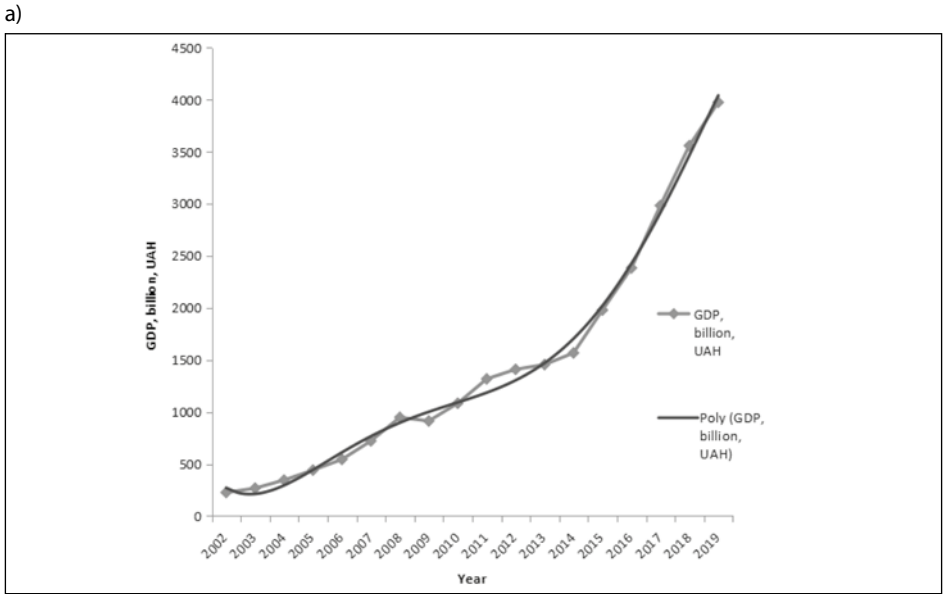
$$y = -0.0263x^5 + 1.3482x^4 - 23.855x^3 + 181.72x^2 - 455.46x + 566.49 \quad (1)$$

- C_f : $R^2 = 0.6685$

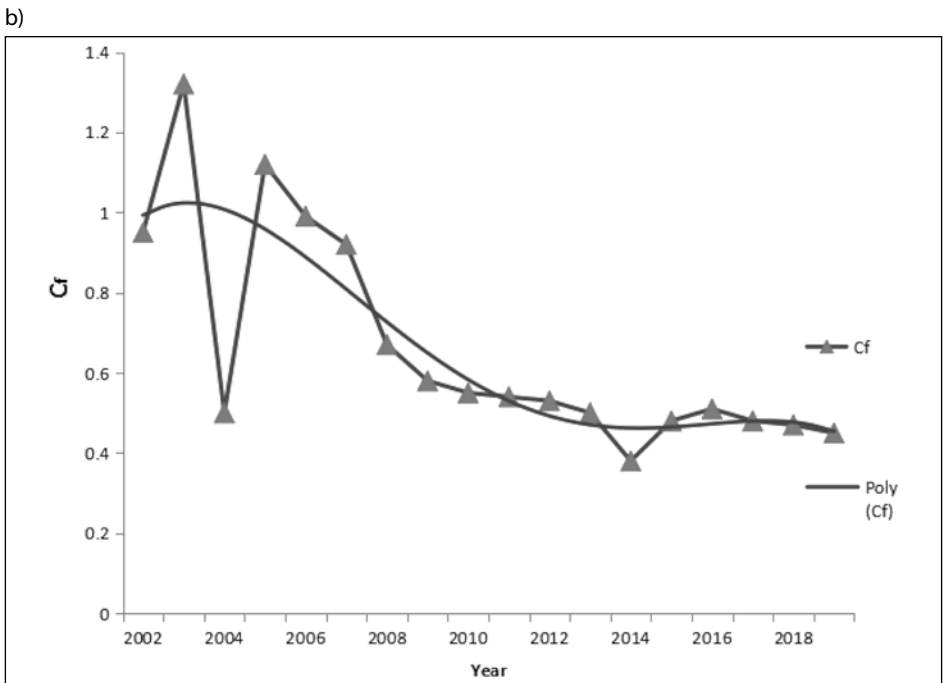
$$y = -7E-05x^4 + 0.003x^3 - 0.0394x^2 + 0.1285x + 0.901 \quad (2)$$

The intersection point of these two curves is of particular interest. Accidentally or not, however, it fell at the start of a hybrid war with Russia. During this period, financial assistance from the countries of Europe and the United States began to

Figure 1. Indicators of the growth of gross domestic product (GDP) in Ukraine (a) and a decrease in C_f (Injury frequency coefficient) in the Chernihiv region (b)



Source: Ministry of Finance (2019).



Source: State Labor Office in Chernihiv region (2018).

come to Ukraine, which gave a positive impetus to GDP growth and, at the same time, new international standards began to be introduced at enterprises, including labour safety.

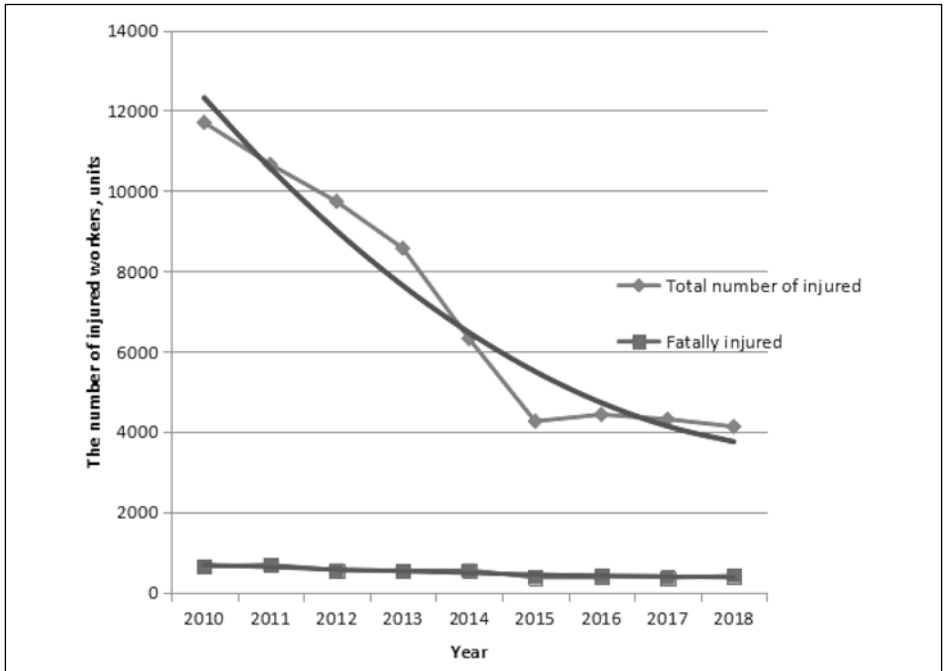
Ukraine began co-operating with the IMF back in 1994 when it received a very 'modest' amount by current standards – USD 763 million which went to maintain the country's balance of payments (Gaevaia 2018). From 1995 to 1998, Ukraine had a three-year standby (SBA) programme with almost USD 2 billion to support the hryvnia exchange rate, payments on external obligations and financing the payment deficit. Kiev received almost USD 1.6 billion between 1998 and 2002 as part of the EFF extended financing programme. These funds were used to replenish the NBU's foreign exchange reserves. In 2002–2005, Ukraine and the IMF cooperated on a loan-free basis under the 'proactive standby' programme, under which the IMF reserved loans in the amount of USD 550 million in case the situation worsened with the balance of payments or with reserving foreign exchange. But since March 2005, Ukraine has ceased to comply with the terms of the economic reform programme, and the IMF has stopped the co-operation. The largest loans in the history of our co-operation with the IMF took place in 2008–2013: in 2008–2009, under the new standby programme, Ukraine received USD 10.6 billion. The first tranche – USD 4.5 billion was urgently credited to the gold and currency reserves of the National Bank. The remaining two tranches went directly to the budget. In 2010–2013, as part of the next programme of co-operation, the IMF transferred almost USD 3.4 billion to the Ukrainian budget. It is these loans that make up the lion's share of the state debt of Ukraine, which will have to be paid in 2019–2025. Kiev was expected to receive another USD 17 billion from the IMF in 2014–2015. This is the amount that was reserved under the new standby loan. However, the treasury received only USD 4.3 billion, and on 11 March 2015, the IMF replaced the standby programme with a new four-year EFF programme for USD 17.5 billion. The first tranche of USD 5 billion arrived immediately after the signing of the Memorandum, and it was already in early August that Ukraine received another USD 1.7 billion. This money went to replenish the reserves of the National Bank. Then the IMF transferred USD 1 billion each in September 2016 and April 2017.

Since 2015, Ukraine has received about EUR 18 billion of assistance from the European Union and also from EU member states, which is many times higher than the amount of financial assistance provided to Kiev by the United States in the form of guarantees on loans in the amount of USD 1 billion, as stated by a special adviser to the president of the European Commission for Relations with Ukraine, former European Parliament deputy from Germany, Elmar Brock (Interfax Ukraine 2019).

At that time, OHSAS 18000, ISO 31000, ISO 12100 and others were ratified and adopted as Ukrainian standards. Since 2011, for the first time, they actively begin training engineers in the field of labour protection in Ukraine. Later, it becomes a specialisation, and now there is an educational program in the field of

civil security. The complex of these measures showed a positive result relatively quickly, in the form of a decrease in C_f and other indicators. Figure 2 shows the characteristics of the dynamics of a decrease in occupational injuries by 2019 (Mitina and Babenko 2018).

Figure 2. Dynamics of reduction of occupational injuries and deaths in Ukraine from 2010–2018



Source: Mitina and Babenko (2018).

The obtained curves are described by trends with the following polynomial equations for equal periods of time:

- total number of injured: $R^2 = 0.9522$

$$y = 97.561x^2 - 2046.2x + 14264 \quad (3)$$

- deadly injured: $R^2 = 0.8444$

$$y = 3.0043x^2 - 69.31x + 752.86 \quad (4)$$

On the basis of the analysis of Figures 1 and 2, it can be stated that an improvement in GDP positively affects the state of occupational injuries, reducing it because of OHSAS 18000, ISO 31000, ISO 12100 which were adopted. This can be explained by the fact that with an increase in GDP, enterprises are able to increase deductions for solving security problems, improving the quality of acquired means of the individual and collective protection of workers, and others. The reduction in injuries as a result of an increase in GDP corresponds to the generally recog-

nised dependence of risks on the economic (financial) condition of the enterprise (Berezutskyi 1999). However, a general ‘picture’ of the financial security situation can be imagined if one assesses the impact of accidents, disasters and other emergencies on the economic condition of not only the enterprise, but also Ukraine. Then it becomes clear that financial security is a component of the enterprise management system, and its subsystem is the risk management subsystem, where the financial security system should be included. Figure 3 shows the structural diagram of the enterprise management system with subsystems. The subsystems are the enterprise management system as well as the Occupational Safety and Health Management Subsystem which quantitatively determine financial risks. Displaying the overlapping areas embraces general issues about risks in different services.

Figure 3. Components of enterprise management system



Source: own study.

4. Occupational Safety Audit and Risk Identification

The identification of risks at the enterprise is possible thanks to the audit of labour safety (NSAI Standards 2018). This allows one to answer the question whether the labour protection system at the enterprise complies with current legislation. During the audit, the following areas are checked:

- Availability of the necessary documentation for labour protection, the completeness of its volume and the correctness of maintenance
- Personnel’s compliance with safety and labour protection rules
- Planning of medical examinations, training of labour protection workers, conducting briefings on electrical safety, fire safety, etc., and the frequency of their conduct

- Whether the employees are provided with all necessary personal protective equipment (PPE)
- How well the employees are informed, theoretically and practically, when it comes to matters of labour safety and labour protection (how familiar they are with the norms of the current legislation, requirements, rights and obligations of employees).

The current legislation of Ukraine determines the conditions under which an audit of labour protection is mandatory (State Statistics Service of Ukraine 2018):

- Preparation for inspection by state regulatory authorities
- Absence of a full-time employee responsible for OSH at the enterprise
- Accident or accidents at the enterprise
- Assessment of the state of the labour protection system at the enterprise in order to prevent accidents.

An audit of labour protection is carried out by an independent third party in order to identify, assess and minimise the risks of the enterprise in compliance with legislation in the field of labour protection and industrial safety. Such an independent labour protection audit has the following advantages:

- Prevention of injuries and industrial accidents
- Identification of risks (inconsistencies) before the arrival of regulatory authorities
- Prevention of financial liability for non-compliance with the labour protection legislation
- Building an effective work system for the labour protection service
- Additional control and verification of the effectiveness of the labour protection service
- Taking the first step towards the development of methods and programmes to achieve industrial safety standards
- Increasing social trust, image, investors, public authorities to the enterprise.

The audit procedure at the enterprise (State Statistics Service of Ukraine 2018):

I STAGE. Preparing:

- Determination of the objectives and timing of the audit
- Definition of an audit programme
- Co-operation arrangements.

II STAGE. Analysis:

- Analysis of documentation on labour protection and assessment of the effectiveness of the labour protection management system
- Analysis of compliance with the requirements of legislative and other regulatory legal acts on labour protection
- Verification of permits for the operation of high-risk equipment
- Effectiveness of risk management (personnel safety when performing hazardous work, equipment operation)

- Availability of resources for the effective functioning of the labour protection system (training, the level of qualification of the personnel in the field of labour protection)
- Analysis of accident data, the results of their studies, corrective actions for previously identified inconsistencies
- Participation in labour protection.

III STAGE. Preparation of an expert report:

On the basis of the results of the audit, a report is compiled that contains: an analysis of the working conditions of the workers, a list of violations in the area of labour protection identified at the enterprise, and tips for eliminating deficiencies, as well as a description of managerial risks and recommended measures to improve labour safety. The expert report includes:

- Research, an analysis of the state of labour protection and industrial safety at the enterprise
- Results of the verification of compliance with the requirements of existing documentation
- Analysis of compliance with labour protection requirements by employers and employees
- Presentation of specific legislation that has been violated
- Recommendations on the elimination of discrepancies, comprehensive solutions for industrial and labour safety.

Thus, the implementation of the coherent work of the labour safety audits in enterprises reveals the dangerous (risky) job sites and prevents crashes or injuries suffered by workers in a timely manner. The auditor must consider the human factor in an audit of occupational safety. It is evident especially in Ukrainian enterprises. Therefore, when solving the issues of labour safety, it is necessary to simultaneously solve the issues of the production and workers culture. Enterprises that have a high level of culture fulfil all the requirements for ensuring financial and industrial safety, as a rule.

5. The Impact of Occupational Risks on the Economic Development of Ukraine

The financial security of enterprises is largely determined by internal financial security, which, in turn, is determined by the technical state of production and the human factor. Not all business leaders give the human factor the necessary attention, which is why they pay later, losing both their finances and their work. Annually, Ukraine suffers impressive losses of labour and financial resources due to the low level of labour safety and non-compliance with sanitary standards at most enterprises, as stated by the Deputy Chairman of the Federation of Trade Unions of Ukraine, Sergey Ukrainets (*The First Krivoy Rog* 2013). According to him, despite

the fact that in Ukraine, there is still no perfect methodology for calculating such losses, there is a generalised model assessment of the International Labour Organization. According to it, every developed country in the world annually loses more than 4% of its GDP as a result of industrial accidents and occupational diseases. The Ukrainian GDP is about UAH 1.5 trillion. Thus, the annual economic losses of Ukraine in the area of labour protection result in at least UAH 60 billion, as noted by Sergey Ukrainets. He specified that these losses consist of the fact that a significant number of people annually stops working. For instance, more than 1,200 people die at work, and about 12.5 thousand workers become disabled, though, if not for injuries or illnesses, they could still work fully and increase the national welfare in the coming years. On the basis of the above financial losses as a result of the lack of a nationwide system of effective risk management in Ukraine and, as part of it, risk management in enterprises, taking all internal and external threats into account, the country suffers huge financial losses, people die and get injured in their workplace, and the infrastructure collapses.

Currently, steps are being taken to address these issues and increase GDP, while reducing injuries and deaths in the workplace is evidence of this positive process. In Ukraine, the international standards ISO 12100, OHSAS 18001, ISO 31001 and others were ratified and adopted for implementation, which, when implemented at the enterprise, should help solve security issues and eliminate problems in managing production risks, improving their identification, assessment, accounting and planning measures to reduce them to acceptable values. However, the process of implementing these standards is not very simple and has many barriers. The fragmentation of government departments and the lack of professionalism of some employees nullify the effectiveness of this work. It will take at least another 10–20 years before the risk management system in the workplace begins to work at the proper level. Both the state and most enterprises are not ready to implement a risk management system because it applies to the entire enterprise and all structures and managers. An external impact is needed, maybe even a threat, including a financial one, of government inspectors who will push the management to implement an enterprise management system according to the scheme shown in Figure 3.

Table 1 shows the costs of enterprises in Ukraine, determined by accidents (related and unrelated to production) which were paid during the reporting year (State Statistics Service of Ukraine, 2018). It is shown that the amount of payments exceeds UAH 15 million in a year. Under the article ‘for other payments to victims, family members, funerals carried out at the expense of enterprises’, the costs equaled more than 11 million in 2017. It should be noted that the amount of fines to officials (administrative employees) for such payments is much less and decreases every year. Therefore, enterprises must consider the financial threats posed by such costs.

Education and training of bachelors and masters in specialisation 263 – Civil Security, in the educational programme – Labour Protection – helps to accelerate

the implementation of risk management and reduce financial losses. In Ukraine, such training began officially in 2011 and currently more than 15 higher education institutions are preparing bachelors and masters in this field. These are those specialists who should replace the ‘old’ personnel, armed with new knowledge and approaches to solving modern problems, based on the experience of previous generations of labour protection engineers.

Table 1. Costs of enterprises caused by accidents from 2014–2017

Indicators	Years			
	2014	2015	2016	2017
The costs of enterprises caused by accidents in total (in UAH)	18,836,342	18,778,507	15,007,204	19,496,946
Including the payment of the first 5 days of incapacity for work, in accordance with the certificate of incapacity for work (in UAH)	9,367,670	10,469,396	6,996,105	7,871,345
Including other payments to victims, family members, funerals performed at the expense of enterprises (in UAH)	9,468,672	8,309,111	8,011,099	11,625,601
The amount of fines paid by administrative employees of enterprises for violation of laws and labour protection standards related to accidents, including for their concealment (in UAH)	145,346	102,868	115,742	92,740

Source: State Statistics Service of Ukraine (2018).

Specialists of the new formation should be managers and co-ordinators of the introduction of risk-oriented approaches to enterprise management, which involves an integrated approach to identifying and managing risks. Learning is necessary not only for students, but also for teachers. Currently, there is an opportunity to undergo advanced training on the introduction of a risk-based approach, not only to introduce it in one’s own country, but also to exchange experiences with partners abroad.

6. Discussion

The studies presented in the paper show that there is a certain relationship between the state of labour protection at the enterprise and its financial security. Historical information provided in this article about accidents and disasters demonstrates that any emergency events in Ukraine lead to global economic losses of enterprises.

Injuries and accidents at work, as well as possible financial losses and the risks associated with them, are a category that must be considered at any enterprise (Figure 3 and Table 1). Insufficient attention paid to this issue by the company management leads to significant financial losses. For instance, the death of an employee or a group of employees stops the production process, and what results in financial losses can exceed the established criteria for financial security which may lead to the financial collapse and closure of this enterprise.

In most cases, economists in Ukraine do not take the impact of such emergencies on financial stability into account, as there is no established system for accounting for production risks. For the last 10 years efforts have been made to introduce a risk-oriented approach to the analysis of the occupational safety and health of workers at the enterprises, and one can already observe a positive impact where this approach has been implemented. The time has come when production risks should be taken into account by financiers in enterprises when analysing the financial security of these enterprises. The history of emergencies in Ukraine and its regions should be carefully studied and financial risks and security must be determined taking all risks, and above all, production risks which at many enterprises exceed acceptable levels, into account.

The dependencies in Figures 1 and 2 show that industrial injuries and the gross income of the state are linked by certain dependencies. These dependencies can have different indicators which are determined by the volume of production and the financial well-being. The analysis of the world's information sources shows that a similar problem exists in almost all enterprises. The only way out of this situation is to train labour safety managers and teach safe working practices for workers. Thus, the implementation of international standards for security and risk management is an urgent task which also has a financial aspect of security.

A research implication is that the reduction in injuries as a result of an increase in GDP corresponds to the generally recognised dependence of risks on the economic (financial) condition of the enterprise. However, the overall 'picture' of the financial security situation can be imagined if one assesses the impact of accidents, disasters and other emergencies on the economic condition of not only the enterprise, but also Ukraine. Then it becomes evident that financial security is a component of the enterprise management system and of the risk management subsystem where the financial security system should be included.

7. Conclusions

The analysis of the financial security of enterprises in Ukraine showed a high degree of risk which is determined by the presence of potential internal and external threats, specified by the absence of a single effective system of comprehensive analysis and assessment which leads to huge financial losses. On the basis of the

research results obtained, it is necessary to regularly conduct labour safety audits at enterprises. At the same time, it is necessary that auditors are not only state-owned, but also independent.

A decrease in the effective control of the state bodies of the DPSN and GOSTRUDA since 2013 over the state of safety of production facilities has led to a decrease in financial security and an increase in financial and professional risk. The international standards introduced by enterprises can help solve these problems, and subject them to an integrated approach that takes into account the education and training of specialists with a degree. It is necessary to improve the training of occupational safety specialists with a focus on world standards and regulations. It is crucial to integrate world standards into the existing legal documents of Ukraine.

The analysis and assessment of financial security should be carried out comprehensively with the involvement of managers and specialists of all departments and services. For each workplace, risk maps must be developed that need to be constantly monitored and changes should be made to their indicators. It is necessary to actively introduce a risk-oriented approach in Ukrainian enterprises, which should be integrated into all areas of production.

The improvement of the state of financial security can also be helped by the work of sanitary doctors who have ceased to train in Ukrainian higher educational institutions. There is an urgent need to address this issue because only they have the opportunity to inspect any enterprise without hindrance.

References

- Abdalla, S., Apramian, S.S., Cantley, L.F., Cullen, M.R. (2017). Injury Prevention and Environmental Health. 3rd edition. Chapter 6. *Occupation and Risk for Injuries*. Available online: <https://www.ncbi.nlm.nih.gov/books/NBK525209/> (accessed on 27 August 2020).
- Berezutskyi, V.V. (1999). Theoretical Foundations of Life Safety. (Ed.), *Social Risk Concept* (pp. 30–32). Kharkov:KhNPU.
- Berezutskyi, V.V., Adamenko, M.I. (2016). *Nebezpečni vyrobnychi ryzyky ta nadiynist (Dangerous Production Risks and Reliability)*. Kharkiv: FOP Panov A.M. Available online: http://repository.kpi.kharkov.ua/bitstream/KhPI-Press/23046/1/Berezutskyi_Nebezpečni_vyrobnychi_ryzyky_2016.pdf (accessed on 21 April 2020).
- Besafe (2020). *The Impact of Health and Safety on Businesses*. Available online: <https://www.phsbesafe.co.uk/news/the-impact-of-health-and-safety-on-businesses> (accessed on 27 August 2020).
- Business portal Uaprm.info (2016). *Novak Calculated the Financial Losses of Ukraine from an Accident*. Available online: <http://uaprom.info/news/156434-novak-podschital-finansovye-poteri-ukrainy-dtp.html> (accessed on 11 March 2020).

- Gaevaia, T. (2018). *'Credit History' of Ukraine. Who and How Much Money Has Lent to Our Country?* Available online: <https://112.ua/statji/kreditnaya-istoriya-ukrainy-kto-skolko-deneg-odolzhil-nashey-strane-475087.html> (accessed on 27 February 2020).
- Gukova, A.V., Anikina, I.D. (2016). *The Role of the Financial Security of the Enterprise in the System of Its Economic Security.* Available online: <http://masters.donntu.org/2016/iem/sidorov/library/article1.htm> (accessed on 17 February 2020).
- Independent Edition DonPress (2018). *Experts Voiced Financial Losses of Ukraine Due to the Occupation of Crimea and Donbass.* Available online: <https://donpress.com/news/23-03-2018-eksperty-ozvuchili-finansovye-poteri-ukrainy-iz-za-okkupacii-kryma-i-donbassa> (accessed on 9 March 2020).
- Information Resource Today (2015). *TOP 5 Technological Disasters in the History of Ukraine.* Available online: <https://www.segodnya.ua/criminal/top-5-tehnogennyh-katastrof-v-istorii-ukrainy-623193.html> (accessed on 9 March 2020).
- Insurance Information Institute (2020). *Reducing the Risk of Work-Related Injuries.* Available online: <https://www.iii.org/publications/insuring-your-business-small-business-owners-guide-to-insurance/risk-management/reducing-the-risk-of-work-related-injuries> (accessed on 27 August 2020).
- Interfax Ukraine (2019). *EU Assistance to Ukraine Is Many Times More than American.* Available online: <https://interfax.com.ua/news/political/617714.html%207> (accessed on 4 March 2020).
- League Business (2010). *Ukraine Loses \$5 Billion Annually as a Result of Road Accident.* Available online: <https://biz.liga.net/all/avto/novosti/ukraina-ezhegodno-teryayet-5-mlrd-v-rezultate-dtp> (accessed on 9 March 2020).
- Luppel, E.M., Ermolenko, E.N. (2016). *The Essence and Features of Financial Security of the Enterprise in the Conditions of Unstable Economic Situation.* Available online: <http://masters.donntu.org/2016/iem/sidorov/library/article1.htm> (accessed on 10 February 2020).
- Ministry of Finance (2019). *Gross Domestic Product (GDP) in Ukraine.* Available online: <https://index.minfin.com.ua/economy/gdp/> (accessed on 17 February 2020).
- Mitina, N.B., Babenko, E.Y., Vorobiova, L.O., Malunovska, N.V. (2018). *Study of the State of Traumatic and Professional Disease Level on Industrial Objects of Ukraine.* Available online: <http://smm.pgasa.dp.ua/article/view/151240/152330> (accessed on 4 March 2020).
- NSAI Standards (2018). *Guidelines for Auditing Management Systems (ISO 19011:2018).* Available online: <https://infostore.saiglobal.com/preview/is/en/2018/i.s.eniso19011-2018.pdf?sku=1983879> (accessed on 4 March 2020).
- Pristanskaia, N. (2020). *How Ukraine Will Deal with Road Traffic Accidents: Kriklii's Explanation.* Available online: https://24tv.ua/ru/kak_v_ukraine_budut_borotsja_s_avarijnostju_na_dorogah_objasnenie_kriklija_n1279107 (accessed on 11 March 2020).

- Seokho, C., Sangwon, H., Dae Young, K., Yoonjung, S (2015). 'Accident Risk Identification and Its Impact Analyses for Strategic Construction Safety Management'. *Journal of Civil Engineering and Management*, Vol. 21(4), pp. 524–538. <https://doi.org/10.3846/13923730.2014.890662>.
- State Labour Office in Chernihiv region (2018). *The Best indicator of Work Is to Reduce the Level of Occupational Injuries*. Available online: <http://cn.dsp.gov.ua/cp2cms/w/cntu/news/new816> (accessed on 27 February 2020).
- State Statistics Service of Ukraine (2018). Injury at Production in Ukraine in 2017. Statistical collection. Kiev. Available online: http://www.ukrstat.gov.ua/druk/publicat/kat_u/2018/zb/05/zb_tv_2017.pdf (accessed on 14 March 2020).
- The first Krivoy Rog (2013). *Every Year, Occupational Injuries Bring Losses to Ukraine by 60 Billion UAH*. Available online: <https://1kr.ua/news-9942.html> (accessed on 11 March 2020).
- Ukrainian Civil Protection Research Institute (2020). Fire Statistics. Available online: <https://undicz.dsns.gov.ua/ua/STATISTIKA-POZHEZH.html> (accessed on 11 March 2020).

Chapter 5

Supporting the Internationalisation of Enterprises: The Role of Foreign Economic Policy and Institutions in Export Development

*Izabela Sarosiek*¹

1. Introduction

In terms of impact on economic processes on a global scale, the company is the basic entity due to the ability to transform production factors into goods, thanks to which it is possible to meet the needs of consumers at a given time and in an appropriate standard. Through the entry of businesses on the market, there is an increase in dynamics and flexible economic changes of a structural nature. This contributes to improving the competitiveness of the economy, raises the level of effective management of available resources, and fills the gap created by the collapse of companies which did not show any appropriate innovation. The phenomenon of internationalisation directly affects the activities of enterprises and economic groups. The growing number of enterprises and the noticeable dynamics of creating facilities on the part of the exporting state towards the internationalisation of the operations of national units testify to the ability and growing awareness of entrepreneurs about possible development directions. The start of foreign expansion ceases to be conditioned by material, financial, and human resources and shows the ability to adapt strategic decisions to the changing business environment.

Although the internationalisation of enterprises is well researched by other authors, it should be noted that there is a lack of an assessment of specific institutions and tools which are used by national institutions for financial and substantive

¹ University of Bialystok (Poland), ORCID: 0000-0001-7873-8468, e-mail: sarosiekizabela@gmail.com

support to Polish exporting enterprises. The research gap is the current list of national support measures, together with a specification of financial and substantive products. Filling that gap consists in transparent classification of institutions offering assistance to exporters and dividing them, according to the nature of their activities. This study is needed due to the sheer volume of information on websites, so it was required that the issue be sorted out.

The aim of the analysis is to determine motives for the internationalisation of businesses, as well as to evaluate the role of foreign economic policy and domestic institutions in supporting the export activities of Polish enterprises. The research question refers to the fact of what financial and substantive support is offered by the national institutions for exporters, and to what extent the foreign economic policy tools are applied for international trade. Therefore, the research, based on literature review, is focused on the classification of types of assistance offered to entrepreneurs by national institutions, which allowed for showing methods of influencing foreign trade by government institutions.

The research is based on a review of the literature and critical analysis regarding foreign trade and economic policy. The paper presents theoretical issues by using Polish and foreign works in the field of international trade. Moreover, the information contained on government websites, which was subjected to classification, was also used and a critical analysis, according to the selected division into financial and substantive assistance, was conducted.

A review of the literature shows the theoretical premises for the process of internationalisation of economic activity. The analysis of the impact of the state's economic policy on foreign trade allows the identification of the main strategies and objectives of foreign trade policy. The overview of domestic forms of support for Polish exporters contributes to an in-depth analysis of the current domestic support measures for Polish exporters for 2020. In line with this, institutions have been indicated, which offer substantive and financial support, along with the presentation of the most important organisations which help national entrepreneurs in starting international expansion.

2. Motives for the Internationalisation of Enterprises

Enterprises, besides households and the state, are the basic tool influencing the processes taking place in global economy. The circular money flow model shows the position of the entrepreneur as a producer of goods and provider of services, for which he or she receives payment from households and the state. At the same time, the enterprise is obliged to pay for the production factors provided by households (Wachowiak 2011:27).

According to Samuelson and Nordhaus (2012:187), an enterprise is a unit that transforms production factors into durable goods, characterised by homogeneity

and the ability to meet the needs of consumers. In addition, they are assigned a dominant position in modern economic life, which is manifested by the ability to direct production processes in the global economy. Begg et al. (2003:182) emphasise that the concept of enterprise is associated with the place where certain benefits arise from production activities occurring in a closely related and repetitive pattern. Wachowiak (2011:27–28) highlights the fact that the company's goal is to provide goods which are characterised by the required standard and are available within a specified period. There is some risk associated with the business activities, and the main goal to be pursued is to increase its value, and not only to achieve a satisfactory rate of return. An increase in the enterprise value is the basic argument in the process of capital involvement by investors who expect to maximise profits from the funds involved in the venture. However, worth mentioning is the fact that in the long run, it is the ability to create competitive advantage and strengthen its continuous growth that is the basis of the enterprise value (Wachowiak 2011:27–28).

In case of achieving an unsatisfactory rate of return or a desire to increase their book value, enterprises decide to enter international markets. According to Rymarczyk (2004:19), internationalisation is a certain way of market behaviour and means foreign expansion of an enterprise of an economic nature, regardless of the degree of involvement or the intensity of activities. The process of the internationalisation of business activities may be considered as an increase in involvement, in particular financial, outside the home market. Internationalisation is also associated with the geographical expansion of enterprises, which increases the number of connections with foreign partners. However, regardless of the perspective of analysing the internationalisation process, the basis for the organisation's activities in the foreign arena is the constant pursuit of enterprise development (Żbikowska 2012:12).

The development of business operations on foreign markets includes both entering and starting operations outside the home market and increasing the involvement of the enterprise's assets abroad. The search for new sales markets and the prospect of reducing unit production costs are the basic premises for starting foreign expansion. At the same time, the reduction of unit costs of production outside the home country depends on such premises as: the reduced labour force price, and lower tax charges (Żbikowska 2012:21). This approach inclines to consider the role of international trade as a function of motives and a tendency to expand into international markets and the predisposition to increase one's position on the foreign arena. Internationalisation creates opportunities to gain benefits from functioning on this level (Żbikowska 2012:21).

In the literature, there are many classifications of the motives for international business activities. Overall, five categories of motives can be distinguished (Żbikowska 2012; Rymarczyk 2004; Grzegorzczak 2013):

- Economic motives
- Market motives

- Political motives
- Cost motives
- Supply motives.

The first category, i.e. economic motives, relates to the process of striving businesses to achieve the required results of operational efficiency, expressed by the amount of expenditure needed, assumptions regarding the financial result, market value, profitability ratios, profitability or the rate of return on capital employed in the venture, and the scale of sales (Wiktor, Oczkowska, Żbikowska 2008:25–26). Enterprises which are guided by economic considerations aim at reducing unit production costs and multiplying the sales of goods offered, thanks to which it is possible to achieve greater profits and improve the efficiency of resource use (Żbikowska 2008:21–22).

Market motives, also called ‘marketing’, result from the need to expand sales markets and attract new consumers. This is associated with the creation of restrictions on the domestic market, i.e. a decrease in demand for goods or increased intensity of competition. As a result, an enterprise with unused production capacity and a lack of development prospects on the domestic market is seeking foreign expansion. In addition, it is worth emphasising the fact that the prospect of increased demand abroad, the size and absorption of the market are the basic premises for investing their resources by investors (Żbikowska 2008:22). According to Rymarczyk (2004:61), the motives for foreign expansion are reflected in:

- Stagnation on the home market
- Product ageing on the domestic market
- Existence of unused production capacity
- Tightening competition in the oligopolistic nature of the home market
- Dynamic development of international markets
- Introduction of import restrictions on markets which have been subject to expansion in this area
- Formation of integration groupings which result in the creation of a common market.

Market factors are also associated with competition activities. The foreign expansion of market rivals and a desire to overtake competitors who have not yet started looking for new markets are another group of reasons included in the market motives. Acquiring a new economic space ahead of competitors enables enterprises to gain an advantage and strengthen their position in a competitive foreign environment (Żbikowska 2012:22). Foreign trade relations and their purchasing power affect foreign trade and the propensity to invest outside their home countries. The undervaluation of the currency causes an increase in exports with a simultaneous decrease in imports. In turn, the overvaluation of the currency creates a motive for investing abroad because investments in a country with a weaker currency are more profitable (Rymarczyk 2004:40). In addition, thanks to exports, it

is possible to reduce the risk associated with changes in the economic situation on individual markets. Spreading the business to several countries can help avoid economic collapse (Rymarczyk 2004:62).

Another category of motives are political premises which form the basis for the existence of all other means. State policy directs the possibilities of supporting or limiting the activities of international companies. This is done through customs and import restrictions which directly affect the operations of enterprises managed in the strategic sphere from the point of view of the importing country (Limański and Drabik 2010:24). The political motives are also based on acts of supporting national enterprises by state organisations offering technical and financial assistance (Żbikowska 2012:23).

Cost motives result from the fact that lower prices of energy, raw materials, semi-finished products, land or workforce on international markets lead to cost reduction, which is the basic premise for economic operators to shift the production cycle outside the home country (Limański and Drabik 2010:24). Costs create a close correlation with the notion of profitability and efficiency of activities carried out by an enterprise. This means that a condition for the successful cost reduction process on foreign markets is to maintain the growing trend in the area of profits exceeding costs and effective actions of businesses. The expansion of markets leads to an increase in the scale of production and sales of products, which results in economies of scale (Grzegorzczak 2013:15; Rymarczyk 2004:62).

Supply motives are associated with the value of the means of production, the price of which may be much lower abroad than in the home country. In this case, this premise is an incentive to supply with imported factors of production (Żbikowska 2012:22–23). However, in order to ensure a constant supply of the means of production necessary to produce a given product and the smooth functioning of the enterprises, it becomes crucial to undertake foreign direct investment (Limański and Drabik 2010:24).

The business activities focus on obtaining a satisfactory rate of return on invested capital and adapting to the requirements set by consumers. The need to survive in the economic environment creates the need to constantly compete for the consumer, achieve financial liquidity, maximise the use of production factors and increase the value of the enterprises. This action causes the creation of an interaction between the enterprise and the environment, whose dynamic changes create opportunities or limitations.

3. The impact of Foreign Economic Policy on International Trade

The concept of national economic policy is understood as the influence of state authorities as well as institutions and organisations controlled by them in terms of

functioning, dynamics, structure and economic relations in the economic space. The adopted assumptions are implemented through methods and measures resulting from the principle of rational management (Winiarski 2012:18). Economic policy is also implemented by organising international relations activities. Contrary to the fact that the independence of businesses in creating foreign contacts is an attribute of a market economy, the state, as part of economic policy, facilitates or limits these relations (Winiarski 2012:450). The road to the efficient foreign economic policy depends on the priorities set by the state authorities, which directly result from the country's economic policy and the ways of implementing them on the international stage. Winiarski (2012:457) lists two methods of implementing the state's foreign economic policy:

- Autonomous policy – independent organisation of international relations activities, no consultation with the authorities of other countries
- Contractual policy – organisation of international relations activities governed by international agreements.

However, the modern picture of the world economy allows one to conclude that it is contractual policy that has a dominant role, through deepening relations towards a supranational co-operation policy and renouncing part of national sovereignty over a supranational organisation.

Another classification of the directions of the foreign economic policy organisation proposed in the literature includes free trade policy and protectionist policy (Kryk 2012:388). The free trade policy is closely linked to economic liberalism, which implies full freedom in accessing goods and services on the international stage. This freedom also applies to the lack of support from the state to improve competitiveness or to start the foreign expansion of domestic enterprises. The free trade policy refers in its assumptions to D. Ricardo's classical theory of comparative costs (Ricardo 1957). The theory of free trade assumes that the free market provides the greatest benefits for those participating in the exchange and there is proportionality in obtaining them. In practice, this aspect shows that the greatest enthusiasts of this theory are countries with the highest level of development and competitiveness (Winiarski 2012:457). The protectionist policy leads to restrictions on freedom of access to domestic goods, services and foreign enterprises. Protectionism in the economic sense is a derivative of state interventionism (Kryk 2012:388). The goal of state protectionism is to maximise the economic benefits resulting from foreign exchange. In its assumptions, this doctrine refers to the lack of proportional redistribution of the benefits achieved by countries with a low level of economic development. The minimal level of industrialisation means that the protectionist policy is the only opportunity to develop competitiveness and maintain a balance in the trade (Winiarski 2012:458). An extreme case of protectionism is the pursuit of economic autarky, i.e. the state of full self-sufficiency of the economy, excluding imports and limiting contacts with foreign countries (Kalina-Prasznik 2005:16).

Foreign economic policy is characterised by the possibility of interference in the international economic environment. By choosing the right direction for the foreign policy organisation, the task of the authorities is to determine the optimum in terms of protecting the domestic economy while maintaining free market structures.

4. Foreign Economic Policy Tools for Polish Exporters

The means of foreign economic policy constitute a number of mechanisms enabling influence on the international environment and enterprises participating in it by state authorities. Among the tools used by the state to intensify the foreign expansion of domestic businesses, there are, e.g. para-tariff instruments (direct and indirect export subsidies) and tax exemptions (Winiarski 2012:460–463). Export subsidies include all facilitations and reliefs granted to national enterprises by state authorities in order to carry out international expansion or stay on foreign markets (Winiarski 2006:463). The export subsidies are divided into direct and indirect ones. The direct subsidies focus on: (1) providing bonuses to exporters which are equivalent to the volume of exports, (2) paying differences between the domestic price of exported goods and its price on foreign markets, (3) reimbursement of part of the costs incurred in connection with the international expansion of domestic entrepreneurs. Indirect export subsidisation is characterised by granting reliefs and facilities which ensure cost reduction, i.e. tax breaks, granting loans on preferential terms, reimbursement of costs related to import duties on imported factors for export production.

Economic promotion includes a set of co-ordinated activities which are undertaken to create a positive reception of the country, its policy and economy. Prepared in an appropriate manner and effectively conducted economic promotion allows one to provide information that convinces one to co-operate in the acquisition of goods produced in a given country. As emphasised by Grzelak (2017:248), the promotion is complementary to the factors which determine the competitiveness of the economy in the international environment, i.e. production costs, the quality and prices of exported goods.

The implementation of promotional activities is carried out through economic diplomacy, which means taking actions conducive to the growth of the international position of the Ministry of Foreign Affairs and diplomatic missions (Table 1). Popularising the economic interests of the state consists in: negotiations and conclusion of commercial contracts, membership in supranational economic groups, searching for partners outside the home country, and promotion of domestic exporters (Grzelak 2017:252). In addition, economic measures are used, i.e.: preferential loans, export letters of credit, guaranteed loan insurance.

Table 1. National export support institutions

Institution	Substantive support	Financial assistance
Ministry of Foreign Affairs	+	+
Foreign Trade Offices	+	–
Investor and Exporter Service Centres	+	–
Polish Investment and Trade Agency	+	–
SOLVIT	+	–
Polish Development Fund Group	+	+
Ministry of Finance	–	+
State Development Bank of Poland	–	+
Export Credit Insurance Corporation 'KUKI'	Only insurance	Only insurance

Source: own study.

Among the institutions substantively supporting the activities of businesses on international markets are Foreign Trade Offices (in Polish: Zagraniczne Biura Handlowe, ZBH) in the Polish Investment and Trade Agency. Foreign Trade Offices are a network of representative offices which actively support the export and investment of Polish enterprises abroad. They are characterised by flexibility in the sphere of needs and challenges tailored to the economic environment of a given country. ZBH's priority is to support Polish enterprises which are interested in foreign expansion. The main tasks of representative offices include (Export Promotion Portal 2020):

- Providing market information and reporting it
- Creating a network of contacts with local enterprises
- Organisation of training for Polish exporters
- Finding and verifying potential business partners
- Assistance in the advertising and promotion of products entering the foreign market.

Foreign Trade Offices form the basis for expanding international co-operation of businesses throughout the entire expansion process and maintaining Polish enterprises on foreign markets.

Substantive export support is also provided by Investor and Exporter Service Centres, which consists of 15 units providing information services in the form of (Polish Investment and Trade Agency 2018):

- List of potential foreign partners from a selected market or industry
- Information about events
- Information on export and investment news, transaction settlement techniques and trading habits
- Information on instruments for supporting international expansion.

The Polish Investment and Trade Agency (in Polish: Polska Agencja Inwestycji i Handlu, PAiH) deals with supporting enterprises at the national and international levels. In the sphere of export, the organisation's activities include the promotion of foreign investments of Polish entrepreneurs and the synchronisation of operational funds, programmes, missions and fairs for foreign trade (PAiH 2019). PAiH is the main co-ordinator of the Polish Tech Bridges programme which helps companies from the SME sector gain support in the development of expansion strategy and their internalisation potential on foreign markets.

SOLVIT is a system whose task is to mediate in solving administrative problems of Polish citizens and enterprises with the European Union, Liechtenstein, Norway and Iceland (European Commission 2020). In Poland, it operates in the Department of European Affairs at the Ministry of Entrepreneurship and Technology. As part of the implementation of the Strategy for Responsible Development for the Period Up to 2020 (Strategy for Responsible Development), the system of supporting the foreign expansion of Polish enterprises has been rebuilt. The Strategy for Responsible Development is a document that sets out Poland's development goals along with the presentation of instruments (Kamińska and Kulińska-Sadłocha 2019:208). Activities aimed at the development of export were included in the area of: Foreign expansion under the specific objective – 'sustainable economic growth increasingly driven by knowledge, data and organizational excellence' (SOR 2017:142–145). The Polish Development Fund Group is a fundamental tool in implementing the strategies.

The Polish Development Fund Group (in Polish: Polski Fundusz Rozwoju, PFR) is an institution bordering financial and substantive assistance. It includes a set of financial and consulting institutions whose goal is to create solutions which guarantee success and security in the areas of banking, insurance, innovation, trade and foreign investment. In addition, it prepares economic analyses and regularly updates all Polish products available to exporters (PFR 2020).

The Ministry of Finance is a governmental institution whose task is to grant government loans for financing the supply of goods and services from Poland. The loans are granted on preferential terms as part of tied aid. The use of aid is possible for developing countries, the list of which has been published by the OECD, based on the Gross National Income per capita (Ministry of Finance 2020). The government loans constitute an important role in supporting Polish exports, and they are an alternative to other assistance instruments, i.e. grants or budget support. In addition, they contribute to the accumulation of development assistance provided by Poland. Furthermore, the Ministry of Finance supports exports through: export and government loans, export credit insurance, and an interest subsidy on loans granted for export (Ministry of Finance 2020).

State Development Bank of Poland (in Polish: Bank Gospodarstwa Krajowego, BGK) is a state-owned development bank that participates in stimulating the development of Polish businesses in the international arena by financing, granting

sureties and guarantees. As part of its strategic tasks, the institution offers exporters (BGK 2019):

- Bank's guarantee
- Letter of credit
- Buyer's credit granted through the importer's bank
- Direct buyer's credit
- Letter of credit discount
- Purchase of Export Receivables
- Financial support for exporters

The bank's guarantee represents the bank's commitment to pay to the beneficiary of the guarantee the amount indicated in it in the event of failure to comply with the guarantee principal's obligation. The letter of credit is the type of financing based on the documentary letter of credit and financing position of the importer's bank. This tool also provides liquidity and reduces transaction risk (BGK 2019:9). The buyer's credit granted through the importer's bank is intended for financing purchases of Polish goods and investment services carried out on the basis of export contracts concluded by Polish exporters with foreign enterprises. The loan is granted to a foreign bank approved by BGK, which, in turn, grants a direct loan to the importer. The loan is insured by Export Credit Insurance Corporation, 'KUKÉ' (in Polish: Korporacja Ubezpieczeń Kredytów Eksportowych, KUKÉ) (BGK 2020). The direct buyer's credit is made for foreign buyers with the intention to finance the purchase of Polish capital goods and services on the basis of contracts concluded with Polish exporters. They are granted directly to foreign buyers. Each loan is insured by KUKÉ (BGK 2020). The letter of credit discount is a form of financing for the exporter. BGK makes payments to the exporter (the beneficiary of the letter of credit) before the payment date specified in the letter of credit. The amount due under the letter of credit is reduced by discount interest. KUKÉ secures the discount by insurance guarantee (BGK 2020). The purchase of Export Receivables is offered as part of the Polish government's financial support programme for exporters. Pursuant to the objectives of the programme, BGK has the option of refinancing a loan granted by a Polish exporter to its foreign partner, insured by KUKÉ (BGK 2020). The financing of the expansion of Polish companies is a long-term loan programme which is based on the balance sheet of a Polish or a foreign being. Product includes the acquisition of companies abroad or their assets, the construction of production plants abroad and the financing of a joint venture with a foreign company (BGK 2019:10).

Export Credit Insurance Corporation 'KUKÉ' (in Polish: Korporacja Ubezpieczeń Kredytów Eksportowych, KUKÉ) is an institution which provides insurance services to Polish entrepreneurs. KUKÉ facilitates safe trade in the country and abroad, including both export and domestic transactions of their clients. Its activity is focused on insuring trade receivables which result from the sale of

goods and services with deferred payment. In addition, as part of its insurance activities, the institution issues bonds and guarantees (KUKI, 2020).

5. Conclusions

The expansion of businesses on foreign markets leads to increased dynamics and flexible economic changes of a structural nature. Internationalisation directly affects the activities of enterprises and economic groups, and it seems impossible to study the issue of foreign expansion without including economic policy. The description of selected tools of foreign economic policy and domestic institutions whose task is to support the foreign expansion of Polish enterprises has shown the demand for such services on the domestic market. The projects change dynamically to adapt to the current needs of the domestic and foreign market environment, which proved difficult during the analysis of the topic. The motives to internationalise the business activities show a wide range of circumstances for the company's foreign expansion.

Enterprises starting foreign expansion and already present on foreign markets may apply for support from Polish institutions in terms of content and finance. The Polish government actively promotes the goods of Polish producers abroad and activates enterprises in internationalisation processes, which means that domestic international trade may become increasingly interested in expanding into foreign markets. Lending on preferential terms and risk minimisation are additional positive incentives to start foreign expansion and gain new markets.

The literature review demonstrates an important impact of foreign trade on the development of enterprises. This made it possible to show the theoretical premises for the process of internationalising economic activity and to identify five motives explaining the undertaking of foreign expansion. The literature provides different internationalisation motives. However, common premises for the internationalisation are: economic motives, market motives, political motives, cost motives, supply motives. Judging from the analysis of the impact of the state's economic policy on foreign trade, the individual tasks, and objectives of foreign trade policy have been identified. The analysis of the literature achievements in the field of available tools of foreign economic policy showed the methods of supporting Polish exporters.

By analysing the current national support measures for Polish exporters in 2020, financial and substantive support could be identified. This allowed for the analysis of selected institutions by substantive, financial, guarantee ones or those simultaneously offering several products. It can be stated that the offer of Polish institutions is very wide and is part of dynamic changes in the economy. In addition to financial and substantive assistance, enterprises can count on help in obtaining a bank guarantee, which significantly extends their access to external sourc-

es of financing, which are often expensive and difficult to obtain in the early stages of running a business.

It is worth emphasising that the willingness to use the services offered by national institutions should result from the information gap that they have. Substantive products can help enterprises through participation in training in the field of management or promotion on foreign markets. Financial assistance allows for the faster development of the enterprises on foreign markets without fear of financial support, and is a motive to search for new sales markets, which is directly related to the economic, supply and cost motives of internationalisation. The wide range of services offered to Polish entrepreneurs in the field of export may enable the use of contractual policy in commercial contacts with foreign partners, and the use of the protectionist policy of the state in relation to domestic enterprises, which is related to the political motives.

Further quantitative analysis should take into account the demand for services of domestic institutions offering assistance to exporters and the use of their potential by enterprises. The research could also be continued with a detailed analysis of the impact of these tools on the exports of Polish enterprises in recent years.

References

- Bank Gospodarstwa Krajowego (2020). Gwarancje bankowe. Available online: <https://www.bgk.pl/przedsiębiorstwa/wsparcie-eksportu/finansowanie-handlu/gwarancje-bankowe/> (accessed on 20 March 2020).
- Begg D., Fischer S., Dornbusch R. (2005). *Economics*. McGraw-Hill/Irwin Education.
- Blaug M. (1997). *Economic Theory in Retrospect*. 5th edition. Cambridge, New York: Cambridge University Press.
- Buckley, P.J. (2009). Business History and International Business. *Business History*, Vol. 51(3), pp. 307–333.
- Carlson S. (1966). *International Business research*. Uppsala: Almquist and Wiksells.
- Cuervo-Cazurra A. (2010). Internationalization Process. In: P. Mazzola and F.W. Kellermanns (Eds.), *Handbook of Research on Strategy Process*. Northampton: Edward Elgar Publishing, pp. 432–451.
- Enterprise Europe Network (2020). International Partnership. Available online: <https://een.ec.europa.eu/content/international-partnerships-0> (accessed on 20 March 2020).
- European Commission (2020). What Is SOLVIT? Available online: https://ec.europa.eu/solvit/what-is-solvit/index_en.htm (accessed on 20 March 2020).
- Export Promotion Portal (2020). Foreign Trade Offices. Available online: <https://www.trade.gov.pl/pl/departments/index> (accessed on 20 March 2020).

- Fletcher M., Harris S. (2012). Knowledge Acquisition for the Internationalization of the Smaller Firm: Content and Sources. *International Business Review*, No. 21.
- Grochal-Brejdak M., Szymura-Tyc M. (2018). The Internationalisation Process of an E-Commerce Entrepreneurial Firm: The Inward-Outward Internationalisation and the Development of Knowledge. *Entrepreneurial Business and Economics Review*, Vol. 6(4), pp. 103–123.
- Grzegorzczak W. (2013). *Marketing na rynku międzynarodowym*. Warsaw: Wolters Kluwer.
- Grzelak S. (2017). Promocja gospodarcza Polski. Kontrola Państwowa, NIK, No. 2(373).
- Hitt M.A., Li Dan, Xu Kai. (2015). International Strategy: From Local to Global and Beyond. *Journal of World Business*, Vol. 51(1), pp. 58–73.
- Kalina-Prasznica U. (2005). *Leksykon polityki gospodarczej*. Cracow: Oficyna Ekonomiczna Oddział Polskich Wydawnictw Profesjonalnych.
- Kryk J. (2012). *Polityka gospodarcza – teoria i praktyka*. Szczecin: Economicus.
- KUKE (2020). About KUKE. Available online: <https://www.kuke.com.pl/en/about-kuke/> (accessed on 20 March 2020).
- Limański I. Drabik (2010). *Marketing międzynarodowy*. Warsaw: Difin.
- Malik R. (2018). Key Location Factors and the Evolution of Motives for Business Service Offshoring to Poland. *Journal of Economics and Management*, Vol. 31, pp. 119–132.
- Ministry of Finance (2019). Financial Export Support. Available online: <https://www.gov.pl/web/finance/financial-export-support> (accessed on 16 March 2020).
- Polish Development Fund Group (2020). Our Offer. Available online: https://pfr.pl/en/offer.html?clientType=clientType_2&need=need_2 (accessed on 16 March 2020).
- Polish Investment and Trade Agency (2018). Regional Investor Assistance Centres. Available online: <https://www.paih.gov.pl/regions/coi> (accessed on 20 March 2020).
- Polish Investment and Trade Agency (2019). About Us. Available online: https://www.paih.gov.pl/about_us (accessed on 16 March 2020).
- Ricardo (1999). *On the Principles of Political Economy and Taxation*. Kitchener: Batoche Books. Available online: <https://socialsciences.mcmaster.ca/econ/ugcm/3ll3/ricardo/Principles.pdf> (accessed on 16 March 2020).
- Rymarczyk J. (2004). *Internacjonalizacja i globalizacja przedsiębiorstwa*. Warsaw: PWE.
- Samuelson P.A., Nordhaus W.D. (2010), *Economics*. McGraw-Hill/Irwin Education, 19th edition.
- Startup PFR (2020). Learn More About Polish Tech Bridges Program. Available online: <https://startup.pfr.pl/en/news/learn-more-about-polish-tech-bridges-program/> (accessed on 16 March 2020).

- State Development Bank of Poland (2019). The State Development Bank of Poland. Warsaw.
- State Development Bank of Poland (2020). Buyer's Credit Granted Through the Importer's Bank. Available online: <https://www.en.bgk.pl/activities/government-programs/government-program-for-exports-support/buyers-credit-granted-through-the-importers-bank/> (accessed on 16 March 2020).
- State Development Bank of Poland (2020). Direct Buyer's Credit. Available online: <https://www.en.bgk.pl/activities/government-programs/government-program-for-exports-support/direct-buyers-credit/> (accessed on 21 March 2020).
- State Development Bank of Poland (2020). Purchase of Export Receivables. Available online: <https://www.en.bgk.pl/activities/government-programs/government-program-for-exports-support/purchase-of-export-receivables/> (accessed on 20 March 2020).
- The Strategy for Responsible Development for the Period Up to 2020 (Including the Perspective Up to 2030) – SRD, Council of Ministers, 2017.
- Wachowiak P. (2011). *Funkcjonowanie przedsiębiorstwa w gospodarce rynkowej*. Warsaw: Stowarzyszenie Księgowych w Polsce.
- Welch C., Nummela N. and Liesch P. (2016). The Internationalization Process Model Revisited: An Agenda for Future Research. *Management International Review*, Vol. 56, pp. 783–804.
- Wiktor J.W., Oczkowska R., Żbikowska A. (2008). *Marketing międzynarodowy. Zarys problematyki*. Warsaw: PWE.
- Żbikowska A. (2012). *Eksport jako forma internacjonalizacji polskich przedsiębiorstw. Uwarunkowania i strategie*. Cracow: Polskie Towarzystwo Ekonomiczne.

II.

Entrepreneurial and Technology-Based Ecosystems of Socio-Economic Development

Chapter 6

Factors Affecting the Cluster Development: Evidence from the Food Industry in Poland

*Roman Chorób*¹

1. Introduction

In the effective development of farms in the region and the local food industry, the important role is played by integration relations – the more advanced they are, the better the development of companies in this industry is. The chances of Poland should be sought in reducing the impact of the large fragmentation of the farms of agricultural producers through the creation of structures integrating farmers, enabling the rationalisation of production and marketing of agricultural products. It is evident that proper development of processes of vertical and horizontal integration can help to achieve a better market position of Polish producers and processors of agri-food products. The presented work is a study of the use of network structures by food industry companies in Podkarpackie Voivodship. It presents the theoretical foundations for the functioning of various types of network structures, with particular emphasis on elements relevant to their operation. In line with this, the following hypothesis can be formulated: clusters are an effective tool of co-operation networks which are conducive to increasing the enterprise's competitiveness.

The cognitive goal of this study is to identify the factors influencing the development of the cluster exemplified by the food industry in Podkarpackie Voivodship. The subject matter of the empirical study conducted in 2015 was innovative integration links occurring in the agri-food industry in Podkarpackie Voivodship, while the research subject included representatives of institutions managing cluster initiatives and entrepreneurs of these clusters. Particular attention was devoted to the initiation, functioning, and development of innovative forms of integration

¹ University of Rzeszów (Poland), ORCID: 0000-0003-2045-6251, e-mail: rchorob@ur.edu.pl

links occurring in agribusiness. For the analysis, four clusters were selected, i.e. Podkarpackie Agricultural and Food Cluster 'AGRO-KARPATY', 'Podkarpackie Smaki' Cluster, Podkarpackie Organic Food Cluster, and 'Serwatkowa Kraina' Cluster. All clusters of this industry have their headquarters in Podkarpackie Voivodship. The considerations were supported by the author's own research as well as that of other authors, thus enriching the issues discussed.

The first part of the study presents the literature review in relation to various forms of integration, with particular emphasis on the concept of strategic networks. The next part focuses on the research methodology. On this basis, the results of the empirical study were interpreted and in the following section, they were verified and confronted with the results of other authors in the discussion part. Finally, the study was completed with a brief summary of the results.

2. Literature Review

Integration occurs in all sectors of economy. Depending on where the integration impulse comes from, the vertical integration can be divided into the integration directed backwards and the integration directed forwards (Małysz 1996b:5–16). Saccomandi (1998:198–199) distinguishes not only the vertical integration directed backwards and the vertical integration directed forwards, but also the horizontal integration. The top-down integration (directed backwards) consists in the entrance of commercial or industrial capital, as an integrator, to agriculture. The farm then becomes subordinate to the integrator, in return, however, the integrator takes over all or a part of the market risk. The bottom-up integration (directed forwards) consists in taking over the role of the integrator by horizontal relations of farmers, usually their co-operatives or capital companies. Examples of this type of integration are marketing groups and economic products produced by agricultural co-operatives in both the processing industry and gastronomy. This type of integration is generally considered to be a form that better reflects the interests of farmers and strengthens their position in the integrated system.

Considering the form of the development of vertical integration emerging between enterprises, the following types of integration can be distinguished (Woś 1998):

- Capital integration (through the acquisition of the title and the start of the production of food raw materials)
- Legal integration (through the establishment of legal norms by the state when the state determines the manner of connecting from the point of view of set priorities, for instance, by supporting producer groups with subsidies)
- Contractual integration (consisting in concluding a contract, i.e. the system of agreements which exist between the suppliers of raw materials, their producers on the recipient's order, and the integrator).

Yet Małyśz (1998:387–391) distinguishes the fourth form of integration, namely the strategic links (strategic networks). These links are established as a result of the partnership agreement of two or more enterprises which hold a strategic position in the integration chain. The strategic relation is to ensure production of the final product of increased competitiveness (lower processing costs, lower transaction costs, higher quality).

In contrast, Sporleder (1962) defines strategic links as co-operative arrangements between or among companies in order to achieve the strategic goals. The author concludes that the strategic links are a form of corporate partnering. These links have not yet been satisfactorily defined in the literature.

In turn, O’Keeffe (1991) discusses the concept of strategic networks which he identifies with the concept of strategic links. According to him, one of the key challenges in agribusiness is to understand the partnering and competitive dimensions of various relations along the chain of values and to develop systems which create trust and prolong the prospect, reduce short-term actions and minimise opportunism. The network approach perceives competition as being a matter of positioning the company in the network rather than attacking the environment. The strategic network is generally used by companies to gain competitive advantage.

Clusters, according to Markowski (1999), are a specific form of the spatial organisation of industry and service sectors considered to be the most mature form of the organisation of production regarding the ability to maintain development. Their special feature is the ability to generate and sustain competitive advantage (Porter 1990; Meyer-Stamer 1999). On the basis of a detailed analysis of 160 clusters from around the world, Enright (2001) showed that nearly 70% of them have a strong or very strong competitive position, while about 60% of the analysed clusters are characterised by high innovation.

According to Sölvell et al. (2003), the cluster initiative is defined as an organised activity aiming at the promotion of the development and strengthening of competitiveness of clusters which include companies belonging to the cluster separated in the region, the authorities and/or the representatives of research institutions. Cluster initiatives bring about the improvement of operations and strategies in the group of companies, improvement of conditions of the specific business environment and strengthening of networking of enterprises to obtain economic benefits and *spill-overs* (creation of spin-offs) (Skawińska and Zalewski 2009). Enterprises are interdependent, thus creating an extensive network structure. Network relations can take place at the level of communication with customers, suppliers, subcontractors, partners within strategic alliances or academic and research centres (Maik and Godzisz 2013:335–336).

The premise for the emergence of network organisations are changes taking place on the market, which is determined by unpredictability. To a large extent, they are the result of social, economic and technological conditions. In addition, changes in the market are manifested by blurring the line between individual roles

of suppliers and customers. Customers' needs and requirements are also growing, and their loyalty is of great importance. The previously indicated factors led to the emergence of the phenomenon of competition; enterprises were forced to take action to maintain their leadership position. Actions to this end have become: activation of marketing activities, slimming their structures (lean management, outsourcing), using tactics to reduce and share risk (Czuba 2015:14–15).

By joining forces, potential entrepreneurs, i.e. companies complementary to each other, become partners. Gaining advantage on world markets and joining forces is the golden means to achieve the so-called critical mass resulting from the expansion of the competition from the local to the national and even global level. To create new markets, further strengthened by the development of technology, joining forces helps to build strong positions in the forming coalitions in the so-called nodal, especially where standards play a key role, network solutions give a huge advantage to those who entered the market first (Ejsmont et al. 2016:46; Yu and He 2017; Yvez and Hamel 2006:70–71).

3. Research Methodology

The task of empirical research conducted in 2015 was to analyse innovative integration links occurring in the agri-food industry in Podkarpackie Voivodship, while the subject of the study were representatives of institutions managing clusters and entrepreneurs of these clusters.

Surveys, using questionnaires and in-depth interviews, covered two groups of entities. The first of them, due to the deliberate choice of the agri-food industry and the research area, were representatives of four institutions managing the clusters having their headquarters in Podkarpackie Voivodship. The second group of the respondents were entrepreneurs from the clusters. The study covered all 99 members within four clusters²: Podkarpackie Agricultural and Food Cluster 'AGRO-KARPATY', 'Podkarpackie Smaki' Cluster, Podkarpackie Organic Food Cluster, and 'Serwatkowa Kraina' Cluster. 19 entrepreneurs refused to or did not answer survey questions. Therefore, the research results were based on 80 correctly completed questionnaires.

The choice of this method is supported by the fact that some data cannot be obtained in a different way, which is why surveys become necessary in this case. It is understandable that this method has a significant drawback that provides intersubjectively unverifiable information (Stachak 1987:157). Therefore, the inter-

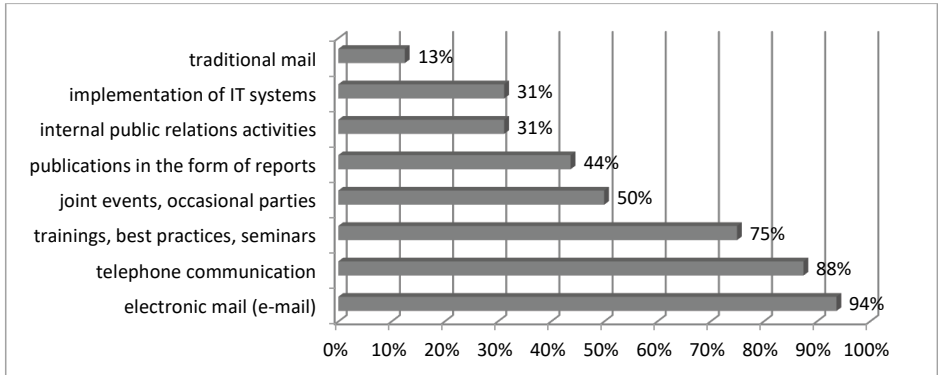
² The number of members and their data necessary to conduct the surveys were made available by representatives of institutions managing individual clusters. In several cases, entrepreneurs declared their membership in more than one cluster. Therefore, they were obliged to complete only one questionnaire.

views were conducted by people with research experience, including the author of this study.

4. Analysis Results

The cluster initiatives extend the concept of social capital by considering mechanisms through which the structure of network relations in a given geographical position brings benefits to individual companies. These benefits result from mutual trust and interpenetration of organisations, and they are favoured by repeated interactions and awareness of mutual dependence in a given region. They strongly encourage the creation of interactions which promote efficiency, stimulate innovation and lead to the creation of new enterprises. Efficient communication supports these processes, and proper management (e.g. through the use of marketing communication tools) can help to create networks of connections between cluster participants (Porter 2001:246–248).

Figure 1. Forms of communication used by cluster entrepreneurs (by scale of importance)³



Source: own study.

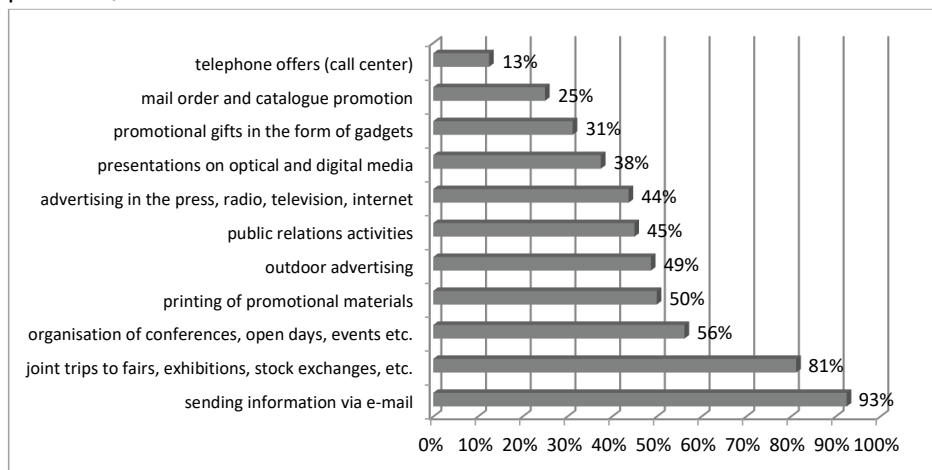
The basis of the communication process in the cluster is a common communication platform. Mutual trust, qualifications and the ability to co-operate with members of the organisation play a significant role in this process, which was also emphasised by other authors (Chorób and Chorób 2015; Fura and Surmacz 2014). The ability to communicate in a cluster means choosing the right communication tools. With reference to the above, on the basis of the results of the author's own research, Figure 1 presents forms of communication preferred by entrepreneurs. The data show that the most popular (by percentage of responses) forms of com-

³ The data do not add up to 100% because the respondents could choose several answers.

munication between entrepreneurs and other participants of the cluster initiative were: electronic mail (93.7%); telephone communication (87.5%) and training, best practices and seminars (75.0%). It proves that the forms of communication mentioned by the respondents are conducive to the functioning and development of the represented cluster initiative.

Cluster promotion is also important for the development of the cluster structure. However, as Kotylak (2013) writes, it should be noted that promotional activities are not a one-sided message, but they constitute true communication. The said promotion can be implemented by appropriate forms of activities, media, presentations or publications conducive to getting to know a given cluster by interested enterprises operating in a closer or distant environment. Figure 2 presents the range of promotion activities which were undertaken by the surveyed entrepreneurs.

Figure 2. Promotional activities preferred by cluster entrepreneurs (by scale of importance)



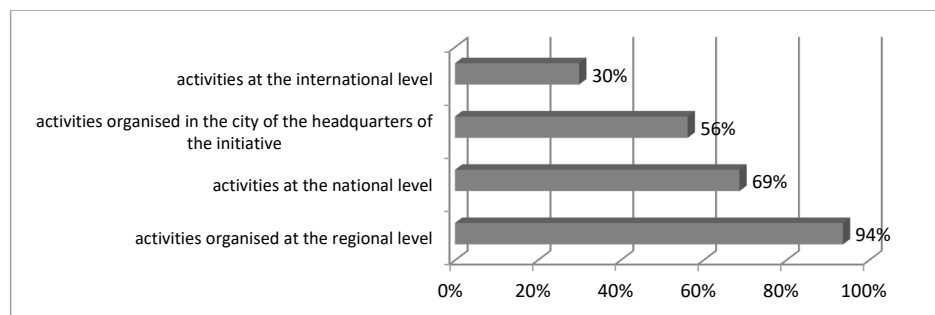
Source: own study.

The data show that the most popular (by percentage of responses) forms of promotion of cluster initiatives were: sending information by e-mail (92.5%) and joint trips to fairs, exhibitions, economic missions and co-operative exchanges (81.2%). Slightly less common in the respondents' opinion were: organisation of conferences, open days, events (56.2%); printing of publications and promotional and advertising materials (50.0%); outdoor advertising (48.7%); public relations activities (45.0%); advertising in the press, radio, television and the internet (43.7%), and presentations on optical and digital media (37.5%).

Considering the range of conducted promotional activities (Figure 3), it was shown that these were mainly organised in the region where the initiative operates

(93.7% of the indications), nationwide activities, to a lesser extent (68.7% of the indications), as well as activities organised in the city in which the cluster structure operates (56.2% of the responses). However, almost every third surveyed entrepreneur expressed the view that these were activities at the international level.

Figure 3. Territorial scope of promotional activities carried out by cluster entrepreneurs (by scale of importance)



Source: own study.

An indispensable element in a well-functioning cluster is also the indication of factors contributing to the dynamic development of this network. According to the representatives of managing authorities, the most important development factors were related to the following answers:

- The initiative has a leader who co-ordinates the activities of all participants
- The initiative has a clearly defined vision and goals transparent to members
- The initiative made it possible to establish co-operation with R&D institutions and/or universities and contributed to the increase in the competitiveness of entities operating in it (3/4 of the responses, respectively).

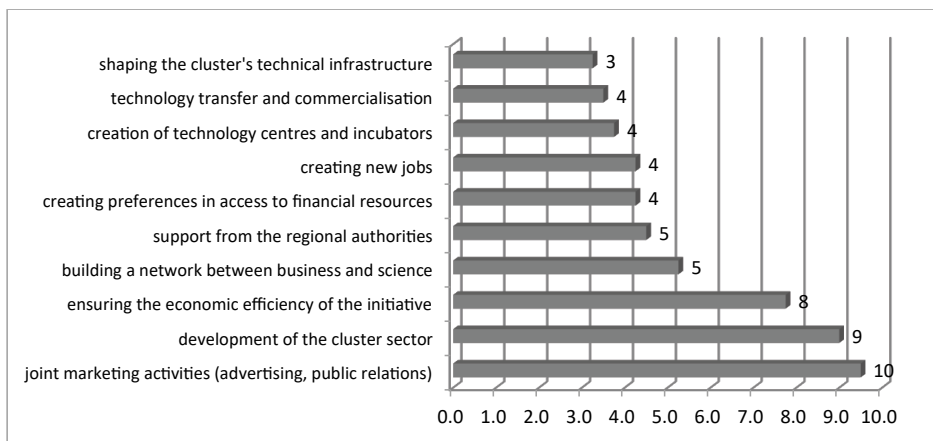
It is worth noting here that co-ordination of activities and having a vision and specific goals are key elements of the cluster development (Chorób 2017:290).

In one question, the surveyed representatives of managing authorities were asked to determine which of the activities support the cluster development to the greatest and least extent. The distribution of their answers (according to the arithmetic average) is presented in Figure 4. Analysing the data, it should be stated that the most important activity turned out to be joint marketing activities, i.e. advertising, public relations (arithmetic average 9.50).⁴ The second most important factor is the development of the sector in which the cluster initiative operates (arithmetic average 9.00). The third position was to ensure the economic efficiency of the cluster initiative (arithmetic average 7.75). It can therefore be concluded that

⁴ The question in the survey was scaled according to the rank scale, where 1 was the least important factor and 10 was the most important factor.

the cluster's development is determined by co-operative and economic factors. When analysing subsequent answers, it is also worth noting political factors. The research results confirm the fact that financial aspects are still a significant limitation or even barrier in creating, functioning and dynamic development of the cluster initiative.

Figure 4. Activities supporting the cluster development according to representatives of managing authorities (arithmetic averages by scale of importance)



Source: own study.

5. Discussion and Conclusions

Co-operation between entrepreneurs is one of the key factors in the development of both companies and the whole economy. The benefits of co-operation are different for enterprises, among them: easy access to information, sharing resources, sharing business risk or greater bargaining power in contacts with other entities. Joint implementation of projects also increases the chances of new ideas and innovations. According to Leydesorff (2013), the co-operation of entrepreneurs with public administration and research institutions is also extremely important. However, according to Krupnik (2014), the main factors determining the existence of co-operation include: trust in the partner, appropriate competences and an environment conducive to co-operation, also by appropriately securing the interests of co-operating parties.

Trust is the main product of the norms of social co-operation, anchored in national and group culture, which make up social capital (Fukuyama 2000). Modern research shows direct relationships of trust with other processes in the economic environment. The transparency of economic and public relations requires a mini-

imum level of trust anchored in interpersonal relationships (Krannich 2013; Chorób and Chorób 2015). Common values give a reference system to social norms which create predictability and credibility, and thus give a chance for complex, co-operative action.

With regard to entrepreneurs, it can be stated that they are distrustful. For instance, in Gardawski's (2013) research, 40.4% of respondents said that most Poles can be trusted, and 51.6% said that you can never be too careful when dealing with people. For comparison, in a similar period, only 13.4% of adult Poles said that most people can be trusted (Diagnoza Społeczna 2015). The quoted research results, unfortunately, do not constitute a good premise for building lasting co-operation based on mutual trust.

The second factor determining cluster co-operation are the appropriate competences. High competences and the willingness of residents to invest in their skills are the main elements supporting the development of entrepreneurship and strengthening the economy of a given country (Hansson, Johanson, Leitner 2004; Jelonek 2014; OECD 2010). These features are also conducive to reducing unemployment mainly among young people and reducing income inequalities (OECD 2012).

Finally, the third factor, as important as trust and competence, affecting cluster co-operation, is the environment conducive to this co-operation, including the quality of lawmaking and law enforcement. As it turns out, entrepreneurs are more willing to co-operate if they feel that the law and the courts are able to minimise the risk associated with dishonest partners. The significant impact of the quality of law and court work on co-operation and investment expenditure in the field of research and development is empirically proven (Watzinger and Seitz 2013; Krupnik 2014). In international rankings, Poland holds relatively low positions in this area. This means that one of the key ways to support business co-operation and R&D and innovation is to improve the quality of lawmaking and law enforcement.

Achieving a critical mass by clusters (the necessary number of companies and other institutions creating the agglomeration effect) does not guarantee success. For a cluster to develop and increase its competitiveness, it is necessary to provide it with certain resources (human, financial, infrastructural) and to shape certain attitudes which are favourable for co-operation. The key in this respect is the existence of an appropriate communication system between cluster entities, ensuring an atmosphere of co-operation and at the same time enabling the establishment of new contacts and the creation of partnerships. In addition to the aspects related to the entities of the cluster and the relations between them (internal environment), an important role in stimulating the development of the group is played by the environment in which it operates, i.e. the external environment (Dzierżanowski, Rybacka, Szultka 2011:38).

The above-mentioned authors, on the basis of the conducted research, mention internal factors, including aspects related to the functioning of entities inside, as well as external factors related to the environment in which the cluster operates,

among the factors favouring the development of clusters. Among the internal factors, they mention the following: an effective communication network between entities, establishing contacts and creating partnerships, an atmosphere conducive to co-operation, the high quality of human capital, the presence of industry leaders in the cluster and the so-called 'entrepreneurial spirit'. On the other hand, among the external factors, they mention: activities supporting public authorities, the presence of business support institutions, the high quality of life, access to financing and a strong scientific background.

It is worth emphasising that the above-mentioned research results are largely consistent with the research results obtained by the author of this study, and cited above. Factors such as: joint activities of entities, ensuring economic efficiency, support for the authorities of the region in which the cluster operates, building a co-operation network between business and science or creating preferences in access to financing, deserve attention. The representatives of managing authorities of the analysed clusters also pointed to such factors as: the development of the sector in which the cluster operates, creation of new jobs, technology centres and incubators, as well as technology transfer and commercialisation. However, the key issue, confirmed by the above-mentioned authors, is the creation of an atmosphere conducive to co-operation, based on mutual trust, as well as the willingness to co-operate, so that the entities of the cluster want to communicate and co-operate with each other.

To sum up the undertaken considerations, it should be emphasised that co-operation is a major challenge, because it has a significant impact on these R&D and innovation activities. Co-operation can be influenced by high competences, increasing the level of trust, improving the efficiency of the functioning of the state and the judiciary in taking care of the individual or group interests of employees. This co-operation may take various forms, one of them is the co-operation of entities within the framework of innovative integration connections, which are cluster structures being an example of a co-operation network.

The study proved that proper co-operation in the form of clusters is one of the main factors affecting the increase in competitiveness and achieving the success of entities concentrated in this structure. Thus, the research hypothesis adopted in the introduction was confirmed that clusters are an effective tool of co-operation conducive to increasing the competitiveness of their member entities. The research results prove that an efficiently functioning cluster structure significantly increases the productivity of local companies. Moreover, the geographical proximity of entities co-operating in the cluster system is a driving force of their innovation and competitiveness, contributing to economic development.

The research results obtained may contribute to similar cognitive research and implementation analyses in the future. They may enrich the presented knowledge regarding both innovative forms of integration connections and their conditions, possibilities and development perspectives in agribusiness.

References

- Chorób R., Chorób E. (2015). Informacja, wiedza i zaufanie w kreowaniu ekspansji innowacyjnych struktur integracyjnych w dobie społeczeństwa cyfrowego. In: M.G. Woźniak (Ed.), *Nierówności społeczne a wzrost gospodarczy. Społeczeństwo, przedsiębiorstwa i regiony w dobie gospodarki elektronicznej* (pp. 47–49). Iss. 44 (4/2015), part 1. Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
- Chorób R. (2017). *Uwarunkowania rozwoju innowacyjnych form powiązań integracyjnych rolnictwa z przemysłem spożywczym z uwzględnieniem klastrów rolno-spożywczych (na przykładzie województwa podkarpackiego)*. Prace Naukowe Wydziału Ekonomii Uniwersytetu Rzeszowskiego, Seria: Monografie i Opracowania, No. 20, Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
- Czuba M. (2015). Klastry jako przejaw struktur sieciowych na przykładzie firm działających w branży usług komunalnych w Polsce. *Zeszyty Naukowe Wydziału Zamiejscowego w Chorzowie Wyższej Szkoły Bankowej w Poznaniu*, No. 17, pp. 13–28.
- Diagnoza POIR – Ministerstwo Gospodarki* (2015). Available online: <http://www.mg.gov.pl/Fundusze+UE/POIR+2014-2020/Dokumenty/Diagnoza> (accessed on 17 January 2019).
- Dzierżanowski, M., Rybacka, M., Szultka, S. (2011). *Rola klastrów w budowaniu gospodarki opartej na wiedzy*. Gdańsk-Szczecin: Instytut Badań nad Gospodarką Rynkową, ICG.
- Ejsmont A., Klemens B., Moczala A. (2016). *Klastry – kooperujące i konkurujące organizacje sieciowe*. Warsaw: Texter.
- Enright M.J. (2001). *Regional Clusters: What We Know and What We Should Know*. Paper prepared for the Kiel Institute International Workshop on Innovation Clusters and Interregional Competition, Kiel, 12–13 November 2001.
- Fukuyama F. (2000). *Wielki wstrząs. Natura ludzka a odbudowa porządku społecznego*. Warsaw: Wydawnictwo Bertelsmann Świat Książki.
- Fura B., Surmacz T. (2014). Zarządzanie środowiskowe w przedsiębiorstwach jako narzędzie służące budowie zielonych łańcuchów dostaw. *Logistyka*, No. 6, p. 13269.
- Gardawski J. (Ed.) (2013). *Rzemieślnicy i biznesmeni. Właściciele małych i średnich przedsiębiorstw prywatnych*. Warsaw: PARP.
- Hansson B., Johanson U., Leitner K-H. (2004). The Impact of Human Capital and Human Capital Investments on Company Performance: Evidence from Literature and European Survey Results. In: P. Descy, M. Tessaring (Eds.), *Impact of Education and Training*, Luxembourg: Publications Office of the European Union.
- Jelonek M. (2014). Kompetencje. In: P. Dardziński, M. Dulak, M. Jelonek, M. Kędzierski, S. Krupnik, W. Przybylski, A. Rzegocki, J.F. Stanikło (Eds.),

- Przedsiębiorczość, głupcze! Jak wejść na drogę do bogactwa?* (p. 16). Fundacja Lepsza Polska, Cracow: Wydawnictwo Księgarnia Akademicka.
- Kotylak S. (2013). *Przemysł kreatywny jako element marketingu terytorialnego*. Zeszyty Naukowe Uniwersytetu Szczecińskiego, No. 775, Problemy Zarządzania, Finansów i Marketingu, No. 30, (pp. 85-98). Szczecin: Wydawnictwo Uniwersytetu Szczecińskiego.
- Krannich M. (2013). Zaufanie w klastrze. In: L. Knop, J. Stachowicz, M. Kranich, S. Olko (Eds.), *Modele zarządzania klastrami. Wybrane przykłady*. Gliwice: Wydawnictwo Politechniki Śląskiej.
- Krupnik S. (2014). Współpraca. In: P. Dardziński, M. Dulak, M. Jelonek, M. Kędzierski, S. Krupnik, W. Przybylski, A. Rzegocki, J.F. Staniłko (Eds.), *Przedsiębiorczość, głupcze! Jak wejść na drogę do bogactwa?* Fundacja Lepsza Polska, Cracow: Wydawnictwo Księgarnia Akademicka.
- Leydesorff L. (2013). N-tuple of Helices. In: E.G. Carayannis (Ed.), *Encyclopedia of Creativity, Innovation and Entrepreneurship* (pp. 1400–1402). New York: Springer.
- Maik A., Godzisz A. (2013). Istota i pojęcie organizacji sieciowej. *Studia i Materiały Uniwersytetu Jana Kochanowskiego w Kielcach. Miscellanea Economicae*, No. 2.
- Małyż J. (1998). Integracja w agrobiznesie. In: A. Woś (Ed.), *Encyklopedia agrobiznesu* (pp. 387–391). Warsaw: Fundacja Innowacja.
- Małyż J. (1996). *Procesy integracyjne w agrobiznesie*. Warsaw: SGH.
- Markowski T. (1999). *Zarządzanie rozwojem miast*. Warsaw: PWN.
- Meyer-Stamer J. (1999). *Strategien lokaler/regionaler Entwicklung: Cluster, Standortpolitik und systemische Wettbewerbsfähigkeit*. Duisburg: Institut für Entwicklung und Frieden, Universität Duisburg.
- OECD (2010). *Innovative Workplaces: Making Better Use of Skills Within Organizations*. OECD Publishing.
- OECD (2012). *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*. OECD Publishing.
- O’Keeffe M. (1991). *The Relationship Between Primary Producers and the Processing Sector: A Case in the Australian Grain Industry*. Seminar on: From Farmer to Consumer.
- Porter M.E. (1990). *The Competitive Advantage of Nations*, New York: Free Press.
- Porter M.E. (2001). *Porter o konkurencji*. Warsaw: Polskie Wydawnictwo Ekonomiczne.
- Saccomandi V. (1998). *Agricultural Market Economies: A Neo-Institutional Analysis of the Exchange, Circulation and Distribution of Agricultural Products. European Perspectives on Rural Development*. Assen: Van Gorcum.
- Skawińska R.I., Zalewski E. (Eds.) (2009). *Klustry biznesowe w rozwoju konkurencyjności i innowacyjności regionów. Świat-Europa-Polska*. Warsaw: PWE.

- Sölvell Ö., Lindqvist G., Ketels C. (2003). *The Cluster Initiative Green-Book*. Stockholm: Center for Strategy and Competitiveness.
- Sporleder T.L. (1962). Accessing Vertical Strategic Alliances by Agribusiness. *Canadian Journal of Agricultural Economics*, No. 4.
- Stachak S. (1987). *Wstęp do metodologii nauk ekonomicznych*. Szczecin: AR w Szczecinie.
- Yu H., He Z. (2017). *Cohabitation Before Marriage? An Examination of Pre-Acquisition Alliance Partnerships and Merger Outcomes*. Available online: https://mediacast.blob.core.windows.net/production/Faculty/StoweConf/submissions/swfa2014_submission_138.pdf (accessed on 22 November 2017).
- Watzinger M., Seitz M. (2013). *Contract Enforcement and R&D Investment*, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2013: Wettbewerbspolitik und Regulierung in einer globalen Wirtschaftsordnung – Session: R&D and Innovation II, No. C10-V1.
- Woś A. (Ed.) (1998). *Encyklopedia agrobiznesu*. 1st edition. Warsaw: Fundacja Innowacja.
- Yvez Doz L., Hamel G. (2006). *Alianse strategiczne: sztuka zdobywania korzyści poprzez współpracę*. Gliwice: HELION.

Chapter 7

The Role of Entrepreneurship as a Factor of Regional Development: The Case of Małopolskie Voivodship

*Kinga Szmigiel*¹

1. Introduction

The basic goal of economic policy, implemented at various territorial levels, including the regions, is to foster socio-economic development and to reduce the development gap between individual territorial units. However, this goal is characterised by both compatibility and competition, especially when it comes to short-term selection of priorities and when the authorities have limited resources to spend. This problem occurs in relation to supporting entrepreneurship. The role of entrepreneurship as a development factor is well recognised in the literature, but the question of what types of companies should be supported in order to contribute most effectively to economic development, and how they should be supported, is still valid.

Therefore, the aim of this article is to determine the role of entrepreneurship in regional development in case of Polish region Małopolska, with particular emphasis on rural areas. The following research questions will be explored: 1) How do the mechanisms for supporting entrepreneurship at the regional level contribute to development of different types of areas? 2) What is the perception of entrepreneurship development in rural communes of Małopolskie Voivodship? The study is conducted on the basis of the analysis of statistics, regional strategies, and evaluation reports, as well as the results of a survey which was carried out among the self-governments of rural communes of the Małopolska region, and a smaller group of urban-rural communes.

¹ Cracow University of Economics (Poland), ORCID: 0000-0002-8269-1225, e-mail: kinga.szmigiel@uek.krakow.pl

The article starts with a literature review by synthesising scientific achievements on the role of entrepreneurship in development, including regional development, and the basic methods of supporting businesses, especially the SME sector. The following sections present the role of entrepreneurship in Małopolska, entrepreneurship support programmes and their importance in the current development strategy of the voivodship. Then, the results of the questionnaire relating to entrepreneurship and conditions for its development in rural communes are presented. The article ends with conclusions and recommendations regarding further support for entrepreneurship in the Małopolska region.

2. Literature Review

Currently, both theoreticians and practitioners agree on the role of entrepreneurship in economic development. Entrepreneurship is a crucial factor in economic development through employment, innovation and welfare effects (Acs and Amorós 2008; Coad 2009; Acs, Parsons, Tracy 2008; OECD 2007 and 2010; Wach 2012). The studies from around the world consistently link entrepreneurship to job creation, GDP growth, and long-term productivity increases (Isenberg 2010). This applies especially to high-growth firms, which can be distinguished across other characteristics of companies, like their size or sector, and strongly contribute to development and prosperity (Mason and Brown 2013). Moreover, small and medium-sized enterprises (SME) sector has an additional meaning, as a large number of small companies contribute to actual competition on the market, resulting in faster development pace and technological advancement (Pach 2008). The support of entrepreneurship is also important for the development of rural areas because it reduces the outflow of population to areas offering better living and working conditions (Kłodziński 2005).

Business of all sizes contributes to the development and competitiveness of economies in a variety of ways, including: creating added value, providing fiscal revenues, employment and being a source of technological advancement through innovation. At the same time, most support instruments focus on a group of small and medium-sized enterprises, and a specific type of innovative entrepreneurship: start-ups (Amorós, Cohen, Lundy 2017; Piecuch and Szarek 2018). This is due to the fact that in a competitive market, it is small and medium-sized enterprises which require attention and support from governments at various territorial levels, whereas large companies have funds or at least more opportunities to obtain capital for investments, foreign expansion, research and development activities. One can also observe a trend towards focusing on promoting high-growth firms, as this type of companies creates a disproportionately large share of all new jobs (Henrekson and Johansson 2010).

Given the different enterprises in the literature, instruments of support are also becoming more and more diversified to better meet the needs of individual

types of companies and the stages of their development. For instance, a new group of instruments: incubators, accelerators and venture capital funds are dedicated to start-ups, as their needs are specific and differ from the rest of the SME sector (Amorós, Cohen, Lundy 2017). Support for entrepreneurship may also differ due to the fact that the definition of entrepreneurship has many dimensions (Rogalska 2018). Supporting the development of such firms cannot be limited to simple subsidies for investments, but it should include a number of instruments. Therefore, the public authorities should build entire entrepreneurial ecosystems (Stam and Spiegel 2016). The said entrepreneurial ecosystems involve interrelations among industrial, social, and institutional conditions in specific territorial units (Mason and Brown 2014; Isenberg 2010).

The crucial role of entrepreneurship is also highlighted by the European Union (EU), especially the SME sector in development of member states (Bednarczyk 2004). The importance of entrepreneurship was first noticed by the Lisbon Strategy and then further emphasised in the Europe 2020 Strategy (European Commission 2002). Therefore, besides a campaign aiming at the promotion of entrepreneurship in Europe, there are many programmes to support the SME sector. For instance, since August 2014, SMEs can access two of financial instruments within the programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME). The EU cohesion policy for 2014–2020 also focuses to a large extent on supporting entrepreneurship and innovation (Kudełko 2010). In the Polish regions, the following operational programmes aimed at supporting entrepreneurship operate in the current programming period: Smart Growth, regional programmes and the Eastern Poland programme available in the five least developed regions. Entrepreneurs can also apply for specific support from other programmes, e.g. co-financing of the project for training or consulting from the Knowledge, Education and Development Programme (Ministerstwo Inwestycji i Rozwoju 2018).

In many EU countries, the SME sector is also characterised by a high innovation tendency which bears the innovativeness of economies (Żoźniński 2006). In case of Poland, unfortunately, the level of innovation of small and medium-sized enterprises is low compared to EU leaders. Furthermore, the ecosystem of start-ups, which are innovative enterprises, is not highly developed in Poland. These issues, combined with the fact that Polish regions are relatively underdeveloped and not very innovative compared to the European Union, make the support of entrepreneurship in Polish regions gain additional significance, not only as a research problem, but also a practical issue for the Polish authorities.

Previous research and literature have focused primarily on national economies, but the territorial aspect of entrepreneurship and the development itself is becoming more and more important (Rocha and Sternberg 2007). Regional entrepreneurship is an emerging research field as the geographical perspective of entrepreneurial activities gains importance (Fritsch and Schmude 2006; Sternberg 2009). Regional de-

velopment can be defined as irreversible quantitative and qualitative changes aimed at achieving a sustainable increase in the socio-economic and cultural potential of the region (Kudełko 2005). In line with theoretical considerations, regional development, as a relatively new area of economy and spatial management, benefits from, among others, the achievements of the general theory of economic development, economic theory or the theory of spatial economy. This means that development processes are perceived analogously at different territorial levels, but certain endogenous factors at the national level are an external factor from the point of view of local governments in the regions. Conditions for the development of entrepreneurship in Poland were very similar in individual regions, but despite the fact that companies are subject to the same national legal regulations, voivodships can offer different quality of human capital, sales markets and infrastructure. As a result, the level of entrepreneurship differs between voivodships, as well as the contribution of businesses to their development.

Development factors are concentrated in the most attractive places to live and run a business, which means that the development of individual territories takes place with different intensity and effects. It is most reflected at the local level, as large agglomerations are characterised by the highest level of development, and peripheral areas and rural ones are least developed. While the former are characterised by dynamic development and often also a concentration of entrepreneurship and innovation, the latter are at risk of depopulation and progressive marginalisation (Borowiecki, Siuta-Tokarska, Thier, Żmija 2018).

It is also with regard to innovation that the regional perspective is more and more frequently taken as the appropriate reference to these processes (Nowakowska 2011). The concept of regional innovation systems emphasises that a region is a place of interactions necessary for the occurrence of innovation processes. In other words, innovation is a geographically rooted process, that consists of reliance on local resources, the concentration of enterprises in relative proximity, and social relations. This does not indicate that regional systems (both entrepreneurial and innovation) are self-sufficient and can be analysed in isolation from other territorial units. They are a part of a larger system and are strongly influenced by external factors and policies at national and international levels. However, the latter shows that regions are the right perspective for research on entrepreneurship and innovation and the implementation of policies to support them. For the above-given reasons, the analysis presented in this article will focus on one of the Polish regions: Małopolska.

3. Research Methodology

Both quantitative and qualitative methodologies were applied in order to draw conclusions on the development of entrepreneurship in Małopolska and means of

its support. In the first stage of the analysis, a synthetic assessment of the level of development was made on the basis of the available statistical data to present the various indicators of entrepreneurship in the region against the background of Poland and the European Union. This choice resulted primarily from the availability of data relating to the chosen research problem. The position of the Małopolska region in comparison to other voivodships and its changes over time result from the specificity of the region and from the fact whether regional and local authorities are able to offer better conditions for entrepreneurship than other areas of Poland. Therefore, in the next step the current strategy for the region's development and other programme documents relating to supporting entrepreneurship were subjected to critical analysis. The regional strategies have been analysed because they determine the difference between voivodships, whereas the national support programmes and some of EU ones are an element common to all regions. At the next level of disaggregation, intra-regional differences are also important, therefore the results of a survey conducted in rural communes of Małopolska Voivodship were used. It allowed for an insight into the perception of the issue of the level of entrepreneurship development and available support for businesses in rural areas in the opinion of local authorities. The respondents are representatives of the local governments: 111 rural communes not belonging to the Cracow area, 9 rural communes belonging to the Cracow area, 4 urban-rural communes belonging to the Cracow area, 35 reserve urban-rural communes. The research sample for the survey was randomly selected to be representative of the rural communes of Małopolskie Voivodship, and included a sample of communes from the Cracow metropolitan area. Moreover, 35 reserve communes are urban-rural communes from Małopolskie Voivodship. The study was carried out by an independent company, sending surveys to the local governments of the selected municipalities and then, if necessary, supplementing the data and obtaining additional explanations in a telephone interview in 2019. The questionnaire contains a variety of questions concerning various aspects of the development of rural communes in the Małopolska region², while this article uses only those survey questions which are related to the research objective of the paper, which is to assess the role of entrepreneurship in the development of the region. Due to the fact that in the region the lowest degree of entrepreneurship is characteristic of rural communes, apart from a few located in the Tatra Mountains area, the inclusion of the results of the survey in the analysis allowed for a better assessment of the situation in the rural areas of Małopolskie Voivodship.

² This study is based on results of the questionnaire among local governments of Małopolska's rural and urban-rural communities conducted in 2019 as a part of research by Department of Economic Policy and Development Programming at the University of Economics in Cracow.

4. Results and Discussion

4.1. The Role of Entrepreneurship in Regional Development in Małopolska Voivodship

Until 2019, the number of enterprises, in particular micro-enterprises, in Poland increased, as well as their contribution to the creation of Gross Domestic Product (GDP) and employment. Although, in relation to the last index, the growth dynamics was lower because mainly micro-enterprises and self-employed persons emerged in recent years. Meanwhile, large companies from the service sector dominate in terms of employment. Indicators relating to research and development and the innovativeness in Polish companies are gradually improving. However, the exceptions are a slight decrease in the share of innovative enterprises (excluding micro-enterprises) to 14.4% and a decrease in the average expenditure on innovation in the industry is contrary to the service sector (GUS 2020). It is also important to note that Polish regions are some of the least innovative ones in the European Union (Regional Innovation Scoreboard 2019). Therefore, rather dynamic improvement is expected on the basis of cohesion policy programmes.

Against this background, the Małopolska region should be considered average. In 2017, the region ranked 7th regarding per capita GDP, which is a slight increase, as in 2005 Małopolska took 9th place. The pace of growth of Małopolskie per capita GDP is in accordance with the Polish average (Bank Danych Lokalnych, indicator P3503, Gross domestic product per capita). In the ranking of small and medium-sized entrepreneurship, Małopolska took 7th place (Skowrońska and Zakrzewski 2019). In terms of the number of active enterprises in the SME sector per 1,000 inhabitants, this is a leading region. However, they are characterised by relatively low revenues and investment outlays compared to other regions (Skowrońska and Zakrzewski 2019). Moreover, the innovativeness of Małopolska's companies is only slightly above average, despite the potential that Cracow represents in this regard. The characteristics of entrepreneurship in Małopolska over time are presented in Table 1.

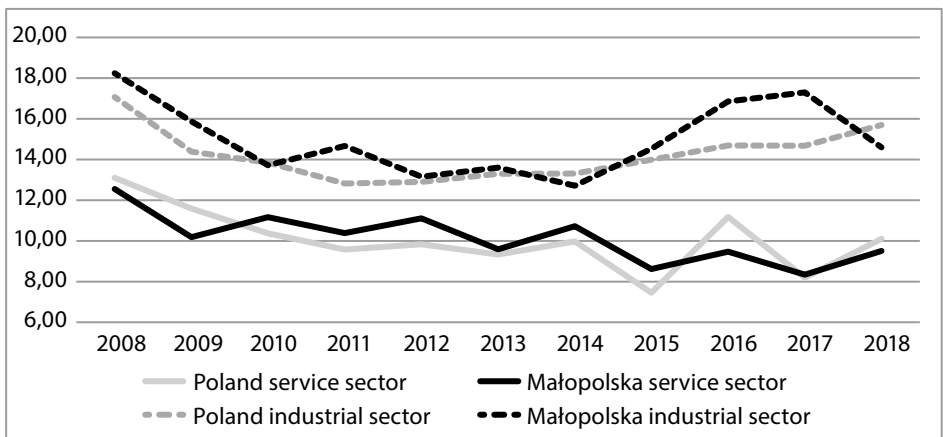
According to the REGON registry, entrepreneurship in Małopolska is slowly growing (Table 1), but the trend is neither strong nor constant. However, a shift in the structure of regional economy can be observed, as the share of newly registered agri-food processing sector enterprises is small and dropping over time, whereas the share of newly registered creative sector enterprises is growing.

As presented in Figure 1, both in Poland and the Małopolska region, the percentage of enterprise conducting innovation activities shows no clear rising trend and it may even be threatened with a decline. This shows the need for intensifying activities which support innovative SMEs at the national and lower territorial levels. The voivodship fluctuates around the national average in this respect, which indicates the average level of the attractiveness of the region for innovative companies.

Table 1. Entrepreneurship indicators for Małopolskie Voivodship in 2009–2019

Indicators	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Enterprises in the REGON registry per 10 thousand people	952	993	991	1,024	1,045	1,059	1,079	1,097	1,121	1,151	1,202
Enterprises in the REGON registry per 1,000 people	86	88	89	89	88	90	92	95	99	99	102
Business environment institutions per 10 thousand enterprises of the national economy	N/A	652.3	657.9	656.7	660.4	659.9	661.2	660.5	666.8	667.8	665.8
Share of deregistered enterprises in the total number of enterprises in the REGON registry	6.1	5.8	9.0	5.9	6.7	7.3	7.1	6.8	6.6	6.4	4.4
Share of newly registered creative sector enterprises	6.28	6.74	6.78	6.50	6.56	7.13	6.87	6.83	7.33	7.44	7.28
Share of newly registered agri-food processing sector enterprises	0.76	1.03	0.63	0.55	0.66	0.65	0.59	0.52	0.55	0.50	0.49

Source: GUS (2020).

Figure 1. Enterprises with expenditures on innovation activity as percentage of all enterprises in Małopolska and Poland in 2008–2018

Source: GUS (2020).

In case of Małopolska companies, the share of expenses on fixed assets in total expenses on innovative activities of industrial enterprises is decreasing (from 79% to 68%) and shifting towards research and development (31%) (Bank Danych Lokalnych 2020). This is a positive trend because it means that companies try to develop new technologies themselves, and not just buy ready-made solutions. Similarly to the national scale, it is also in Małopolska that the level of innovation in enterprises depends on their size – the least innovative companies are among micro- and small enterprises. In 2018, only 17% of micro- and small companies invested in product innovations and 9% of them in process innovations.

In Małopolska, innovative enterprises are concentrated in Cracow, it is the third city for start-ups after Warsaw and Wrocław. Over 10% of Polish start-ups come from Cracow, and thanks to numerous acceleration programmes and access to highly qualified human capital, they can scale up (Nieć 2019). Małopolska start-ups specialise mainly in the areas of Big Data, analytics, Internet of Things and ICT, which is one of the region's intelligent specialisations. Nonetheless, it should be emphasised that ICT is one of the most common smart specialisations in regions. The game production industry should be considered more unique on the national scale, as the availability of specialists attracts companies from this industry and favours the establishment of new ones. The internet and digital technologies are also to the largest extent used by micro- and small companies in Cracow, while in the rest of the voivodship, they are less popular and there are problems with internet speed. The region has great potential of highly qualified human capital to use for enterprises due to the highest percentage of university graduates in technology and natural sciences in Poland. Małopolska, especially Cracow, took full advantage of the existing opportunities for development in some high-tech industries, and in 2018, there was a shortage of designers, database administrators and programmers in the region (Zarząd Województwa Małopolskiego 2019).

As stated by Regional Innovation Scoreboard 2019, Małopolska scores among moderate innovators, along with seven other regions in Poland, including the one that is newly distinguished for administrative reasons: the Warsaw metropolitan region. The rest of Polish regions are the lowest group of modest innovators. The innovation performance of Małopolska has increased over time, but it remains below the EU average. The following indicators in Małopolska are above the EU average, stating the advantages of the region: population with tertiary education, non-R&D innovation expenditures, design and trademark applications and R&D expenditures in the business sector. This may be seen as an indicator of a well-developed entrepreneurial system in the voivodship, however, it is only a part of the system components, which is not enough for its effective functioning. Moreover, as already mentioned, qualified human capital is concentrated in Cracow, which attracts innovative firms and causes their concentration. It is not a sufficient engine of development for innovative companies in the entire region, as evidenced by the indicators of low effects. The weakest indicators of Małopolskie Voivod-

ship, according to Regional Innovation Scoreboard 2019 are all types of innovations: product, process, marketing and organisational, SME innovating in-house (Regional Innovation Scoreboard 2019). What is interesting is that in comparison with the first measurement of RIS in 2011, innovative SME's co-operation with others shifted from the region's strength to a weakness.

A significantly lower, but still diversified level of entrepreneurship is represented by rural communes of the region. Rural communes in the region constitute a large and diverse group. Małopolska as a region with a relatively high number of agricultural municipalities needs solutions supporting the diversification of jobs in rural areas. In case of these areas, one should not count on the dynamic development of many innovative enterprises. Due to favourable conditions, such enterprises and start-ups will be located in the largest cities. It is also indicated by the distribution of aid funds, which are concentrated in more developed areas, offering better conditions for the development of entrepreneurship. However, there are also specific instruments available to peripheral areas and those at risk of marginalisation. The stimulation of entrepreneurship and the creation of new jobs are also important in rural areas, and they are the objective of the Rural Development Programme for 2014–2020 (Ministerstwo Rolnictwa i Rozwoju Wsi 2018). The development of entrepreneurship in rural areas was one of the pillars of the Pact for Agriculture and Rural Areas as early as in 1999 (Rada Ministrów 1999). However, the amount of funds allocated for this purpose turned out to be insufficient in view of the scale of the problems, and the distribution of funds within the programmes addressed to rural areas is in favour of the development of agricultural activity.

Entrepreneurs from Małopolska have possibilities to receive EU support from all programmes, both EU-wide and available for Poland under the cohesion policy, except for the territorially limited Operational Programme Eastern Poland. At the same time, the most important thing for the specific situation of enterprises in the region is their perception of the regional development strategies. *Małopolska Development Strategy 2011–2020* (Urząd Marszałkowski Województwa Małopolskiego 2011) assumed support for individual entrepreneurship as a part of increasing competitiveness. The authors of this strategy noticed the unfavourable situation of Małopolska in terms of innovative enterprises and planned actions aimed at its improvement. The implementation of a new support model entrepreneurship in the region was to be based on returnable funds and active business environment support. However, taking into account the fact that since then the region has fallen in the rankings relating to the innovativeness of enterprises, they should be considered relatively ineffective.

The 'Małopolska 2030' strategy seems to be more concerned with the worsening situation of the region in comparison to other voivodships. The authors of this new strategy indicate the following challenges relating to entrepreneurship: improving the ability of the education system to shape universal competences, including digital skills, as well as pro-innovative and entrepreneurial attitudes (Zarząd Wojew-

ództwa Małopolskiego 2019). An important challenge is also appropriate support for start-ups and facilitating access to advanced services for enterprises. The strategy also noticed the challenges related to the increase in the economic activity of businesses in rural areas. On the basis of the analysis of reports and statistical data, the following conclusion is justified that supporting business environment institutions and co-operation between enterprises are also important issues in Małopolska.

The region authorities have decided on seven smart specialisations, on which the support granted to enterprises should focus: life science – including health and the quality of life and bioeconomy, sustainable energy, information and communication technologies (including multimedia), chemistry, electrical engineering and industry machinery, production of metals and metal products, as well as non-metallic mineral products, and creative and leisure industries (Urząd Marszałkowski Województwa Małopolskiego 2018). Support for enterprises is supposed to focus on these sectors because they are perceived by the authorities as both a development opportunity and a strength of the region. However, it should be emphasised that considering the fact that innovative companies representing the above smart specialisations are to be supported, the chances for their development are concentrated mainly in Cracow and other cities in Małopolska.

4.2. Perception Analysis of the Entrepreneurship Development in Rural Communes of Małopolskie Voivodship

As stated in the literature on the subject cited above, entrepreneurship is important for the development of both cities and rural areas. In case of the latter, it ensures non-agricultural jobs, diversifies the population's income sources and improves living conditions (Kłodziński 2006; Kamińska 2011). Meanwhile, rural areas are characterised by low innovativeness and relatively weak opportunities for the development of innovative companies. This causes both the outflow of educated human capital and the location of companies in more attractive metropolitan areas. It also contributes to the fact that in rural areas, there is less use of aid programmes aimed at innovative enterprises, and this is the focus of the European Union and the Polish government.

Małopolska – apart from urban areas, mainly the capital of the region: Cracow and other bigger cities: Tarnów and Nowy Sącz – consists mostly of rural areas where entrepreneurship is not thriving. Businesses concentrate in Cracow and in the Tatra powiat (administrative district), where the tourism industry dominates (hotel industry, gastronomy and small trade related to tourism).

Two tendencies can be distinguished with regard to the level of the development of individual communes and entrepreneurship in Małopolska. The highest level of development is characterised by highly urbanised communes of the Cracow powiat (administrative district), which benefit from the location close to the

metropolis which is the regional centre of entrepreneurship and innovation. Many companies operate in communes located on the outskirts of cities, especially Cracow: Siepraw, Zielonki, Mogilany, Wielka Wieś, Zabierzów municipalities. The second type of area that bases its development on entrepreneurship is the Tatra powiat (administrative district), especially Poronin and Kościelisko municipalities, but in this case, it is tourism that is a source of income and development. Czorsztyn, Zawoja and Lanckorona municipalities are also characterised by a relatively high number of enterprises of the national economy registered in the REGON registry per 1,000 people (GUS, Bank Danych Lokalnych). In mountain and tourist municipalities located in the south of the region, entrepreneurship related to this industry is also developing, but individual municipalities do not benefit equally from it. The east and south of the region, where agriculture – often very fragmented – predominates, is much less developed.

This makes it necessary to consider the needs and development possibilities of various areas in terms of support for entrepreneurship in Małopolskie Voivodship. In Małopolska, entrepreneurship, especially innovative companies, is concentrated in few locations, while many instruments of support aim at innovative SMEs, or even solely start-ups. As indicated by the data in Table 2, local authorities in rural and urban-rural communities are aware of this fact and look for sources of development in other areas of entrepreneurship or outside it.

Table 2. The perception of selected strengths and weaknesses of rural and urban-rural communes in Małopolskie Voivodship by local government authorities in 2019

Analysis criteria	Very weak side ³	Weakness	Neutral	Strength	Very strong side
Level of entrepreneurship	5	28	36	58	14
Efficient of business environment	25	50	44	24	1
Education level of the population	0	8	50	80	6
Innovativeness of enterprises	13	42	70	16	3
High speed internet access	4	23	48	58	12
Ability to obtain EU funds for the development	0	9	19	81	7

Source: own study.

Table 2 presents the way communes are perceived by local authorities. To some extent, it confirms the conclusions from the statistics. The authorities of even relatively underdeveloped rural communes perceive the level of entrepreneurship as a neutral factor or even their strength. However, the business environment seems to be a problem and weakness for the majority of rural municipalities. Regarding other conditions for the development of entrepreneurship, such as access to high-speed

internet and level of education, they are perceived as rather neutral or even positive. This allows for the conclusion that the support should be focused, in accordance with the theoretical concepts, not only on companies, but on building an entrepreneurial ecosystem, also in rural areas. Industries which may develop there, including tourism and agri-food processing, should be included in the regional strategy and covered by the support programme, after prior determination of the needs of individual areas, as they are diversified and represent different strengths and challenges.

The surveyed local government officials perceived themselves and their municipalities as able to obtain funds from the European Union for development, which is a very positive trend. However, the question of what specific types of support were granted to enterprises in those communes and what the funds received were spent on requires further research. Furthermore, it has to be stated that the future availability of EU funds is in question and enterprises in the communes of Małopolska may have to base their development to a greater extent on endogenous factors and national funds in the coming years. It should also be taken into account that the European Union's support will focus even more on innovative companies and institutions creating innovative systems in the next programming period. In this case, many rural communes of Małopolska may mainly be able to obtain funds from the EU agricultural policy, and not from policies aimed at the development of entrepreneurship.

In most opinions of the local authorities, innovation is a weakness of their communes, which is in line with reality. The question remains whether, in case of rural areas, this should be seen as a barrier to further development. Over time, the authorities will have to answer this question, but for now, there is still a lot to be done in terms of supporting entrepreneurship itself, even if it is not technologically advanced.

5. Conclusions

The aim of this study was to analyse the role of entrepreneurship in regional development exemplified by the Polish region of Małopolska and to assess the perception of entrepreneurship development in rural communes of Małopolskie Voivodship.

Unlike the general indicators of entrepreneurship, most of the indicators relating to innovative SME and start-ups are not available at the communal level and are not separated for rural areas in urban-rural communes, which constitutes a research limitation. An analysis of the differences between rural areas, depending on their location and functions in terms of entrepreneurship development, would be a valuable topic of future research because they are diverse and need forms of

³ The respondents could select only one answer. Individual sums of responses may differ, as not all respondents answered every question.

support adapted to their specificity. It is also recommended to create a list of good practices for local governments in the preparation and implementation of entrepreneurship support.

The research findings show that entrepreneurship plays an average role in the development of Małopolskie Voivodship and, if properly supported, it can contribute more to its dynamics. Other regions are better able to use both their strengths and opportunities resulting from the availability of EU funds and gain in entrepreneurship and innovation rankings when the relative position of Małopolska is declining. This is at odds with the dominant perception of the local authorities in Małopolska's rural communes that ability to obtain support from the European Union is their strength.

Most innovative companies in the region are concentrated in Cracow. There is also a clear concentration of incentives, as many programmes are addressed to innovative companies and modern business environment institutions. In turn, enterprises from the tourism industry are also concentrated in the Tatra powiat (administrative district) and similar tourist locations. Entrepreneurship is also developing in other areas, but not to a sufficient degree to consider Małopolska as a place at the forefront of Polish regions.

The current development strategy of Małopolskie Voivodship focuses on prospective areas, innovative companies and companies corresponding to the region's smart specialisation profile. The latter indicates that support for entrepreneurship in the Małopolska region is shifting from traditional into growth-oriented one. However, it has to be stated that with a full transition to a new trend of concentrating all the support on high-growth firms, apart from positive effects, also negative ones should be expected. As Małopolska remains a region with many municipalities, where non-agriculture businesses are needed, and with tourist-oriented areas, where entrepreneurship may be negatively affected by the pandemic, traditional support for the SME sector is also a necessary means of fostering development.

Acknowledgement

This paper was supported by the Ministry of Science and Higher Education of the Republic of Poland within a subsidy granted to the Cracow University of Economics.

References

- Acs Z.J., Amorós J.E. (2008). The Startup Process. *Estudios de Economía*, Vol. 35(2), pp. 121–13.
- Acs Z., Parsons W., Tracy S. (2008). *High-Impact Firms: Gazelles Revisited*. U.S. Small Business Administration: Washington DC.

- Amorós J.E., Cohen B., Lundy L. (2017). The Generative Potential of Emerging Technology to Support Startups and New Ecosystems. *Business Horizons*, Vol. 60(6), pp. 741–745.
- Bednarczyk M. (Ed.) (2004). *Małe i średnie przedsiębiorstwa w Polsce a integracja europejska*. Cracow: Wydawnictwo Akademii Ekonomicznej w Krakowie.
- Borowiecki R., Siuta-Tokarska B., Thier A., Żmija K. (2018). Rozwój małych i średnich przedsiębiorstw w Polsce wobec wyzwań gospodarki XXI wieku: kontekst ekonomiczno-zarządczy, Katedra Ekonomiki i Organizacji Przedsiębiorstw Uniwersytetu Ekonomicznego w Krakowie, Cracow, p. 266.
- Coad A. (2009). *The Growth of Firms: A Survey of Theories and Empirical Evidence*. Cheltenham: Edward Elgar Publishing.
- European Commission (2002). Lisbon Strategy. The Road to the Success of United Europe, Department of Social Economic Analysis of the Office of the Committee for European Integration, May 2002.
- Fritsch M., Schmude J. (Eds.) (2006). Entrepreneurship in the Region. *International Studies in Entrepreneurship*. New York: Springer.
- GUS (2020). Bank Danych Lokalnych (various indicators of entrepreneurship and innovativeness in Poland and the Małopolska region). Available online: <https://bdl.stat.gov.pl/BDL/dane/podgrup/temat> (accessed on 11 September 2020).
- Heffner K. (2011). Regionalny wymiar dychotomii rozwoju obszarów wiejskich. *Studia PAN KPZK, CXXXVIII*, pp. 9–34.
- Isenberg D. (2010). The Big Idea: How to Start an Entrepreneurial Revolution. *Harvard Business Review*, Vol. 88(6), pp. 40–50.
- Kamińska W. (2011). Pozarolnicza aktywność gospodarcza osób fizycznych na obszarach wiejskich w Polsce, *Studia PAN KPZK, CXXXIII*, pp. 103–127.
- Kłodziński M. (2006). *Aktywizacja społeczno-gospodarcza gmin wiejskich i małych miast*. IRWiR PAN, Warsaw.
- Kudelko J. (2005). Rozwój regionalny a konkurencyjność regionów. In: Z. Ziolo (Ed.), *Uwarunkowania rozwoju i konkurencyjności regionów*. Instytut Gospodarki Wyższej Szkoły Informatyki i Zarządzania w Rzeszowie, Cracow-Rzeszów, pp. 57–73.
- Kudelko J. (2010). Rola europejskiej polityki spójności w krajowej i regionalnej polityce rozwoju, In: M. Klamut, E. Szostak (Eds.). *Jaka polityka spójności po 2013 r.* Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu.
- Urząd Marszałkowski Województwa Małopolskiego (2018). *Małopolska Smart Specializations Guide*. Available online: <https://www.malopolska.pl/biznes/innowacje/inteligentne-specjalizacje-regionu> (accessed on 6 July 2020).
- Mason C., Brown R. (2013). Creating Good Public Policy to Support High-Growth Firms. *Small Business Economics*, Vol. 40(2), pp. 211–225. <https://doi.org/10.1007/s11187-011-9369-9>.

- Mason C., Brown R. (2014). *Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship. Final Report to OECD*, Paris: OECD.
- Ministerstwo Inwestycji i Rozwoju (2018). Biuletyn Informacyjny – Fundusze Europejskie w Polsce, Fundusze dla przedsiębiorców. No. 47.
- Ministerstwo Rolnictwa i Rozwoju Wsi (2018). Program Rozwoju Obszarów Wiejskich na lata 2014–2020. Warsaw.
- Nieć M. (2019). *Raport Startupy w Polsce 2019*. Warsaw: Polska Agencja Rozwoju Przedsiębiorczości.
- Nowakowska A. (2011). Regionalny system innowacji. In: K.B. Matusiak (Ed.), *Innowacje i transfer technologii. Słownik pojęć*. Warsaw: Polska Agencja Rozwoju Przedsiębiorczości, pp. 253–254.
- OECD (2010). *High-Growth Enterprises: What Governments Can Do to Make a Difference*. Paris: OECD Publishing.
- OECD (2007). *Manual on Business Demography Statistics*. Paris: OECD Publishing.
- Pach J. (2008) Znaczenie małych i średnich przedsiębiorstw w Polsce po 2000 r. *Przedsiębiorczość – Edukacja*, Instytut Geografii Uniwersytetu Pedagogicznego im. Komisji Edukacji Narodowej w Krakowie, Vol. 4/2008.
- Pakt dla rolnictwa i obszarów wiejskich, przyjęty przez Radę Ministrów 22 lipca 1999 r.
- Piecuch J., Szarek J., (2018). The importance of startups for construction of innovative economies. *International Entrepreneurship – Przedsiębiorczość Międzynarodowa*, Vol. 4(2), pp. 69–78.
- Regional Innovation Scoreboard 2019 (2019), Publications Office of the European Union, ISSN, pp. 2315–2125.
- Rocha H. O., Sternberg, R. (2007) Why Entrepreneurship Is a Regional Event: Theoretical Arguments, Empirical Evidence, and Policy Consequences. In: *Entrepreneurship: The Engine of Growth*. Vol. 3: Place. M. P. Rice and T. G. Habbershon (Eds.), pp. 215–238. London: Praeger.
- Rogalska E. (2018). Multiple-Criteria Analysis of Regional Entrepreneurship Conditions in Poland. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, Vol. 13(4), pp. 707–723.
- Skowrońska A., Zakrzewski R. (Eds.) (2019). *Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce*. Warsaw: Polska Agencja Rozwoju Przedsiębiorczości.
- Stam F.C., Spigel B. (2016). *Entrepreneurial Ecosystems*. USE Discussion Paper Series, No. 16(13).
- Sternberg R. (2009). *Regional Dimensions of Entrepreneurship*. Boston: Now.
- Strategia Rozwoju Województwa Małopolskiego na lata 2011–2020, Załącznik nr 1 do Uchwały nr XII/183/11 Sejmiku Województwa Małopolskiego z dnia 26 września 2011 roku.

- Zarząd Województwa Małopolskiego (2019). Strategia Rozwoju Województwa „Małopolska 2030”. Załącznik nr 1 do uchwały nr 1612 /19 Zarządu Województwa Małopolskiego z dnia 29 sierpnia 2019 r.
- Wach K. (2012). *Europeizacja małych i średnich przedsiębiorstw: rozwój przez umiędzynarodowienie*. Warsaw: Wydawnictwo Naukowe PWN.
- Żołnierski A. (2006). *Innowacyjność 2006*. Warsaw: Polska Agencja Rozwoju Przedsiębiorczości.

Chapter 8

Challenges for Digital Transformation in the Manufacturing Industry

Serghei Ohrimenco¹, Grigori Borta²

1. Introduction

The transitional stage in scientific and technological development, the complex processes of adoption of modern innovations are associated with the implementation of the concept of the fourth industrial revolution, Industry 4.0. At this moment, its analogues and more advanced versions are being implemented all over the world. Having become the universally recognised management term, Industry 4.0 is used in a much broader sense than its original meaning, encompassing many innovations. Among them are smart manufacturing, the Internet of Things, artificial intelligence, a variety of nano-devices, 3D printing (including food, organs and tissues), medical robotic surgeons, and many others. The emergence of new technologies is not accidental, it is an answer to the pressing problems of modern generations who want to save time and money by receiving services in digital format.

Specialists from the World Bank, and the McKinsey Global Institute, and others gave the name to such technologies – ‘disruptive’ because they create opportunities for radical changes (Manyika, Chui, Bughin, Dobbs, Bisson, Marrs 2013; International Finance Corporation; Petralia, Philippon, Rice, Véron 2019). These changes give rise to global fundamental transformations. The scale of innovation is unprecedentedly huge; it is being implemented at an ultra-high unprecedented pace and is easily spreading around the world, ignoring borders. The previous model of business production and marketing does not meet the requirements of

¹ Academy of Economic Studies of Moldova (Republic of Moldova), ORCID: 0000-0002-6734-4321, e-mail: osa@ase.md

² Academy of Economic Studies of Moldova (Republic of Moldova), ORCID: 0000-0003-4120-4731, e-mail: grigori.borta@gmail.com

today and requires a change in the principles of regulation of production, completely new competition arises among producers of goods and services.

All this led to an increase in the need for a variety of information, which characterises almost all aspects of the activities of individuals, society and the state. Simultaneously with these processes, there has been an increase in the volume of illegal activities in relation to the information itself, the processes of its receipt and transmission through communication channels, places of concentration and storage of information resources. In other words, the extraction of information in all its forms, using various products and services, has turned into a highly profitable illegal business (Lusthaus 2018) for a group of entrepreneurs. In addition, the components of Industry 4.0 are used to commit a wide range of unlawful acts against individuals, society and the state. On their basis, illegal markets for products and services are formed, satisfying the needs of both individual users, entire corporations, and government bodies. Thus, a 'shadow' economy is formed, built on the modern achievements of human activity and functioning in parallel with the developed markets of scientific and technological achievements.

The aim of this paper is to analyse the impact of digitalisation processes on the manufacturing sector based on challenges and threats associated with the implementation of the achievements of the Industry 4.0 concept. The analysis of the main threats to digitalisation processes focuses on artificial intelligence, Big Data, 5G networks, and blockchain. Along with innovative achievements, digitalisation processes are accompanied by the development of a digital economy and the growth of illegal activities. This analysis provides a contribution to the development of shadow digitalisation processes and the formation of a shadow digital economy, which is directly related to cybersecurity.

As a methodological approach, the analysis and synthesis of statistical information presented in the reports of leading research companies in the field of information and communications technologies and information security were used. A conceptual diagram of the relationship between the components of Industry 4.0 is proposed, highlighting the concept of cybersecurity. Moreover, a definition of the shadow digital economy (SDE) was proposed where the 'crimeware' is a substantial business and an obstacle to the development of the digitalisation processes in all developed and developing countries.

2. Literature Review

The authors of this paper attempt to achieve three main tasks while working with literature review. First, to analyse the literary sources which characterise the development of the concept of Industry 4.0. In the face of growing inequality for many countries, Industry 4.0 is not a solution to problems, but another huge challenge. There is a constant search for a new managerial paradigm, a large-scale re-

view of organisational processes, approaches to training, hiring and monitoring staff. The main distinctive features of the ongoing processes are the depth, regularity and high speed of change, as well as highlighting social issues.

The second task is to analyse the development of the Industry 4.0 components of the manufacturing sector (including retail, telecommunications, insurance, lending, accounting services, real estate valuation, investments, etc.).

The third, most difficult and important task is to identify and evaluate the spectrum of threats of the Industry 4.0 components in relation to citizens, society and the state.

In accordance with the first objective of the study, the publications of international organisations were analysed: the Okinawan Charter of the Information Society (2000), the report of the Secretary-General of the International Labour Organization, 'Century Initiative for the Future World of Work' (2015), World Bank's reports, OECD (OECD 2019), UNCTAD (United Nations Conference on Trade and Development 2019) documents.

The authors of the famous and popular book *The Age of Cryptocurrencies: How Bitcoin and Blockchain Are Changing the World Economic Order* note that society itself is rapidly and continuously changing. 'Digital technologies and online computing are at the epicenter of these changes, transforming the principles of organization of society, public relations and business relations, because all aspects of our life are increasingly dependent on the power of computers and network communications' (Vigna and Casey 2016).

Of particular relevance is the problem of opposing the illegal processes of extracting, processing and distributing information in a variety of forms and contents in the context of building a digital society and a digital economy. The said digital economy implies total globalisation, creates an extremely highly competitive environment, develops rapidly, is inconceivable without qualified personnel and quality education, kills many traditional areas of activity, provides a new quality of life, business and public services, and is largely virtual, intangible. However, it is impossible without communication with the material world. Therefore, the basis of the digital economy is industrial development.

The World Bank Group's Digital Dividend Report for 2016 states: 'The current expansion of access to digital technology brings many people more choice and more convenience. By enhancing social integration, increasing efficiency and introducing innovations, such access opens up opportunities for the poor and disadvantaged segments of the population that they were previously deprived of' (The World Bank 2016). One cannot disagree with this. However, any coin has another side. In addition to the obvious and understandable achievements, it is necessary to analyse the explicit and hidden threats carried by the digitalisation processes of individuals, society and the state.

The author of the book entitled *Introduction to the Theory of the Digital Economy* indicates: '(...) we consider the digital economy as a necessary stage in the

transition to a more advanced innovative economy, which will open to humanity access to virtually unlimited resources and make creativity a need and priority for every person. The society of creators, based on the network principle, is the present future of humankind. And it is precisely this goal that the innovative economy will serve, which must be built through the digitalisation stage' (Mendeleeva 2018).

We consider it possible to agree and emphasise the importance of theoretical research and the preparation of practical developments in this new area, which is the digital economy itself and its security problems, in particular. The following authors, Keshelava, Budanov, Rumyantsev (2017), note: 'Due to a fateful set of circumstances, the beginning of digitalization coincided with the end of globalization and the Global Economic Crisis. The end of the extensive model of the development of capitalism inevitably requires a review of many of the fundamental tenets of the modern world order. This means that under the auspices of digitalization, a completely new world can be created in which other values of the system of values, managerial paradigms, social norms and economic laws will dominate. Of course, this view already has both supporters and opponents, to whose irreconcilable and violent confrontation we can all become witnesses in the near future.'

On 22 January 2020, the UN Secretary-General, António Guterres, named the main threats to humanity: geostrategic tension, climate change, growing distrust at the global level and the danger of new technologies ('reverse side' of the digital revolution) the 'Four Horsemen of the Apocalypse' (United Nations). According to the Secretary-General, new technologies are developing so fast that we do not have time not only to respond to them, but also sometimes even understand their essence. Despite the fact that they promise enormous advantages, digital technologies and artificial intelligence become an instrument of incitement, spread of false information, interference in privacy, exploitation of people, and committing crimes.

Therefore, he considers the use of combat autonomous systems – 'machines capable of killing without any human involvement and bearing no responsibility' – unacceptable, and calls for banning the use of 'killer robots'. António Guterres strongly recommended that order be put in place in cyberspace, which he called the digital Wild West. 'Terrorists, champions of the purity of the white race and others like them abuse the Internet and social networks', said the head of the UN. 'Bots are spreading misinformation, pushing for polarization and undermining democracy. Next year, cybercrime will cost us \$6 trillion.'

Another front in the fight against the costs of new technologies is the labour market, where, as António Guterres predicts, automation will deprive hundreds of millions of workers in the next decade. He sees a way out in the reform of the education system, the task of which is to teach people to learn throughout their lives. According to the Secretary-General, the UN is the most suitable platform for governments, the private sector and civil society to oppose global co-operation to the 'digital split'.

In the report ‘The Global Risks Report 2018’ (World Economic Forum 2018), which was prepared by the World Economic Forum, information threats were included in the global risk rating. Threats such as cyber attacks and data theft and fraud are among the five highly probable threats to critical infrastructures. There, the main areas of risk are highlighted: economic, geopolitical, environmental, social and technological. It is the technological area that global transformations are focused on: information security, information technology, internet governance, the digital economy and society, labour and employment, the future of economic progress, youth prospects, supply and transport, migration, and the fourth industrial revolution.

The collective monograph on the digital transformation of the economy states: ‘The new model is being formed on the technological basis of the next fourth industrial revolution, related to the digitalisation of the economy not only in the field of services, corporate and public administration, but also in the material basis of the economy, in manufacturing and associated logistics infrastructure’ (Tolkacheva 2018). The main drivers of digital transformation are the following: the Internet of Things, artificial intelligence, Big Data analytics, neural networks, blockchain, cloud computing, robotics, additive technologies (including 3D printing), virtual and augmented reality. Digitalisation is planned to be introduced in the following areas: state regulation, information infrastructure, research and development, personnel and education, information security, public administration, smart city, digital healthcare. Particular attention is paid to information security, since a change, for instance, of the digital content of such a phenomenon as a ‘digital twin’ can lead to a catastrophic situation not only in the field of industrial production. Illegal actions in relation to a set of critical technologies pose a potential danger, including the likes of the industrial internet or the Internet of Things, medical equipment, primarily cardiological, computer technologies integrated with biological organisms, etc.

As noted by Keshelava, Budanov and Rumyantsev (2017), the topic of the digital economy is very extensive and is currently extremely popular. ‘The excitement around this area, on the one hand, and the lack of a single conceptual field, on the other, leads to the emergence of a huge number of seemingly incompatible opinions and, as a result, to the impossibility of dialogue.’ There are three waves of digital technology, each characterised by technological advances and a set of threats. The first wave includes the implementation of information and communications technologies, the computerisation of key areas of activity, the automation of management processes (including the implementation and use of ERP, EDI, CRM, etc.), as well as the introduction of broadband access. The second wave can be characterised by the development and implementation of online platforms, for instance, search engines, marketplaces, distance learning, social networks. The third wave involves the introduction of technologies such as predictive analytics of big data, industrial internet or the Internet of Things, robotics,

additive technologies (including 3D printing), artificial intelligence, including machine learning.

There is reason to believe that interest in illegal activities in the field of the digital economy will rapidly increase this process, and actions need to be investigated in all aspects, primarily in relation to critical technologies to prevent serious consequences.

In addition, as noted by Oltsik (2019), based on Environmental, Social, and Governance (ESG) data and services, the lack of cybersecurity skills is felt. For several years in a row, this company has been conducting a survey, and as a result, the percentage of organisations reporting a problematic lack of cybersecurity skills continues to grow. Below are the results of the last four polls:

- 2018–2019: 53% of organisations report a problematic shortage of cybersecurity skills;
- 2017–2018: 51% of organisations report a problematic shortage of cybersecurity skills;
- 2016–2017: 45% of organisations report a problematic shortage of cybersecurity skills;
- 2015–2016: 42% of organisations report a problematic shortage of cybersecurity skills.

The main goal of this article is to analyse, discuss and develop an approach to determining the reverse (shadow) side of the digital economy, which accompanies the global digitalisation processes.

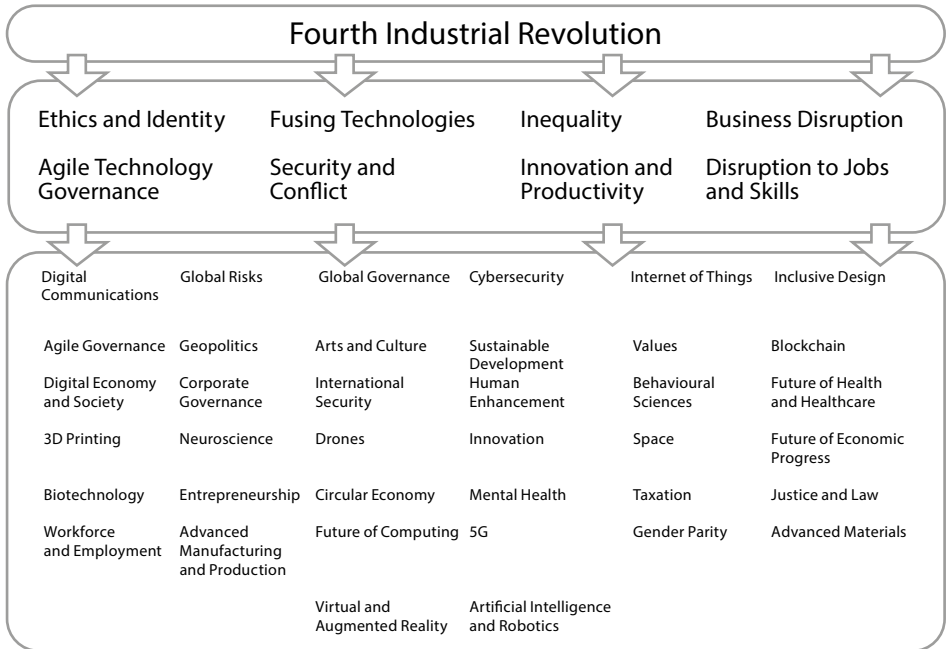
3. Research Methodology

This research is based on the analysis of numerous studies conducted by international organisations and technological companies which associate their activities with the development and implementation of information and communications technologies. For instance, these are materials from the UN, UNESCO, IMF, the World Bank, the World Economic Forum, the Organisation for Economic Co-operation and Development (OECD), etc., as well as reports from research centres, such as McAfee, Kaspersky Lab, Ernst & Young, Kroll, ESET, IBM, EuroPol, Imperva, Panda Security, Ponemon and many others (Reis, Amorim, Melão, Matos 2018).

The methodology of this study is based on the views of a wide range of experts from the World Economic Forum's Expert Network and is curated in partnership with Benjamin Fung, Canada Research Chair in Data Mining for Cybersecurity, Associate Professor, School of Information Studies, McGill University (World Economic Forum 2020b). These materials combine research on the Fourth Industrial Revolution and Cybersecurity. The conceptual diagram of the interconnection of the Industry 4.0 components is shown in Figure 1. This approach should

be expanded and lay the foundation for subsequent research on shadow digitalisation processes.

Figure 1. Conceptual diagram of the relationship of the components of Industry 4.0



Source: own study.

The conceptual content of the cybersecurity direction is represented by a set of the following main modules (World Economic Forum 2020a):

- Technology and the Law – adaptations of the existing laws to the ever-growing list of new hi-tech crime.
- New Norms of Collaboration – better data sharing protocols should be put in place between academic researchers, private sector organisations, non-profits and government agencies.
- Critical Infrastructure Protection – an effective set of measures of protection for the critical infrastructure against digital threats and cyberthreats is required.
- Cyber Privacy – a lot of data that is used is not anonymised or just not anonymised enough, putting privacy at risk.
- Security of Things – with most of the modern devices being interconnected, there is a growing risk of their security being breached, thus requiring thoughtful design of the device software and their communication protocols.
- Cyber War – the lack of international accords in place creates a situation where certain entities can be extremely vulnerable to cyberattacks.

- Systemic Risk and Resilience – regular evaluation of security systems in place can greatly strengthen their resilience.
- Cybercrime – while making our life easier on the one hand, the technologies also make us much more vulnerable to illegal actions, on the other hand.

4. Results

As a result of the research, it was concluded that the shadow digital economy is forming against the backdrop of the development of global digitalisation processes. For this study, the following definition of the shadow digital economy, based on its specificity in terms of the production of products and services, the life cycle of products and services, is proposed: the shadow digital economy (SDE) is a sector of economic relations covering all types of industrial and economic activities, which in their direction, content, nature and form contradict the requirements of the law and are implemented contrary to the state regulation of the economy and bypassing control over it.

We supplement this definition with the following components which were developed by the authors of this paper (Borta 2013; Ohrimenco and Borta 2014; Ohrimenco and Borta 2016):

- All individual and collective activities which are illegal, associated with the design, development, dissemination, support and use of components of information and communications technologies, hidden from society are encompassed by the shadow information economy. That is, the shadow information economy is all the illegal and hidden products and services which use and are based on information technology. The following are the most important economic elements of this sphere: illegal economic relations, illegal activities related to the production, distribution and use of prohibited products and services.
- Shadow information economy – an activity related to the research, design, production, distribution, support and use of components of information and communications technologies, hidden from society and the state, outside state control and accounting, and also, most frequently, illegal. Thus, the reason for the existence of a shadow information economy is the presence of conditions under which it is beneficial to hide own activities, or own individual elements.
- Shadow information economy is all the collective or individual activity that parasitises in all areas of society, on the basis of the use of information and communications technology components. This type of illegal activity should be considered as a special segment, which is characterised by the following systemic properties: universality, integrity, communication with the external environment, structure, ability to organise and continuously develop itself, the presence of a constructive (productive sector) and a destructive (criminal sector) element.

Table 1. The targets, motives and methods of cybersecurity attacks

Specification	Government structures	Financial domain	Online servers	Medical facilities	Education	Services	IT corporations	Industrial companies	Retail	Private persons
Targets	Infrastructure	42	20	56	57	42	53	79	22	35
	Web resources	32	72	10	17	30	31	4	52	18
	Users	10	7	34	26	7	5	17	4	18
Motives	Internet of Things	-	1	-	-	2	5	-	-	2
	Mobile devices	-	-	-	-	6	3	-	-	27
	ATMs and POS	16	-	-	-	13	3	-	22	-
Methods	Financial gain	92	-	69	81	70	84	55	74	79
	Data acquisition	8	85	28	17	21	16	24	26	19
	Hacktivism	-	9	3	2	9	-	7	-	1
Methods	Cyberwar	-	5	-	-	-	-	14	-	1
	Use of malware	37	-	16	16	17	15	12	8	39
	Software vulnerabilities exploitation	8	4	8	9	3	5	2	3	20
Methods	Compromising user accounts	2	13	13	14	14	4	4	4	35
	Web vulnerabilities exploitation	9	27	7	8	9	3	1	5	12
	DDoS	7	10	1	-	2	4	-	2	-
Methods	Social engineering	12	2	12	9	2	2	8	2	38
	Other	2	3	4	2	6	5	2	3	14

Source: compiled by the authors on the basis of the research in: Positive Technologies (2018).

The main conclusion is that the SDE represents a technical, technological, economic basis for cybercrime and combines a set of actions directed against individuals, society and the state.

The report ‘Cybersecurity Threatscape 2017’ (Positive Technologies 2018), which was prepared by the well-known company Positive Technologies, examines the results from 2017 in relation to the existing infrastructure and information impact in the context of targets, motives and methods (Table 1).

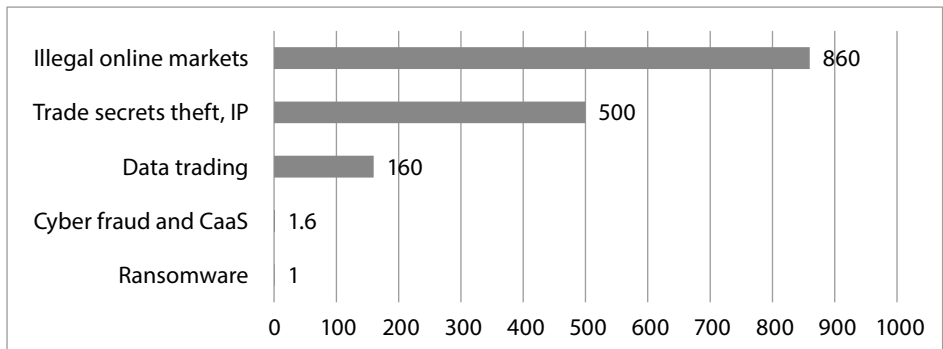
‘The world is just beginning its path to cybersecurity, and although the technologies of the fourth industrial revolution will undoubtedly raise new obstacles, we have many options for innovation and new models of co-operation in combating existing and new threats’, says William Dixon, head of operations at the Global Centre for Cybersecurity – Economic Forum (Samartsev and Dixon 2019).

Another very important problem is the study of the economic foundations of cybercrime. In this regard, the data on the economy of cybercrime looks staggering against the background of the collected statistics on the activity of the SDE. Cybercrime was estimated at USD 1.5 trillion in 2018, according to a study by Bromium. This was the first study of its kind to examine the ‘dynamics of cybercrime’ in the context of revenue stream and profit distribution. The study identified new criminal platforms and a thriving cybercrime economy that is self-sufficient and blurs the boundaries of legality. Gregory Webb, CEO of Bromium, commented on the study’s findings as follows: ‘It’s shocking how widespread and profitable cybercrime has become. The model of crime is to create malware and deliver it to cybercriminals as easily as shopping online. Not only is it very easy to gain access to the tools, services and expertise of cybercriminals, this means that businesses and governments will face more sophisticated, costly, and destructive attacks as the network is profit-driven and gains traction. We cannot solve this problem with old thinking or outdated technology. The time has come for new approaches’ (Williams 2019). The report is accompanied by a summary table that provides data on the annual income generated from the implementation of selected cybercrimes.

This paper makes an interesting suggestion that if cybercrime, from an economic point of view, were a sovereign country, it would rank 13th in the world in terms of GDP. The total income, according to approximate data, is equal to USD 1.5 trillion (Figure 2) and includes:

- USD 860 billion – actions in illegal online markets
- USD 500 billion – trade secrets theft, IP
- USD 160 billion – data trading
- USD 1.6 billion – cyberfraud and cybercrime as a service
- USD 1 billion – ransomware.

The report points out that cybercrime operates at multiple levels, with some large ‘corporate’-style trading operations bringing in over USD 1 billion and ‘small and medium-sized business’ orders ranging from USD 30,000 to USD 50,000.

Figure 2. Yearly income from cybercrime in 2018

Source: compiled by the authors based on Williams (2019).

A wide range of economic agents with their deep specialisation (from the development of specific malicious software mechanisms to the rental of ready-made bot systems, etc.), economic relations and other economic factors contribute to the generation, support and confirmation of high incomes on an unprecedented scale.

A preliminary conclusion may be based on the fact that the activities of the SDE are directly related to cybercrime (Walker and Reitano 2019; Lampe 2016; Riek et al. 2016). Consider the main components of digitalisation and threat processes, respectively:

- Artificial intelligence in terms of data security, models and operations. First of all, attacks on AI itself: the intruder steals models and data for training; deception of models through the use of false data; manipulation of training data to modify its behaviour and make decisions; attack on the algorithm by making changes to the algorithm itself; adjustment of actions to the algorithm; adversarial examples; attack on data (entering extraneous data, changing existing data). In addition, AI can be used to search for vulnerabilities in software, modify software abuses, develop and implement phishing attacks, create high-performance bots, set up passwords and change identities.
- 5G communication networks are a breakthrough technology, but can be used as the basis of the MIM (man-in-the-middle) attacks, jamming, mobile edge computing, DOS and DDOS, existing application vulnerabilities may also be exploited.
- Big Data, as the main element of Industry 4.0, are high-performance, high-speed and diverse information assets which require cost-effective, innovative forms of processing information to enhance understanding and decision-making. The main threats can be the following: wiretapping, interception and theft of data, data loss, destruction of records, loss of devices, use of personal and false data. These actions can be implemented using unlicensed software, social engineering, malicious code and targeted attacks.

- Blockchain. It should be noted that threats are shifting to the customer devices (operating system, network protocols, key management). The organisation of attacks, including ‘denial of service’, on the infrastructure in the closed blockchain, quantum attacks on cryptography, attacks on smart contracts (BatchOverflow, MAIAN, Reentrancy, Bad Randomness, etc.) is not ruled out.
- Biometrics. Threat models are currently being developed for: the data processing (data or device substitution, device reboot, intruder data injection, component replacement, guessing and enumeration, results manipulation, hill climbing, malicious code injection, decision-making manipulation); for the storage process (compromising the database); for inter-processor stages (interception, repetition, selection, manipulation of results, replacement of components, manipulation of the decision made in comparison, etc.).
- All the clear advantages of ‘breakthrough’ technologies are combined to implement a new widespread threat – misinformation (Bradshaw and Howard 2019; Fallis 2009). This threat is not completely new, but the preparation and implementation have been put on a new technological level – the development and distribution of fake news through social networks, etc.
- Advances in information and communications technology and digitalisation have created new challenges and threats. This applies to the development of encryption programs, the emergence of cryptocurrencies and, as a result, the organisation of attacks on cryptocurrency exchanges and cryptocurrency exchangers.

Crimeware is a serious business. Developers model their activities in accordance with corporate standards to maximise profits. As an example, the emergence of ‘crimeware-as-a-service’ (criminal software as a service) can be considered as a demonstration of its capabilities. For a short period of time, cybercriminals radically change their toolkits to achieve new results. An additional example is cryptomining as an operation. The cryptocurrency market peaked at the end of 2017 and began to decline by February 2018. The downward trend in the bitcoin index directly affected the activity of cryptomining as an operation, which fell by more than 50% during the year. The statistical correlation between the jumps in the bitcoin index and the popularity of ‘cryptomining as an operation’ can be considered as a highly profitable tool for influencing the business.

One more important feature of cryptocurrencies should be highlighted – receiving bribes by cryptocurrencies has been very popular among officials and lawyers for several years. Such transactions can be tracked, but neither actually nor legally can they be tied to a person. That is, formal evidence for the investigation and trial cannot be obtained *a priori*. Moreover, cryptocurrency immediately appears outside the state, and it is almost impossible to confiscate it. However, with the internet, it always remains at the disposal of the owner. This is a kind of airbag for detainees.

We consider it possible to refer to the research by the RAND Corporation, entitled *Economic Competition in the 21st Century* (Shatz 2020). This report examines various forms of economic competition, including the concept of national competitiveness, competition for markets and investment, the use of economic instruments in areas of international competition, and competition for the nature of the global economic system. The main idea is the thesis that geopolitical competition using economic instruments can be effective, but the use of such instruments can be very expensive. In any case, the costs of implementing them should be weighed against the benefits obtained. Among other economic instruments for geopolitical competition in the United States, the following stand out:

- Trade policy
- Investment policy
- Sanctions
- Cyber tools
- Financial help
- Financial and monetary policy
- Production and export of energy and goods.

Cyber tools are of particular interest, since they can be used to inflict damage (for instance, a reference is made to the alleged shutdown of the Ukrainian power grid in 2015), as well as to steal intellectual property, technology and trade secrets.

5. Conclusions

The aim of this paper was to analyse the impact of digitalisation processes on the manufacturing industry focused on challenges and threats of the implementation of the Industry 4.0 concept. The analysis revealed that cybercrime and SDE are widespread in the business and society. Effects of a single criminal attack (for instance, DDOS or MIM and other) affect supply chains beyond the realm of cyberspace. Therefore, a qualitative and quantitative review of the content is required, using the following cybersecurity assessment metrics (Daultrey 2017): legal (cybercrime laws, regulations, training); organisational (collection of metrics on cybersecurity, national strategy); technical (industry standards); capacity building (training for cybersecurity professionals, public awareness); co-operation (international, inter-agency and public-private sector).

For instance, 5G communication networks, which are just starting to be launched in several countries, will hardly cope with the growing volume of data transfer by 2028. According to analysts of Bank of America Merrill Lynch, we should expect by this time the next generation networks – 6G. 6G mobile communication technologies may become one of 15 breakthrough technologies which will have a key impact on the global industry in the coming years, among other similar breakthrough technologies (quantum computers, Hyperloop, nanosatellites, geo-

engineering, etc.). Analysts believe that 6th generation networks will be able to increase speed up to 400 times higher than 5G, in addition, the advantages of AI will be used. Based on this, one can assume the expansion of capabilities for implementing various attacks.

A programme to improve the warning system about new software abuse and countermeasures is needed. This work should be implemented in relation to state and private institutions, primarily financial and banking activities. The risk of using malware is clearly underestimated, making protection efforts difficult. This leads to the fact that losses from the impact of criminal software are growing, and countermeasures are taken to reduce the effectiveness of the confrontation. The impact of criminal software is enormous, and if the resistance efforts are not significantly increased, more serious and widespread consequences in terms of coverage and cost may arise.

The growth of criminal software is steady, the frequency of distribution of new species is growing from year to year. Moreover, as a result, criminal software represents a more serious threat to business than targeted attacks on information systems do. The introduction of criminal software is not expensive and does not require much effort on the part of motivated participants. It ensures the optimisation of ongoing attacks to achieve profitable goals. The ability to increase responsiveness and change strategies has led to the emergence of increasingly sophisticated and targeted attacks on business programmes.

References

- Borta G. (2013). *Analiz etapov razvitiya tenevoy informatsionnoy ekonomiki* (Analysis of the Stages of Development of the Shadow Information Economy). Academy of Economic Studies of Moldova.
- Bradshaw S., Howard P. (2019). *The Global Disinformation Order: 2019 Global Inventory of Organised Social Media Manipulation*. Available online: <https://bit.ly/3ay5YBi> (accessed on 30 March 2020).
- Daultrey S. (2017). *Cybercrime: Invisible Problems, Imperfect Solution*. Available online: <https://bit.ly/2QWks6f> (accessed on 30 March 2020).
- Fallis D. (2009). *A Conceptual Analysis of Disinformation*. Available online: <https://bit.ly/39seC2Q> (accessed on 30 March 2020).
- International Finance Corporation. *Plodotvornyye investitsii* (Productive Investment). Available online: <https://bit.ly/3dHn41t> (accessed on 30 March 2020).
- Keshelava A., Budanov V., Rumyantsev V. (2017). *Vvedeniye v «Tsifrovuyu» ekonomiku* (Introduction to the 'Digital' Economy). Available online: <https://bit.ly/2QUOzuC> (accessed on 30 March 2020).
- Lampe K. (2016). *Organized Crime: Analyzing Illegal Activities, Criminal Structures, and Extra-Legal Governance*. Available online: <https://bit.ly/2yjQDWR> (accessed on 30 March 2020).

- Lusthaus J. (2018). *Industry of Anonymity: Inside the Business of Cybercrime*. Harvard: Harvard University Press.
- Manyika J., Chui M., Bughin J., Dobbs R., Bisson P., Marrs A. (2013). *Disruptive Technologies: Advances That Will Transform Life, Business, and the Global Economy*. *McKinsey Global Institute*. Available online: <https://mck.co/3dABpge> (accessed on 30 March 2020).
- Mendeleeva D. (2018) *Vvedeniye v teoriyu tsifrovoy ekonomiki (Introduction to the Theory of the Digital Economy)*. Moscow: Grifon.
- OECD. (2019). *Economic Outlook May 2019: Digitalisation and Productivity: A Story of Complementarities*. Available online: <https://bit.ly/2UrBkDU> (accessed on 30 March 2020).
- OECD. (2019). *Measuring the Digital Transformation: A Roadmap for the Future*. Available online: <https://bit.ly/3bMxHyz> (accessed on 30 March 2020).
- Ohrimenco S., Borta G. (2014). *Zvorotnyy bik informatsiynoho suspil'stva (The Reverse Side of the Information Society)*. Kiev: Banking University of the National Bank of Ukraine (NBU).
- Ohrimenco S., Borta G. (2016). *Issledovaniye kharakteristik tenevoy informatsionnoy ekonomiki (Study of the Features of the Shadow Information Economy)*. D. A. Tsenov Academy of Economics.
- Olsik J. (2019). *The Cybersecurity Skills Shortage Is Getting Worse: More Than Half of Organizations Report a "Problematic Shortage" of Cybersecurity Skills, and There Is No End in Sight*. Available online: <https://bit.ly/2Jrp3cm> (accessed on 30 March 2020).
- Petralia K., Philippon T., Rice T., Véron N. (2019). *Banking Disrupted? Financial Intermediation in an Era of Transformational Technology*. Available online: <https://bit.ly/39uRNM1> (accessed on 30 March 2020).
- Positive Technologies (2018). *Cybersecurity Threatscape 2017*. Available online: <https://bit.ly/2D2FSe6> (accessed on 27 August 2020).
- Reis J., Amorim M., Melão N., Matos P. (2018). *Digital Transformation: A Literature Review and Guidelines for Future Research*. Available online: <https://bit.ly/2w3GtsI> (accessed on 30 March 2020).
- Riek M., Bohme R., Ciere M., Ganan C., van Eeten M. (2016). *Estimating the Costs of Consumer-Facing Cybercrime: A Tailored Instrument and Representative Data for Six EU Countries*. Available online: <https://bit.ly/3bBKvYc> (accessed on 30 March 2020).
- Samartsev D., Dixon W. (2019). *5G, Artificial Intelligence and Biometrics Will Determine the Cybersecurity Strategy for the Next Decade*. Available online: <https://bit.ly/2wDfaWv> (accessed on 30 March 2020).
- Shatz H.J. (2020). *Economic Competition in the 21st Century*. Available online: <https://bit.ly/3lmlVQQ> (accessed on 27 August 2020).
- The World Bank. (2016) *World Development Report 2016: Digital Dividends*. Available online: <https://bit.ly/2QVBZvv> (accessed on 30 March 2020).

- Tolkacheva S. (2018). *Promyshlennaya politika v epokhu tsifrovoy transformatsii ekonomiki (Industrial Policy in the Era of Digital Transformation of the Economy)*. Moscow: Knorus.
- United Nations Conference on Trade and Development. (2019). *Digital Economy Report 2019: Value Creation and Capture: Implications for Developing Countries*. Available online: <https://bit.ly/2WU4ddS> (accessed on 30 March 2020).
- United Nations (2020). Glava OON rasskazal o svoikh prioritetakh na 2020 god (UN Chief Spoke About His Priorities for 2020). Available online: <https://bit.ly/3bEt8Gu> (accessed on 30 March 2020).
- Vigna P., Casey M. (2016). *Age of Cryptocurrency*. London: Picador
- Walker S., Reitano T. (2019). *Fragmented but Far-Reaching: The UN System's Mandate and Response to Organized Crime*. Available online: <https://bit.ly/39v5lqI> (accessed on 30 March 2020).
- Williams J. (2019). *Cybercrime as an Economy*. Available online: <https://thefin-techtimes.com/cybercrime-economy/> (Accessed on 20 March 2020).
- World Economic Forum (2020a). *Cybersecurity*. Available online: <https://bit.ly/3dAOyWC> (accessed on 28 August 2020).
- World Economic Forum (2020b). *Fourth Industrial Revolution*. Available online: <https://bit.ly/2yb9vqP> (accessed on 30 March 2020).
- World Economic Forum. (2018). *The Global Risks Report 2018*. Available online: <https://bit.ly/3dK1RXx> (accessed on 30 March 2020).

Chapter 9

Coliving as a Co-operative Business Model Innovation

Nina Stępnicka¹, Paulina Wiączek²

1. Introduction

Coliving (also co-living)³ being the combination of private space with the concept of community and services (e.g. available in a hotel) is a new form of co-operation for freelancers. This is a relatively new phenomenon, and an innovation on the labour market, however deriving from the access economy and the sharing economy, and it is based on the concept of coworking, which has been known for several years and means working together in a rented room. The idea behind coworking comes from the concept of Barcamp, i.e. meetings of people associated with the internet technology (IT) who are supposed to get to know each other more and exchange experiences and ideas, as well as spend time in a nice atmosphere (Azzimonti et al. 2015:53–68; Mauldwin and McDannell 2020). It is a rapidly growing sector within the sharing economy, also called we-economy, peer-to-peer economy or rental economy (Chan and Zhang 2020:36).

The problem of coliving is not widely discussed in the literature, and only a few publications cover this phenomenon in a superficial way. Both in foreign literature and on the Polish publishing market, there are visible shortcomings in this concept. In Poland, only two reports, several scientific and popular science articles concerning coliving have emerged so far. In the world, the phenomenon of coliving is discussed closer, e.g. by McDannell (2018).

¹ The Jan Kochanowski University in Kielce, Department in Piotrków Trybunalski (Poland), ORCID: 0000-0002-3060-2876, e-mail: nstepnicka@ujk.edu.pl

² The Jan Kochanowski University in Kielce, Department in Piotrków Trybunalski (Poland), ORCID: 0000-0002-3630-5020, e-mail: paulina.wiaczek@ujk.edu.pl

³ Coliving is usually defined by the following terms: ‘phenomenon’, ‘model’, ‘trend’, ‘lifestyle’, ‘project’ or ‘housing & working community’ (*Co-living...* 2017).

The aim of the article is to identify the advantages and disadvantages of coliving as well as to indicate the coliving experiences in Poland. The following research questions were defined: (1) What are the advantages and disadvantages of coliving? (2) What types of coliving business models exist world-wide and in Poland? In line with this, the following research methods were used: the critical analysis of literature, the historical method and a case study.

The paper consists of four parts. The first part describes the characteristics of coliving, including its theoretical background. Next, selected world-wide coliving models are presented, and especially Polish coliving model which is exemplified by the Clipster service. Finally, the main findings will be summarised and practical implications provided.

2. Theoretical Background of the Coliving Concept

Coliving is a form of common residence, aimed mainly at young people aged 20–35, in which tenants share space, interests, and values (Chimczak 2017:37). In Hatałska's report on modern nomads, the term *coliving* was explained as 'a combination of one's own private space with the idea of the community (similar to that in dorms) with the services available in hotels. In the coliving community, everything – from dishwashing liquid to cleaning – is usually organised top-down' (Hatałska 2017:28; cf. Davies 2015). In turn, a report by Chimczak states that coliving is 'an alternative that adds another layer to the idea of micro-apartments, by creating a series of common rooms which give you the opportunity to form a community' (Chimczak 2017:35). When analysing the definitions mentioned above, it can be stated that coliving is a community of people in which participants, due to fulfilling their professional ambitions (e.g. working on a project) live in the same building, but in separate rooms and maintain strong relationships due to meetings and conversations taking place in common rooms, a co-working space or patio.

According to Dora Karadima and Spyros Bofylatos (2019:752), coliving is:

- Social innovation
- Paradigm shift
- Fragmentation of social identity
- Collaborative service
- Otherness
- Collaboration.

The motives behind the coliving formula are mainly: the desire to live in the community, combining travelling with regular work or searching for an alternative (cheaper) place to work. Coliving is an opportunity not only for the participants themselves, i.e. for tenants, but also an impressive solution for institutional partners, for whom this type of residence can be an attractive way to attract the most talented employees (including foreign ones) from other cities. This type of

housing alternative, which is a hybrid of a lease and maintaining friendly relationships between participants, is also an attractive solution for developers, housing agencies and companies offering a relatively new service on the Polish market: fit out, i.e. the most common preparation of an office space (but also a residential one) and equipping it in a way that best reflects the nature of the company.

In Poland, the term *coliving* is still little known and used. It is much more popular in the United States or the United Kingdom. Over the past years, Google Trends has shown that the popularity of the slogan ‘coliving’ has increased by 300%, and according to some researchers, coliving is a new vision of life in the community (Hatalaska 2017:28). So far, no report showing the coliving situation has been produced (i.e. the number of colivings, the number of participants, etc.), but it is reported that at the end of 2016, there were more than 60 colivings in the world, and by the end of 2018, there were more than 200, including one in Poland, i.e. Clipster (discussed later in the article) (Bojęć 2018). It is estimated that after 2020, the number of colivings in the world will be recognised in thousands (Mikulska 2019:81).

In the age of technological and cultural change and the importance of access and the sharing economy, ‘the delivery of a place of residence is transformed from the sale of the product into providing access to the service’ (Oleksa 2019). The coliving space ceases to be merely the domain of students living in dorms, and begins to gain importance in the housing industry.

3. Selected Coliving Models

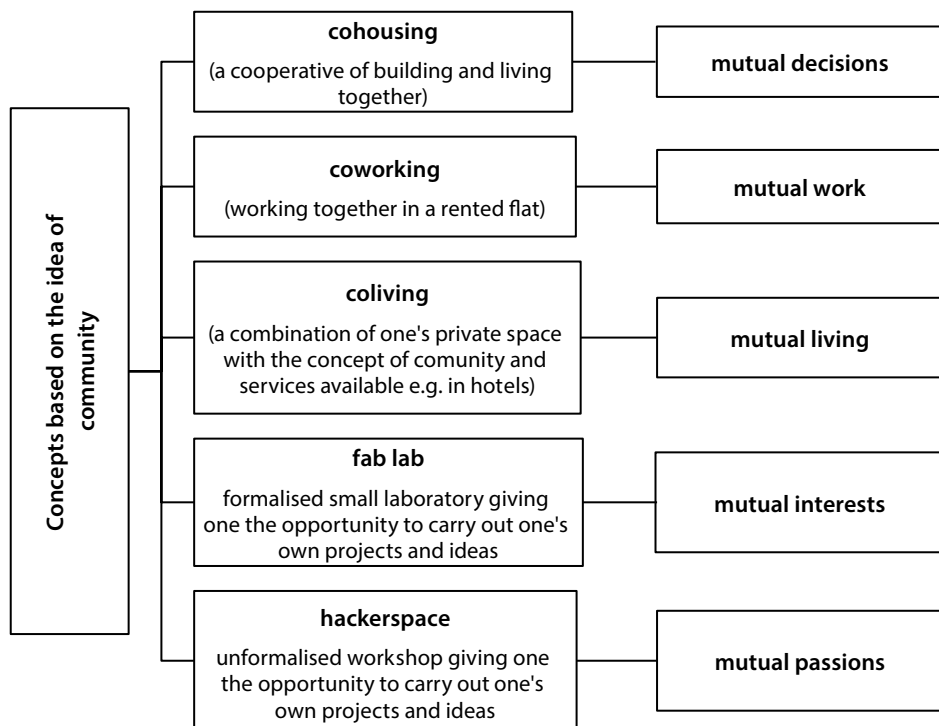
Coliving, like cohousing and coworking is a concept based on the idea of community, sharing and access. All these ideas, apart from the economic motive (most frequently the desire for profit or savings) pay special attention to the social aspect, including maintaining friendly relations with participants, mutual assistance, exchange of experiences, assistance in creating projects, etc.

The following figure shows the concepts in which the key determination of development is the combination of private life (in case of cohousing and coliving) and professional life (in case of coworking) (Figure 1).

Cohousing is about creating and using common places (e.g. a common garden, children’s playgrounds, social gathering places, etc.) by people or entire families living nearby. The idea of cohousing is sometimes described as ‘an idea without ideology’, as it has no hierarchical structure and no leader. Management belongs to the members of cohousing themselves, who make decisions concerning the community together (McCamant and Durret 2011:48–50). The characteristics of cohousing are joint management and joint decision-making by cohousing participants, so that every resident feels strongly belonging to the place and community. In cohousing, neighbours base their relationships and activities on co-operation rather

than competition, and every resident takes the role of not only a friend, but also an ally, who promotes joint action (*Cohousing...* 2020).

Figure 1. Concepts based on the idea of community



Source: own study.

Coworking, on the other hand, is based on the same idea of community co-operation, though it ignores the aspect of jointly-taken decisions. Coworking (or co-working, common work) is a concept based on individual or joint work, e.g. several people in a rented room (most frequently a coworking office). Coworking solutions are most often used by freelancers, i.e. people who perform free or creative professions (e.g. architects, designers, graphic designers, lawyers). Working in a common room is intended to have a positive impact on work effects and the atmosphere of freedom, not discipline, is supposed to be beneficial to carrying out projects. The idea of coworking is based on the following principles: co-operation (co-operation instead of competition), action (action instead of passive observation), maintaining 'soft relationships' with coworking members (soft relationships instead of formal ones) (Kardyś 2019).

As has already been mentioned, the idea of community is also used for the concept of coliving. This phenomenon is based on three pillars: participation (e.g. spending time together in the common room, meeting room, etc.), community (cre-

ating coliving spaces by residents) and celebrating (time spent with other members of coliving) (Boff 2011:137).

Another idea based on the concept of community is the fab lab (fabrication laboratory) which is a form of work/co-operation of its members, most frequently young and creative people. People who do not have adequate education to work in the field of digital production can use fab labs, i.e. places resembling laboratories equipped with digital devices (e.g. digital 3D printers) and at the same time fulfil their passions and develop interests together with other members of the fab lab community. In the right place and with necessary tools in which fab labs are equipped and by having the opportunity to consult qualified mentors, people can pursue their passions and dreams and also conduct scientific projects (*What Is...* 2020).

Another initiative in which participants meet mainly to discuss their interests in the field of computer science, technology and electronics is so-called hackerspace. Meetings which are informal and take the form of workshops or lectures are attended by people from the local community. It is the degree of formalisation that distinguishes fab labs from the idea of hackerspace. While the first has higher formal requirements, the second has no criteria which limit the space to be hackerspace.⁴

Table 1. Advantages and disadvantages of coliving

Evaluation criteria	Advantages of coliving	Disadvantages of coliving
economic	<ul style="list-style-type: none"> - ability to work and live in the same place - saving time - cost savings 	<ul style="list-style-type: none"> - competitive environment - less flexibility in space management
social	<ul style="list-style-type: none"> - ability to combine private life with work - ability to meet interesting or more experienced people 	<ul style="list-style-type: none"> - limited personal space - blurring the line between private life and work
other	<ul style="list-style-type: none"> - ability to instantly change one's place of living - comfort about renting a house - higher motivation to work - inspiring conversations with other participants of coliving - promoting workation (work during holiday) 	<ul style="list-style-type: none"> - blurring the line between free time and hobbies - the need to use common facilities e.g. kitchen - promoting workation (work during holiday)

Source: own study.

⁴ There are two formal criteria recognising a given space as a fab lab. The first is that the place has adequate infrastructure facilities, e.g. in the form of a 3D printer or a laser cutter. The second criterion is to respect certain rules, e.g.: acting according to the fab lab card which specifies, for instance, intellectual property concerning projects (Zaród 2013:39).

All these initiatives are based on the idea of community. Participants of coliving spaces, fab labs, hackerspace, cohousing or coworking spaces, apart from working on their projects, maintain relations with other community members, both for professional purposes (e.g. gaining information on a project from tutors or other participants) and informal purposes (spending time together). The phenomenon of coliving brings many economic, social and other advantages and disadvantages for its participants (Table 1).

Coliving provides convenience for its participants, as it is the administrator (most frequently the owner) who is responsible for the condition and functionality of the rented flat. Moreover, the participants of coliving can terminate the tenancy agreement seamlessly and change their place of residence. This is important for the participants because they are frequently young people with unstabilised private life, characterised by mobility and not attaching themselves to the place where they live (so-called modern nomads or digital nomads).⁵ Coliving is also a form of co-operation between freelancers, for whom combining work with private life is an excellent option. Another advantage of coliving is the possibility of working and living in one place, which saves a lot of time. Some companies, such as The Collective and WeWork have initiated the creation of coliving places very close from the headquarters of such giants as Pinterest, Twitter and Uber, employing thousands of employees. The time that coliving participants would have to spend on commuting can be used for their projects and work. Coliving is also recognised as a lifestyle of Generation Y, facilitating the combination of private and professional life. It also provides an opportunity to get to know interesting people, make new acquaintances, find new inspirations and motivations among participants of coliving.

In turn, among the disadvantages of coliving, the restriction of personal space remains extremely important. This is especially important for singles, who value privacy and peace, or those with a stable family life. Coliving is something ‘between a hotel, a flat and coworking’, which means that interactions between its members are indispensable (in the form of meetings in the kitchen, shared living room, common room or coworking space) (Berłowski 2019). Moreover, in the long run, coliving leads to blurring the line between free time and hobbies. Very often, one’s hobby takes all (or a significant part) of one’s leisure time, engages so much and even becomes work.⁶ The participants of coliving, when working on their projects (in a more or less conscious way), devote all their free time to work instead of meeting friends or going out.

⁵ Modern nomads are people who are in constant motion, move from place to place, mainly for professional reasons. On the other hand, people who do not move from place to place in a physical manner, but learn about new places and communicate with each other through the internet and by means of new technologies are called digital nomads (Hatalaska 2017:17).

⁶ In his works from the 1980s and 1990s, R. Stebbins discussed similar issues: blurring the border between rest and hobbies (Stebbins 1996:21–29).

It is also worth paying attention to the idea of ‘working during holidays’, so-called workation (in Polish: *pracowakacje*), which can be seen as both the advantage and disadvantage of coliving. People living in a coliving space (most frequently employees of enterprises) can use their leave for a new project or a project being prepared as a part of their work. This is, on the one hand, making good use of leisure time, which will result in the development of a new project, and on the other hand, the opportunity to meet new people and gain knowledge and experience, e.g. through conversations with mentors.

Table 2. Selected coliving business models around the world

Geographical range	Name	Place	Features
Asia	Lt Josai	Nagoya (Japan)	<ul style="list-style-type: none"> – 13 tenants – common space arranged in the form of cascade terraces and floors
North America	Founder House	New York (USA)	– an initiative aimed exclusively at young entrepreneurs, engineers and designers
	Proper Hotel	Los Angeles (USA)	– the combination of an apartment for an extended stay, a luxury hotel and an elite club
	Common	New York, San Francisco, Washington (USA)	– full flexibility, possibility to rent a room for a short period of time
Europe	Nest	Copenhagen (Netherlands)	– tenants are expected to have a high level (the average level is seven years) of experience in running their own business
	Zoku	Amsterdam (Netherlands)	– short (compared to other colivings) time of residence
	The Trampery	London (Great Britain)	– the offer of ‘inclusive’ coliving, available not only to young people, but to a wider range of people, i.e. singles, families and the elderly
	Je M'appelle Company	Amsterdam (Netherlands)	<ul style="list-style-type: none"> – the initiative is a place that combines the advantages of shared housing and work – advertising slogan: 1 house, 25 creatives, 24/7 company
	The Collective	London (Great Britain)	– coliving offering a stay for both one week and the whole year
World	Roam Coliving	Global range	<ul style="list-style-type: none"> – designed for people who travel and work in different parts of the world – unique places of coliving, e.g. old palace in Madrid

Source: own development based on Chimczak (2017:38-48).

The idea of simultaneous work and foreign travels can be an inspiration and incentive to act, though it is not an ideal solution from the psychological point of view because workation will never provide one with a real chance to rest, break away from work and problems associated with it (*Workation...*, 2015).

Coliving is a relatively new phenomenon in Poland, but the United States and Western Europe already have numerous examples of this type of housing. All of them share the basic premise, though they have some different elements. In the coming years, a significant number of dwellings based on the coliving formula is expected to appear in the world, as the German company Medici Living Group, managing coliving housing, and Corestate Capital, have joined forces to invest one billion euros in the construction of a portfolio of 6 thousand premises in about 35 buildings in Austria, Switzerland, Spain and Poland (Rogulski 2018). Selected coliving models operating in different locations around the world are presented in Table 2.

Despite the belief of the homogeneous structure of coliving, addressed mainly to young people – modern nomads – there are also initiatives, such as The Trampers in London, which emphasise the inclusiveness of those places for all those interested in a hybrid of house, office and hotel services.

4. Clipster in Gdańsk as an Example of Coliving in Poland

In Poland, the first venture that synergises the elements of coworking with coliving and the possibility of business acceleration is Clipster. The initiative was established in 2015 in Gdańsk Wrzeszcz on the premises of the Garnizon settlement built by the Investment Group Hossa SA by the creators of acceleration programmes: Alfabeat and Gdańsk Entrepreneurship Incubator STARTER leading the Starter Rocket.

People (from Poland, as well as from abroad) who are interested in working on the development of their projects (from each industry) have the opportunity to live in one of the sixteen offered micro-apartments (fourteen – single and two – double) and can make use of a common lounge and coworking zone, as well as the knowledge and care of an experienced tutor. The most important values which define Clipster are contacts, knowledge, creative work of participants, training and mentoring programme and establishing business relations.

After a previous recruitment process, students or entrepreneurs who do not have a specific idea to complete the project may also live in Clipster. In this case, Clipster provides the opportunity to draw from the knowledge and experience of other start-ups or even use mutual knowledge and connect start-ups into teams in order to create a joint venture (Stawikowska 2015). Clipster offers two formulas of participation: just work, and live and work. The first guarantees a package of train-

ings, meetings and workshop. The second formula includes a training package and accommodation in one of Clipster's micro-apartments (Kieszkowska 2018).

Nowadays, Clipster is the only initiative based on the coliving formula. In the near future, the construction of the 'largest coliving in Poland', Smartti Mokotów, is to begin. It is supposed to be 'modernly furnished and functional residential unit combined with co-working space and rich infrastructure' built by Finnish developer YIT in the last quarter of 2019 (YIT... 2018). Warsaw's coliving project aims primarily to provide the community with space to spend time together. The investor planned to build not only modernly furnished residential buildings, but also a 'creative space' in the form of service premises, food outlets, reading rooms, an open-air gym or a football pitch (Sarniewicz 2019).

5. Conclusions

Coliving is now a new look at the idea of sharing (e.g. space) with other participants, paying particular attention to the interactions between these participants, such as openness, co-operation and partnership. This is a solution aimed mainly at freelancers, young people, and creators, who pursue their dreams or professional plans.

The main advantages or disadvantages resulting from coliving can be considered in environmental, social and economic terms. Most authors describe this phenomenon by analysing its positive attributes above all. However, it should be taken into account that activity based on the sharing model, which also includes coliving, also generates many threats. The most important ones include: changing the ownership paradigm in favour of use (borrowing, access), or increasing the size of the shadow economy through the provision of services and activities not reflected in GDP.

Many social aspects are in favour of coliving, as this solution provides a sense of community, security and is a driving force for freelancers. It is a concept aimed at open people, who are able to find themselves in different situations and looking for new challenges and acquaintances. Coliving spaces are intended to foster creativity and collaboration. Among the many initiatives based on the idea of community, it is coliving that allows to break through certain barriers and is a new form of co-operation, while it also has its economic value, i.e. time saving. The phenomenon of coliving remains still in the early stages of development, but in the next few years, it will play a significant role on the estate market in Poland and around the world.

References

Azzimonti L., Cremona M.A., Ghiglietti A., Ieva F., Menafoglio A., Pini A, Zanini P. (2015). BarCamp: Technology Foresight and Statistics for the Future. In: A.M. Paganoni and P. Secchi (Eds.), *Advances in Complex Data Modeling*

- and Computational Methods in Statistics* (pp. 53–68). Cham: Springer International Publishing.
- Berłowski P. (2019). *Wspólne mieszkanie nomadów*. Available online: <https://www.pb.pl/wspolne-mieszkanie-nomadow-954892> (accessed on 29 March 2020).
- Boff L. (2011). *Virtues for Another Possible World*. Eugene: Cascade Books.
- Bojć T. (2018). *Mieszkanie dla Milenialsów*. Available online: <https://thinkco.pl/coliving-o-nas-pdf/> (accessed on 10 March 2020).
- Chan Y, Zhang J.K. (2020). *Sharing by Design*. Cham: Springer Nature.
- Chimczak P. (2017). *Coliving. Mieszkania adresowane do generacji Y jako sposób na przyciąganie talentów*. Warsaw: Wydział Architektury Politechniki Warszawskiej.
- Cohousing* (2020). Available online: <http://okraglemiasteczko.net/co-ko/cohousing/> (accessed on 16 March 2020).
- Co-living – przestrzeń życiowa i jej wpływ na trendy w budownictwie* (2017). Retrieved from: <https://www.homesquare.pl/co-living-przestrzen-zyciowa/> (accessed on 29 March 2020).
- Davies S. (2015). *Coworking Becomes Coliving*. Available online: <https://www.ft.com/content/cf08ca42-65e7-11e5-97d0-1456a776a4f5> (accessed on 25 August 2020).
- Hatalska N. (2017). *Wędrowcy. Raport o współczesnych nomadach*. Gdańsk: Hatalaska.com.
- Jagiełło-Kowalczyk M., Ptaszkiewicz M. (2017). Cohousing – idea współzamieszkania. *Środowisko Mieszkaniowe*, No. 21, pp. 17–24.
- Karadima D. and Bofylatos S. (2019). Co-living as a Means to Re-engagement: A Literature Review. *The Design Journal*, Vol. 22, Iss. 1, pp. 751–762.
- Kardyś T. (2019). *Cooperation COWORKING Community – ile w Polsce jest coworków?* Available online: <http://www.coworkingpoland.pl/ile-w-polsce-jest-coworkow/> (accessed on 21 March 2020).
- Kieszkowska D. (2018). *Mieszkanie dla Milenialsów*. Available online: <http://pdf.edu.pl/dominika-kieszkowska/zjawiska/mieszkanie-dla-milenialsow> (accessed on 29. March 2020).
- Mauldwin L., McDannell Ch. (2020). *The Coliving Code: Investor Guide: How to Identify Top Opportunities, Distill Fact from Fiction, & Optimize Your Returns*. New York: Independently Published.
- Mikulska D. (2019). Scenariusze przyszłości: Coliving. *Estate*, No. 2(3).
- McCamant K., Durret Ch. (2011). *Creating Cohousing: Building Sustainable Communities*. Philadelphia: New Society Publishers.
- McDannell Ch. (2018). *The Coliving Code: How to Find Your Tribe, Share Resources, and Design Your Life*. Scotts Valley: CreateSpace Independent Publishing Platform.
- Oleksi D. (2019). *Sharing economy i jej wpływ na rynek nieruchomości*. Available online: <https://thinkco.pl/sharing-economy-coliving/> (accessed on 23 March 2020).

- Rogulski A. (2018). *Miliardowa inwestycja w internaty dla dorosłych*. Available online: <https://www.rp.pl/Mieszkaniove/312129899-Miliardowa-inwestycja-w-internaty-dla-doroslych.html> (accessed on 25 March 2020).
- Sarniewicz M. (2019). *Największy co-living w Polsce – Smartti Mokotów powstanie w Warszawie*. Available online: <https://www.muratorplup.pl/inwestycje/inwestycjekom-ercyjne/najwiekszy-co-living-w-polsce-smartti-mokotow-powstanie-w-warszawie-aa-LNkH-ppKYSLcd.html> (accessed on 29 March 2020).
- Stawikowska E. (2015). *Pierwsze takie miejsce w Polsce. W Clipsterze mieszkasz i pracujesz*. Available online: http://trojmiasto.wyborcza.pl/trojmiasto/1,35612,1898763_9,pierwsze-takie-miejsce-w-polsce-w-clipsterze-mieszkasz-i-pracujesz.html (accessed on 29 March 2020).
- Stebbins R. (1996). Casual and Serious Leisure and Post-traditional Thought in the Information Age. *World Leisure and Recreation*, No. 3, Iss. 38, pp. 21–29.
- What Is a Fab Lab?* (2020). Available online: www.fabfoundation.org/ (accessed on 28 March 2020).
- Workation – sposób na wakacje i pracę w jednym* (2015). Available online: <https://porady.pracuj.pl/zycie-zawodowe/workation-sposob-na-wakacje-i-prace-w-jednym/> (accessed on 27 March 2020).
- Zaród M. (2013). Fabryka edukacji. Laboratoria wytwórcze jako nowe narzędzie edukacji technicznej. *Edukacja Biologiczna i Środowiskowa*, No. 4, pp. 38–44.
- YIT wybuduje największy co-living w Polsce – Smartti Mokotów* (2018). Available online: <https://www.yit.pl/aktualnosci/aktualnosci-2018/yit-wybuduje-najwiekszy-co-living-w-polsce---smartti-mokotow> (accessed on 29 March 2020).

Chapter 10

Changes in the Recorded Music Market in the Face of the Globalisation Process: Insights from the Visegrad Group Countries

*Zbigniew Michalik*¹

1. Introduction

Undergoing structural changes and facing significant technological changes, the phonographic sector is an interesting field of research. Like many other areas of economic activity, it is also affected by globalisation processes. Multinational companies develop products which have a chance to appear on a global scale. To achieve economies of scale, these products also appear in minor markets, interfering with customers' purchasing habits. In the spatial aspect, the analysis covers the countries forming the Visegrad Group (V4), co-operation within which, apart from shaping international policy, also covers the economy.

The aim of the article is to analyse the changes on the market of phonogram sales in the Visegrad Group countries. In line with this, the analysis will allow for answering the main research question whether the advancing globalisation processes have led to the domination of these markets by international artists' recordings offered by global concerns. The position of the product on the phonogram sales chart was chosen as an indicator of a competitive position. A research hypothesis has been formulated, according to which the consequence of globalisation is an increase in the number of albums by foreign artists published by large concerns, occupying the first place on the sales chart in the V4 countries. The article uses the method of analysing market data presented by organisations monitoring the functioning of the recording sector in selected countries.

¹ Cracow University of Economics (Poland), ORCID: 0000-0002-7188-6510, e-mail: michaliz@uek.krakow.pl

The paper consists of the following parts: besides the introduction, the article includes a literature review, which precedes the description of the research methodology. The research design is presented thereafter in the third section, followed by a presentation of the empirical findings in the fourth section. The main results are discussed in the fifth section, and the last section presents the conclusions, implications for the practice and ideas for further.

2. Literature Review

The starting point of the globalisation process was the progressive internationalisation of large enterprises, which perceived the opportunity to increase sales revenues by entering new markets (Dunning 1988; Johanson and Vahlne 1990). However, it was conditional on the adjustment of the offer to the regulations in force separately in each country. Hence, in the interest of enterprises, activities aimed at harmonising regulations have been started. Governments have become a natural ally of this process, supporting domestic enterprises in the process of expansion into foreign markets. This resulted in activities aimed at lifting administrative barriers. In case of the phonographic sector, apart from the existence of administrative barriers, it should be emphasised that there is a limitation in the form of the language in which a recording is performed, and this restriction does not apply to instrumental pieces. Therefore, at the start of the globalisation process of this sector, companies offering phonograms by artists recording in English are in a privileged position. Links with complementary sectors, particularly with regard to access to sound carriers, also turned out to be a strong point. Successive mergers and acquisitions have shaped the current sector structure with three multinational companies: Universal Music Group, Sony Music Entertainment, and Warner Music Group referred to as ‘majors’. Apart from them, there are thousands of small independent entities around the world – the so-called ‘indies’. In the last 25 years, a slight decrease in the market share of dominant enterprises has been noticeable. In the years 1990–2003 it was almost 77%, whereas in the period 2003–2010, it was about 72% (Essling, Koenen, Peukert 2017).

The phonographic sector is subject to periodic sales fluctuations, the most serious challenge was the decline in sales that started at the turn of the 20th and 21st centuries. However, Oberholzer-Gee and Strumpf point out that such a decline was not the first. Such a situation took place at the turn of the 1970s and 1980s, and in both cases, the authors look for the reason in the change of the dominant format and time that consumers need to adapt to the new medium (Oberholzer-Gee and Strumpf 2016). The availability of illegal files in the internet appears to be a significant factor accompanying the second decline (Moreau 2013). The public interest was aroused by lawsuits against the internet platforms Napster or Audiogalaxy. Nguyen et al., on the basis of research in a group of 2,000 people, believe that an-

other form of access to music via the internet, namely streaming services, does not affect the sales of recordings, but positively affects the participation of respondents in live shows (Nguyen, Dejean, Moreau 2013). Furthermore, concerts are now the main source of earnings for artists, reversing the situation from several decades ago, when the shift from the dominance of live music to recorded music resulted in an increase in the profitability of the best-selling albums and the creation of a group of superstars (Rosen 1981). Anderson emphasises another effect of bringing music online. The collapse of traditional media sales at the beginning of the 21st century and the growing popularity of digital media contributed to the creation of the long tail – recordings available in the internet which enjoy little interest and are not available in traditional stores (Anderson 2004; Weeds 2012). It should be added that one more important reason for this phenomenon is the growing availability of recording tools and techniques. Artists are no longer completely dependent on record companies and their associated recording studios. Despite the unfavourable trend that could contribute to formulating the question about the legitimacy of publishing activity, the number of new titles is growing (Handke 2012). Easier access to individual recordings, including legal ones, meant that the question of the legitimacy of placing entire albums on the market was raised. Some of the artists decided to present single songs, also arguing it with the fact that modern youth is unable to maintain concentration for 35–50 minutes, which is the duration of a standard album. However, Kretschmer and Peukert (2014) noticed that the presentation of music videos on YouTube has a positive effect on sales results, and this relationship applies to entire albums, not individual songs. Keeping the album on the sales list may also be favoured by the activity of artists in social media (Sher and Kuo 2018). With the passage of time, the importance of releasing singles decreases, as the client receives quick access to a single recording in digital form (Essling, Koenen, Peukert 2017). In the V4 countries, the singles market has never been as developed as in Western Europe and the USA, so further analysis was based on the album format.

3. Research Methodology

The analysis was based on data from four selected markets which constitute the Visegrad Group. The approach based on the place of the phonogram on the sales list as an indicator of a competitive position has found its application in the literature (McCourt and Rothenbuhler 1997; Sernoë 2005; Harrison 2007; Carroll 2015; Haampland 2017). Sales figures are compiled by MAHASZ (in Hungary), ZPAV (in Poland) and IFPI (in Czechia and Slovakia). The publication of the lists did not start at the same time, which means that the information in Figures 1–8 covers different periods of time: from 1998 for Hungary, from 2001 for Poland, from 2006 for Czechia, and from 2016 for Slovakia. The best-selling album on a given market

in a given period of time was selected from each individual list. Basically, it was one week, but it happened that during the periods of public holidays or holidays, one compilation covered 2–3 weeks. Then, the sales leader was characterised in terms of two criteria: the country of origin of the artist, to obtain the division into domestic and foreign artists, and the specificity of the publisher, to obtain the division of ‘majors’ vs ‘indies’.

Until the turn of the 1980s and 1990s, the phonographic sector functioned differently in the countries currently forming the Visegrad Group than in the market economy. The dominant role of state-owned enterprises went hand in hand with the inability to conduct business activity by economic entities from behind the Iron Curtain. Therefore, from their perspective, the only option to enter these markets was to sell licences for the production and sale of phonograms. Due to limited production capacity, the number of titles and their circulation were also limited. Thus, these markets were not generally considered by Western European and American companies in their internationalisation strategies. The situation changed in the last decade of the 20th century, when Western record companies entered into co-operation with companies from Central Europe, which initiated the takeover processes.

In Poland, Western concerns achieved a position on the market in two stages. In the first one, they established business co-operation with Polish partners, mostly small entities, such as Izabelin, MJM, Pomaton, which started operating shortly after the political changes. The exception was Polton, owned by Poles living abroad, operating from 1983. In the second stage, takeover processes occurred, which led to the shaping of the current structure of the sector.

Hungaroton, founded in 1951 as Qualiton, played a key role in Hungary. It monopolised the local market in the following decades by launching sublabels: Pepita, Bravó, Krém, oriented to pop music. Significant changes took place in the second half of the 1980s. As a result of liberalisation and the increasing availability of foreign phonograms and investment activities, income began to decline. In 1995, there was privatisation, but the state retained the golden share to control the archives. Hungaroton became a part of the Hungarian Fotex Group, and one of the advantages of such a solution was to avoid the problems typical of multinational companies.

In Czechoslovakia, Supraphon was denationalised in 1992, and Bonton took control of it a year later. Sony took over its shares in 2008. In addition to Supraphon, Panton and Opus were also state-owned companies. Panton functioned until 1996, and Opus, after privatisation in 1990, was in the hands of the Slovak Forza Music. This state of affairs continued until 2019, when Forza Music was acquired by Warner Music.

All three large concerns are present in the V4 countries, directly in Poland, Czechia and Hungary, indirectly in Slovakia: Warner through Forza Music and Sony Music through its Czech branch. In their strategies, large concerns release

some of their titles on labels other than the main one, creating the impression of portfolio diversification. From an operational point of view, the management of the sublabel specialised in niche music is delegated to a lower level and thus decentralised A&R tasks.

It is assumed that the activity of an international concern is oriented towards achieving a dominant competitive position; in case of the phonographic sector, by maximising the number of sold phonograms. Supporting measures may be essential, e.g. through the frequency of appearance of recordings on radio. For instance, in the research sample for the German market, the domination of American and British contractors was noticed. Oberholzer-Gee and Strumpf associate it with statistics, according to which only 6% of songs in German radio stations are recordings by German artists (Oberholzer-Gee and Strumpf 2016). According to Polish law, at least 33% of the airtime is devoted to songs performed in Polish, of which at least 60% between 5 a.m. and midnight. It should be assumed that songs known off the air may have an impact on purchasing decisions (Kask and Öberg, 2019).

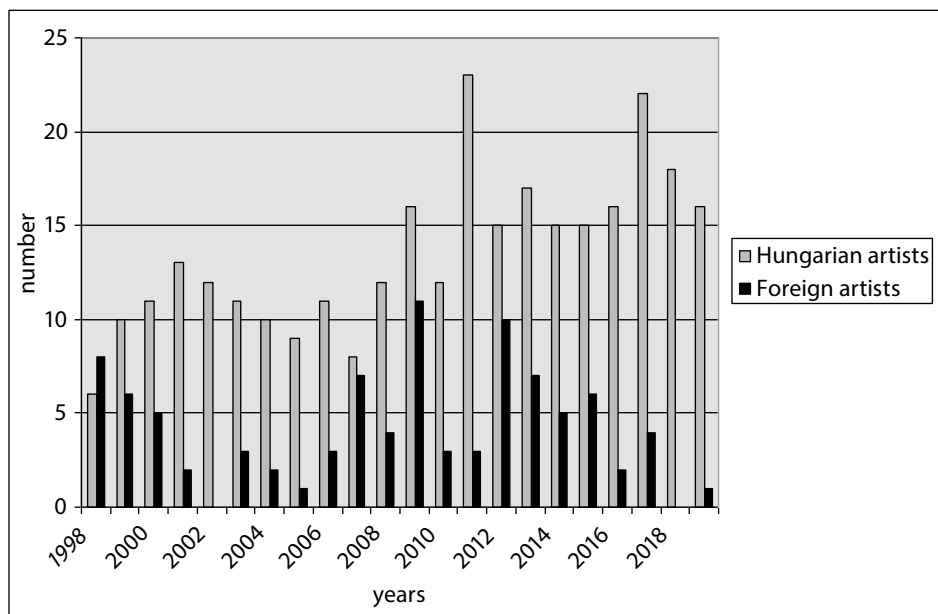
Hence, a research hypothesis was formulated, according to which the consequence of globalisation is the increase in the number of albums by foreign performers published by large concerns, occupying the first place on the sales lists in the V4 countries.

4. Results

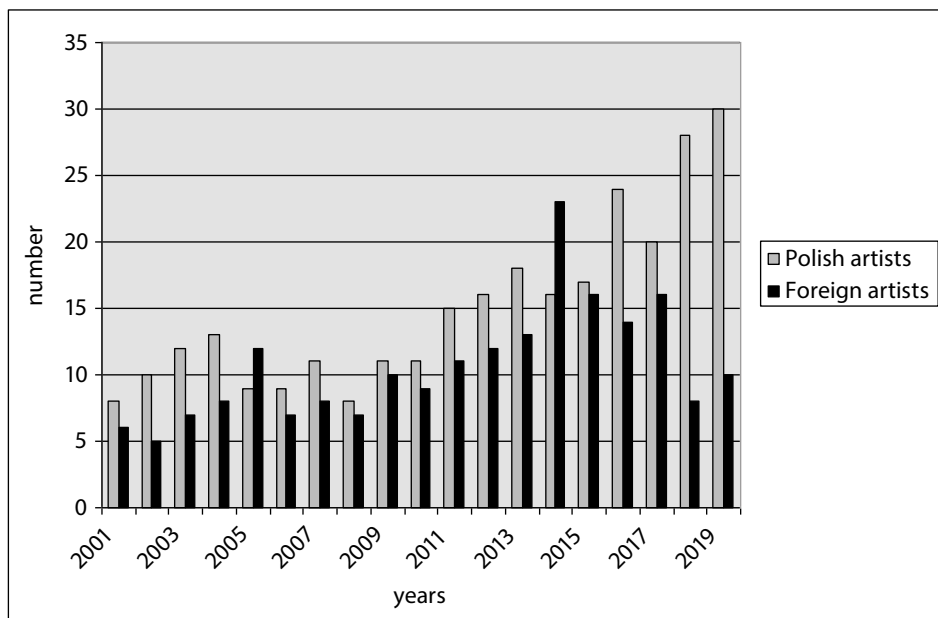
Hungary has the longest tradition of publishing a sales chart. It has been published since 1998 by MAHASZ (Magyar Hangfelvétel-kiadók Szövetsége Közös Jogkezelő Egyesület). The data on the number of best-selling recordings broken down by Hungarian and foreign performers are presented in Figure 1.

Recordings of local artists dominate the Hungarian market. In the analysed period, only in the first year of the compilation's operation, the number of phonograms by foreign artists was higher than the number of Hungarian artists. From then on, local artists have an advantage, and it is most clearly expressed by the fact that no phonogram with foreign music reached the top of the list in 2002 and 2018. Additionally, in 2009 alone, more than 10 foreign phonograms ranked first on the sales list.

On the Polish market (Figure 2), in the 19 years covered by the analysis, only twice, in 2005 and 2014, the number of the best-selling foreign phonograms was higher than the number of phonograms containing the music of Polish artists. The dominance is particularly noticeable in the last two years, when the number of Polish numbers one was at least three times higher than their foreign counterparts.

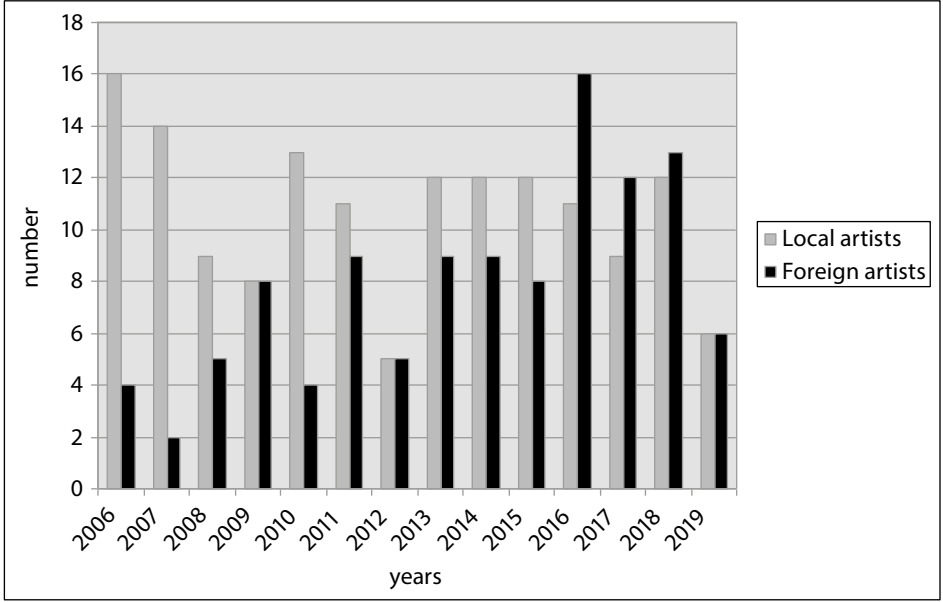
Figure 1. Number of recordings peaked at number 1 on the Hungarian chart

Source: own elaboration based on the MAHASZ data.

Figure 2. Number of recordings peaked at number 1 on the Polish chart

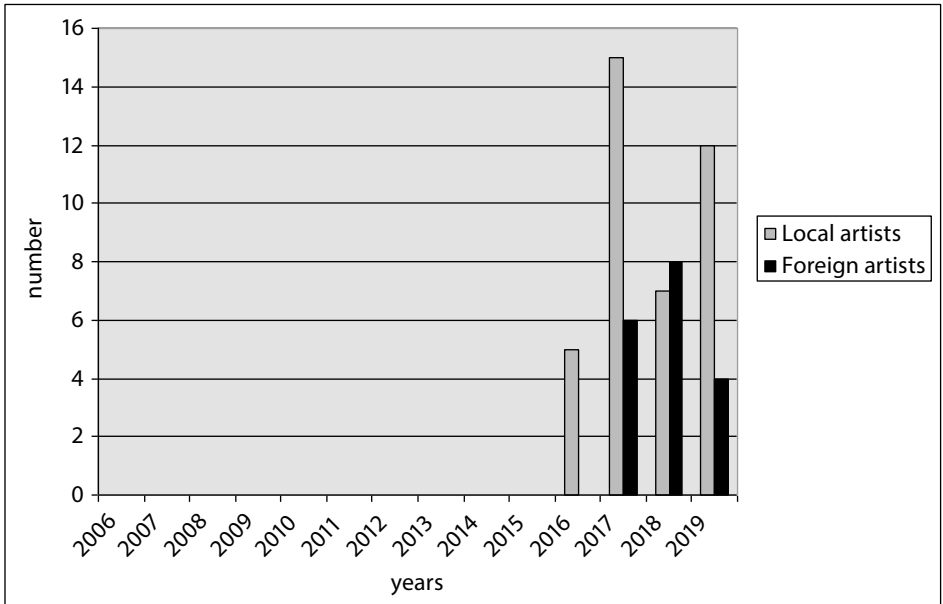
Source: own elaboration based on the OLIS data.

Figure 3. Number of recordings peaked at number 1 on the Czech chart



Source: own elaboration based on the IFPI data.

Figure 4. Number of recordings peaked at number 1 on the Slovakian chart



Source: own elaboration based on the IFPI data.

In case of the Czech market (Figure 3), in the analysed period, the number of best-selling phonograms by local artists was eight times higher than the ‘number ones’ of their foreign counterparts. The advantage on the side of foreign performers was noted only three times, but it was three of the last four years. Additionally, in 2019, there was a draw. It follows that, in contrast to the Hungarian and Polish markets, the competitive position of phonograms with foreign music has been increasing in recent years, measured by the number of the highest positions in the sales statement.

Considering the short functioning of the separate sales list for the Slovak market (Figure 4), it is difficult to formulate opinions regarding the long period of time. However, in recent years, the best-selling albums in individual weeks have more frequently been those recorded by local artists, contrary to the situation on the Czech market.

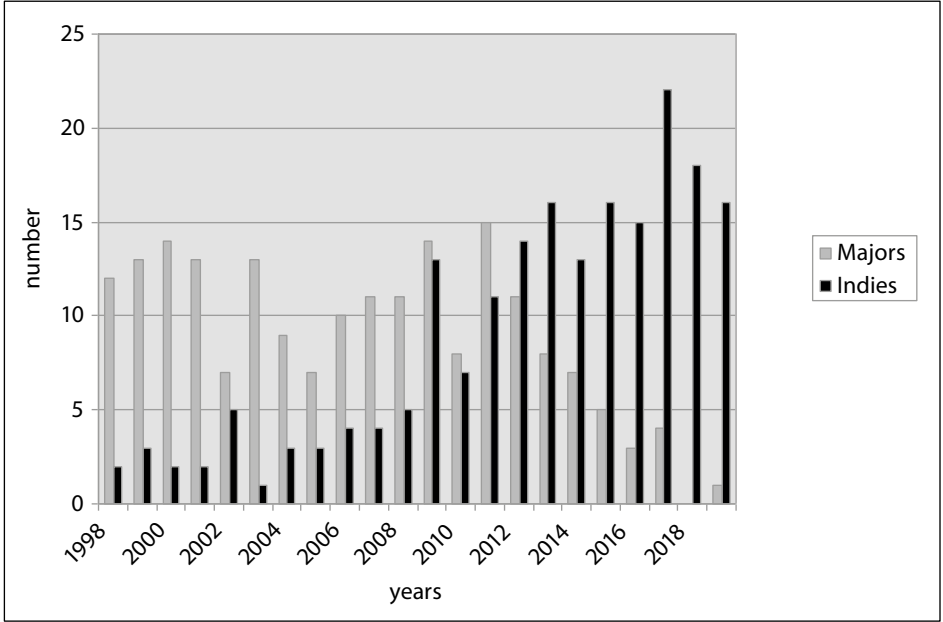
If customers in a given market are attached to local brands, multinationals may seek ownership of these brands through takeover processes when entering such a market. In case of the phonographic sector, the role of the brand is played by an artist with a wide base of loyal fans. Therefore, a multinational company may seek to take over a local record company, and thus gain access to the catalogue of local artists mentioned above, or offer the artist to sign a contract directly. Regardless of the chosen path, there may be a situation where the local artists are at the top of the phonogram sales lists, but international corporations will be responsible for their success. Therefore, the changes which took place in selected markets with regard to the number of recordings number one, released both by international concerns and independent labels, will be shown in the further part of the analysis. Figure 5 shows the situation in this respect for the Hungarian market.

Until 2011, each time the number of ‘number ones’ issued by international concerns was higher than those offered by independent companies. Since 2012, small businesses have gained a competitive advantage. It is becoming clearer and clearer, as evidenced by the fact that in 2018–2019, only one album from the majors’ offer, Ed Sheeran’s *No.6 Collaborations Project*, reached the top of the MAHASZ list.

Figure 6 shows the tendency for the Polish market.

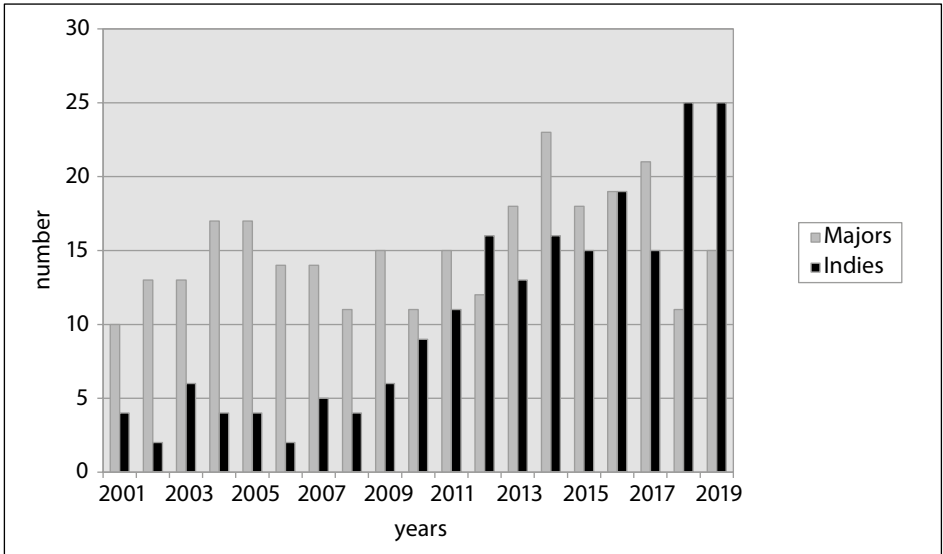
In the analysed period, a growing number of independent number ones can be seen. The domination of international leaders on the Polish market was broken in 2012, but unlike the Hungarian market, it was not the beginning of a permanent advantage for independent market players. In 2013–2015 and 2017, more albums labelled by the majors reached the first place in the OLIS ranking. On the other hand, in the last two years, small companies have gained a relatively clear advantage, placing a total of 50 albums at the top of the sales chart. The situation on the Czech market is shown in Figure 7.

Figure 5. Number of recordings issued by 'majors' and 'indies' peaked at number 1 on the Hungarian chart



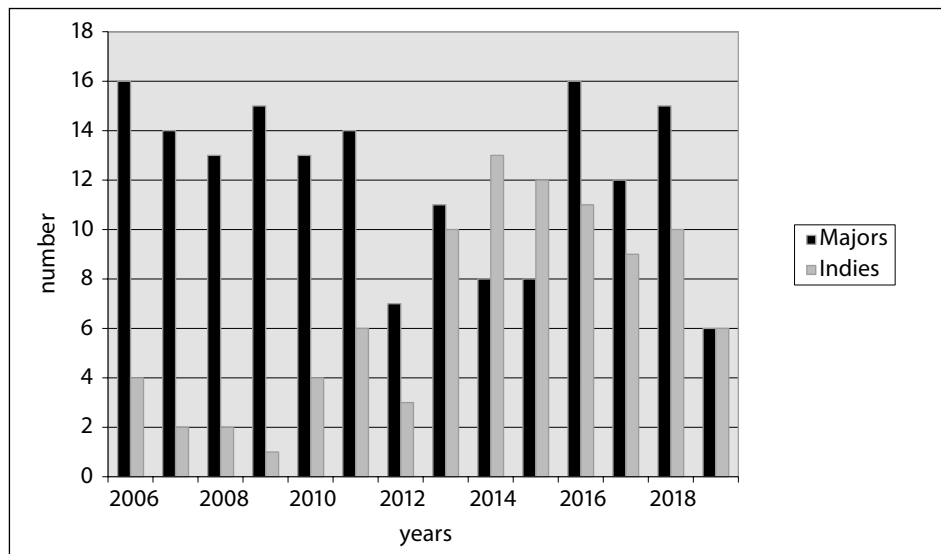
Source: own elaboration based on the MAHASZ data.

Figure 6. Number of recordings issued by 'majors' and 'indies' peaked at number 1 on the Polish chart



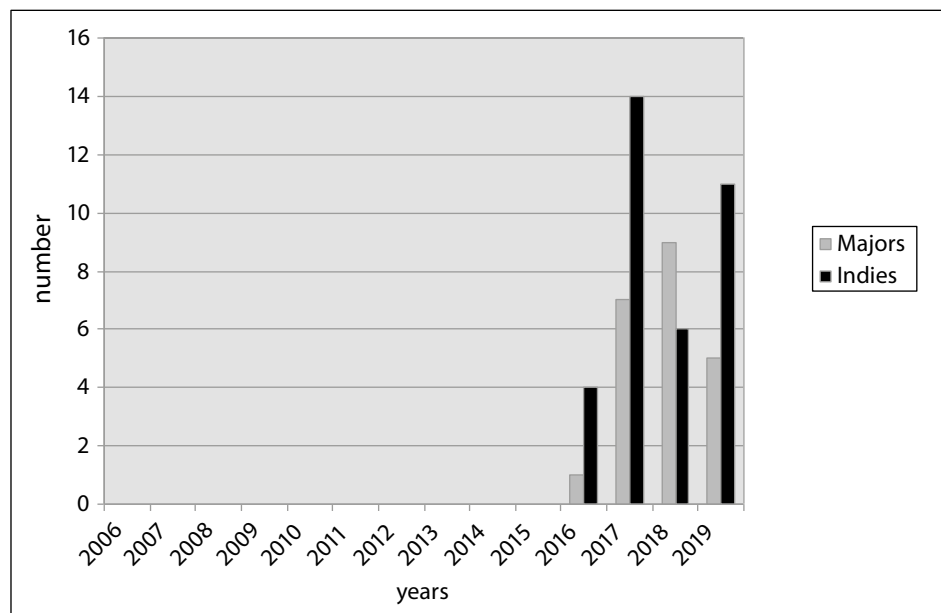
Source: own elaboration based on the OLIS data.

Figure 7. Number of recordings issued by 'majors' and 'indies' peaked at number 1 on the Czech chart



Source: own elaboration based on the IFPI data.

Figure 8. Number of recordings issued by 'majors' and 'indies' peaked at number 1 on the Slovakian chart



Source: own elaboration based on the IFPI data.

In the Czech market, small companies achieved a competitive advantage measured by the number of recordings number one in a given week in 2014, i.e. two years later compared to Hungary and Poland. Contrary to these two countries, the last few years have not been marked by the advantage of independent companies. Only in 2019, both groups of entities obtained the same number of recordings at the top of the sales lists. The data for the Slovak market are presented in Figure 8.

In the analysed period, which was shorter compared to other countries, small companies managed to put their recordings on the first place on the Slovak IFPI list three times. Only in 2018, large enterprises gained the advantage.

5. Discussion

When deciding to operate on the global market, a company faces the dilemma of whether to strive for product unification on a global scale or differentiate brands on local markets. The latter option does not allow for the achievement of economies of scale as significant as in case of choosing the first option, but it may be necessary when the brand has already been present on a given market, is recognisable and profitable, and has been included in the portfolio of an international company following a takeover or merger. By transferring these theoretical assumptions to the specificity of the phonographic sector, one can point out similarities and differences. Global companies, known as ‘majors’, enter the local market usually through acquisition processes. With global products at their disposal – recordings by international performers – it is expected that they will seek to increase the sales volume of recordings of these performers. As for local artists, a decision may be made to extend their contracts or not to co-operate with them any longer. Moreover, thanks to their A&R know-how, they can, by monitoring the local market, search for promising artists to offer them co-operation (Casillas, Barbero, Sapienza 2015). It can only theoretically be assumed that a large label will endeavour to release all artists on a given market. In practice, small independent enterprises operate in addition to large entities on each local record market. Each of them prepares an offer to present it on the market.

Hence, despite the disproportion of competitors in terms of financial or promotional opportunities, the phenomenon of competition can be observed, and both sides strive to maximise the number of volumes sold, both in total and with regard to individual titles. The first criterion is used to determine market shares and clearly positions the advantage of global players. However, the single product criterion theoretically creates opportunities for small businesses to compete with their rivals. In the theory of globalisation, it is assumed that if there is a space in a sector for companies limiting their activities geographically, then the appropriate strategy for them, according to Porter, is to focus on a niche (Porter 1980). The niche product is of limited interest to customers, so the offer of small companies in the

phonographic sector should fit in with the concept of a long tail described by Anderson. As it has been shown, during the analysed period, small companies managed to place at least one album at the top of the sales list every year. Any such situation could be regarded as a success, given the limited financial possibilities. Nevertheless, despite this disproportion, in the last ten years, especially on the Hungarian and Polish markets, independent companies placed more albums on the sales lists than their big competitors did. It was accompanied by the growing popularity of local artists. It seems that the explanation for this situation can be found in the concept of glocalisation (Jain et al. 2012; Jurić Pahor 2020). Small entities perceive customer needs better and thus are able to respond to these needs more accurately. An important explanatory factor may also be the economic patriotism of customers, as evidenced by the fact that, in parallel with the increase in the number of 'independent' number ones, the number-one position of local artists increases. Such decision-making behaviours of customers reflect the once popular statement that 'Polish youth sings Polish songs'. Changing publishers to independent companies also turned out to be an important factor. In Hungary, Jimmy Zábó changed his publisher from Warner to Magneoton, Ákos went from BMG to Magneoton, Falcon Media and Fehér Sólyom, Pali Balázs went from EMI to self-release, Tankcsapda went from Sony to self-release, Magdolna Rúza went from Universal to CLS Records, Kispál És A Borz went from PolyGram to Megado, and Irigy Hónaljmirigy went from PolyGram to CLS Records.

To sum up, the hypothesis that the consequence of globalisation is the increase in the number of albums by foreign artists released by large concerns, occupying the first place on the sales lists in the V4 countries, should be rejected.

6. Conclusions

The main objective of this paper was to analyse changes in the competitive position of the phonographic sector product in the V4 countries. Filling the existing gap in this regard, the article provides an important hint for people and institutions operating in the phonographic sector. The progressing process of globalisation did not mean that small companies were doomed to struggle for survival. If, on the basis of a recording provided by the artists, they respond to customer needs, they can effectively compete with an international concern for the highest position on the sales chart. It should be emphasised that this conclusion may have implications in other sectors where small businesses operate alongside global players. One cannot forget about the possible reaction of big players to the growing competitiveness of small companies. An example is the American label Def Jam, belonging to Universal Music Group, which, seeing the potential of Polish hip-hop, in 2019, through the Def Jam Recordings Poland branch, introduced the rapper Ero's album to the first place on the OLIS list.

Potential doubts may arise when choosing the competitive advantage indicator on the basis of which the analysis was conducted. However, as explained above, the popularity of online video channels serves entire albums rather than individual songs. The sales chart itself is prepared by a legally empowered organisation, so even if one raised objections of a methodological nature, it would be very difficult to develop a more objective report of sales combined with network popularity.

Another limitation is undoubtedly the set of countries within which the analysis was conducted. In the context of the latter, it would be interesting to extend the research to other countries where English is also not an official language. It would then be possible to compare whether the situation in the V4 countries is specific or whether it falls within the standard sector response to the advancing globalisation. As regards the countries with English as the official language, it is not so much legitimate to ask about the differences between domestic and foreign performers because there is wide acceptance of recordings in the language area on these markets, but rather the scale of presence in the sales charts of performers from outside this area. In addition, are independent labels able to achieve such favourable results in these countries as in the V4 countries?

Acknowledgement

This paper was supported by the Ministry of Science and Higher Education of the Republic of Poland within a subsidy granted to the Cracow University of Economics.

References

- Anderson C. (2004). *The Long Tail*. Available online: <https://www.wired.com/2004/10/tail/> (accessed on 18 March 2020).
- Carroll Jr. W.F. (2015). Not So Lonely at the Top: Billboard #1s and a New Methodology for Comparing Records, 1958–75. *Popular Music and Society*, Vol. 38(5), pp. 586–610. <https://doi.org/10.1080/03007766.2014.991188>.
- Casillas J.C., Barbero J.L., Sapienza H.J. (2015). Knowledge Acquisition, Learning, and the Initial Pace of Internationalization. *International Business Review*, Vol. 24(1), pp. 102–114. <https://doi.org/10.1016/j.ibusrev.2014.06.005>.
- Dunning J.H. (1988). The Eclectic Paradigm of International Production: A Re-statement and Some Possible Extensions. *Journal of International Business Studies*, Vol. 19(1), pp. 1–31. <https://doi.org/10.1057/palgrave.jibs.8490372>.
- Essling C., Koenen J., Peukert C. (2017). Competition for Attention in the Digital Age: The Case of Single Releases in the Recorded Music Industry, *Information Economics and Policy*, Vol. 40, pp. 26–40. <https://doi.org/10.1016/j.infoecopol.2017.05.002>.

- Haampland O. (2017). Power Laws and Market Shares: Cumulative Advantage and the Billboard Hot 100. *Journal of New Music Research*, Vol. 46(4), pp. 356–380. <https://doi.org/10.1080/09298215.2017.1358285>.
- Handke C. (2012). Digital Copying and the Supply of Sound Recordings. *Information Economics and Policy*, Vol. 24(1), pp. 15–29. <https://doi.org/10.1016/j.infoecopol.2012.01.009>.
- Harrison T. (2007). “Empire”: Chart Performance of Hard Rock and Heavy Metal Groups, 1990–1992. *Popular Music and Society*, Vol. 30(2), pp. 197–225. <https://doi.org/10.1080/03007760701267730>.
- Jain M., Khalil S., Le A., Cheng J.M.S. (2012). The Glocalisation of Channels of Distribution: A Case Study. *Management Decision*, Vol. 50(3–4), pp. 521–538. <https://doi.org/10.1108/00251741211216269>.
- Johanson J., Vahlne J.E. (1990). The Mechanism of Internationalisation, *International Marketing Review*, Vol. 7(4), pp. 11–24. <http://dx.doi.org/10.1108/02651339010137414>.
- Jurić Pahor, M. (2020). National Identity in the Light of Globalisation, Glocalisation and Transculturation. *Teorija in Praksa*, Vol. 57(2), pp. 561–580.
- Kask J., Öberg C. (2019). Why “Majors” Surge in the Post-disruptive Recording Industry. *European Journal of Marketing*, Vol. 53(3), pp. 442–462. <https://doi.org/10.1108/EJM-11-2017-0841>.
- Kretschmer T., Peukert C. (2014). *Video Killed the Radio Star? Online Music Videos and Digital Music Sales*. Centre for Economic Performance, LSE. CEP Discussion Papers dp1265. Available at: <http://eprints.lse.ac.uk/60276/1/dp1265.pdf> (accessed on 27 May 2020).
- McCourt T., Rothenbuhler E. (1997). SoundScan and the Consolidation of Control in the Popular Music Industry. *Media, Culture & Society*, Vol. 19(2), pp. 201–218. <https://doi.org/10.1177/016344397019002005>.
- Moreau F. (2013). The Disruptive Nature of Digitization: The Case of the Recorded Music Industry. *International Journal of Arts Management*, Vol. 15(2), pp. 18–31.
- Nguyen G.D., Dejean S., Moreau F. (2014). On the Complementarity Between Online and Offline Music Consumption: The Case of Free Streaming. *Journal of Cultural Economics*, Vol. 38 (4), pp. 315–330. <https://doi.org/10.1007/s10824-013-9208-8>.
- Oberholzer-Gee F., Strumpf K. (2016). The Effect of File Sharing on Record Sales, Revisited, *Information Economics and Policy*, Vol. 37, pp. 61–66. <https://doi.org/10.1016/j.infoecopol.2016.11.001>.
- Porter M.E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: The Free Press.
- Rosen S. (1981). The Economics of Superstars. *American Economic Review*, Vol. 71(5), pp. 845–858.

- Sernoe J. (2005). “Now We’re on the Top, Top of the Pops”: The Performance of “NonMainstream” Music on Billboard’s Albums Charts, 1981–2001. *Popular Music and Society*, Vol. 28(5), pp. 639–662. <https://doi.org/10.1080/03007760500142670>.
- Sher C.-Y., Kuo Y.-H. (2018). Can Facebook Popularity Help Albums to Remain in the Sales Charts? *Applied Economics Letters*, Vol. 25(16), pp. 1121–1124. <https://doi.org/10.1080/13504851.2017.1400644>.
- Weeds H. (2012). Superstars and the Long Tail: The Impact of Technology on Market Structure in Media Industries. *Information Economics and Policy*, Vol. 24(1), pp. 60–68. <https://doi.org/10.1016/j.infoecopol.2012.01.008>.

III.

Social and Environmental Ecosystems of Socio-Economic Development

Chapter 11

Raw Material Security in the European Union: Towards a Low-Carbon Economy

Robert W. Włodarczyk¹, Justyna Tomala²

1. Introduction

Mineral raw materials are an important element of the development of any economy, as they also determine technological progress. They are used not only in strategic sectors of the economy, but also in environment-friendly technologies. The constantly growing demand for mineral resources, observed especially in emerging economies, as well as their uneven concentration in the earth's crust, constitutes a challenge related to ensuring the security and continuity of supplies. Hence, raw materials security plays an increasingly important role in the policies of countries. This trend can be observed especially in case of countries with a negligible amount of resources which depend on imported minerals.

The aim of the article is to diagnose and assess the raw material security of the European Union, with particular emphasis on activities for the development of a low-emission economy. The research applied the method of critical analysis of the literature and the analysis of statistical data.

The article consists of five sections. The first section of the paper identifies major features of raw materials security, with particular emphasis on the raw materials security of the European Union (EU). The second section introduces measuring the importance of critical raw materials to the EU economy. In the next section, the results obtained are assessed in relation to the actions proposed under the *Long-Term Strategic Vision for a Prosperous, Modern, Competitive and Climate*

¹ Cracow University of Economics (Poland), ORCID: 0000-0001-7610-6504, e-mail: wlodarc@uek.krakow.pl

² Cracow University of Economics (Poland), ORCID: 0000-0001-6090-9337, e-mail: tomalaj@uek.krakow.pl

Neutral Economy. The last section outlines synthetic conclusions from the analysis carried out and indicates recommendations for future research.

2. Development of International Raw Material Markets

2.1. The Role and Importance of Raw Material Security

The process of the globalisation, internationalisation of the economy, technological progress and industrialisation contributes to the increase in the demand for mineral resources. It is particularly important, as mineral resources are indicated as one of the key elements of economic growth (Maull 1984). Especially in the first decade of the 21st century, mineral resources gained importance in the economic dimension. This was due to the involvement of the People's Republic of China and other emerging economies in the processes of globalisation. This has led to an increase in mineral commodity prices, as well as concerns about the scarcity of mineral resources in international markets and the continuity of mineral resource supplies. It is worth underlining that the latter factor particularly becomes an issue of fundamental importance for the state (Maull 1984).

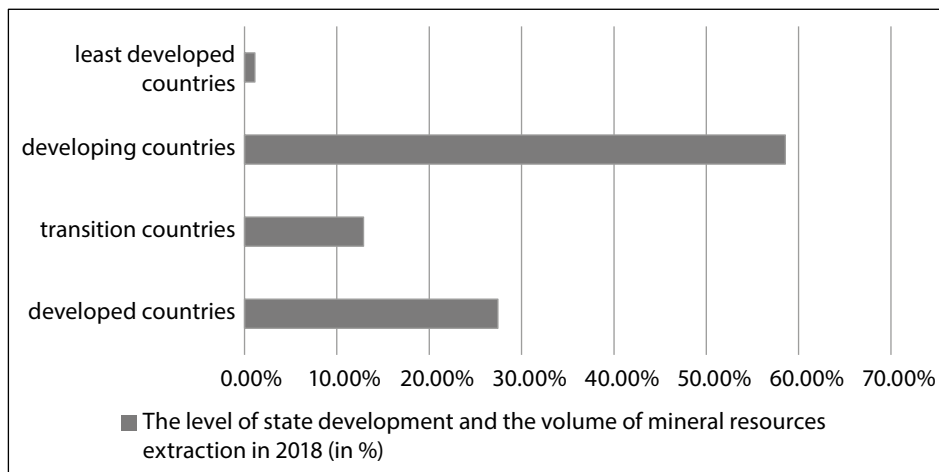
Hence, raw materials security plays an increasingly important role in the policies of individual countries. This concept can be defined as all activities which meet the demand for mineral resources needs (Bojańczyk 2014). Raw materials security can also be considered as the implementation of the country's economic and industrial policy and the degree of balancing the raw material needs with the supply of raw materials from internal sources [extraction and processing] and external [import] (Galos et al. 2012). Raw material security is also defined as a recurrent phenomenon, caused by the uneven distribution of mineral resources in the earth's crust, which leads to dependence on the import of minerals by countries without raw material deposits (Mancini, Benini, Sala 2018).

It should therefore be emphasised that the raw materials security is extremely important, above all from the point of view of countries with insignificant or small raw material deposits. It is indicated that mineral resources are concentrated in developing and transforming countries, as shown in Figure 1 (Pach-Gurgul 2015).

In 2018, developing countries provided 58.57% of the supply of mineral resources to the world market, compared to 27.43% of the share of developed countries. In turn, the transition countries accounted for the production of 12.88% of mineral resources. On the other hand, the least developed countries supplied the world market with only 1.12% of the minerals. In addition, it is indicated that the share of politically unstable countries in the extraction of mineral resources in 2018 was as high as 57.15% (Federal Ministry of Agriculture, Regions and Tourism 2020).

It is precisely the concentration of mineral production in politically unstable countries, but also the growing tendency to process minerals at the point of extraction, that contributes to the need to import mineral resources, which in turn leads

Figure 1. The level of state development and the volume of mineral resources extraction in 2018 (in %)



Source: Federal Ministry of Agriculture, Regions and Tourism (2020).

to the emergence of political and economic dependencies. The result may be the lack of continuity of supplies of mineral resources, which is considered a threat to the security of raw materials (Humphreys 2010). However, it is worth adding that the source literature points out that no country has the potential to build its economic opportunities only on internal resource deposits (Wojciechowski 1998). In order to ensure raw materials security, the following determinants are extremely important (Galos et al. 2012):

- Ensuring the continuity of supplies of mineral resources
- Effective use of resources
- Exploitation of internal resource deposits.

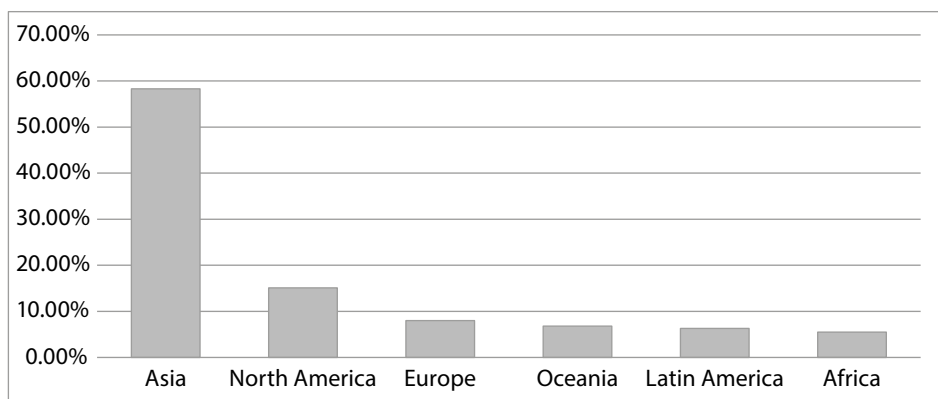
The growing interest in mineral resources causes the involvement of individual countries and leads to decisive measures to ensure the security of raw materials. This activity can have both positive and negative effects (De Ridder 2013). The development of international commodity markets enables countries rich in mineral resources to achieve political and economic goals both domestically and internationally. Additionally, the raw materials policy is focused on the socio-economic development of the country and avoiding the phenomenon of the 'resource curse'. On the other hand, countries dependent on the import of mineral resources pursue a resource policy oriented towards ensuring uninterrupted supplies of mineral resources. However, international commodity markets are associated with many risks, including: increasing demand for mineral resources by emerging economies, a threat to the supply of many key minerals, and a price dictate. Hence, raw materials security should be considered as one of the main priorities of economic development (Hagelüken et al. 2018). It should be emphasised that even small

amounts of mineral resources are of great importance for the industry, and thus the economy, affecting the competitiveness or innovation of the economy.

2.2. Raw Material Security of the European Union

The European Union, one of the most economically developed areas in the world, is dependent on the import of mineral resources. Currently, the EU has to import about 60–100% of mineral resources, including energy resources and metals (Kawalec, Tomczyk, Wróbel 2015), as the European Union's mining capacity is very limited. In 2018, Europe supplied the world market with only 8% of mineral resources, while the share of Asia was 58.3% and North America – 15.1% (see Figure 2). This is due to the low competitiveness of the mining industry in the EU member states, increasing costs of extracting mineral resources, as well as stricter and stricter environmental protection standards.

Figure 2. The share of continents in the production of mineral resources in 2018 (in %)



Source: own study based on Federal Ministry of Agriculture, Regions and Tourism (2020).

One of the European Union's goals is to counteract global challenges, including ensuring the continuity of supplies of mineral resources. This is important as thirty million jobs in the EU depend on the availability of mineral resources (European Commission 2020b). Therefore, projects related to extracting mineral resources from internal sources or promoting investments in the mining industry are gaining importance. There are also activities aimed at increasing the knowledge of the mining industry and the technology of the production of mineral resources (Latola et al. 2016). In addition, the European Union encourages the industrial sector to take measures to secure the continuity of supplies of mineral resources and reduce the risk in the supply chain (Rech 2015).

The growing importance of the People's Republic of China and other emerging economies, which have become more and more actively involved in the globalisation processes, and the growing demand for mineral resources have prompted the European Union to take specific measures. In 2008, the European Commission announced the EU's raw materials strategy – the Raw Materials Initiative, which initiated a discussion on mineral resources in the European Union's economic and trade policy (December 2018). The adopted strategy was based on three pillars:

- Guaranteeing access to mineral resources for EU countries on the terms applicable to other participants of international raw material markets (I)
- Defining a framework for co-operation within the European Union on the sustainable supply of mineral resources from domestic sources (II)
- Increasing the efficiency of using mineral resources and promoting the recycling process in order to reduce the dependence of the EU economy on imports and reduce the consumption of mineral resources (III) (Tomala 2019).

The first pillar of the Raw Materials Initiative emphasises the role of international co-operation in order to ensure the European Union's access to mineral resources and the continuity of mineral supplies. That is why the EU should conduct a dialogue, first and foremost, with countries rich in mineral resources, but also effectively co-ordinate all EU external policies. The raw material policy and the mineral resources themselves should be included in the European security strategy (European Commission 2008).

A key pillar of the Raw Materials Initiative from the EU point of view was the second pillar, as it encourages the acquisition of mineral resources from European sources. Under this pillar, regulatory framework conditions were envisaged, which, in turn, would facilitate administrative processes in the extractive sector. The implementation of research projects or the networking of geological surveys carried out in individual EU member states was also assumed, which would allow for increasing knowledge about European resource deposits. The development of modern methods of extracting mineral resources was also promoted (Šolar, Demicheli, Wall 2012).

In turn, the third pillar of the Raw Materials Initiative emphasises the importance of resource efficiency, the recycling of mineral resources, and the significance of renewable resources. The aim was to reduce the European Union's dependence on imported mineral resources. The third pillar of the Raw Materials Initiative was also intended to promote sustainable development and industrial policy and ensure the transition to a resource-efficient economy. Research on substitutes for mineral resources was supported, as well as extensive co-operation, also with third countries, in the field of the recycling of mineral resources. In addition, the desire to pursue the separation of mineral resources and economic growth in the long term was outlined (European Commission 2008).

Therefore, the Raw Materials Initiative was the most important action in the field of raw material security undertaken by the European Union in the first dec-

ade of the 21st century. However, according to the Lisbon Treaty, the raw materials policy is the responsibility of the European Union's member states (Šolar, Demicheli, Wall 2012).

Another action taken by the EU in the field of raw material security was *Report of the Ad hoc Working Group on Defining Critical Raw Materials* and a list of critical minerals. The list includes mineral resources with a high supply risk and high economic importance. For this purpose, the list included (European Commission 2014):

- Implementation of the EU industrial policy
- Increasing the competitiveness of industry and the EU economy
- Intensification of activities for the production of key mineral resources
- Facilitating the processes of exploitation of European resource deposits
- Support in negotiating commercial contracts
- Counteracting trade distorting measures
- Popularising research and innovation.

The first list of critical minerals was published in 2011 and included 14 raw materials (antimony, beryllium, fluorspar, gallium, germanium, natural graphite, indium, cobalt, magnesium, rare earth elements, niobium, platinum group metals, tantalum and tungsten), which posed a serious threat to the continuity of supply. At that time, 41 non-energy and non-food resources were assessed. In 2014, after re-analysis, one raw material (tantalum) was removed from the list of critical mineral resources, as the supply risk was reduced, while six more raw materials were added (borate, chromium, phosphate rock, magnetite, silicon metal, coking coal). The last revision of the list of critical minerals was made in 2017, when 61 non-energy and non-food raw materials were examined. It was then decided to expand the list to include barite, bismuth, hafnium, helium, natural rubber, phosphorus, scandium, tantalum and vanadium (European Commission 2020a). The list of critical mineral resources, updated every three years, is a short-term solution and illustrates the current situation. However, it is noted that the list of critical mineral resources is a kind of signpost for the EU industry by pointing to bottlenecks, thus allowing one to determine the scale of activities undertaken to secure the supply of mineral resources (Hagelūken et al. 2018). From the point of view of the EU economy, all mineral resources are extremely important. Hence, the continuity of supplies of all minerals should be ensured, regardless of whether they are included in the list of critical mineral resources (European Commission 2014). Medium and long-term activities for the safety of EU raw materials are also included in the European Innovation Partnership on raw materials.

This partnership not only strengthens the Raw Materials Initiative, but also provides an advisory platform for the European Commission, bringing together representatives of the academic world, industry, public administration, and non-governmental organisations (European Commission 2020c). Its purpose is to work for the safety and continuity of raw material supplies, maintain the competitive-

ness of the EU economy, continuously increase the efficiency of resource use, and implement projects aimed at recycling mineral resources (Šolar, Demicheli, Wall 2012). A key element of the European Innovation Partnership is research and innovation funding (European Commission 2020c).

Another important document supporting the activities for the European Union's raw material security is the *Long-Term Strategic Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy* presented by the European Commission in 2018. It is a comprehensive strategy that covers almost all EU policies, including transport, industry, energy and agriculture. The strategy assumes the following activities to contribute to the achievement of the goal of a low-carbon economy:

- Maximising energy efficiency
- Striving to decarbonise energy sector by increasing the share of renewable energy sources in energy production
- Low-emission transport
- Promoting a competitive industry and a circular economy
- Expansion of intelligent network infrastructure and interconnections
- Utilising the bioeconomy
- Reducing CO₂ emissions to the atmosphere through the use of clean carbon technologies (Carbon Capture and Storage) (Directorate General for Climate Action, European Commission 2019).

The strategy responds to the European Union's efforts to combat climate change, which are expected to lead to climate neutrality as well as to a low-carbon economy. Therefore, mineral resources are extremely important for industrial policy and the EU economy.

Moreover, in the framework programme for research and technological development, Horizon 2020, the necessity to use the full potential of mineral resources was also indicated. The greatest challenges for the European Union include the continuity and security of supplies of mineral resources, as well as the dependence of the EU economy on the import of minerals. The mineral-dependent sectors of the EU economy represent more than EUR 1,000 billion in added value and generate around 30 million jobs. Moreover, the Horizon 2020 Strategy emphasises that the European Union should focus on ensuring a sustainable supply of mineral resources and the efficient use of natural resources, which will allow for meeting the growing demand for mineral resources. The importance of innovation in the extractive industry was also emphasised (European Commission 2020a).

3. Material and Methods

Raw material security means looking for such a diversification of mineral resources to ensure the continuity of production processes and the production of gross added value. Various factors may determine shortages or delays in the supply of raw ma-

terials. The empirical part of the paper examines the degree of criticality of selected mineral resources in the entire European Union, which may determine the resource security of the economy. The research began with identifying the applicable research subject. The subject of the analysis is a collection of 40 groups of mineral resources, one of which is a subgroup of four minerals (holmium, lutetium, ytterbium and thulium), while the remaining 39 groups of raw materials are as follows: antimony, beryllium, bismuth, borate, magnesium, natural rubber, niobium, iridium, palladium, rhodium, ruthenium, phosphorus, cerium, dysprosium, erbium, europium, gadolinium, lanthanum, neodymium, praseodymium, samarium, terbium, yttrium, scandium, tantalum, natural graphite, platinum, helium, phosphate rock, vanadium, barite, fluorspar, germanium, silicon metal, tungsten, gallium, cobalt, hafnium, indium. A static study used a taxonomic method based on EU-wide data for 2017.

Four diagnostic variables were used to assess the criticality level of selected mineral resources for the European Union:

- (Z1) share of recycling (contribution of recycled materials to raw materials demand – the share of recycled materials in the demand for mineral resources)
- (Z2) adjusted economic importance – the importance of the raw material for the economy, adjusted by the appropriate substitution index for economic importance
- (Z3) adjusted supply risk – the risk of interrupting the supply of materials to the production process, adjusted with the appropriate substitution index for supply risk
- (Z4) import compliance – the percentage of the use of the imported mineral resource in the economy in relation to the total consumption of this raw material in the economy.

For the purpose of the taxonomic method, the variable Z1 was classified as a destimulant, and the variables Z2–Z4 were classified as stimulants. Then, the normalisation of these variables was carried out, using the unitarisation method, separately for destimulants and stimulants. Subsequently the reference object was determined on the basis of standardised reference values for individual diagnostic variables. The reference object contains values which ensure the maximum criticality of the mineral raw material. Thereafter the distances of each of the examined groups of mineral resources from the defined pattern were calculated. With this end in view, a measure called the Euclidean distance was used, and the smaller (greater) value this measure takes, the more (less) critical a relevant mineral is. Then, the calculated taxonomic measures were subjected to the linear ordering procedure. The hierarchy of objects (mineral resources) allowed for dividing the set of objects into homogeneous subgroups (Włodarczyk 2012).

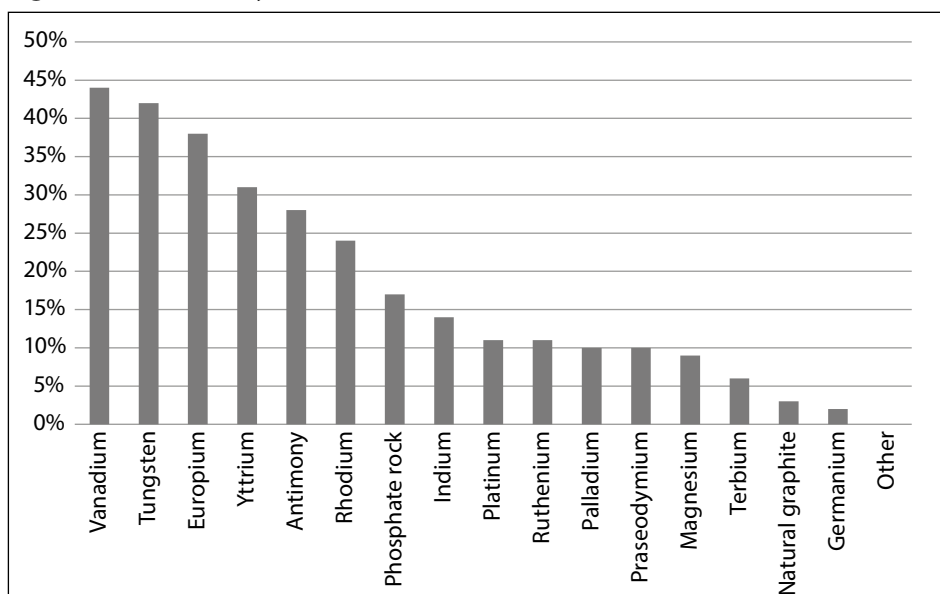
4. Research Findings

Four indicators were characterised in 2017 during the investigation of the criticality of raw materials in the European Union: the share of recycled materials in the

demand for mineral resources; the adjusted economic significance of raw materials; the adjusted supply risk; import dependency in terms of the demand for a relevant raw material.

Advanced recycling of individual (poorly available on the market) raw materials may be an important factor in determining the criticality of a relevant raw material. Recycling can be an alternative source to meet the demand for mineral resources, thus minimising the negative effects of the shortage of raw materials and thus reducing their criticality. In 2017, the share of recycling in the demand for individual mineral raw materials ranged from 0% to 44% (Figure 3).

Figure 3. Share of recycled materials in the demand for mineral resources



Source: own study based on European Commission (2017).

The greatest importance of recycling in the demand for a specific raw material can be observed in case of vanadium, tungsten, europium, yttrium, antimony and rhodium. That said, for many raw materials, this indicator is highly unsatisfactory, which increases their criticality and generates uncertainty in production processes. It is worth emphasising that among the examined groups of raw materials, the share of recycling is 0% for nine of them, and for 24 out of 40 examined raw materials, the share of recycling is below 2%. It can be concluded that recycling does relatively little to complement the demand for mineral resources in the European Union, which should be treated as a weakness of this area of the European economy.

Raw materials are important to the economy of the European Union, since they are the buttress of production processes, taking part in a wide range of man-

ufacturing goods and numerous applications in modern technologies. Therefore, individual materials have a different economic significance. Depending on the significance in the economic process, share in the production of gross value added, as well as the possibility of substitution by other semi-finished products or raw materials, an individual raw material assumes different economic significance indicators. The most economically desirable minerals include tungsten, rhodium, magnesium, cobalt, palladium, phosphorites and natural rubber, while among the studied raw materials, the lowest value of this indicator was observed for helium, barite, natural graphite, indium and samarium (Table 1). The economic importance of a particular mineral affects the nature of its criticality. A particular threat to the economic security of the country will be the high criticality of the raw material if it is of high importance in production processes.

Table 1. Economic significance index of individual mineral resources in the EU in 2017

No.	Group of raw materials	Scope of the index of the economic significance of raw materials
1	Tungsten, rhodium, magnesium, cobalt, palladium, phosphate rock, natural rubber, niobium, platinum, fluorspar, phosphorus	4.00–6.86
2	Iridium, antimony, hafnium, beryllium, silicon metal, holmium, lutetium, ytterbium, thulium, yttrium, tantalum, europium, lanthanum, germanium, bismuth, cerium, erbium, scandium, vanadium, dysprosium, gadolinium, praseodymium, neodymium, ruthenium, borate, terbium, gallium	3.04–3.999
3	Samarium, indium, natural graphite, barite, helium	2.632–2.923

Source: own study based on European Commission (2017).

In addition to the economic significance index, the supply risk index is also important for the criticality of raw materials. The higher the risk of supply, the greater the likelihood of blockages in the supply of raw materials and, consequently, the limitation or interruption of production processes and the inhibition of economic growth. For this reason, the increasing (decreasing) risk of supplying a given mineral increases (decreases) its criticality. Table 2 presents the groups of the investigated minerals with regard to the scope of the supply risk indicator. Among the mineral resources which are most exposed to the risk of supply in terms of the structure and functioning of the European Union's economies, europium, lanthanum, cerium, holmium, lutetium, thulium and yttrium are distinguished, while in the group of the studied mineral resources, natural rubber, tantalum, silicon metal and phosphate rock are characterised by the lowest risk of supply.

Table 2. Supply risk index of individual mineral resources in the EU in 2017

No.	Group of raw materials	Scope of the supply risk indicator
1	Europium, lanthanum, cerium, holmium, lutetium, ytterbium, thulium, yttrium, erbium, praseodymium, dysprosium, gadolinium, neodymium, terbium	4.46–4.90
2	Antimony, samarium, phosphorus, magnesium, bismuth, ruthenium, borate, niobium, natural graphite, scandium, iridium, rhodium, beryllium, indium, platinum	2.156–3.999
3	Germanium, tungsten, palladium, cobalt, helium, barite, vanadium, gallium, fluorspar, hafnium, phosphate rock, silicon metal, tantalum, natural rubber	0.92–1.90

Source: own study based on European Commission (2017).

Another determinant of the criticality of raw materials for the European Union is the degree of dependence of the economy on the import of the investigated raw materials. The data for 2017 show that out of the 40 groups of raw materials tested, the degree of this dependence was 100% in as many as 26 cases. Out of the remaining 14 groups of raw materials, 9 of them were dependent on import over

Table 3. EU dependence on imports of selected groups of mineral resources in 2017

Group of raw materials	Degree of dependence (in %)
Indium	0
Hafnium	9
Cobalt	32
Gallium	34
Tungsten	44
Silicon metal, germanium	64
Fluorspar	70
Barite	80
Vanadium	84
Phosphate rock	88
Helium	96
Platinum	98
Natural graphite	99
Antimony, beryllium, bismuth, borate, magnesium, natural rubber, niobium, iridium, palladium, rhodium, ruthenium, phosphorus, cerium, dysprosium, erbium, europium, gadolinium, lanthanum, neodymium, praseodymium, samarium, terbium, yttrium, scandium, tantalum, holmium, lutetium, ytterbium and thulium	100

Source: own study based on European Commission (2017).

50%. Only for five raw materials from among the investigated, the dependence on import was lower than 50%, and in case of indium, the European Union became completely independent of import. The list of all investigated raw materials is summarised in Table 3.

On the basis of the collected statistical data for the investigated raw materials in terms of four diagnostic variables and their standardisation, the values of a taxonomic measure were calculated, which allowed to assess the phenomenon of mineral resource criticality for the European Union in 2017 (Table 4).

Table 4. Values of standardised diagnostic variables Z1–Z4 and a taxonomic measure for the researched mineral resources in the EU in 2017

Raw material	Standardised diagnostic variables				Taxonomic measure
	Z1	Z2	Z3	Z4	
Magnesium	0.795	0.905	0.683	1	0.194
Phosphorus	1	0.324	0.706	1	0.368
Holmium, lutetium, ytterbium, thulium	0.977	0.252	0.975	1	0.374
Niobium	0.993	0.410	0.501	1	0.386
Lanthanum	0.977	0.212	0.988	1	0.394
Cerium	0.977	0.186	0.975	1	0.407
Rhodium	0.455	0.938	0.397	1	0.408
Erbium	0.977	0.183	0.927	1	0.411
Dysprosium	1	0.165	0.915	1	0.420
Gadolinium	0.977	0.165	0.903	1	0.420
Neodymium	0.977	0.135	0.902	1	0.435
Bismuth	0.977	0.195	0.666	1	0.436
Praseodymium	0.773	0.144	0.926	1	0.444
Terbium	0.864	0.104	0.890	1	0.457
Palladium	0.773	0.622	0.192	1	0.460
Iridium	0.682	0.323	0.444	1	0.466
Beryllium	1	0.291	0.366	1	0.476
Samarium	0.977	0.069	0.758	1	0.481
Platinum	0.750	0.374	0.311	0.980	0.482
Antimony	0.364	0.303	0.774	1	0.485
Scandium	1	0.174	0.461	1	0.493
Ruthenium	0.750	0.131	0.589	1	0.497
Borate	1	0.111	0.523	1	0.505
Yttrium	0.295	0.252	0.975	1	0.514
Natural rubber	0.977	0.552	0	1	0.548

Natural graphite	0.932	0.029	0.476	0.990	0.553
Cobalt	1	0.725	0.171	0.320	0.553
Phosphate rock	0.614	0.583	0.020	0.880	0.570
Germanium	0.955	0.205	0.246	0.640	0.577
Europium	0.136	0.229	1	1	0.579
Fluorspar	0.977	0.351	0.086	0.700	0.581
Tantalum	0.977	0.244	0.008	1	0.624
Silicon metal	1	0.267	0.018	0.640	0.639
Helium	0.977	0	0.155	0.960	0.655
Barite (BaSO ₄)	0.977	0.015	0.147	0.800	0.659
Tungsten	0.045	1	0.208	0.440	0.681
Gallium	1	0.096	0.107	0.340	0.716
Hafnium	0.977	0.301	0.086	0.090	0.734
Indium	1	0.067	0.354	0	0.756
Vanadium	0	0.174	0.147	0.840	0.780

Source: own study based on European Commission (2017).

Depending on the value of the taxonomic measure, the analysed objects (raw materials) were linearly ordered and grouped into homogeneous subgroups (Table 5). As a result of these activities, four homogeneous subgroups of mineral resources were obtained:

- Very highly critical (e.g. magnesium, phosphorus)
- Highly critical (e.g. lanthanum, cerium)
- Medium critical (e.g. natural rubber, natural graphite)
- Low critical (e.g. vanadium, indium).

Table 5. Grouping of mineral resources according to the value of the taxonomic measure

Groups of raw materials	Value range of a taxonomic measure	Criticality assessment
Magnesium, phosphorus, holmium, lutetium, ytterbium, thulium, niobium	0.194–0.392	very highly critical
Lanthanum, cerium, rhodium, erbium, dysprosium, gadolinium, neodymium, bismuth, praseodymium, terbium, palladium, iridium, beryllium, samarium, platinum, antimony, scandium, ruthenium, borate, yttrium	0.392–0.515	highly critical
Natural rubber, natural graphite, cobalt, phosphate rock, germanium, europium, fluorspar, tantalum	0.515–0.638	medium critical
Silicon metal, helium, barite, tungsten, gallium, hafnium, indium, vanadium	0.638–0.780	low critical

Source: own study based on European Commission (2017).

5. Discussion

Increasing popular awareness and changing consumption patterns also have an impact on the functioning of the EU economy (European Commission 2018). Changes in the structure of working persons in European economies are also of key importance (Włodarczyk 2011). However, the growing importance of green energy for transport, industry and construction, promoting environment-friendly technologies, including e-mobility and decarbonising the EU economy, increase concerns about the supply of economically desirable mineral resources [e.g. cerium, lanthanum, neodymium, praseodymium or dysprosium, classified as rare earth metals, have been used in the automotive sector, and additionally, dysprosium and neodymium are involved in the conversion of solar energy into electricity (Tomala 2019). Notwithstanding, the research indicated that these raw materials are among the most exposed to supply risk, the degree of EU dependency on their import is 100%, and the criticality of these raw materials is high.

On this basis, it can be concluded that the transition to a circular economy will be extremely important and it will facilitate the efficient use of resources and the development of the recycling of mineral resources. This will make it possible to increase the share of recycling materials in production processes, which will have a positive impact on the increase of the competitiveness of the EU economy and sustainable development, as well as the expansion of the export of high-tech products (Włodarczyk 2008). In addition, the efficiency of resource management and effective waste management can contribute to: reducing the demand for mineral resources, reducing the amount of waste or minimising losses resulting from the incomplete use of mineral resources in production processes. These activities will have an effective impact on the environment, as CO₂ emissions to the atmosphere will be reduced. It is estimated that in case of the European Union, the decrease in CO₂ emissions to the atmosphere may drop by as much as 56% by 2050 (European Commission 2018).

In view of the advancing climate change, in 2018, the European Union presented the *Long-Term Strategic Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy* (European Commission 2018). This strategy assumes the development of environment-friendly technologies and the efficient management of resources. However, environmentally friendly technologies, such as electric cars or photovoltaic cells, require access and a continuous supply of mineral resources. Europe is responsible for the production of only 8% of mineral resources in the world, consuming about 20% of minerals. In connection with the pursuit of the EU economy towards climate neutrality and a low-carbon economy, as well as the implementation of environmentally friendly technologies, one of the priorities will be to guarantee access to rare and economically important mineral resources. The European Union is dependent on the import of these minerals which,

in turn, may lead to a shift in the European Union's priorities, as well as a revision of its trade policy. Additionally, a necessary element will also be steady technological progress (including the development of the recycling of mineral resources), which will allow for the implementation of the adopted measures (European Commission 2018).

6. Conclusions

The purpose of the article was to diagnose and assess the raw material security of the European Union. The research and analysis allowed for the formulation of several conclusions. First, it is worth emphasising that the European Union, in particular, should secure supplies of critical mineral resources. All the more so it is indicated that the impact of critical mineral resources on the economy is much greater than that of other mineral resources. Secondly, mineral resources constitute a 'bottleneck' of many production processes carried out within the individual economies of the European Union, determining not only the formation of a large part of production, but also the dynamics of changes in this production and its sensitivity to emerging economic disruptions. Thirdly, when 2/3 of the studied raw materials are fully (100%) dependent on import for production processes and the share of recycling in the demand for raw materials is below 2%, the criticality of mineral raw materials is an important factor determining the competitiveness of EU economies. Fourthly, many raw materials characterised by the highest risk of supply and dependence on import are necessary in coevally strategic sectors, such as automotive or renewable energy. It is signified that there is relatively low economic security determined by access to raw materials with the highest criticality in the European Union.

Further research on the raw material security of the European Union may focus on the assessment of the importance of critical mineral resources for individual sectors of the EU economy. Moreover, there may be a need to examine the risk factors of the supply of mineral resources.

Acknowledgement

This paper was supported by the Ministry of Science and Higher Education of the Republic of Poland within a subsidy granted to the Cracow University of Economics.

References

Bojańczyk M. (2014). *Bezpieczeństwo ekonomiczne w niestabilnej gospodarce światowej*. Warsaw: Akademia Finansów i Biznesu Vistula.

- Buijs B., Sievers H., Tercero Espinoza L.A. (2012). Limits to the Critical Raw Materials Approach. *Waste and Resource Management*, Vol. 165 (4), pp. 201–208. <https://doi.org/10.1680/warm.12.00010>.
- De Ridder M. (2013). *The Geopolitics of Mineral Resources for Renewable Energy Technologies*. The Hague Centre for Strategic Studies. Available online: https://hcss.nl/report/the_geopolitics_of_mineral_resources_for_renewable_energy_technologies_1 (accessed on 20 June 2020).
- Directorate General for Climate Action, European Commission (2019). *Going Climate-Neutral by 2050: A Strategic Long-Term Vision for a Prosperous, Modern, Competitive and Climate-Neutral EU Economy*. Available online: https://ec.europa.eu/clima/sites/clima/files/long_term_strategy_brochure_en.pdf (accessed on 22 June 2020).
- European Commission (2008). Communication from the Commission to the European Parliament and the Council. The Raw Materials Initiative: Meeting Our Critical Needs for Growth and Jobs in Europe. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52008DC0699> (accessed on 21 June 2020).
- European Commission (2014). *Communication from the Commission to the European Parliament, The Council, The European and Social Committee and the Committee of the Regions on the Review of the List of Critical Raw Materials for the EU and the Implementation of the Raw Materials Initiative*. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014DC0297> (accessed on 21 June 2020).
- European Commission (2017). *Study on the Review of the List of Critical Raw Materials: Critical Raw Materials Factsheets*, Luxembourg: Publications Office of the European Union. Available online: <https://op.europa.eu/en/publication-detail/-/publication/6f1e28a7-98fb-11e7-b92d-01aa75ed71a1/language-en> (accessed on 25 June 2020).
- European Commission (2018). *A Clean Planet for All: A European Long-Term Strategic Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy*. Available online: https://ec.europa.eu/clima/sites/clima/files/docs/pages/com_2018_733_analysis_in_support_en_0.pdf (accessed on 22 June 2020).
- European Commission (2020a). *Critical Raw Materials*. Available online: https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en (accessed on 21 June 2020).
- European Commission (2020b). *Policy and Strategy for Raw Materials*. Available online: https://ec.europa.eu/growth/sectors/raw-materials/policy-strategy_en (accessed on 21 June 2020).
- European Commission (2020c). *The European Innovation Partnership (EIP) on Raw Materials*. Available online: https://ec.europa.eu/growth/sectors/raw-materials/eip_en (accessed on 22 June 2020).

- Federal Ministry of Agriculture, Regions and Tourism (2020). *Mining Data 2020*. Available online: <https://www.world-mining-data.info/wmd/downloads/PDF/WMD2020.pdf> (accessed on 20 June 2020).
- Galos K., Nieć M., Radwanek-Bąk B., Smakowski T., Szamałek K. (2012). Bezpieczeństwo surowcowe Polski – ocena sytuacji w zakresie kopalin nieenergetycznych. *Biuletyn Państwowego Instytutu Geologicznego*, Vol. 452, pp. 33–42.
- Gruni G. (2018). *The EU, World Trade Law and The Food: Rethinking Free Trade Agreements with Developing Countries*. Oxford: Hart Publishing, Oxford.
- Hagelüken Ch., Buchholz P., Gutzmer J., Littke R., Thauer R.K., Wellmer F.W., Herzig P. (2018). *Raw Materials for Future Energy Supply*. Cham: Springer.
- Humphreys D. (2010). The Great Metals Boom: A Retrospective. *Resources Policy*, Vol. 35 (1), pp. 1–13.
- Kawalec M., Tomczyk M., Wróbel J. (2015). Wojna gospodarcza na płaszczyźnie surowcowej – wybrane problemy. In: J. Płaczek (Eds.), *Współczesna wojna handlowo-gospodarcza*, pp. 160–188. Warsaw: Difin, Warsaw.
- Latola K., Sarkki S., Stępień A., Jokinen M. (2016). Activities Affecting Land Use in the European Arctic. In: A. Stępień, T. Koivurova, P. Kankaanpää (Eds.), *The Changing Arctic and European Union: A Book Based on the Report “Strategic Assessment of Development of the Arctic: Assessment Conducted for the European Union”*. Leiden: Koninklijke Brill.
- Mancini L., Benini L., Sala S. (2018). Characterization of Raw Materials Based on Supply Risk Indicators for Europe. *The International Journal of Life Cycle Assessment*, Vol. 23, pp. 726–738.
- Maull H.W. (1984). *Raw Materials, Energy and Western Security*. London: Macmillan.
- Pach-Gurgul A. (2015). Międzynarodowe rynki surowcowe. In: E. Molendowski (Eds.), *Ekonomia rynków międzynarodowych. Wybrane problemy*, pp. 127–142. Cracow: Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie.
- Rech M. (2015). Rare Earth Elements and the European Union. In: R.D. Kiggins (Eds.), *The Political Economy of Rare Earth Elements. International Political Economy Series*, pp. 62–84. London: Palgrave Macmillan.
- Šolar S. V., Demicheli L., Wall P. (2012). Raw Materials Initiative: A Contribution to the European Minerals Policy Framework. In: R. Sinding-Larsen, F.-W. Wellmer (Eds.), *Non-Renewable Resources Issues: Geoscientific and Societal Challenges*, pp. 21–33. Dordrecht: Springer.
- Tomala J. (2019). Surowce mineralne jako narzędzie ekonomiczne i polityczne na przykładzie metali ziem rzadkich. In: J. Kardaś, F. Kowalska, M. Pazdej, E.A. Stępa (Eds.), *Wyzwania dla świata XXI w: Wybrane kryzysy globalne i lokalne*, pp. 43–56. Poznań: Wydawnictwo Naukowe Wydziału Nauk Politycznych i Dziennikarstwa.

- Włodarczyk R.W. (2008). Eksport produktów wysokich technologii – przykład krajów strefy euro. In: S. Pangsy-Kania, K. Piech (Eds.), *Innowacyjność w Polsce w ujęciu regionalnym: nowe teorie, rola funduszy unijnych i klastrów*, pp. 86–98). Warsaw: Instytut Wiedzy i Innowacji.
- Włodarczyk R.W. (2011). Zróżnicowanie sektorowej struktury pracujących w strefie euro. *Ekonomista*, No. 4, pp. 527–550.
- Włodarczyk R.W. (2012). Rynek pracy a szoki asymetryczne w unii monetarnej na przykładzie Unii Gospodarczej i Walutowej. *Zeszyty Naukowe Seria Specjalna: Monografie*, No. 216, pp. 114–120. Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie.
- Wojciechowski H. (1998). *Międzynarodowe rynki towarów i usług*. Poznań: Akademia Ekonomiczna.

Chapter 12

Towards Low-Carbon Agriculture in Romania: Theoretical and Practical Challenges

Lavinia Popescu¹, Adela Sorinela Safta²

1. Introduction

The transformations of the global economy have imposed in the scientific debate a new issue, related to climate change and the effects of agriculture on the environment. As Tol (2019) argues, humanity is facing a new stage at present, namely that of climate change. In this context, the strategic priorities of agricultural policy and rural development require reorientation, resizing and the resources provided by the environment are limited, and their recovery time at the stage of use is very long (Tuomisto et al. 2016; Ruttan 2019; Singh et al. 2020). The paper points out that in scientific research, interdependence should be analysed with other areas which have the role of improving the quality of research through innovation, so that research on the agricultural sector is complemented by various forms of academic knowledge which have proved to be vital, such as quality soil.

The aim of this study is to analyse efficient land management practices which can contribute to the reduction of greenhouse gases and the creation of spaces for the development of ecological production models in Romania. Research and development in the plain area are as important as the mountain area, but the south-eastern part of Romania is characterised by large areas of plains where intensive agriculture is practised. This determined a careful approach in this paper to estimate a possible improvement in: the effects of agricultural production in the southern and south-eastern parts of the country, the role of crops produced in this area from the perspective of carbon absorption, and the risk of pesticide pollution.

¹ The University of Economic Studies in Bucharest (Romania), ORCID: 0000-0003-2545-7739, e-mail: popesculavinia14@stud.ase.ro

² The University of Economic Studies in Bucharest (Romania), ORCID: 0000-0002-8321-2636, e-mail: saftaadela19@stud.ase.ro

Although from this perspective, tradition has special relevance in agriculture, the paper emphasises that these interdependencies should be analysed with other areas which can improve the quality of research through innovation, so that research in the agricultural sector is complemented by various vital academic knowledge.

Given the approach of agricultural management, it is to emphasise that the correlation of soil degradation processes, the determination of the main pollutants, the monitoring and control of the soil, and the monitoring of the soil quality status are relevant for agriculture. The effects of climate change are unfavourable for agriculture, which spreads in agricultural territories in the short term by reducing soil water reserves for crops and in the medium, and in the long term by depreciating soil quality. Black soils with a high humus content predominate. Along the rivers the soils are meadows. In these areas, traditional methods are applied especially in the soil treatments. From this perspective, the need to analyse good practices can highlight the relevance of applying unpolluted fertilisers which generate effective actions for environmental quality while protecting soil, plants and biosphere.

2. Transition Towards a Low-Carbon Agriculture in Romania

Agriculture can significantly contribute to achieving the objectives of reducing the negative effects generated by climate change, not only from the perspective of ensuring the conservation of carbon reservoirs, which are still present in the soil, or by extending their size and favouring humus formation, as indicated in some specialised studies (Zhang et al. 2019; Adewale et al. 2019; Huang et al. 2019), but especially by reducing the energy consumption required in agricultural production and the supply of biomass needed for renewable energy production. As it is argued in CES (2008), agriculture is not only a victim of climate change, but it contributes to the emission of greenhouse gases itself. At the same time, Agovino et al. (2019) argue that agriculture and climate change are characterised by a complex cause-and-effect relationship and the agricultural sector generates significant amounts of climate-affecting gas emissions.

There is the need to reduce carbon emissions and develop their level of absorption at the farm level acts, as noted in some studies (Ramírez et al. 2019; Aznar-Sánchez et al. 2019), as an incentive in promoting the use of biomass as a raw material in the production of different categories of organic products, for the decarbonisation of agricultural production as a whole and the consolidation of carbon reservoirs. A strategic option assumes that due to the specific behaviour of nitrogen in the soil, fertilisation with this nutrient and also the cultivation techniques which influence its dynamics in the soil should be conducted in a way that minimises losses with percolating water, thus reducing the risk nitrate contamina-

tion of groundwater and surface water. Several countries have also made efforts to reduce pollution associated with the use of fertilisers. New regulations or adjustments to existing nitrogen leakage programs have been introduced.

The reduction of agricultural emissions at EU-27 level is mainly due to a decrease in the number of animals, and improvements in the level of good agricultural practices, the lower use of nitrogen-based fertilisers, a better management of natural soil fertilisers, as well as the importance of the zootechnical sector and agricultural practices regarding biomass. The global average concentration of atmospheric CO₂ shows a steady increase. This trend, together with increases in other greenhouse gases (GHGs), such as N₂O and CH₄, is contributing to climate change which is considered a major problem (Hartmann. et al. 2013; Petersen et al. 2013). Through nutrient and water management, the organic fertilisers and the management of organic soils and degraded land can be used (Hutchinson et al. 2007; Petersen et al. 2013; Smith et al. 2012). For Romania, the main sources of greenhouse gases are nitrous oxide (N₂O) based on soil nitrification and management of natural fertilisers, the resulting methane (CH₄) from enteric fermentation of herbivores, mainly cattle, and carbon dioxide (CO₂) from the energy/fuel used by buildings and machines. 50% of agricultural emissions are nitrogen oxide, followed by 45% methane, while only 5% of emissions are based on carbon dioxide.

Carbon sequestration contributes to the overall goal of lowering greenhouse gas concentrations in the atmosphere. The incorporation of the vegetal mass in the soil on the agricultural lands where green crops are established contributes to carbon sequestration. However, the result of this objective will be quantified by monitoring the surfaces on which green crops were established, as well as by quantifying the amount of plant biomass resulting from afforestation. The management applied through the modification of some practices of crop management has first and foremost an impact on the organic texture of the soil through the rotation and selection of crops, which can produce biomass by managing crop residues.

Gas exchanges between agricultural production systems on the one hand and the atmosphere on the other hand are the subject of intense research. However, in order to develop GHG mitigation measures, it is vitally important to analyse and quantify, through a better understanding of the processes underlying GHG emissions or removals in agricultural systems, the functions of indicators which may reveal a simulation of the mitigation vision of GHG sources. That is why in this paper, we highlighted the arable land used as a priority source of agricultural production, knowing that Romania is divided into developing regions. This will allow one to follow which of the development areas of Romania will achieve more the proposed objective.

The reserves for increasing the agricultural area in Romania are quite limited (Table 1). Subsistence agriculture is practised, based on consumption. Some of the causes which do not allow the practice of efficient and competitive agriculture are poor technology applications of plant and soil protection techniques in a tradition-

al way, without advanced fertilisation plans which lead to the protection of biodiversity and the reduction of climate effects.

Table 1. Total agricultural areas in the development regions of Romania

No.	Development region	Agricultural area (ha)
1	North-West	2,070,817
2	Centre	1,869,370
3	North-East	2,122,735
4	South-East	2,324,779
5	South-Muntenia	2,432,301
6	Bucharest Ilfov	104,877
7	South-West Oltenia	1,797,633
8	West	1,868,417
9	Romania (ha in total)	14,590,929

Source: INSSE General Agricultural Census (2010).

The existence of a large number of small farms in parallel with large farms reveals the structural imbalance that influences agriculture in Romania and its competitiveness. The ratio between the arable area of the country and the number of inhabitants shows that each inhabitant of Romania has about 0.41 ha of arable land, a value higher than in many countries in the European Union and almost double the EU 27's average, which was 0.212 ha/inhabitant arable area per capita in the European Union in 2017 (European Commission 2017).

Romanian agriculture has low productivity, and rural areas are disproportionately poor. An important factor in the said low productivity is the large share of small agricultural holdings. The sector needs to consider adaptation to a changing and less favourable climate going forward, as well as mitigate Green House Gas (GHG) emissions. In Romania, especially in the Romanian Plain, the southern development area is analysed. The climatic changes faced by large commercial agricultural holdings being different from those of subsistence, of very small dimensions. Climate change is expected to affect farmers in the southern and south-eastern regions of Romania in general and individually. Given that large farms usually have very specialised products, such as cereals and oilseeds, they are particularly vulnerable to the impact of frequent and long-term droughts which affect their production and profit, as is the case for the agricultural holdings and cultivated area, according to the categories of the used agricultural area (INSSE General Agricultural Census, 2010). However, they are well-informed professionals, have the necessary technical and financial resources, and have more options to adapt their agricultural systems to climate change through new technologies and irrigation systems.

Smallholder farms, which practise subsistence farming, are socially and economically vulnerable to adverse climatic events. Directly about one-third of the

population works in agriculture. In some individual cases, farmers are specialised in the production of specific crops, such as onions or potatoes, thus increasing their level of vulnerability. In other cases, some intrinsic resistance can be found in smallholder communities due to the practice of organic farming and resource recycling, low-carbon economy, diversity of production, strong social relations, and (in some regions) alternative sources of income.

3. Research Methodology

This study is aimed at analysing the efficient land management models which respond to climate change challenges, especially from the perspective of reducing greenhouse gases, depending on soil quality. The paper provides an overview of the agricultural economy regarding the development of agriculture and rural space. Prioritising an action behaviour in terms of vulnerabilities favours the orientation of agriculture to more environmentally responsible methods. One of the main objectives in the field of agriculture and rural development is to maintain a low level of greenhouse gas emissions generated by the agricultural sector. The research in the field has shown that an important factor in the reduction of the carbon footprint per tonne of food produced from organic farming was comparable to conventional agriculture, in principle, due to the abandonment of the use of chemical fertilisers and pesticides. The hazard analysis with excessive land treatment includes:

- Identification of the hazards associated with an authorised plant protection product at all stages of manufacture
- Assessment of the probability of occurrence of these hazards (risk analysis)
- Identification of the preventive measures necessary for the control of these dangers
- Determining the critical points through which the identified risks can be kept under control
- Establishing the critical limits which must be observed in order to keep each identified critical control point under control
- Establishing a monitoring system which would allow to ensure the effective control of the critical control points
- Establishing corrective actions which must be applied when the monitoring system indicates that a deviation from the established critical limits has occurred
- Establishing specific verification procedures, intended to confirm that the protection system applied to plants is within the normal limits of the protection product applied to plants and works effectively
- Establishing a documentary system (procedures and operational records) appropriate for these principles and their application.

The land management for carbon sequestration is highlighted by soil carbon inventory, especially by the form in which it is kept, the capacity, the persistence

and bulk density, the textural class of the soil. Changes in crop management practices which affect soil organic dynamics are related to the crop selection, high biomass crop rotation, crop residue management, nutrients, and water management, the use of organic fertilisers, and management of organic soils and degraded land (Hutchinson et al. 2007; Petersen et al. 2013; Smith et al. 2012).

Taking into account soil properties, climate and crop management are vital features from an emissions perspective. However, the result of this goal will be quantified by monitoring the areas on which green crops have been established, as well as by quantifying the amount of biomass of plants resulting from afforestation. Most agricultural soils contain too little natural nitrogen available to meet growing requirements during the growing season. As a result, it is necessary to supplement the nitrogen naturally contained in the soil every year. Applying the right amount of nitrogen at the right time is the basic requirement for good fertiliser management. Due to the specific behaviour of nitrogen in the soil, fertilisation with this nutrient and also cultivation techniques which influence its dynamics in the soil must be performed in a way that minimises losses with percolating water, thus reducing the risk of nitrate contamination of underground and surface water (Tecimen 2017; Joshi and Chilwal 2018; Işık and Kırkpınar 2020).

Thus, agriculture is at the root of this challenge being the world's largest engine of global environmental change (Tilman et al. 2001). The risk of pollution is mainly related to nitrogen oxidation compounds. The use of extra-root fertilisers as a fertilisation process in modern agriculture is also a possible method of developing organic farming, due to the very small amounts of active substance applied. Given the findings of specialised studies (Gavrila 2013; Szymczyk 2010), the amount and type of plant residues are also influenced by the addition of fertilisers, which are essential to supporting plant productivity in agricultural systems. In addition, through their effect on microbial activity, the carbon contributions of plants, climatic factors such as temperature solution.

4. Results

The land management for carbon sequestration is highlighted by soil carbon inventory, especially by the form in which it is kept, the capacity, the persistence and bulk density, the textural class of the soil. In certain areas, especially on soils with thin limestone substrate, there is an imminent danger of groundwater pollution. Depending on the local specificity, this danger should always be taken into account when applying organic fertilisers in such high risk areas. The research revealed a difference in soil carbon when the C factors had the effect of applying a management method based on the interdependence between production and crop rotation, soil quality, carbon uptake, climate. At the same time, soil carbon changes are caused by land use changes.

Any nitrogenous fertiliser in organic form is mineralised as a result of the activity of bacteria present in the soil, ultimately resulting in nitric and ammoniacal nitrogen. The calculation method regarding the contribution of nitrogen from organic sources is important for the assessment of greenhouse gas emissions from agricultural activities. The nitrogen in the soil is found, almost entirely, in the organic matter, and only a small fraction of it is in an immediately assimilable form for plants. Organic nitrogen can be used by crops only after its passage into an inorganic form through mineralisation or gradual decomposition of organic matter from the soil, first in ammoniacal nitrogen and then in nitric nitrogen. Typically, soil organic matter is made up of fractions which differ by the value of the C/N ratio (carbon/ nitrogen).

When estimating the level of the planned crops, the climatic characteristics of the place (particularly the thermal regime and the precipitation, including their annual distribution) must be considered. This is decisive in the dynamics of the fertilising elements in the soil and in particular in mineralisation of organic matter and in the movement of nutrients in the soil profile, under the rooting zone. It is undeniable that nitrate losses from the soil are more intense in the seasons with more abundant rainfall when, as a rule, the soil is deprived of vegetation. Under the specific conditions in Romania, after the annual crops, smaller or bigger quantities of mineral nitrogen from the previous fertilisation remain (about 50% of the applied nitrogen remains unconsumed by the crops) and from the mineralisation of the organic matter from the soil.

Mineralisation is more intense in autumn, when favourable conditions of temperature and humidity are encountered and when there is also an increased risk of nitrate water pollution. In counteracting this phenomenon, crop rotation plays an essential role. It is recommended to rotate with the main crop a crop with rapid growth, capable of harnessing the residual nitrogen and that in spring can be used as green fertiliser for spring-summer culture. The main evolution factor towards mineral forms of nitrogen is the ratio between carbon and nitrogen in fertiliser (C/N). It may be more or less high, and it conditions the rate of mineralisation. The transition from the organic to the mineral (ammoniacal or nitric) form depends on the value of the C/N ratio. It is difficult to estimate with minimum rigour what quantities of nitrogen or other nutrients from the previous crops can be taken into account in calculating fertiliser doses. The hypothesis of carbon storage in the soil could be an option to mitigate climate change for agriculture, by managing the land and changing its use.

In this study, we consider the possibility of adapting the methods used to estimate carbon changes in the soil. For large-scale assessment, the schedule CO₂ emissions from the soil should be taken into account. Many studies have evaluated cropland, grassland and marshland, while Schmidt (2008) evaluated the transition from natural land to agricultural land. For instance, some studies show that change factors from permanent cover to an annual harvest, plus simultaneous

factors for the changes of the crop management involves the achievement of a balance between the soil carbon and its kinematic function of the use and degradation of the soil. Not infrequently the concern is to follow the cyclicity of the crops used depending on the texture of the soil. However, a technical formula cannot be validated precisely because depending on the periods of maintenance of the soil with fertilisers these techniques have to be controlled according to external factors.

Potentially accessible or mineralisable nitrogen comes from these less stable fractions. For the soil conditions in Romania, it represents between 1 and 2% of the total nitrogen, both for soils taken long ago in culture and for soils in natural regime. Quantitatively, it varies between 20 kg and 50 kgN/ha per year, depending on the type of soil and the climatic conditions of the respective year. The production capacity of a crop, determined genetically, can be reached only under ideal conditions, when through the factors mentioned above optimal conditions for plant growth and development are achieved. Table 2 shows the average specific nitrogen consumption for the main crops from Romania (kg of N/tonne of main crop and the corresponding quantity of secondary crop). The figures have an approximate value, within the same species there are differences between varieties and hybrids.

Table 2. Average consumption (exports) of nutrients from the soil for crop formation (kg of nutrients (active substances) / tonne of main crop and corresponding quantity of secondary crop

No.	Specification of crops	N	P ₂ O ₅	K ₂ O
1.	Autumn wheat straw 1: 1.3	26.5	13.7	16.4
2.	Grain rye straw 1: 1	27.5	10.8	22.3
3.	Grain oat straw 1: 1.5	28.5	11	31.2
4.	Corn grains: strain 1: 1.6	27.5	12.5	16.5
5.	Sugar beet roots: Leaves and parcels 1: 1	4.9	2.0	6.0
6.	Pea berry berries: 1: 1.5 edges	61.0	16.6	28.0
7.	Soybean beans: 1: 1.5 rods	70.0	22.5	34.0
8.	Natural grass grass fan	24.0	5.6	18.0
9.	Natural grassland grass	6.5	1.4	4.5
10.	Hemp stems	10	8.5	17.5

Source: MARD (2015).

Consideration of soil properties, climate and crop management are vital characteristics from the perspective of emissions. The following scenarios are aimed at the interaction between crop growth, soil carbon, nitrogen needs and climate.

Most agricultural soils contain too little natural nitrogen available to meet the crop requirement during the growing period. As a result, it is necessary to supplement the nitrogen naturally contained in the soil each year. Applying the right amount of nitrogen at the right time is the basic requirement of good fertiliser management.

Nitrogen needs vary considerably in different crops, and within the same crop, with the level of harvest possible to be achieved in a certain conjuncture of pedoclimatic and technological factors. Nitrogen losses are in the form of gases in the atmosphere (Ng). These losses can occur through various mechanisms, especially by denitrification and by volatilising ammonia to the surface of alkaline soils. It is estimated that in a normal soil 10–15% of nitric nitrogen can be denitrified from that produced annually by mineralisation of soil organic matter and from that incorporated in the form of chemical fertilisers. These losses may be higher in poorly drained soils, where the frequency and intensity of the phenomenon are higher.

Green manures are made up of certain plants that are grown in order to be incorporated into the soil with the basic works. Plants used as green manure must produce a plant mass as rich as possible, in a short time and not be pretentious to the soil. The plants used for this purpose are mostly legumes (lupin, peas, sulfine, etc.). Other plants can be also used, such as rye, sunflower, rapeseed, mustard, and others. These plants can be used alone or in a mixture of several species to produce a more complex fertiliser. An effective way to obtain and use them is to practice hidden cultures. The effects of this type of fertiliser are very close to that of animal manure, having a favourable action on the activity of soil flora and fauna, for a period of 2–3 years and in addition, improving the physicochemical properties of the soil.

5. Discussion and Conclusions

The need to reduce carbon emissions and develop its absorption level in agricultural holdings acts as an incentive to promote the use of biomass as a raw material in the production of various categories of organic products, to decarbonise overall agricultural production, and strengthen carbon sinks. In this context, the assessment of the costs and the economic and financial impact of the sequestration of 4% / year of carbon dioxide on farms is an important step in analysing the possibilities of decarbonising agriculture and promoting the principles of the bioeconomy in agriculture. Carbon sequencing is that storage function at the soil level, which highlighted the importance of determining soil quality and interdependence with the climate ecosystem. In many soils, soil organic matter, which contains about 55–60% carbon by mass, comprises most or all of the carbon stocks' current knowledge – and knowledge gaps – about the role of soils in carbon, nitrogen, and

water cycles. The accumulation of stabilised carbon in the soil requires control in terms of storage. The quantity and type of residues produced by plants are also influenced by the addition of fertilisers, which are indispensable for sustaining the productivity of plants in agricultural system.

In addition, they affect the microbial activity, the carbon contributions of the plants, the climatic factors, such as the temperature solution. The calcium carbonate content is strongly correlated with the quality influenced by the distribution of clay in soils, the geographical area as well as perhaps the most important of the material residues. Thus, it can be seen that the distribution of nitrogen in the soil is closely related to the organic carbon, vegetation and climate as well as the texture of the soil. Therefore, the use of land, the use of innovative agricultural practices based on a management designed on the basis of local data and adapted to agricultural production can be a factor in improving soil performance. In our opinion, the agricultural lands in general and especially those in Romania have considerable potential for carbon capture and storage. Managing the soil environment can help maintain soil carbon.

In conclusion, one can say that the conservation and improvement of natural resources and habitats by encouraging the use of innovative, environmentally friendly agricultural production methods that protect the environment, conserve biodiversity, and improve water, soil and natural landscape quality is vital. In the field of rural development, agricultural economy, economic environment, we need a clean environment based on the rational use of natural resources, increasing competitiveness by identifying best practices in the field. Moreover, the need to control the effects of fertilisers and treatments applied to plants and soil in agriculture can help to understand the economic and financial impact of storing a percentage of carbon dioxide on the farm. This also allows for defining the demands on achieving competitive agricultural production which may significantly contribute to the decarbonisation of agriculture.

References

- Adevale C., Reganold J.P., Higgins S., Evans R.D., Carpenter-Boggs L. (2019). Agricultural Carbon Footprint Is Farm Specific: Case Study of Two Organic Farms. *Journal of Cleaner Production*, Vol. 229, pp. 795–805.
- Agovino M., Casaccia M., Ciommi M., Ferrara M., Marchesano K. (2019). Agriculture, Climate Change and Sustainability: The Case of EU-28. *Ecological Indicators*, Vol. 105, pp. 525–543.
- Aznar-Sánchez J.A., Piquer-Rodríguez M., Velasco-Muñoz J.F., Manzano-Agugliaro F. (2019). Worldwide Research Trends on Sustainable Land Use in Agriculture. *Land Use Policy*, Vol. 87, p. 104069.
- European Commission (2017). *EU Agricultural Outlook: Arable Land Area to Continue Its Decline*. Available online: <https://ec.europa.eu/info/news/eu-ag->

- gricultural-outlook-arable-land-area-continue-its-decline_en (accessed on 15 July 2020).
- Gavrila V. (2013). Soil Management in Sustainable Development Context. *Lucrări Științifice Management Agricol*, 15(2), p. 161.
- Huang J., Chen Y., Pan J., Liu W., Yang G., Xiao X., Zhou L. (2019). Carbon Footprint of Different Agricultural Systems in China Estimated by Different Evaluation Metrics. *Journal of Cleaner Production*, Vol. 225, pp. 939–948.
- Hutchinson J.J., Campbell C.A., Desjardins R.L. (2007). Some Perspectives on Carbon Sequestration in Agriculture. *Agricultural and Forest Meteorology* 142, p. 288.
- INSSE General Agricultural Census (2010). Selection of Tables with the Main Indicators, at the National Level at the Level of Macro-regions, Development Regions and counties. Available online: <https://insse.ro/cms/files/RGA2010/Rezultate%20definitive%20RGA%202010/rezultate%20definitive%20RGA%202010.html> (accessed on 19 March 2020).
- Işık Ö., Kırkpınar F. (2020). The Effect of Feeding on Environmental Pollutant Emissions in Broiler Production. *Turkish Journal of Agriculture – Food Science and Technology*, Vol. 8(1), pp. 234–238.
- Joshi G., Chilwal A. (2018). Influence of Integrated Nutrient Management on Yield and Yield Attributing Characters of Baby Corn (*Zea Mays L.*). *The Pharma Innovation Journal*, Vol. 7(8), pp. 201–204.
- MARD (2015). Code of Good Practice. Ministry of Agriculture and Rural Development, Romania, Vol 1, row 58. Available online: <https://www.icpa.ro/documente/coduri/vol1.pdf> (accessed on 20 July 2020).
- National Strategy on Climate Change and Low-Growth Economic Growth (2015). Annex No. 1, row 53. Available online: http://www.mmediu.ro/app/webroot/uploads/files/Strategie_CRESC_v2.pdf (accessed on 15 July 2020).
- Petersen B.M., Knudsen, Hermansen, J.E., Halberg N. (2013). An Approach to Include Soil Carbon Changes in Life Cycle Assessments. *Journal of Cleaner Production*, Vol. 52, pp. 217–224.
- Ramírez P.B., Calderón F.J., Fonte S.J., Bonilla C.A. (2019). Environmental Controls and Long-Term Changes on Carbon Stocks Under Agricultural lands. *Soil and Tillage Research*, Vol. 186, pp. 310–321.
- Smith P., Davies C.A., Ogle S., Zanchi G., Bellarby J., Bird N., Boddey R.M., McNamara N.P., Powlson D., Cowie A., van Noordwijk M., Davis S.C., Richter D.D.B., Kryzanowski L., van Wijk M.T., Stuart J., Kirton A., Eggar D., Newton-Cross G., Adhya T.K., Braimoh A.K. (2012). Towards an Integrated Global Framework to Assess the Impacts of Land Use and Management Change on Soil Carbon: Current Capability and Future Vision. *Glob Change Biol*, Vol. 18, pp. 2089–2101. doi:10.1111/j.1365-2486.2012.02689.x.
- Szymczyk S. (2010). Influence of the Type of Soil Dewatering and Land Use on the Dynamics of Concentrations and Volume of Nitrogen Discharged from Agricultural Areas. *Journal of Elementology*, Vol. 15(1), pp. 189–211.

- Tecimen H.B. (2017). Land Use Effect on Nitrogen and Phosphorus Fluxes into and from Soil. *Eurasian Journal of Forest Science*, Vol. 5(1), pp. 8–12.
- Tilman D., Fargione J., Wolff B., D'Antonio C., Dobson A., Howarth R., Schindler D., Schlesinger W.H. et al. (2001). Forecasting Agriculturally Driven Global Environmental Change. *Science*, Vol. 292, pp. 281–284.
- Tol R.S. (2019). *Climate Economics: Economic Analysis of Climate, Climate Change and Climate Policy*. Edward Elgar Publishing.
- Zhang N., Zhang G., Li Y. (2019). Does Major Agriculture Production Zone Have Higher Carbon Efficiency and Abatement Cost under Climate Change Mitigation? *Ecological Indicators*, Vol. 105, pp. 376–385.

Chapter 13

Preventing Occupational Diseases and Injuries in Ukraine: The Socio-Economic Perspective

Natalia Berezutskaya¹, Tetiana Stytsenko², Viacheslav Berezutskyi³

1. Introduction

The transition of the Ukrainian economy to market conditions is related to the fact that there is frequently a restriction of the funds allocated for labour protection. Therefore, the main task of improving the safety management system in an enterprise in the context of economic reform is to ensure maximum efficiency, given the existing levels of restrictions on management actions. These tasks can be achieved through the optimal allocation of available human and financial management resources, the correct selection of the number and quality of management personnel, making sound, management decisions which are close to optimal. What is of utmost importance is the availability of complete, objective information about the state of the object of management, the state of injury and occupational diseases in the enterprise and developed and scientifically sound methods of its processing and management decisions. This is impossible without the creation of modern information systems in the field of occupational safety.

The purpose of this article is to assess the socio-economic effectiveness of prevention of occupational diseases and injuries in Ukraine. In order to improve the assessment of the workers' injury hazards in enterprises or technological processes, a proposal was made to implement actions which reduce injuries and oc-

¹ Kharkiv National University of Radio Electronics, Kharkiv (Ukraine), ORCID: 0000-0003-2573-9031, e-mail: natalia.berezutskaya@nure.ua

² Kharkiv National University of Radio Electronics, Kharkiv (Ukraine), ORCID: 0000-0003-4530-0253, e-mail: tatiana.stytsenko@nure.ua

³ National Technical University «Kharkiv Polytechnic Institute», Kharkiv (Ukraine), ORCID: 0000-0002-7318-1039, e-mail: viaberezuc@gmail.com

cupational diseases in enterprises. To assess the effectiveness of the prevention of injuries and occupational diseases, the Social Insurance Fund's reporting data on occupational injury and occupational health surveillance were used. Formation of indicators of supervisory activity and occupational traumatism was carried out by types of supervision, which allowed one to analyse quantitative and qualitative indicators of supervisory activity of industrial traumatism over a certain period of time and to use these data to evaluate the effectiveness of the prevention of injuries and occupational diseases.

This paper is structured as follows: in the next section, a comprehensive review of literature is performed to identify international activities on occupational accident prevention. The subsequent section introduces the methodology followed by exemplary results based on data from the Social Insurance Fund on Injury and Occupational Diseases in Ukraine. Finally, an assessment of the socio-economic effects of injury and occupational disease prevention and conclusions were provided.

2. Literature Review

Occupational injuries and occupational diseases have a significant impact on health or they cause the death, disability of the worker, and they also influence the economic performance of the enterprise, and the social security system. From the economic point of view, the losses are increased when the indirect costs are taken into account, i.e. all costs which accompany the direct costs of an industrial injury. These expenditures include reduced labour productivity, economic impact, employee stress, replacement training costs, medical and legal costs. The total costs of one case of injury in Europe are twice, and in the USA three times, the costs of insurance. From the first year of its activity, the International Labour Organization (ILO) has paid great attention to the problem of occupational injuries. Thus, as early as in 1923, the ILO adopted a recommendation on general principles for the organization of an inspection system that should be aimed 'at ensuring the application of the most effective safety practices to prevent accidents' (*Rekomendatsiya shchodo zahalnykh...* 1923). More specific was ILO Recommendation No. 31 'On Industrial Accident Prevention', which was adopted in 1929 (*Rekomendatsiya 31...* 1929). A year earlier, the ILO adopted a resolution on combating injury under the slogan 'Safety Above All'. Recommendation No. 31 identified the industries most dangerous in terms of occupational injuries. Attention was also drawn to the importance of investigating the causes of accidents in each industry, not only their technical and organisational aspects, but also their physiological and psychological factors. However, the ILO's recommendations do not have the status of a legislative international document that is inherent in the Conventions. Therefore, in 1981, the International Labour Organiza-

tion adopted Convention No. 155 on Occupational Safety and Health and Industrial Environment, which sets out the principles of national labour safety policy, and how to prevent accidents which occur during work (*Konventsiya No. 155 ... 2011*).

When conducting national policy, safe workplaces are developed and implemented in production, equipment is adapted to the physical and mental characteristics of workers, and professional training is carried out. In recent years, the ILO has adopted a number of recommendations which address occupational accidents and their reporting. In doing so, each ILO member state must annually submit full statistics on industrial accidents to the International Labour Office in order to facilitate the international exchange of these data. What is particularly important here is Convention No. 187 of 2006 on the Basics of Promoting Safety and Health at Work. This Convention defines different terms, e.g. ‘National Labour Safety Policy’, ‘National Occupational Safety System’, ‘National Occupational Safety Programme’, ‘National Occupational Safety Prevention Culture’ (*Konventsiya pro osnovy... 2006*). Although the ILO has made significant efforts internationally and nationally to address occupational injuries, it is estimated that more than 1.2 million workers die every year due to accidents. However, for various reasons, it is not always possible to obtain accurate statistics on the number of accidents. In some countries, statistical reports are prepared by incompetent authorities or institutions which hide the true state of affairs. Other countries do not have government departments of labour statistics. Among the most serious problems in this regard is the international comparison of accident statistics.

When analysing real statistics, it is common to create safe jobs through targeted action plans under national job security programmes. The ILO’s Global Workplace Safety Strategy, adopted in 2003, underlines the importance of creating a preventive safety culture and management systems. In 2001, the ILO developed guidelines for workplace safety management (ILO-OSH 2001), which are a fundamental international standard. They indicate how systems based on the concept of the permanent improvement of workplace safety through the introduction of a plan-do-check-act cycle at the enterprise level should be developed (ILO 2001). Convention 187 and Recommendation 196, cited above, constitute a further development of the Global Strategy.

3. Research Methodology

To evaluate the effectiveness of preventing occupational diseases and injuries, we used the reporting data from the Social Insurance Fund for nine months of 2019, including:

- Distribution of the number of accident victims according to the production-related H-1 acts for the most traumatic causes of accidents

- Distribution of the number of victims of accidents according to the production-related H-1 acts by the most traumatic sectors of the economy of the enterprises in which the accidents occurred
- Distribution of industrial accidents according to production-related H-1 acts by regions of Ukraine
- Distribution of occupational diseases according to P-4 acts by sectors of the economy of enterprises where victims were employed
- Distribution of occupational diseases according to P-4 acts by regions of Ukraine.

The main tasks of social insurance against accidents are:

- Preventive measures aimed at eliminating harmful and dangerous factors of production, the prevention of accidents at work, occupational diseases and other cases of threats to the health of the insured caused by working conditions are entrusted to insurance experts on labour protection
- Promoting the creation of conditions for the recovery of the health of the victims of the industrial accidents
- Indemnification for damages related to the loss of the insured persons' wages or their corresponding part during the performance of their duties, provision of social services in connection with their damage to health, as well as insurance payments to disabled members of their families in case of the workers' deaths (*Zakon ukrayiny... 1999*).

The effectiveness of any structure depends on how well it is organised in terms of accounting and control. To evaluate the effectiveness of prevention requires the effective management of occupational safety to analyse occupational diseases and injuries in enterprises and other organisations.

4. Findings

4.1. Accident Analysis

According to the report of the Social Insurance Fund (*Fond sotsialnoho... 2020*) for nine months of 2019, working agents of the Executive Directorate of the Fund registered 3,270 victims of industrial accidents (including 286 fatal), which acts in the form of H-1, related to the production.

When one analyses and compares the data from nine months of 2019 to the data from nine months of 2018, the number of cases of accident insurance decreased by 7.9% (from 3,549 to 3,270), the number of fatalities increased by 10.0% (from 260 to 286). The number of accidents at work increased: in Kiev by 52 cases (16.4%), in the Poltava region – by 20 cases (17.5%), in the Dnipropetrovsk region – by 18 cases (3.6%), Sumy region – by 16 cases (25.4%), Odessa region – by 11 cases (9.6%), Khmelnytsky region – by 9 cases (11.5%), Chernivtsi region – by 5 cases (17.2%), Ternopil region – by 2 cases (3.8%). The number of fatal accidents has significant-

ly increased in the Kiev region by 14 cases, or 3.3 times (from 6 to 20), the Volyn region – by 7 cases, or 2 times (from 7 to 14), in the Mykolaiv and Kharkiv regions – by 6 cases, or 1.8 times (from 8 to 14) and 2 times (from 6 to 12), respectively. Significant reduction of cases of accident insurance was observed in: the Rivne region – by 34.9% (from 83 to 54), Ivano-Frankivsk region – by 34.5% (from 87 to 57), Transcarpathian region – by 27.5% (from 40 to 29), Kharkiv region – by 27.2% (from 151 to 110) and Zaporizhzhian region – by 23.6% (from 220 to 168).

During nine months of 2019, the number of accidents at the enterprises with the highest level of injuries occurred at the following enterprises: PJSC DTEK Pavlogradugol (127 accidents) in Dnipropetrovsk region, PJSC Mine Management Pokrovske (29) in Donetsk region, DTEK Dobropillyugol LLC (26) in Donetsk region, a company with foreign investments, McDonald's Ukraine Ltd (24), in Kiev. A significant increase in the number of insured accidents for nine months of 2019 compared to nine months of 2018 occurred at PJSC DTEK Pavlogradugol – by 28 cases, or by 28.3% (from 99 to 127). 72.2% (2,362) of men and 27.8% (908) of the total number of injured people in Ukraine were injured at Ukrainian enterprises.

Alcoholic intoxication injuries were sustained by 87 people (2.7% of the total number of people injured in Ukraine), which is 10 people less than in the first nine months of 2018. At the same time, 30 people died. When it comes to professions, most of the injured workers were drivers of vehicles (147), miners (132), sinkers (83). The highest rate of occupational injuries was observed among workers aged 50–59 years (875 people, representing 26.8% of the total number of injuries in Ukraine for nine months of 2019). Among the causes, 64.9% (2,121) of the accidents were organisational. For psychophysiological reasons, 20.7% (679) of accidents occurred for technical reasons – 13.2% (432) of accidents. Man-made, natural, environmental, and social reasons related only to 0.6% (19) of the accidents, and other causes – 0.6% (19) of the accidents. The most common organisational, psychophysiological and technical causes are depicted in Table 1.

The most common organisational reasons were non-compliance with the requirements of the instructions on labour protection with 36.1% of the total number of injured people in Ukraine (1,179 injured people). The most common psychophysiological causes, in turn, were personal negligence of the victim with 12.0% of the total number of injured people in Ukraine (392 injured people). Among the most common technical reasons, one can indicate the poor technical condition of production facilities, buildings, structures, utilities, territories with 4.0% of the total number of the injured in Ukraine (132 injured people).

The next analysed issue was the main events that led to the accidents which include:

- Fall of the victim during movement – 22.0% (720 injured people from the total number of the injured in Ukraine)
- Act of moving and rotating parts of equipment, machines and mechanisms – 12.4% (405 people)

- Victim's fall from height – 8.2% (268 people)
- Road accidents on public roads – 7.9% (257 people)
- Intentional homicide or trauma caused by another person – 5.2% (170 people)
- Drop of equipment or their structural elements – 4.5% (148 people).

Table 1. Total number of injured people in Ukraine by different types of causes

Types of causes		Percentage of injured people	Number of injured people
Organisational causes	non-compliance with the requirements of the instructions on labour protection	36.1%	1,179
	failure to perform official duties	8.3%	272
	violation of safety requirements during the operation of public transport (road, water, rail, air)	8.3%	270
	technological process disruption	3.3%	109
	violation of safety requirements during the operation of equipment, machines, mechanisms, etc.	2.2%	72
	other organisational reasons	1.1%	37
Psychophysiological causes	personal negligence of the victim – of the total number of injured people in Ukraine (injured people)	12.0%	392
	injury (death) as a result of the illegal actions of others	5.7%	185
	other reasons	2.3%	74
Technical reasons	poor technical condition of production facilities, buildings, structures, utilities, territories	4.0%	132
	poor technical condition of the means of production	1.7%	56
	other technical reasons	1.6%	53
	imperfection of the technological process, its non-compliance with safety requirements	1.4%	46
	structural defects, imperfections, insufficient reliability of the means of production	1.3%	44

Source: own study.

During the nine months of 2019, the number of production-related accidents which resulted from the operation of equipment, machinery, and mechanisms is 875, including 109 fatalities, accounting for 26.8% of the total number of injuries in Ukraine. The equipment which most frequently leads to accidents is:

- Cars – 5.5% of the total number of those injured in Ukraine (181 injured people)
- Mining equipment – 3.3% (109 people)
- Specialised cars, trains, tractors, vans, trailers, trolleybuses, forklifts, motorcycles, bicycles – 3.2% (106 people).

Given the main traumatic sectors of the economy and types of work, the following sectors can be indicated:

- Mining and quarrying – the percentage of injured is 17.6% of the total number of the injured in Ukraine (577 people, including 21 fatalities)
- Transport, warehousing, postal and courier activities – 9.2% (301 injured, including 45 fatalities)
- Agriculture, forestry and fisheries – 7.2% (234 injured people, including 40 fatalities).

The percentage of injured persons in these sectors is 34.0% of the total number of injured persons in Ukraine.

4.2. Analysis of Occupational Diseases

Over the nine months of 2019, with the data compared to the data from the nine months of 2018, the number of occupational diseases increased by 26.5%, or by 348 diseases (from 1,314 to 1,662). The main circumstances leading to occupational diseases over 2019 were: imperfection of mechanisms and working tools – 21.9%, imperfection of technological process – 20.1% and non-use of personal protective equipment – 10.1% of their total.

In the structure of occupational diseases, the first place belongs to respiratory diseases – 45.4% of the total number of diagnoses in Ukraine (1,314 cases). In second place – diseases of the musculoskeletal system (radiculopathy, osteochondrosis, arthritis, arthrosis) – 25.1% (728 cases). The third place for hearing-related diseases is 14.9% (430 cases), the fourth place for hand-arm vibration syndrome is 7.3% (211 cases). The highest percentage of occupational diseases occurred in the field of mining and quarrying – 83.5% of the total number of occupational diseases in Ukraine (1,388 people), which is 28.4% (307 people) more than in the nine months of last year.

One of the effective measures for accident prevention is the process of investigation, the purpose of which is to identify the specific causes which led to the accident or occupational disease, in order to prevent the latter. In order to take measures aimed at preventing accidents, eliminating health threats to workers caused by working conditions, it is necessary to carry out checks on the state of preventive work on creating healthy and safe working conditions in enterprises. In carrying out inspections, in order to prevent the occupational diseases, special attention should be paid to the organisation of the employer and the timely passage of legally prescribed medical examinations of employees and the implementation of health measures in accordance with the results of medical examinations.

In order to improve the working conditions and preventive work against industrial accidents and occupational diseases, and to ensure the implementation of measures for the prevention of occupational injuries and occupational diseases on the basis of co-operation with employers, it is necessary to train workers with safe

working practices. Promoting safe and harmless working conditions is an important part of prevention work. Insurance experts on labour protection promote the positive experience of the functioning of specific elements of the management system of labour protection for practical application in any enterprises. The employers are provided ongoing assistance in addressing human health and safety issues.

The occupational diseases and injuries at enterprises depend on the efficiency of the functioning of the occupational health and safety (OHS) management system. This system should be one of the links in the enterprise's overall business management system (Berezutskyi 2007). The occupational health and safety management system at the enterprise is built in such a way that all its management should receive information on the safety and health of workers in the workplace, process it, make appropriate decisions or measures and implement them in the workplace while informing the employees about the measures taken.

5. Discussion and Conclusions

The economic importance of injury prevention in occupational diseases is assessed by the results, changes in social indicators, which are expressed in the implementation of measures to improve working conditions: improving productivity; reducing unproductive costs of time and labour; increasing working time fund; reducing the costs associated with staff turnover due to working conditions, costs for improving working conditions and labour protection. An increase in working hours and the efficiency of the use of equipment is achieved by reducing downtime during a change due to the deterioration of employees' well-being through working conditions and micro-injuries. If harmful factors for a person act in a complex idle time in the workplace, they can reach 20–40% for a change due to occupational injuries and poor health.

The increase in labour productivity is also caused by the poor organisation of workplaces. Without taking into account ergonomic (anthropometric) requirements, there is a need to perform unnecessary movements and make additional physical efforts due to the inconvenient position, poor location of equipment controls and poor design of workplaces. As a result of improving working conditions, optimal conditions are created for the normalisation of the psychological climate in the workforce, increasing working capacity and increasing productivity. An increase in working time is achieved through a reduction in occupational injuries and non-attendance. Harmful working conditions significantly affect not only the occurrence of occupational diseases, but also the occurrence and duration of common diseases.

The cost savings can be achieved by cancelling benefits and compensation for adverse working conditions. Observance of sanitary and hygienic requirements and rules of workplaces makes it possible to completely or partially abolish such

privileges as: shortened working hours and additional leave; raising the tariff rate and preferential pension; therapeutic and preventive nutrition and free delivery of milk. All of these benefits are associated with significant payments of extra cash in virtually no time spent. There is a high turnover among the workers whose work is associated with heavy physical labour, unfavourable sanitary and hygienic conditions, monotonicity of the production process. The costs of improving conditions and occupational safety can be divided into:

- Expenses for the compensation paid to the victims of injuries caused by injuries and occupational diseases
- Expenses for compensation for work in unfavourable conditions which do not meet the sanitary standards (privileges for severe and harmful conditions)
- Costs for the prevention of injuries and occupational diseases
- Costs of accidents and accident management
- Costs of fines and other damages.

The studies show that businesses spend significantly more on benefits and compensation associated with hazardous working conditions than on occupational safety measures to prevent occupational injuries and morbidity, and to normalise working conditions. The ratio between the costs of improving conditions and labour protection and the cost of benefits for adverse working conditions, preferential pensions and extra holidays is 1:10 and sometimes more (Sorochnyńska 2013). In the conditions of the imperfection of market mechanisms, all these costs are attributed to the cost of production, and, as a result, it is not their managers, but society who pays for the imperfect system of labour safety management at the enterprises. The current system of benefits and compensation does not cause the desire of managers to improve working conditions, because these costs do not affect the economic performance of the company. On the other hand, the penalties paid by the company in the presence of the facts of the injuries and occupational diseases of workers are now quite considerable, and therefore make the employer (their authorised body) seriously think that it is better to suffer losses (which can sometimes lead to bankruptcy), without occupational safety or without conflict with the law, and to invest in preventive measures in a timely manner, preserving the lives and health of people.

Analysing the submitted financial statements of the enterprises (SMIDA 2020), it can be stated that there is no article that would cover the costs of improving the conditions and labour protection. There is also no open access to reliable information on the financial costs of the Social Insurance Fund for the prevention of injuries and occupational diseases. On the official site of the Foundation's Office, there is only a report on the systematic work on the preparation of information material on injury prevention.

The list of penalties and other economic costs for enterprises includes: penalties for every industrial accident or occupational disease; compensation for damages, lump sums and all other payments to victims in the workplace or to their

families and dependents of the victims; payments to businesses, institutions, organisations which have been harmed (for instance, due to the production of poor-quality equipment, poor design of a manufacturing facility, late performance of obligations under the agreement with a partner, etc.); compensation to hospitals, other health and medical institutions, expenses for the treatment and rehabilitation of victims, provision of sanatorium and resort services; compensation of expenses of social security bodies for the payment of pensions to disabled workers; expenses on rescue work during accidents, investigation and examination of their causes, burial of the dead, compilation of the sanitary and hygienic characteristics of the workplace of the worker who contracted the occupational disease, etc. The cost of benefits and compensation provided for by applicable law and collective agreements may be significant. Therefore, one of the main objectives of the economic feasibility of measures to improve conditions and labour protection is to determine the costs of implementing measures which include capital investment and operating costs.

In most developed countries, the so-called ‘compensation schemes’ for losses from accidents at work are currently being implemented. Under such schemes, victims of occupational injuries and occupational diseases are paid their lost income and are reimbursed for medical expenses. The main task of the compensation schemes is to provide the employee and his or her family with a guarantee of a certain income in the event that he or she becomes disabled or loses his or her ability to work as a result of an injury or occupational disease. Since the compensation payments are made by employers themselves, it is they who are primarily interested in preventing accidents, even if it requires significant physical costs.

To reduce the number of injuries and occupational diseases in accordance with ILO-OSH 2001 (ILO-OSH 2001 International Guidelines on Occupational Safety and Health Management Systems) and OHSAS 18001: 2007 ‘Occupational Health and Safety Assessment Series’ provides for the establishment of a management system based on the principle of a risk-oriented approach to safety management. Within the framework of this concept, hazard identification and risk assessment are carried out by the method of expert assessment. The risk of injury and deterioration of workers’ health is assessed in the workplace. The assessment is carried out by competent persons taking into account the opinion of employees (Berezutskyi 2020). The problem of assessing the effectiveness of the prevention of injuries and occupational diseases remains unresolved today, which negatively affects the state of occupational safety, the level of occupational injuries, and makes it impossible to improve occupational health and safety management systems. One of the promising scientific directions for improving the performance of the Occupational Safety and Health Management System is a comprehensive study of the performance of the Occupational Safety and Health System, identifying the factors which most influence its effectiveness and developing them on the basis of the results of scientifically sound management decisions.

The purpose of implementing a risk-oriented approach in the enterprise is to determine the priority of planned actions and measures to eliminate hazards and limit risks. As a result, qualitative and quantitative risk indicators are identified, which identify hazards in the workplace and provide an opportunity to manage them. Risk assessment is an important step in the management system of labour protection of the enterprise. It is a structured process that identifies ways to achieve goals and analyse the consequences and probabilities of dangerous events to decide on the need to reduce risk. Risk management is performed on the basis of the international standard ISO/IEC 31010 'Risk Management. Risk Assessment Methods' [ISO/IEC 31010: 2009 Risk management. Risk Assessment Techniques]. This standard accumulates risk assessment methods and data for reference to other international standards. To reduce the degree of risk, one of the authors of this paper developed a method of using risk indicators in 2016. It is a Ukrainian analogue of the Fine-Kinney method, but it differs from the proposed risk indicators of danger; that is, all risks are divided into groups of occupational risks and the degree of the severity of the consequences and (separated by colour, depending on the degree of consequences) they belong to different colour groups. After receiving the results of the assessment, the company must respond to certain actions and implement measures to eliminate the dangerous situation, depending on the risk-indicator (Berezutskyi, Adamenko 2016). At present, an example of the use of a risk-based approach is the division into different colour zones, according to the frequency and severity of the cases of COVID-19.

To conclude, as a result of the implementation of actions which reduce injuries and occupational diseases in enterprises, it is possible to improve the management system of labour protection in the enterprise in terms of economic reform, and thus ensure its maximum efficiency.

References

- Berezutskyi, V.V. (ed.) (2007). *Osnovy okhorony pratsi (Basics of Labour Protection)*. 2nd ed., revised. Kharkiv: Fakt, <https://www.kpi.kharkov.ua/archive/Articles/safety/ot.pdf> (accessed on 20 April 2020).
- Berezutskyi V.V. (2020). *Ryzhky-menedzhment vykorystannya obladnannya ta tekhnolohyy (Risk Management of the Use of Equipment and Technologies)*. Kharkiv: FOP Panov A.M. Available online: <http://repository.kpi.kharkov.ua/handle/KhPI-Press/47595> (accessed on 20 April 2020).
- Berezutskyi, V.V., Adamenko, M.I. (2016). *Nebezpechni vyrobnychi ryzyky ta nadiynist (Dangerous Production Risks and Reliability)*. Kharkiv: FOP Panov A.M. Available online: http://repository.kpi.kharkov.ua/bitstream/KhPI-Press/23046/1/Berezutskyi_Nebezpechni_vyrobnychi_ryzyky_2016.pdf (accessed on 21 April 2020).

- Fond sotsialnoho strakhuvannya Ukrayiny (Social Insurance Fund of Ukraine) (2020). Diyal'nist upravlinnya fondu (Fund Management Activities), <http://www.fse.gov.ua/fse/control/kiev/uk/index> (accessed on 21 April 2020).
- ILO (2001). Guidelines on Occupational Safety and Health Management Systems, ILO-OSH 2001. Geneva: International Labour Office. Available online: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_publ_922116344_en.pdf (accessed on 20 April 2020).
- Konventsia No. 155 «Pro bezpeku ta hihiyenu pratsi i vyrobnyche seredovyshe» Dokument 993_050, potochna redaktsiya, Ratyfikatsiya vid 02.11.2011 (Convention No. 155 'On Occupational Safety and Health and the Working Environment' Document 993_050, current version, Ratification of 2 November 2011). Available online: https://zakon.rada.gov.ua/laws/show/993_050 (accessed on 23 April 2020).
- Konventsia pro osnovy, shcho spryyayut' bezpetsi ta hihiyeni pratsi, N 187, Dokument 993_515, potochna redaktsiya, pidpysannya vid 15.06.2006 (Convention on the Fundamentals of Occupational Safety and Health No. 187. Document 993_515, current version, signed on 15 June 2006). Available online: https://zakon.rada.gov.ua/laws/show/ru/993_515 (accessed on 21 April 2020).
- Kundiyeu YU.I., Nahorna A.M., Dobrovolskyi L.O. (2010). Problema vyrobnychoho travmatyzmu v hlobal'nomu vymiri ta stan v Ukrayini (The Problem of Industrial Injuries in the Global Dimension and the Situation in Ukraine). *Ukrayins'kyy zhurnal z problem medytsyny pratsi (Ukrainian Journal on the Problem of Medical Practice)*, 1(21), pp. 3–8. Available online: <http://oplib.org.ua/2567> (accessed on 21 April 2020).
- Rekomendatsiya shchodo zahal'nykh pryntsyviv orhanizatsiyi system inspektsiyi dlya zabezpechennya vtillennya v zhyttya zakoniv i pravyl stosovno zakhystu pratsivnykiv (Recommendation on the General Principles for the Organisation of Inspection Systems to Ensure the Implementation of the Laws and Regulations Concerning the Protection of Workers), No. 20, 29 October 1923. Available online: https://zakon.rada.gov.ua/laws/show/993_108 (accessed on 22 April 2020).
- Rekomendatsiya 31 shchodo zapobihannya neshchasnym vypadkam na vyrobnytstvi, Heneral'na konferentsiya Mizhnarodnoyi orhanizatsiyi pratsi (Recommendation 31 on the Prevention of Accidents at Work, General Conference of the International Labor Organization), 30 May 1929. Available online: https://zakon.rada.gov.ua/laws/show/993_305/sp:max15 (accessed on 23 April 2020).
- SMIDA (2020). Ahentstvo z rozvytku infrastruktury fondovoho rynku Ukrayiny (Stock Market Infrastructure Development Agency of Ukraine), <https://smida.gov.ua/db/emitent> (accessed on 22 April 2020).
- Sorochynska O.L. (2013). Sotsial'ni ta ekonomichni aspekty okhorony pratsi (Social and Economic Aspects of Labour Protection). Series: Transport Systems

and Technologies, No. 22, pp. 194–200. Available online: http://nbuv.gov.ua/UJRN/Znpdetut_tsit_2013_22_32 (accessed on 21 April 2020).

Zakon ukrayiny pro zahal'noobov'yazkove derzhavne sotsial'ne strakhuvannya (Law of Ukraine on Compulsory State Pension Insurance), 1999, No. 46–47. Available online: <https://zakon.help/law/1105-XIV/edition20.01.2018/> (accessed on 21 April 2020).

Chapter 14

Development of the Insurance Market in the Slovak Republic: A Historical Approach

Tomáš Ondruška¹, Erika Pastoráková²

1. Introduction

The formation and development of insurance relationships in the Slovak Republic had undertaken similar forms and phases, as abroad, but with a certain time lag. The development of insurance was determined by the low economic strength of the territory of today's Slovakia. The mining industry and agriculture prevailed in this country until the 19th century, and thus the primary sector was dominant. This fact also determined the development of risks in the territory of today's Slovak Republic. The main feature of this form of insurance was the mutual assistance in emergencies which originated in random events, without any commercial aspect. The risks covered in this form were primarily fire and death. Until the end of the Middle Ages, agriculture and a few associated activities prevailed in Slovakia (pottery, mead and beer production, basketry, canvas, and leather clothing). However, it is also necessary to mention the primacies of the territory of Slovakia in the mining industry when Slovakia (Upper Hungary) was the largest copper producer in Europe until the discovery of America. In 1627, they used the gunpowder in Banská Štiavnica for the first time in the world to the blasting of rock, and the first Mining Academy in Banská Štiavnica was founded in 1762.

Other risks addressed by the population were plague epidemics, floods, drought, hailstorms, storms, fires, and livestock deaths. In order to describe the development of forms of risk coverage formally or legally, one can start from personal forms as the form of associations/associations in guilds, guilds, and church treasures, through insurance societies and companies, to foreign insurance companies, respectively insurance companies from various parts of Austria-Hungary

¹ University of Economics in Bratislava (Slovak Republic), e-mail: tomas.ondruska@euba.sk

² University of Economics in Bratislava (Slovak Republic), e-mail: erika.pastorakova@euba.sk

operating in the territory of present-day Slovakia. It was only in 1921 that the first insurance companies with Slovak capital were established.

The insurance market in the Slovak Republic is nowadays classified as an advanced insurance market. The development to the present form was significantly determined by the initial conditions, as well as the factors of the socio-economic conditions in specific development periods.

Insurance in the territory of today's Slovak Republic has developed at a slow pace due to its focus on agriculture, the mining of raw materials with the absence of industry and the low standard of living of the population. At the time when modern forms of insurance were offered in the insurance markets of developed countries, mutual types of insurance or very early forms of commercial insurance products were still dominating in the Slovak Republic.

Even the life insurance has developed only at a very slow pace, which is the reason for the current state of the market, in which the determinants of the insurance market development differ from the determinants which are characteristic for the developed market countries.

The aim of the article is to outline the main issues influencing the development of the insurance market in today's Slovak Republic. The authors point out the specific economic, social, economic and demographic circumstances of development in selected periods of the insurance market development in the Slovak Republic. For this study, the method of critical literature review, secondary document analysis, and the synthesis method were used.

The structure of the article is as follows: besides the introduction, the next section will present the historical background of the insurance development in the Slovak Republic, from the 15th century to the period after the Second World War. Then, significant changes in the current insurance system in force since 1989 will be indicated. Finally, the most important conclusions will be summarised and their practical implications will be given.

2. The Historical Background of the Insurance Development in the Slovak Republic

Slovakia has been a part of the Austro-Hungarian Empire since 1526 (as the Habsburg Monarchy). Former Slovakia, as a part of Kingdom of Hungary, was an underdeveloped feudal state until the beginning of the 19th century, which was predominantly focused on agricultural production. Nobles, as decisive economic actors in the country, were not interested in the development of insurance due to the existence of extensive forms of agricultural production. The reason for the ruling class's lack of interest in insurance must also be sought in the urban system, particularly in the existence of a rent in kind (tithe, thirty), as a result of which the nobility enjoyed privileges which allowed them to bear the adverse consequences

of natural disasters (fires, hail and floods) more easily (Marvan et al. 1989). More favourable conditions for the development of insurance relations were created in towns, especially when there was an increase in the concentration of population and property values exposed to the risk of destruction due to frequent fires since the mid-18th century.

Associations, guilds, gilds and fraternities were present in the territory of present-day Slovakia for a long time to cover the risks of the population. Unlike developed countries, where modern forms of risk coverage through insurance companies have passed to the company relatively early, in the territory of present-day Slovakia, the implementation of reciprocal cover remained much longer in its primary forms. In the 18th century, the establishment and coverage of risks were characteristic through the form of church treasuries set up on Catholic parishes and various associations (Marvan et al. 1989). The associations were an extremely widespread form of risk coverage for a very long time – thanks to a number of extant records about the existence of associations, one can find out about at least some of them: 1746 – the municipality of Ochtiná insurance association for livestock insurance, associations of traders and carters in Gemer and many others (Marvan et al. 1989). In general, it was the association of a large number of individuals, for instance ca. 80,000 artisans, merchants, miners, metallurgists and coal workers were members of support associations.

The most well-known and one of the most documented associations is the Fire Insurance Association of the Spiš region towns, which was founded in the mid-18th century. Due to lack of funds, the ruler of the Austro-Hungarian Empire allowed 13 cities from its territory to come under the control of the Polish king. This happened as a result of the loan when as a guarantee, 13 Spiš towns and villages were given by Žigmund to Vladislav II. These towns and villages were in the deposit of the Polish kings from 1412 to 1773. The administration of the Spiš towns was entrusted to the Polish king, August III, by his wife Maria Josepha of Austria. Maria Josepha's Initiative by Order of 31 October 1747 recommended cities to set up a fire insurance treasury (Marvan et al. 1989). The Polish rulers were well aware that if these cities suffered significant damage as a result of fires, they would not be economically interesting to them. They would become places where resources from the royal treasury are drained in the form of helping the poor, beggars and orphans to lose their taxes and fees. The establishment of a fire insurance association took place on 25 November 1752 and worked until 1773 (Marvan et al. 1989). The existence of this association was also followed by Empress Maria Theresa. After returning these towns back to Austria-Hungary, in 1778, they added other towns to them, and the 'Province of 16 Spiš Towns' was established. Since 1810, this province has also provided livestock insurance. It ceased to exist in 1825. Navigation Insurance Company Prístav-Komárno (Rév-Komárom) deserves attention (Wagner 1924). It was established during the Napoleonic Wars, when the transport of grain on land was dangerous. In 1806, Zsigmund Csepy – an attorney from

Komárno – founded a company of grain traders. In the form of a mutual guarantee by means of co-deposited funds, they operated the insurance of ships transporting grain on the Danube, thus ensuring subsistence for the population in the cities of the Austro-Hungarian Monarchy.

Legal restrictions prevented the development of insurance in the 18th century. Until the early 19th century, insurance was not legally defined. Although the Code of 1811, the provisions on insurance contracts, entered into a law called the General Civil Code, they were extremely negative (Marvan et al. 1989). Insurance contracts were classified as so-called ‘courageous covenants’ which, according to §1267, ‘promise and induce hope of uncertain benefit’. The legislation did not distinguish between contingent payment and contingent contract. Transport insurance was considered the ‘usual’ subject of the insurance contract (Wagner 1924). There is also a brief mention of fire insurance in the Code, but life insurance was not mentioned at all (as not to support efforts to secure survivors).

The beginning of the 19th century can be described as a breakthrough in the development of insurance and the insurance industry. Insurance companies from other, more developed parts of Austria-Hungary, especially from Austria (for instance: 1825 – Erste Österreichische Feuer-Versicherungs-Gesellschaft, 1825 – Österreichische Wechselseitige Brandschaden-Versicherungs-Gesellschaft and others), and Italy (for instance: 1831 – Assicurazioni Generali Austro-Italiche, as well as 1841 – Riunione Adriatica di Sicurtà, or 1848 – Nuova Società Commerciale di Assicurazione) (Marvan et al. 1989). The key factors for the development of insurance in the territory of present-day Slovakia include the creation of preconditions for the creation of a free labour force (abolition of serfdom during the reign of Joseph II), the emergence of sufficient entrepreneurial capital and bourgeois revolution (1848–1849) (Wagner 1924). In this period, insurance companies based in the territory of present-day Slovakia also operated, but they were only of local importance and were capital insignificant. For instance, in 1839, the Komárno County Pension Institute of Catchpoles was founded, which provided a pension to hussars, catchpoles, and pandurs, as well as funds for their widows and orphans. Gemersko-Malohontský Institute which covers fire damages was established in 1844 in Plešivec, and a similar institute of Zemplín County was established in 1848 – the county fire damage replacing association. In the 1880s, insurance companies from America, such as Equitable (1883), The Mutual (1886), New York (1886) or Germania (1887), came to this territory (Marvan et al. 1989).

In this period the national revival culminated, as Slovakia was not an independent state (it was still a part of the Austro-Hungarian Monarchy). The national revival also manifests itself in the area of insurance, by continual efforts to create its own Slovak national insurance company. It was not successful until 1921 (Wagner 1924), when several insurance companies were established at the same time: First Slovak Insurance Company, participating association in Žilina – later Slovákia General Insurance Company, participating association in Bratislava; First Slovak

Insurance Company, participating association in Bratislava. Slovenská poisťovňa (Slovak Insurance Company), participating association in Bratislava, is also operating since 1921; and the Slovak Agricultural Insurance Cooperative in Bratislava since 1922 as Karpatia, a farmers' and co-operative insurance company and a participating association (Patoprstý 1993). These insurance companies form the basis of further development of insurance in the territory of present-day Slovakia. This period is also associated with the creation of an independent common state of Czechs and Slovaks after the First World War. The post-war period was a period of settling insurance contracts, as many citizens had contracts concluded in foreign insurance companies. The transfer of insured groups was dealt with by a special commission, which was set up in 1938 due to other reasons and also after the Second World War. It is demonstrable how political and economic changes interfered with the development of insurance in the territory of today's Slovakia, and today we know that it was not in a positive spirit. The confidence in the promise that the insurance companies gave to its clients also continued to weaken. War reparations, as well as irrecoverable own funds, had given rise to the idea of non-transparent business in this area.

Extraordinary radical events took place in Slovakia less than two decades after the establishment of the first Slovak insurance companies. An independent Slovak Republic was founded in 1938 as the initiative of nationalist Germany. After that moment, 44 private insurance companies were active in Slovakia, which testifies to the development of the insurance market. The Vienna Arbitration of 2 November 1938 caused the necessity to solve the problems of insured's groups in the territories forcibly connected to Hungary, Poland and Germany (Patoprstý 1993). Similarly to the situation after the First World War, the issue of the cancellation of insurance contracts, transfer of insurance contracts, and often the return of contracts to the territory of Slovakia was not resolved at all. It was an extremely dramatic year. Even a curatorial report was imposed on the non-Slovak insurance companies, which means that they were not able to operate in that territory. For the period around 1940, the territory of present-day Slovakia was characterised by the concentration and nationalisation of the insurance industry, as it was the territory of the Slovak state favoured by Hitler's Germany.

Afterwards, the Second World War started, which prevented the development of insurance and the insurance industry. After the war, Slovakia once again became a part of Czechoslovakia (devoid of Carpathian Ruthenia). The most important milestone for insurance and insurance industry was the approval of the Košice Government Programme on 5 April 1945. After the Second World War, there was a particularly violent intervention in private business – nationalisation. The entire private insurance industry was nationalised in 1945 and only five insurance companies were granted permission to continue operating, namely: Slávia Praha Insurance Company, Prague Insurance Company in Prague (Pražská poisťovňa Praha), First Czechoslovak Insurance Company in Brno (Prvá československá

poist'ovňa Brno), Slovan Bratislava Insurance Company, and Prague Health Insurance Company (Nemocenská poist'ovňa Praha) (Patoprstý 1993). They integrated all nationalised private insurance companies and insurance associations which had to be in the form of a national enterprise. Three years later, on 28 February 1948, the Beneš Decrees were enacted, which meant for the insurance industry the merger of five insurance companies into one monopoly – the Czechoslovak State Insurance Company in the legal form of a national enterprise.

In further development, the Czechoslovak State Insurance Company acquired the status of an independent economic organisation in 1966 and became the only insurance and reinsurance company in the Czechoslovak Republic (Patoprstý 1996). It operated in this way for many years until 1990, when the whole economy was totally transformed and market principles began to apply in the operations of companies.

3. The Development of the Slovak Insurance Market After 1989

After 1989, significant changes occurred in the Slovak Republic. Act No. 24/1991 Coll. on Insurance had abolished the monopoly of a single insurance company and modified the conditions of doing business in this area. After that year, there was a large expansion in the insurance market in the Slovak Republic when more and more companies started their business as competitors for the monopoly insurance company. The first private insurers for over four decades were created – Otcina in Nitra, and Kooperativa in Bratislava in 1991. In the following years, the number of insurers grew very fast with a peak in 2000. The process of transition also affected the insurance industry, when operations were rebuilding on market principles. These new private insurance companies, mainly subsidiaries of foreign parent insurance companies, started to offer insurance products and competition between them increased.

Concurrently with these changes, the integration efforts of Slovak Republic into OECD, NATO and the European Union started. The harmonisation of the legislation had a major impact on the changes which occurred in the insurance industry. Integrated financial services supervisions were instituted, which also included insurance market regulation. In 2000, The Financial Market Authority (UFT) was established under Act No. 329/2000 Coll. and later, in 2002, Act No. 95/2002 Coll. recodified insurance legislation and brought the Slovak insurance market closer to the EU model. In January 2006, the National Bank of Slovakia took over supervision of the insurance, pension and capital markets in Slovakia from the former UFT.

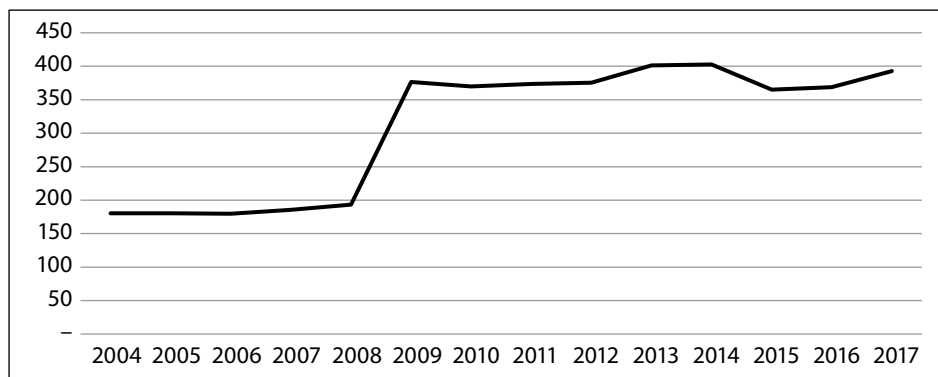
The easing of political restrictions led to significant changes in the political, economic and social spheres in the Slovak Republic. The number of people with a university degree increased and compared with the advanced countries, this dis-

parity has gradually converged, whereas the population aged 25–64 with tertiary level of education in 2017 in Slovakia was represented by the value of 23.1%, according to the OECD. It was the same for life expectancy, as a consequence of the increase in the quality of life and living standards. For illustration, between 1990 and 2016, life expectancy increased on average by 6.1 years in the Slovak Republic.

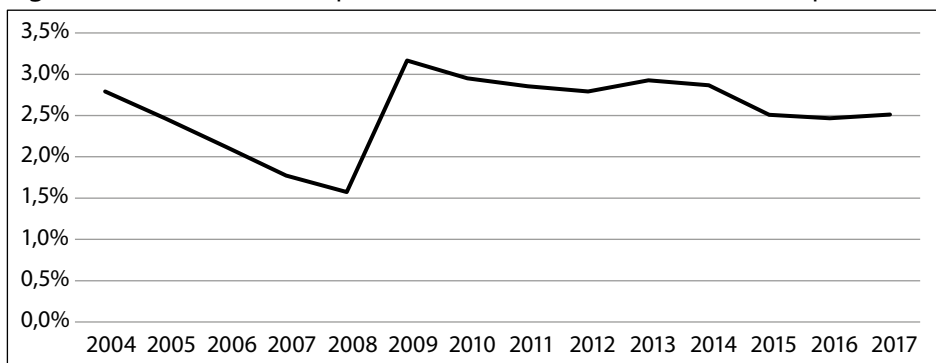
In addition, the volume of international trade increased as a result of open borders. That prompted the need for the coverage of previously unrecognised risks (Brokešová et al. 2014). However, the transformation process did not bring only positive effects to the countries. General changes in people's lives gave rise to new phenomena: unemployment, inflation, reduction of the social system's generosity, and the loss of previously perceived certainties. Employment opportunities caused resettlement from the countryside into the large towns, which contributed to the polarisation of regions (Brokešová et al. 2014). While, before the transformation, the living conditions in different regions had been very similar, there is a large disparity between regions in current times, especially between Bratislava and eastern regions. Southern and eastern Slovak regions without employment opportunities and flourishing cities are the reality of the recent period. There was also another new phenomenon: inflation. As the initial phase of the transition process was characterised by high levels of inflation rates, later, they stabilised at levels comparable with the levels in advanced economies.

The insurance industry is generally considered an essential part of economy, but insurance premiums generated only 2.2% of GDP in the Slovak Republic in 2019. Nowadays, the development of the Slovak insurance market is standardised. The private insurance industry in Slovakia has been growing continuously since the fall of the Iron Curtain (despite the economic and financial crisis in 2008). Indicators of the insurance industry development in Slovakia are getting very slowly closer to the level of advanced countries, as can be seen in Figures 1 and 2.

Figure 1. Density (total premiums per inhabitant in EUR) in the Slovak Republic



Source: Sigma Explorer (2020).

Figure 2. Penetration (total premiums as a % of GDP) in the Slovak Republic

Source: Sigma Explorer (2020).

The outlook of the general performance of the insurance market in the Slovak Republic allows for a better understanding of the specifics of this market. The performance of the insurance market is usually analysed through three indicators: volume of written premium, insurance penetration ratio, and insurance density ratio. Generally, the insurance density and penetration ratios (Figure 1 and Figure 2) show that the indicators are not improving over time. The persistence of such a trend will cause the inhabitants of the Slovak Republic to be less protected against the effects of random events. Figures 1 and 2 indicate that insurance premium remained stable over time and the variance of the ratio was driven mainly by the changes of GDP. It signals that the growing GDP was not bringing substantial growth in insurance coverage demand. The insurance density index in Slovakia was associated with a significantly lower interest in life insurance products among the Slovak population. Gross written premium per capita is increasing only in the non-life insurance industry, which is driven by the better economic situation of inhabitants and higher interests in mortgages. The insurance potential of the market is evident due to the increase in the value of property (rapid increases in the number of motor vehicles, housing, electronics and technical equipment).

4. Conclusions

The aim of the article was to indicate the main issues influencing the development of the insurance market in today's Slovak Republic in a synthesised way. The authors focused on the specific economic, social, economic and demographic circumstances of development in selected periods of the insurance market development in the Slovak Republic.

The Slovak insurance market is one of the relatively young insurance markets. During its historical development, the market went through turbulent changes which shaped it into its today's form. From various insurance societies, guilds,

through first insurance companies operating in the current territory of Slovakia, a single state insurance company, to a competitive market based on market principles. However, various historical milestones have led to the fact that the level of the market has not reached the level of Western European countries yet. The density and penetration indicators suggest that the Slovak insurance market is still catching up in order to approach advanced insurance markets, but the insurance potential of the market is evident.

Acknowledgments

This paper is a part of a research project VEGA No. 1/0466/19 supported by the Ministry of Education, Science, Research and Sport of the Slovak Republic.

References

- Beck U. (2006). Living in the World Risk Society. *Economy and Society*, Vol. 35(3), pp. 329–345.
- Brokešová Z., Pastoráková E., Ondruška T. (2014). Determinants of Insurance Industry Development in Transition Economies: Empirical Analysis of Visegrad Group Data. *Geneva Papers on Risk and Insurance – Issues and Practice*, Vol. 39.
- Ehrlich J., Becker G.S. (1972). Market Insurance, Self-Insurance and Self-Protection. *Journal of Political Economy*, Vol. 80, pp. 623–648.
- Hempel C.G. (1965). Aspects of Scientific Explanation, and Other Essays in the Philosophy of Science. New York: Free Press.
- Kaser M.C., Radice E.A. (Eds.). (1985). *The Economic History of Eastern Europe 1919–1975*, Vol. I –III. Oxford.
- Manes A. (1942). Outlines of a General Economic History of Insurance. *Journal of Business of the University of Chicago*, Vol. 15(1), pp. 30–48.
- Marvan M., Patoprstý J. et al. (1989). Dejiny poisťovníctva v Československu. Diel 1. Dejiny poisťovníctva v Československu do roku 1918. Prague: Novinář.
- Masci P. (2011). The History of Insurance: Risk, Uncertainty and Entrepreneurship. *Journal of the Washington Institute of China Studies*, Vol. 5(3), pp. 25–68.
- OECD. 2020. <https://data.oecd.org/>.
- Pastoráková E. (2014). Historicko-teoretický prístup k životnému poisteniu. *Vývojové trendy v poisťovníctve 2014: recenzovaný vedecký zborník vedeckých prác [elektronický zdroj]*. Bratislava: Vydavateľstvo Ekonóm, pp. 211–217.
- Patoprstý J. (1993). Dejiny poisťovníctva v Česko-Slovensku. Diel 2. Dejiny poisťovníctva v Česko-Slovensku v rokoch 1918–1945. Bratislava: Alfa Konti.
- Patoprstý J. (1996). Dejiny poisťovníctva v Česko-Slovensku. Diel 3. Dejiny poisťovníctva v Česko-Slovensku v rokoch 1945–1992. Mária Demeterová (Ed.). Bratislava: Alfa konti.

- SWISS RE (2020). Sigma Explorer. Available online: <https://www.sigma-explorer.com> (accessed on 17 August 2020).
- Trener C.F. (1926). *The Origin and Early History of Insurance*. London: P.S. King.
- Vostatek J. (2000). *Sociální a soukromé pojištění*. Prague: Codex Bohemia.
- Wagner J.A. (1924). *Poistovníctvo na Slovensku, s krátkym úvodom do poistovníctva*. Bratislava: Slovenská kníhtlačiareň v Bratislave.

ECONOMICS



This monograph presents current results of research on interdisciplinary issues related to socio-economic development from the perspective of ecosystems, specifically the role of international institutions and financial systems in shaping responsible socio-economic development, the role of entrepreneurship and new technologies in creating new value for customers and society, and selected aspects of sustainable socio-economic development, oriented towards society and natural environment.

The scope of this monograph offers an overview, analysis and evaluation of selected aspects of new development pathways in complex and dynamic times. The authors and editors of this monograph wish to contribute to the discussion on these challenges which are spread over and affect various ecosystems.

This monograph is addressed to all those who remain concerned about future prospects for socio-economic development, in particular academics in the relevant fields, policy-makers and students. We hope that the content of this monograph will not only raise awareness of the current challenges, but also provide a positive impulse for research and practice of socio-economic development.

This book is also available in e-book format

www.poltext.pl

ISBN 978-83-8175-233-6



9 788381 752336

P12100801

Cena 119,00 zł