EUROPEAN UNION
European Structural and Investing Funds
Operational Programme Research,
Development and Education

MINISTRY OF EDUCATION,
YOUTH AND SPORTS

The conference was sponsored by a European union project
CZ.02.2.69/0.0/0.0/18_054/0014696
Development of R&D capacities of the Silesian University in Opava

Title: **Proceedings of International Scientific Conference "Economic and Societal Challenges of the European Economy (COVID and Post-COVID Period)"**

Editor: Eva Kotlánová

Publisher: Silesian University in Opava
School of Business Administration in Karviná

Number of pages: 203

Number of copies: 50

Printing Office: Profi-tisk group s.r.o.

Karviná 2021
ISBN 978-80-7510-488-5

ECONOMIC AND SOCIETAL CHALLENGES OF THE EUROPEAN ECONOMY (COVID AND POST-COVID PERIOD)

Proceedings of International Scientific Conference

EUROPEAN UNION
European Structural and Investing Funds
Operational Programme Research,
Development and Education

MINISTRY OF EDUCATION,
YOUTH AND SPORTS

International Scientific Conference

ECONOMIC AND SOCIETAL CHALLENGES OF THE EUROPEAN ECONOMY (COVID AND POST-COVID PERIOD)

Conference Proceedings

Organized by Silesian University in Opava,
School of Business Administration in Karviná

SLEZSKÁ UNIVERZITA
OBCHODNĚ PODNIKATELSKÁ FAKULTA V KARVINÉ

September 15-16, 2021
Petrovice u Karviné, Czech Republic

EUROPEAN UNION
European Structural and Investment Funds
Operational Programme Research,
Development and Education

MINISTRY OF EDUCATION,
YOUTH AND SPORTS

International Scientific Conference

ECONOMIC AND SOCIETAL CHALLENGES OF THE EUROPEAN ECONOMY (COVID AND POST-COVID PERIOD)

Conference Proceedings

Organized by Silesian University in Opava,
School of Business Administration in Karviná

The conference was sponsored by a European union project CZ.02.2.69/0.0/0.0/18_054/0014696
Development of R&D capacities of the Silesian University in Opava

September 15-16, 2021

Petrovice u Karviné, Czech Republic

SILESIAN
UNIVERSITY
SCHOOL OF BUSINESS
ADMINISTRATION IN KARVINA

ISBN 978-80-7510-488-5

Year of publishing: 2021

Number of pages: 203

Editor: Eva Kotlánová

All papers passed a double-blind review process.

Suggested citation:

Author, A., 2021. "Title of the paper". In: Kotlanová, E. (ed.). Proceedings of International Conference Economic and Societal Challenges of the European Economy (Covid and Post-Covid Period). Karviná: Silesian University, pp. XXX-XXX. ISBN 978-80-7510-488-5.

Dears Participants of the Conference

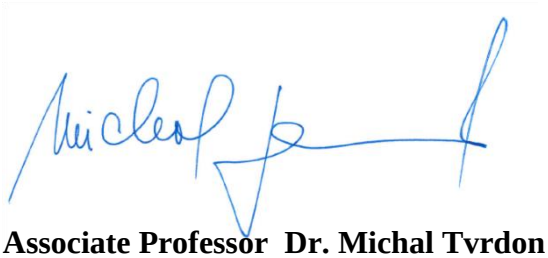
The international scientific conference "Economic and Societal Challenges of the European Economy (Covid and Post-Covid Period) is a platform for international scientific discussion on economic policy in its broadest sense. This conference was held on September 15-16, 2021, Petrovice u Karviné, Czech Republic and it follows the long tradition of conferences on the topics of economic policy of the EU Member States, organised by the Silesian University in Opava, School of Business Administration in Karvina, Department of Economics and Public Administration in association with the Technical University of Ostrava, Faculty of Economics, Department of Economic Policy and later, PRIGO University. As previous conferences, this year´s one is a platform for the worldwide dissemination and sharing of ideas for research in the field of Economic Policy, Economy of the European Union, Future of European Integration, External Relations of the European Union, Labour Market, Globalisation Processes, Competitiveness, Regional Disparities. Moreover, this year´s conference reflects the actual situation in the European and global economy in relation to the on-going COVID-19 pandemics.

Our lives has been significantly affected by the COVID-19 pandemic in the last two years and one area that was most affected was the traditional people gathering. Some conferences were not held at all, some only virtually (online). We are very happy that we managed to organize this conference and we had a chance to discuss professional topics, but also informal issues after such a long time physically. We would also like to express our deeply appreciations and thanks to all participants for their high quality contributions. It was our pleasure to welcome at our conference a significant number of participants from abroad.

We are happy that we have been able to get such broad participation from different sectors of the scientists, practitioners, policy makers and private sector actors. Together we try to advance efforts and present new ideas related to different aspects of economic policy.

The proceedings contain only papers that have successfully passed a double-blind referee process and whose authors had agreed with publication in the proceedings. There have always been two referee reports on each paper. The referees selected are distinguished scholars from Czech as well as foreign universities.

We hope that next volume of our conference will be also successful and enjoyable to all participants. We look forward to seeing all of you next year ☺.



Associate Professor Dr. Michal Tvrdon
Department of Economics and Public Administration

CONTENTS

Beran Vlastimil	**LABOUR COSTS BEFORE COVID**	1
Bočková Nina, Pakšiová Renata	**SUPPORT FOR ENTREPRENEURS IN THE COVID-19 PANDEMIC IN THE CZECH REPUBLIC AND THE SLOVAK REPUBLIC**	15
Bočková Nina, Doubravský Karel	**IMPACT OF COVID-19 ON PASSENGER-KILOMETERS IN SELECTED EUROPEAN COUNTRIES**	28
Doleželová Petra, Fojtíková Lenka	**STATE AID MEASURES OF THE EU MEMBERS IN TIME OF COVID-19 PANDEMIC**	39
Duda Danuta, Turečková Kamila, Buryová Ivona, Kubalová Radka	**THE COMPARISON OF V4 SOCIAL SECURITY SCHEMES WITH THE FOCUS ON MATERNITY AND PARENTAL BENEFITS**	50
Duháček Šebestová Jarmila, Šperka Roman, Klepek Martin	**MIGRATION AND INTEGRATION AT SCHOOL LEVEL: A CZECH PRELIMINARY STUDY PAPER**	63
Horehájová Mária, Kuráková Ivana, Lacová Žaneta, Vallušová Anna	**THE IMPACT OF THE COVID-19 PANDEMIC ON DIGITAL EXCLUSION IN SLOVAKIA**	75
Klimko Roman, Rievajová Eva	**THE IMPACTS OF COVID-19 PANDEMIC ON YOUNG PEOPLE IN THE LABOUR MARKET AND THEIR FUTURE PROSPECTS**	88
Knapková Miroslava, Považanová Mariana	**DEVELOPMENT OF TRADES IN SLOVAKIA FROM A SECTORAL PERSPECTIVE WITH EMPHASIS ON CRISES PERIODS**	96
Mališová Daniela, Štrangfeldová Jana	**IMPACT OF THE COVID - 19 ON THE LABOUR MARKET IN THE EUROPEAN UNION COUNTRIES**	106
Nenička Lubomír	**REFLECTIONS AND PERSPECTIVES OF THE ASYLUM POLICY IN THE EUROPEAN UNION AND CZECH REPUBLIC**	117
Pastorek Daniel	**UNCERTAINTY EFFECTS OF THE EUROPEAN INTEGRATION**	127
Poledníková Eva	**EU COHESION POLICY: EFFECTIVE TOOL OF RESPONSE TO THE COVID-19 PANDEMIC?**	137

Rubáček Filip, MacGregor Pelikánová Radka	**GDP GROWTH, R&D EXPENDITURE AND COVID – SUSTAINABLE MESSAGE REVEALED BY THE SYNTHESIS OF THREE INDICATORS IN THE COVID-19 ERA**	145
Šimek Milan	**APPROACHES TO ASSESSING THE EMPLOYABILITY OF UNIVERSITY GRADUATES IN THE LABOUR MARKET**	156
Škrabal Jaroslav, Chmielová Petra	**THE SITUATION OF BROWNFIELDS DURING THE COVID-19 PANDEMIC: A CASE STUDY OF SELECTED MEC REGIONS IN THE CZECH REPUBLIC**	170
Varadzin František	**DISTRIBUTION AND INCOME**	179
Vostatek Jaroslav	**OECD REVIEW OF CZECH PENSION SYSTEM: CUI BONO?**	192

LABOUR COSTS BEFORE COVID

Vlastimil Beran[1]

[1]*Research Institute for Labour and Social Affairs,*
Dělnická 213/12,170 00 Praha 7, Czech Republic
email: vlastimil.beran@vupsv.cz

Abstract
Labour costs comprise one of the basic indicators of labour market competitiveness and can be monitored with respect to three aspects: labour costs, share of labour costs and unit labour costs. 2008 saw the beginning of a major financial crisis, to which individual national economies reacted in different ways and, especially, over different time horizons. The crisis was followed by several years of economic expansion. In 2020, the world economy was impacted by a new external shock in the form of a disease that became known as Covid-19. However, the availability of the data needed to calculate the various labour indicators is subject to a two-year delay. Hence, no one knows what in fact happened to these labour indicators in 2020. The article provides an analysis of this issue at two levels, the first of which presents a forecast of labour cost indicators for European Union countries in terms of their probable development had no external shock occurred; the accuracy of this forecast and the impact of Covid-19 will be determined only at the end of 2022. The second level considers the convergence of European Union countries concerning labour costs in 2008-2019; cluster analysis is used to determine similarities and differences. The various EU countries are ranked in subsets of mutual real competitors.

Keywords
Competitiveness, Cluster Analysis, Forecasting, Labour Costs, Share of Labour Costs, Unit Labour Costs.

JEL classification
E2, J3

1 Introduction

The aim of the article is to identify the degree of convergence within the European Union based on calculated labour market indicator values. The European Union as a whole is the third largest economic unit (after the United States and China) in the world economy. In terms of population, it is also the world's third most important player (after China and India). Unlike the above countries, however, the European Union does not have characteristics that are typical of individual states. It is a community of 27 autonomous countries that have given up their competences in some areas in favour of a greater whole. The European Union can, therefore, be seen as an entity that has, in part, the powers of an international organisation and, partly, those of one united country. This has resulted, however, in strong internal conflicts that are not typical of geographically larger states. The member states of the EU are in fact both partners and rivals. The aim of the European Union is to achieve a combination of sustainable development based on balanced economic growth and price stability, a highly-competitive market economy with full employment and social progress, and environmental protection. However, since achieving this aim is particularly complicated with so many differing economic environments, the article focuses on fulfilling the objective of convergence, i.e. the convergence of the various economies and the harmonisation of the economic cycles of member states.

The Covid-19 pandemic was the biggest external shock of the last decade in terms of disrupting the expansionary part of the business cycle, and there is no doubt that this event will not be limited to affecting economic development in individual EU member states. While the quantification of the various economic impacts is slowly emerging, the social consequences for both individuals and society, including the cultural consequences, are likely to last at least a decade. The reason for the relative rapidity of the calculation of the economic consequences is the fact that economic entities are forced to react within very short time horizons so that they do not lose their competitive advantage or allow it to be assumed by their competitors. It is no coincidence that acting quickly on the basis of

available information provides for the higher probability of a competitive advantage and, thus, for higher rates of profit. This does not mean, however, taking action hastily without having the necessary information. An alternative option is to wait to determine the activities performed by pioneer firms or companies classified as dominant in the oligopolistic structure. Such "waiting companies" or companies that copy the activities of pioneer firms enjoy a competitive advantage. Moreover, in today's economic environment waiting for the implementation of measures by the fiscal authority also plays a role. Nevertheless, the fact remains that all economic entities are forced to react relatively quickly; however, not all the relevant players enjoy the ability to react quickly. The statistics required to calculate labour costs are available with a delay of as long as two years. While it is possible to find partial analyses that focus on micro-regions, market segments or industries, no such information is available for the European Union as a whole or even for the individual economies of EU member states.

The Empirical results chapter of the paper presents tables of the various types of labour costs calculated for all the member states of the European Union between 2008 and 2019. The final columns in the tables contain predictions for 2020. How would labour costs have developed had Covid-19 never happened? The results of the cluster analysis in the form of cluster dendrograms are presented below each of the labour cost tables.

2 Literature review

It is important to note that at different times labour costs were calculated using a range of varying methodologies. This was due principally to differences in terms of the relevant statistics and the fact that, for many years, no statistics were available in this area. At the International Labour Office in Geneva, Van Ark and Monnikhof (2000) compiled a study in which labour costs were calculated according to industry (based on estimates) and Holý (2002) compiled a similar study with respect to conditions in the Czech Republic. Further, Andersen (2003) compiled a study on labour costs for the European Commission. Subsequently, statistics on labour costs were processed by Eurostat in the form we know today; minor methodological adjustments are introduced on a relatively regular basis.

Researchers then began to use this data in the search for answers to questions that had previously been unanswerable. For example, research on the link between labour costs and economic growth conducted by Hájek and Mihuka (2009). Opinions are common in both the economic and public spheres that reducing labour costs through wage cuts (especially in the PIIGS countries and countries that acceded to the EU after 2004) is the best way to achieve competitiveness. However, Storm and Naastepad (2014) subsequently presented evidence of the irrationality of such an approach. The convergence of EU states is also an issue that is discussed extensively particularly with respect to whether the countries that joined the EU post 2004 managed to seize the opportunities available to close the considerable gap between the economies of member states (Žuk et al., 2018)

With respect to the Czech Republic, a broad overview of labour costs was previously provided by the Research Institute for Labour and Social Affairs in its Monitoring Bulletin on Labour Costs in the Czech Republic, the European Union and the USA. However, the publication of this bulletin was suspended by the Ministry of Labour and Social Affairs of the Czech Republic in 2021.

The evaluation of labour costs provides an opportunity to determine the general state of competitiveness in terms of the price of labour within the European Union and, specifically the position of the Czech Republic, i.e. where the Czech Republic stands in this "economic battlefield" (Baštýř et al., 2004).

3 Methodology and data

The methodology employed in this study was created by the Research Institute for Labour and Social Affairs and includes the monitoring of labour costs and labour as a factor of production (the share of

labour of total costs and unit labour costs) in the form of an international comparison using both national price levels and parity purchasing power.

Rankings based on official data result from aggregated data for the national economies of individual countries; moreover, the input variable time delay of two years, due in part to the two-stage data collection process, represents a serious shortcoming. Data is collected and checked in each country by local statistical offices according to established uniform methodology. The data is then sent to Eurostat (and distributed to other institutions) where it is reviewed once more, sometimes with further consultation with local statistical offices. While this process serves to eliminate errors, it requires a considerable amount of time to complete. Therefore, any data that is available for the current year is, at best, only a rough estimate and the reporting value of such data is, in most cases, zero.

While the uniformity of the methodology guarantees the potential for the comparison of the results, when examining the resulting values and dendrograms it must be borne in mind that a number of EU countries have markedly differing characteristics, i.e. particularly Luxembourg, Malta, Cyprus and Ireland.

3.1 Labour costs

From the macro-economic point of view, labour costs represent the sum of the costs associated with the functioning of the labour production factor and the reproduction of economic and social relations (Kozelský and Vlach, 2011).

3.2 Share of labour costs of total costs

The share of labour costs of total costs indicator is particularly important with respect to those economies that traditionally have low labour costs. This indicator is not monitored by any international institutions.

The calculation is as follows:

$$SLCTC = \frac{\frac{NEC}{emp}}{\frac{C}{emm}} \times 100 = \frac{\frac{NEC}{emp}}{\frac{IC}{emm} + \frac{NEC}{emp} + \frac{D}{emm}} \times 100 = \frac{\frac{NEC}{emp}}{\frac{MS}{emm} + \frac{NEC}{emp} + \frac{GOS - NOS}{emm}} \times 100 \quad (1)$$

where *SLCTC* is the share of labour costs of total costs, *NEC* is the nominal employee compensation, *emp* is the number of employees, *C* is costs at current prices, *IC* is intermediate consumption at current prices, *emm* is total employment (workers), *D* is depreciation at current prices, *GOS* is the gross operating surplus at current prices and *NOS* is the net operating surplus.

3.3 Unit labour costs

The unit labour costs indicator is a composite expression of cost pressures in a given economy exerted by the labour force (Jílek and Vojta, 2001). Central banks monitor this indicator for the prediction of both the inflation rate (inflation cost factor) and the effective exchange rate. It is also used as an indicator of the competitiveness of the economy and one of the factors employed in deciding upon foreign direct investment.

The concept of unit labour costs varies in terms of the purpose and requirements of individual institutions. One of the leading methodologies in this respect was developed by The Vienna Institute for International Economic Studies (Havlik, 2005). The various inconsistencies concerning both calculation methods and interpretation, also prevalent in the Czech Republic, led the Research Institute for Labour and Social Affairs to develop its own methodology which is based on the share of the average cost of labour expressed in terms of employee compensation per employee and gross

domestic product per employee at current prices. The calculation is in the form of a percentage calculated from both national price levels and purchasing power parity (PPP) values. The article applied the Research Institute for Labour and Social Affairs approach.

The calculation is as follows:

$$UNC = \frac{\frac{NEC}{emp}}{\frac{GDP}{emm}} \times 100 \qquad (2)$$

where *UNC* is unit labour costs, *NEC* is nominal employee compensation, *emp* is the number of employees, *GDP* is gross domestic product and *emm* is total employment (workers).

Unit labour costs are expressed at the national price level; however, for the purpose of comparison, they are often also expressed in the form of the so-called purchasing power standard. Thus, this indicator results in two tables and two graphs (figures). The first of the following two tables and figures shows unit labour costs at national price levels and the second in terms of the purchasing power standard.

4 Empirical results

The following text presents the results of the analysis of the three monitored indicators (accompanied by a commentary on each): labour costs, share of labour costs of total costs and unit labour costs.

4.1 Labour costs

Labour costs include wages and salaries (including wages in kind included in earnings), wage compensation for non-worked hours, social benefits, social costs and expenses (statutory and voluntary) and the various personnel costs, taxes and subsidies related to employment. As far as this article is concerned, labour costs are expressed in Euro per month worked per employee, see Tab. 1. Note, the Czech Republic is referred to as Czechia in the following tables

Table 1. Labour costs in Euro per month worked per employee in the period 2008-2019

GEO/TIME	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belgium	32.9	34.2	35.3	36.3	38.0	38.8	39.0	39.1	38.6	39.1	39.7	40.5	41.6
Bulgaria	2.6	2.9	3.1	3.3	3.4	3.6	3.8	4.1	4.5	5.0	5.4	6.0	5.8
Czechia	9.2	9.1	9.8	10.5	10.0	9.7	9.4	9.8	10.3	11.3	12.7	13.5	12.5
Denmark	34.4	35.6	36.7	37.3	39.4	39.9	40.6	41.2	41.3	42.8	43.9	44.8	45.7
Germany	27.9	28.6	28.8	29.6	30.5	30.9	31.4	32.2	32.8	33.8	34.6	35.6	35.8
Estonia	7.8	7.7	7.6	7.9	8.6	9.2	9.8	10.3	10.8	11.6	12.4	13.4	13.2
Ireland	28.9	29.5	28.9	28.7	29.8	29.8	29.8	30.0	30.6	31.2	32.1	33.2	32.4
Greece	16.7	17.1	17.0	16.2	15.7	14.5	14.5	14.1	15.2	15.6	16.0	16.4	15.0
Spain	19.4	20.5	20.7	21.2	21.1	21.2	21.1	21.2	21.2	21.2	21.3	21.9	21.9
France	31.2	31.6	32.6	33.6	34.3	34.4	34.7	35.1	34.5	34.9	35.9	36.5	36.8
Croatia	9.2	8.7	8.6	8.7	9.5	9.5	9.4	9.6	9.5	10.1	10.8	11.1	10.8
Italy	25.2	26.1	26.8	27.2	27.7	28.1	28.3	28.1	27.6	27.7	28.3	28.7	29.0
Cyprus	16.7	17.4	17.7	18.0	16.8	16.3	15.8	15.7	15.7	15.9	16.6	17.5	16.1
Latvia	5.9	5.8	5.5	5.7	5.9	6.2	6.6	7.1	7.7	8.2	9.3	9.9	9.5
Lithuania	5.9	5.6	5.4	5.5	5.9	6.2	6.5	6.8	7.4	8.1	9.0	9.4	9.1
Luxembourg	31.0	32.2	32.9	33.9	33.9	35.1	36.2	36.3	38.7	39.9	40.8	41.9	42.4

Hungary	7.8	7.1	7.0	7.3	7.4	7.7	7.7	7.9	7.8	8.7	9.2	9.9	9.3
Malta	11.3	11.5	11.9	12.2	11.8	12.3	12.8	13.2	14.2	14.6	15.1	15.2	15.5
Netherlands	29.8	30.4	31.1	31.6	32.5	33.2	33.7	34.0	34.5	35.1	35.8	36.5	37.0
Austria	26.4	27.6	28.0	29.0	29.7	30.6	31.4	32.4	32.5	33.0	33.8	34.6	35.5
Poland	7.6	6.6	7.2	7.3	7.9	8.1	8.3	8.6	8.7	9.5	10.1	10.7	10.5
Portugal	12.2	12.6	12.6	12.6	13.3	13.3	13.2	13.4	13.6	14.0	14.2	14.4	14.5
Romania	4.2	4.0	4.1	4.2	4.1	4.4	4.6	4.9	5.3	6.2	7.0	7.7	7.1
Slovenia	13.9	14.4	14.6	14.9	15.6	15.3	15.6	15.8	16.8	17.6	18.1	19.0	18.7
Slovakia	7.3	7.6	7.7	8.0	8.9	9.2	9.7	10.0	10.2	10.9	11.6	12.5	12.4
Finland	27.1	28.2	28.8	29.5	31.3	32.0	32.5	33.0	33.7	33.2	33.6	34.1	35.6
Sweden	31.6	29.5	33.6	36.4	37.3	38.2	37.3	37.4	37.7	38.1	36.7	36.5	39.4
United Kingdom	20.9	18.8	20.0	20.1	25.0	24.1	25.8	29.7	27.9	26.8	27.4	28.5	30.6

Source: Eurostat (2021), own presentation.

Table 1 reveals large differences in the values between countries. In 2008, the lowest labour costs value related to Bulgaria at Euro 2.60 and the highest labour costs value to Denmark at Euro 34.40. In 2019, the lowest labour costs value related (again) to Bulgaria at Euro 6.00 and (once more) the highest labour costs value to Denmark at Euro 44.80. Thus, during the observed interval, Bulgaria had the lowest and Denmark the highest labour costs. Moreover, labour costs increased at differing intensities during the monitored period. The largest increase in labour costs was recorded for Bulgaria at 130.8%, while the lowest increase (in fact a decrease) was recorded for Greece at -1.8%. The highest increases in labour costs in the observed interval generally concerned the post-2004 EU accession countries. The average increase for these countries was 53.5% (47% if Bulgaria is excluded from the calculation). The average increase in labour costs for the EU-15 was 21.5%. While at first glance the difference between the post-2004 accession countries and the EU-15 appears huge, in fact it reflects one of the biggest obstacles to European convergence. Labour costs stand at completely different levels, a fact that, in itself, determines the production focus of the economies involved and future developments in this area.

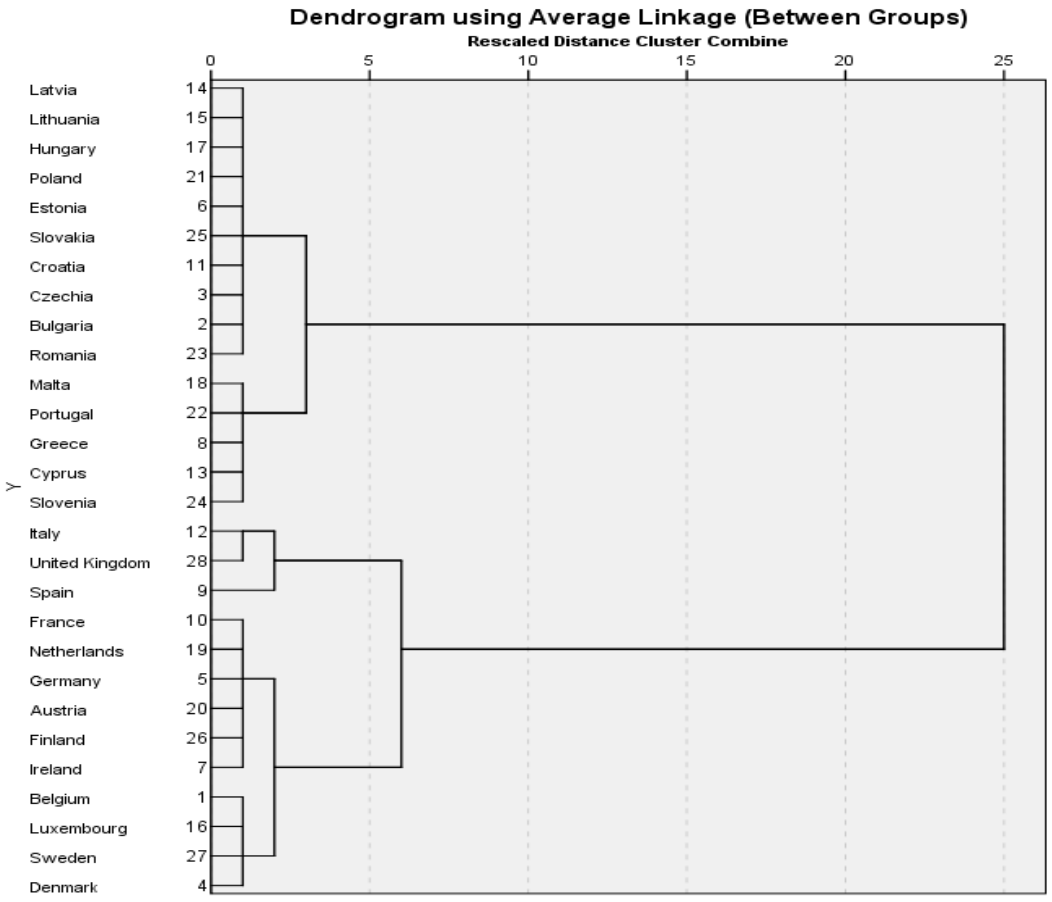


Fig. 1. Dendrogram of labour costs (own presentation)

The dendrogram shows the division of countries into clusters. Five clusters with the highest degrees of similarity (homogeneity) were formed at the first level, which highlight how the European Union is divided. Two clusters emerged at the highest level (with the exception of Greece and Portugal), which divided the European Union into the original EU-15 countries and the post-2004 accession countries.

4.2 Share of labour costs of total costs

The share of labour costs provides for an alternative view of labour costs with concern to the same issue. This indicator relates labour costs to total production costs and clearly shows the percentage of the share of labour in the total costs of production. With respect to this indicator, it is always necessary to take into account the specialisations of the given economy and the sectors to which production refers.

Table 2. Share of labour costs of total costs in the period 2008-2019 in percent

GEO/TIME	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Belgium	29.9	32.3	30.7	29.6	30.0	30.8	31.0	31.0	31.1	30.8	30.4	30.7	30.8
Bulgaria	23.2	26.0	27.0	25.9	26.3	28.5	28.0	28.5	30.6	31.0	31.1	31.4	32.5
Czechia	22.5	23.8	23.1	22.6	23.1	23.1	22.8	23.0	23.8	24.1	24.8	25.6	24.8
Denmark	33.2	35.6	35.2	34.3	33.7	34.2	34.5	34.6	34.8	34.4	34.1	34.2	34.3
Germany	32.0	33.8	32.8	32.0	32.8	33.3	33.5	33.9	34.1	33.9	33.9	34.6	34.6
Estonia	30.1	31.8	28.5	26.9	26.8	27.0	28.0	29.1	28.9	29.4	29.7	30.5	29.1
Ireland	26.1	26.9	27.2	29.2	25.7	25.0	24.9	22.0	21.7	22.2	21.5	21.9	20.5

Greece	37.5	39.0	38.2	38.2	37.1	35.4	35.7	35.8	36.8	36.0	35.8	36.4	35.3
Spain	32.7	35.1	35.0	34.4	33.9	34.0	33.8	34.2	34.7	34.0	33.6	33.9	34.0
France	34.4	36.0	35.3	34.9	35.1	35.5	35.7	35.9	36.1	35.6	35.3	35.0	35.7
Croatia	35.5	37.5	37.8	36.9	36.2	35.9	35.4	35.5	34.9	34.4	34.4	33.7	33.8
Italy	29.4	31.6	30.6	30.0	30.3	30.6	30.6	30.8	31.4	30.8	30.8	31.2	31.2
Cyprus	32.9	34.2	34.5	35.1	35.4	34.2	33.1	31.8	31.3	30.9	30.6	30.8	30.4
Latvia	29.0	28.7	25.2	23.8	23.8	24.9	26.3	28.4	30.8	30.8	31.2	32.0	31.2
Lithuania	32.5	34.8	31.1	29.8	30.2	30.7	31.8	33.1	34.8	34.6	33.9	34.0	34.2
Luxembourg	20.0	22.7	20.5	20.1	19.6	18.7	16.8	15.8	16.4	16.5	17.0	17.0	15.2
Hungary	26.6	27.3	26.0	25.5	26.3	25.9	25.8	25.7	26.3	26.5	26.3	25.8	25.9
Malta	20.9	20.8	20.4	19.9	19.8	20.3	20.5	19.9	20.4	20.0	20.5	20.5	20.2
Netherlands	33.4	34.6	33.7	32.7	32.6	32.8	32.8	32.4	32.8	32.3	32.0	32.4	31.9
Austria	31.7	33.2	32.3	31.5	31.4	31.6	32.3	32.6	33.3	32.7	32.4	32.6	32.7
Poland	27.7	28.7	28.4	27.3	27.6	27.6	28.0	27.9	28.2	28.0	28.0	28.2	28.0
Portugal	32.4	34.4	33.6	32.4	32.1	32.8	32.5	32.5	32.8	32.2	32.2	32.3	32.1
Romania	32.2	30.9	29.8	26.4	26.0	26.0	26.4	26.1	28.4	29.9	30.2	31.2	28.5
Slovenia	31.5	34.2	33.5	33.0	33.1	33.2	33.0	33.1	33.9	33.3	33.3	34.3	33.9
Slovakia	21.3	23.9	22.9	22.1	22.0	22.7	22.7	22.5	22.9	23.3	23.1	24.1	23.5
Finland	30.0	32.5	31.8	31.0	31.3	31.6	31.7	32.3	32.2	31.0	30.6	30.4	31.2
Sweden	30.0	31.3	31.0	30.9	31.6	32.4	32.5	32.6	32.9	32.5	32.0	32.4	33.1
United Kingdom	37.4	37.6	37.5	37.0	37.0	37.0	37.3	37.5	37.8	37.6	37.5	38.1	37.7

Source: Eurostat (2021), own presentation.

At first glance, the values in Table 2 appear very similar to those in the previous table. However, while equally important, the data in Table 2 allows for the identification of other significant trends. In 2008, the lowest share of labour cost values was recorded for the tax haven countries. However, the lowest value for a standard (non-tax haven) EU member state concerned Slovakia at 21.3% and the highest value concerned the United Kingdom at 37.4%. In 2019, the situation remained unchanged; again excluding tax havens, the lowest share of labour costs was recorded for Slovakia at 24.1% and the highest for the United Kingdom at 38.1%. The development of the share of labour costs differed from that of the labour costs indicator considered in Table 1 in that increases or decreases in the observed quantities were not related to whether the country belonged to the EU-15 group or the post-2004 accession group; no correlation was determined in this respect.

The largest increases in the share of labour costs were recorded for Bulgaria, the Czech Republic and Slovakia. Slovakia and the Czech Republic feature the lowest values of this indicator (with the exception of the tax haven countries). It is often argued that these countries are merely cheap assembly plants. Industrial production in both these countries comprises a combination of costly capital equipment and a cheap labour production factor. The lowest increases (in fact decreases) were recorded for Croatia (-4.9%), Romania and the Netherlands (both -3.1%).

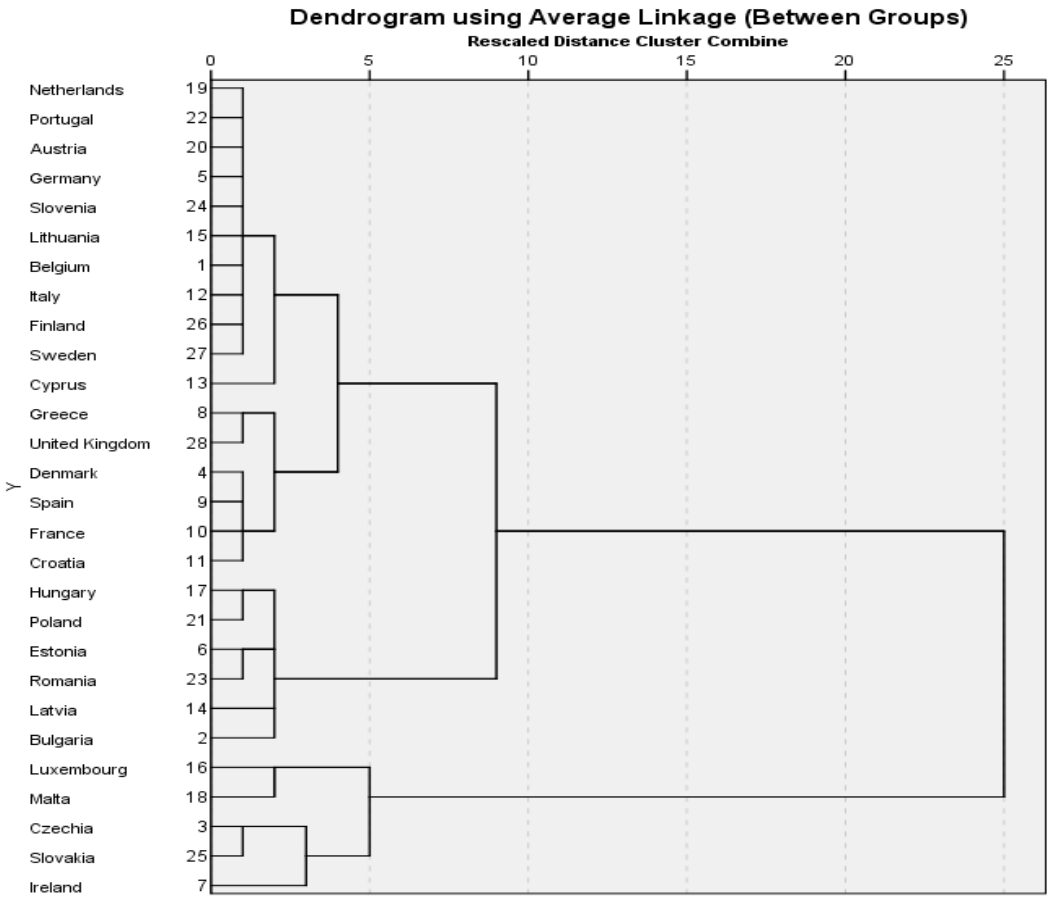


Fig. 2. Dendrogram of the share of labour costs of total costs (own presentation)

While the previous labour costs dendrogram (Fig. 1) clearly identified clusters in the European Union according to the date of accession, no similar differences were evident in the share of labour costs dendrogram. It is interesting that the lowest cluster at the second level comprises tax haven countries, Slovakia and the Czech Republic. This cluster merges with those of the other European Union countries only via the final iteration (25). It appears that these two clusters have very few similarities. The first two clusters that merged at the third level comprise mainly original EU-15 member countries. Only later are they joined by a cluster that includes post-2004 member countries.

4.3 Unit labour costs

The unit labour costs indicator is expressed in two tables and two dendrograms, i.e. at the national price level and according to the purchasing power standard.

Table 3. Unit labour costs as a percentage based on national price levels in the period 2008-2019 in percent

GEO/TIME	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EU (28)	55.9	57.5	56.9	56.4	56.7	56.7	56.4	55.8	55.7	55.6	55.8	55.9	55.6
EU (15)	55.7	57.4	56.7	56.4	56.7	56.8	56.5	55.9	55.9	55.8	56.0	56.1	55.9
Belgium	60.8	62.3	60.7	61.3	61.8	62.0	61.3	59.9	59.1	59.1	59.0	59.1	58.8
Bulgaria	45.6	48.2	50.1	48.2	49.7	54.0	55.9	55.7	55.6	58.1	59.4	58.4	61.3
Czechia	48.1	48.0	48.8	49.2	50.1	49.5	48.8	48.0	48.8	49.9	51.6	51.8	51.0
Denmark	56.5	58.8	56.4	56.0	55.2	55.1	54.9	55.1	54.8	54.4	54.6	54.8	53.8
Germany	55.2	57.7	56.7	56.2	57.3	57.5	57.3	57.5	57.5	57.4	58.0	58.5	58.4
Estonia	54.2	54.8	51.3	49.2	49.2	49.9	50.6	52.4	51.0	53.1	53.8	55.0	52.8

Ireland	52.9	53.3	50.4	48.2	47.6	47.3	45.1	35.4	36.6	35.3	34.0	33.0	29.7
Greece	51.8	54.1	53.8	54.9	54.7	52.3	52.4	50.9	51.2	50.9	51.8	51.9	51.0
Spain	57.2	57.8	57.2	56.2	54.9	54.1	54.2	53.8	53.2	52.7	52.7	53.2	51.6
France	55.7	57.5	57.5	57.5	58.1	58.4	58.5	58.0	58.1	58.2	58.1	57.0	58.3
Croatia	60.6	63.0	62.2	61.1	59.5	57.1	55.7	55.4	53.9	52.9	53.7	53.9	51.2
Italy	52.7	54.1	53.8	53.3	53.2	53.1	52.7	52.7	52.3	51.9	52.4	52.6	52.1
Cyprus	51.8	55.7	54.3	54.6	54.6	52.7	51.4	50.2	49.1	49.6	49.6	50.1	48.6
Latvia	53.6	52.8	48.4	44.4	44.9	46.5	48.4	50.8	52.6	53.2	54.0	56.3	53.6
Lithuania	49.8	50.6	45.9	43.8	43.6	44.4	45.4	47.7	49.8	49.9	50.7	52.3	50.1
Luxembourg	52.1	55.2	52.7	51.5	52.5	51.9	51.4	51.4	50.6	52.1	52.8	52.6	51.6
Hungary	50.1	48.8	47.3	47.4	48.6	47.1	45.9	44.8	46.0	46.3	45.6	44.8	44.3
Malta	49.2	50.1	48.1	50.5	50.4	49.5	48.1	46.4	48.8	47.8	48.9	49.7	48.3
Netherlands	56.3	59.2	57.9	58.4	59.2	58.9	58.8	57.6	57.9	57.5	57.4	57.3	57.7
Austria	53.4	55.0	54.6	53.9	54.5	55.0	55.0	54.5	54.5	54.5	54.6	55.1	55.0
Poland	50.0	48.6	48.9	47.8	47.8	47.8	47.9	47.2	48.1	48.3	49.3	48.9	48.2
Portugal	56.6	57.6	56.6	55.5	54.0	53.6	52.6	51.5	51.0	51.3	52.1	52.1	49.9
Romania	53.1	50.1	54.1	48.5	47.9	46.3	47.0	44.5	47.3	49.6	50.5	50.3	47.4
Slovenia	60.0	62.9	63.8	62.5	62.7	61.9	61.0	60.7	61.3	61.1	61.5	62.6	61.5
Slovakia	41.8	44.9	43.9	43.5	43.3	43.5	43.9	44.4	45.8	47.2	48.2	49.5	48.5
Finland	53.2	56.6	55.4	55.4	56.5	55.9	55.5	55.1	54.3	52.1	52.4	52.6	52.8
Sweden	48.5	49.6	47.9	48.4	50.1	50.5	50.1	48.9	49.4	49.3	49.8	49.4	49.8
United Kingdom	57.9	59.0	58.7	58.1	57.7	57.9	57.2	56.9	57.3	57.5	57.6	58.6	57.4

Source: Eurostat (2021), own presentation.

Unit labour costs at the national price level evince a very low degree of volatility, i.e. this indicator does not express any particularly significant differences. The countries with the most significant declines in this indicator during the observed interval comprise Ireland (-37.6%), Croatia (-11.2%) and Hungary (-10.4%), while the countries with the highest increases in this respect were Bulgaria (28%), Slovakia (18.5%) and the Czech Republic (7.7%). The values reflect a rapid decline in extremes; most countries oscillate at a level of around zero. It is interesting that the first value for the EU (28) is identical to the final (2019) value. The forecast for the whole of the European Union for 2020 indicates a slight decrease in unit labour costs.

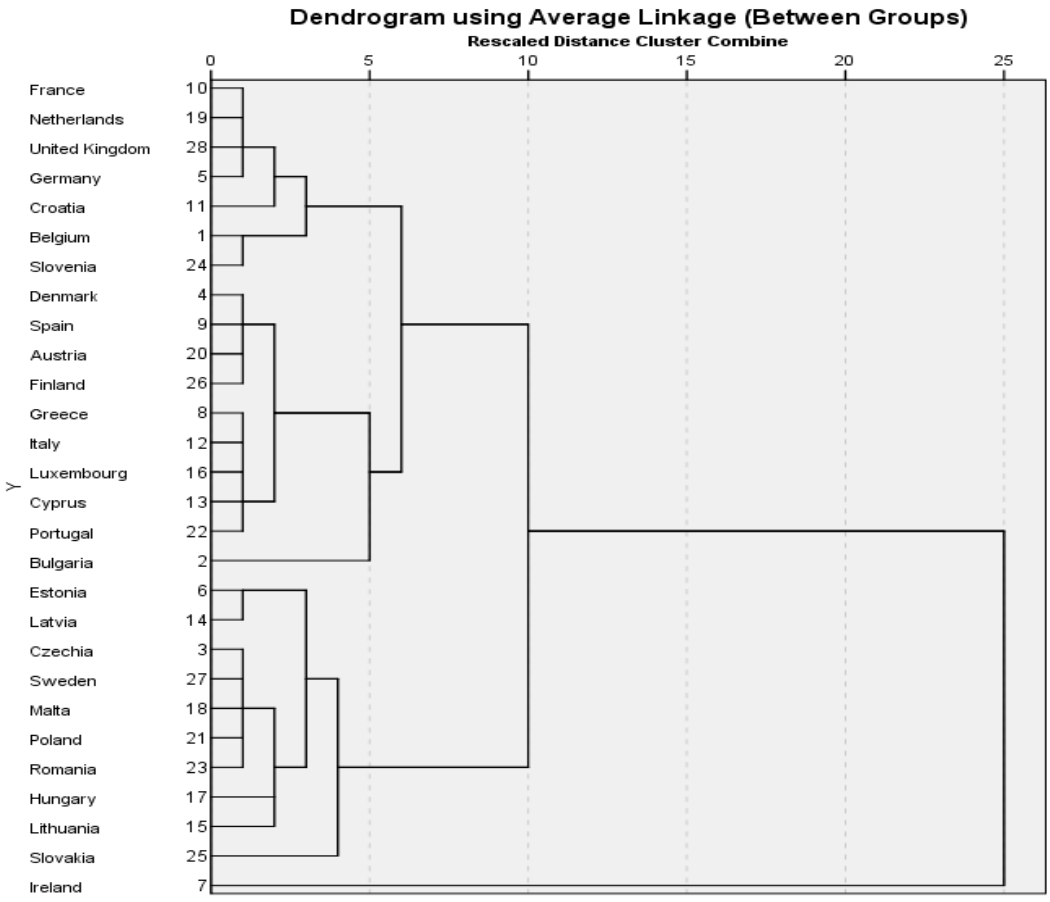


Fig. 3. Dendrogram of unit labour costs as a percentage based on national price levels (own presentation)

The unit labour costs dendrogram shows a number of clusters in the European Union. Ireland is completely separate from the other members of the EU; such a unique development in terms of unit labour costs has never been recorded for any other country. The other original EU-15 member states are, again, divided into two clusters. In contrast, most of the post-2004 accession countries form a single cluster.

Table 4. Unit labour costs as a percentage based on purchasing power parity in the period 2008-2019 in percent

GEO/TIME	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EU (28)	55.9	57.5	56.9	56.4	56.7	56.7	56.4	55.8	55.7	55.6	55.8	55.9	55.6
EU (15)	58.6	60.9	60.2	59.9	60.4	60.4	60.2	59.7	59.6	59.3	59.6	59.8	59.7
Belgium	66.7	69.6	66.3	67.6	67.2	68.0	66.5	63.7	64.6	65.5	65.3	65.3	64.4
Bulgaria	20.0	22.5	22.6	22.9	23.3	25.6	25.7	25.7	26.5	28.7	30.0	30.4	31.0
Czechia	34.0	32.5	34.5	35.4	35.0	33.2	30.5	30.3	31.8	33.7	36.1	36.9	34.2
Denmark	76.1	80.2	75.1	74.4	74.2	73.9	73.2	71.8	73.0	71.8	71.8	71.2	70.1
Germany	57.3	61.6	59.6	58.8	59.7	60.6	59.7	59.5	60.5	61.1	61.9	63.3	62.3
Estonia	37.4	37.3	34.3	33.3	33.9	35.5	36.2	37.5	37.7	40.6	42.1	43.7	41.8
Ireland	63.3	63.1	56.0	53.1	51.8	52.2	50.1	38.1	40.7	40.0	38.9	38.9	32.9
Greece	46.4	50.1	50.8	51.9	49.5	44.9	43.4	41.2	42.2	41.8	42.3	41.9	39.7
Spain	52.5	54.6	54.3	53.2	50.4	49.7	48.6	47.6	47.8	47.5	48.2	48.5	46.0
France	62.1	65.3	64.2	64.1	64.8	64.5	64.1	62.3	63.4	64.1	63.6	60.7	62.6
Croatia	41.1	43.4	43.2	40.9	38.3	36.6	35.1	34.0	33.9	33.7	34.6	34.6	31.4

Italy	52.3	54.8	54.4	53.6	52.7	53.3	52.9	51.8	51.3	51.2	51.5	51.3	50.8
Cyprus	45.5	49.9	49.7	50.5	51.0	49.3	47.4	44.2	42.8	43.6	43.7	44.4	42.9
Latvia	39.0	36.1	30.6	29.2	30.3	31.7	32.7	33.6	35.7	36.9	38.4	40.7	37.5
Lithuania	31.0	31.2	27.0	26.3	26.1	26.8	27.3	28.3	30.6	31.6	32.8	34.3	32.0
Luxembourg	59.3	65.5	63.8	61.8	63.0	63.3	61.7	60.2	60.4	63.1	64.7	64.9	63.4
Hungary	33.0	29.2	28.4	28.0	27.9	27.0	26.1	25.5	27.3	29.1	28.8	28.8	27.0
Malta	35.6	37.5	36.0	38.4	38.7	38.9	38.3	37.0	39.8	40.1	41.3	41.8	41.6
Netherlands	60.4	66.0	64.6	64.8	64.6	64.0	64.5	62.1	64.5	64.3	64.4	65.6	64.9
Austria	57.7	61.0	60.0	59.4	58.6	59.6	59.5	57.9	59.2	60.3	60.4	61.3	60.3
Poland	33.2	27.6	28.9	27.7	27.1	27.3	27.4	26.5	26.8	28.3	29.2	29.3	27.4
Portugal	45.6	47.5	46.1	45.9	43.3	42.6	41.3	40.1	40.8	42.2	43.1	42.8	40.4
Romania	28.6	24.3	25.8	23.5	22.2	22.9	23.4	22.1	23.6	25.0	26.2	26.1	24.1
Slovenia	48.1	53.4	53.2	51.7	50.3	49.7	48.9	48.1	49.5	49.8	50.6	51.4	49.7
Slovakia	27.4	30.5	28.8	29.2	28.9	29.1	28.9	29.0	32.2	34.8	36.3	38.2	36.3
Finland	61.4	66.7	65.2	65.9	67.9	68.9	68.3	66.5	66.9	64.3	64.6	64.7	66.2
Sweden	56.0	54.8	59.2	62.8	65.8	68.3	65.2	61.6	64.4	64.7	62.2	60.3	65.4
United Kingdom	64.5	61.8	62.8	62.6	66.0	64.5	67.2	72.3	67.4	64.2	64.5	66.6	67.7

Source: Eurostat (2021), own presentation.

Unit labour costs expressed in terms of the purchasing power standard evince very different values to those expressed in terms of the national price level. The degree of volatility is significant and, again, differences in the economic levels of EU countries are clearly evident. The unit labour cost values expressed via the purchasing power standard of the post-2004 accession states are, on average, half those of the original EU-15 member states. In 2008, the lowest value concerned Bulgaria at 20.0% and the highest Denmark at 76.1%. In 2019, the lowest value referred to Romania at 26.1% and the highest to Denmark at 71.2%. The largest decrease in the observed interval was recorded for Ireland (-38.6%) and the largest increase for Bulgaria (52%).

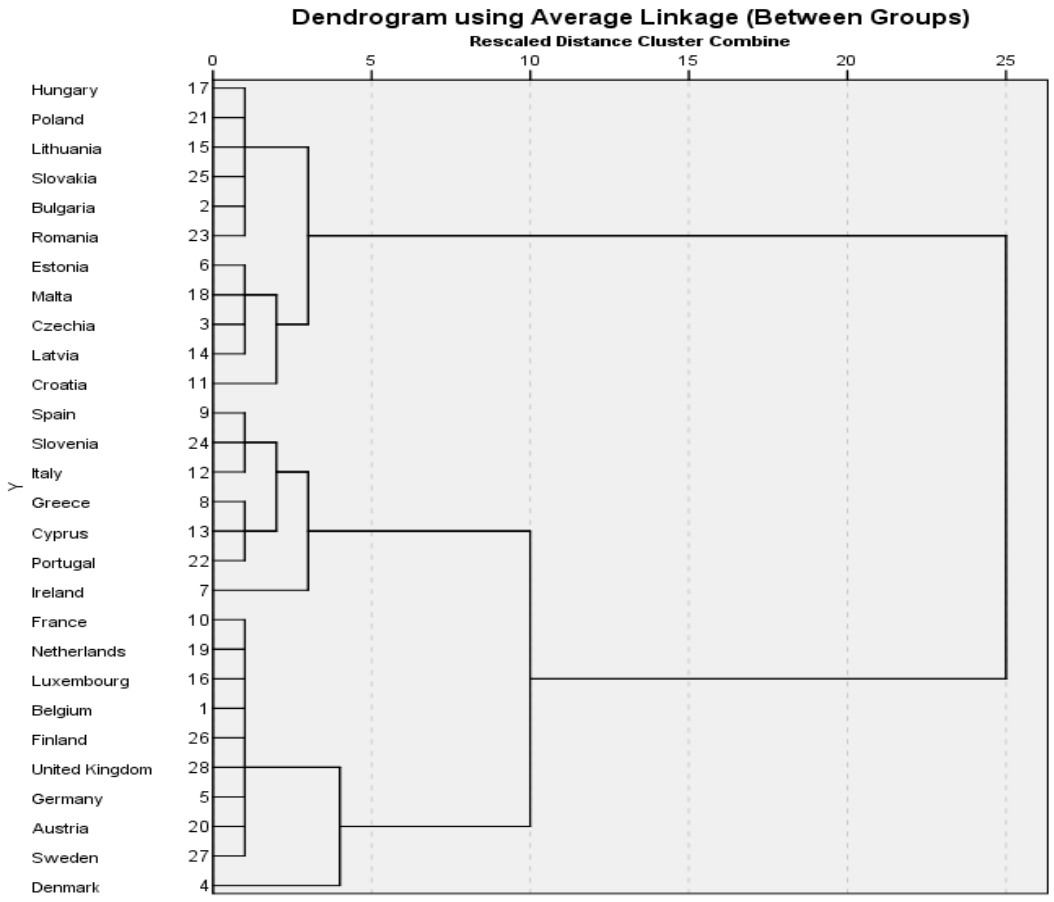


Fig. 4. Dendrogram of unit labour costs as a percentage based on purchasing power parity (own presentation)

The dendrogram shows that the post-2004 accession countries are relatively homogeneous and form a single cluster at an early stage. The original member states (EU-15) also create a cluster, but only after the tenth iteration. The differences between the EU member countries in terms of the labour costs indicator are most evident in terms of the purchasing power standard.

5 Conclusion

The paper included the calculation of three labour cost indicators: labour costs, the share of labour of costs and unit labour costs in the period 2008-2019, i.e. the latest information available on these indicators. The tables of statistics also include predictions of the various labour costs for 2020 calculated based on knowledge of previous developments and, importantly, not taking into consideration the external shock of the Covid-19 pandemic. The real figures for 2020 will be available next year, at which time it will be possible to compare the real values with the predicted values provided in this paper and, finally, to determine the real impacts of Covid-19 on the labour market. The need to forecast these indicators concerns the fact that the input data for the calculation of the various labour cost indicators changes every year, which acts to change the data for up to 5 years previously. If the various labour cost values were calculated for the period 2008-2019 from the values published next year, different results would be obtained. The results of the 2020 forecast are therefore unique to this paper.

The second aim of the article was to determine the progress of the process of the convergence of EU member countries in the labour market via the various labour cost indicators. Cluster analysis was chosen as the method for determining this factor. The paper includes the presentation of the outputs in the form of dendrograms of the considered labour cost indicators. It is clear that from the point of

view of the labour market, the European Union is far from comprising a homogeneous grouping of countries. However, it may come as a surprise that the member states that acceded to the EU after 2004 are more homogeneous than are the original member states (EU-15) according to the data available for the period 2008-2019. However, this indicates that they are greater competitors with each other, i.e. they compete in terms of their economic position, a situation that is strongly influenced by Germany's position in terms of the European Union's foreign trade (Beran, 2018). However, it is important to mention that the level of competition between the post-2004 accession countries has not led to the more rapid economic convergence of these countries. On the contrary, the convergence process has stagnated. These countries are becoming economically "exhausted" and there is a lack of incentives to grow and to thus to raise living standards. The original (EU-15) member states, on the other hand, form a significantly more heterogeneous grouping that can be divided into several clusters, indicating that they do not represent such a high level of competition as do the post-2004 accession countries; this is a direct consequence of their economic specialisations and orientations. At the same time, this is the reason why the poorer member states of the original grouping of the European Union (EU-15) have not yet caught up with their richer neighbours. While the convergence process has been underway much longer in the EU-15, it has not been significantly more successful.

It cannot be expected that the development of poorer member states and the chances of wealth enhancement will change without changes in the labour market and/or the behaviour of its main players, i.e. employees and employers. Poorer countries will only see improvements if they work harder to enforce changes in their own economic environment; in other words, the current situation will not lead to greater convergence. On the contrary, the present low level of convergence will continue and will, thus, reap no benefits for those countries adversely affected. There remains the very real risk that the present development of convergence will be so slow that the capital assets of the post-2004 accession states will become both technically and morally obsolete. Moreover, these countries do not have the financial means available to adequately restructure these assets. Should such a situation occur, the labour market convergence process is likely to come to a complete halt.

Despite developments in the EU labour market, it should be stated that the European Union has achieved social gains that are unparalleled globally. Moreover, it applies modern principles of civilisation, i.e. it respects the rights and freedoms of its citizens (employees), a principle that simply does not exist in many other parts of the world.

References

[1] Andersen, T. M., 2003. *Wage formation and European integration.* Brussels: European Commission Directorate-General for Economic and Financial Affairs.

[2] Baštýř, I. et al., 2004. *Náklady práce.* Praha: RILSA.

[3] Beran, V., 2018. Competition versus Labour Costs in the Eureopean Union in the Period 2006-2016. In Nálepová, V. (ed.). *Proceedings of the International Scientific Conference ECONOMIC AND SOCIAL POLICY*. Ostrava: Vysoká škola sociálně správní, 2018, pp. 35-47.

[4] Havlik, P., 2005. *Unit Labour Costs in the New EU Member States.* Vienna: The Vienna Institute for International Economic Studies.

[5] Holý, D., 2002. Index nákladů práce v ČR a v EU. *Statistika*, vol. 6, pp. 199 – 205.

[6] Jílek, J. and M. Vojta, 2001. Vypovídací vlastnosti změn jednotkových pracovních nákladů a souvisejících ukazatelů. *Statistika*, vol. 38, issue 4, pp. 178 – 189.

[7] Kozelský, T. and J. Vlach, 2011. *Labour Costs, Unit Labour Costs and the Labour's Share in Costs in the Czech Republic in 2000 to 2008*. Praha: RILSA.

[8] Storm, S. and C. W. Naastepad, 2014. Europe's Hunger Games: income distribution, cost competitiveness and crisis. *Cambridge Journal of Economics*, vol. 39, issue 3, pp. 959-986.

[9] van Ark, B. H. H. and E. Monnikhof, 2000. *Productivity and unit labour cost comparisons: a database.* Geneva: International Labour Office.

[10] Żuk, P. et al., 2018. Real convergence in central, eastern and south-eastern Europe. *ECB Economic Bulletin Article*, vol. 3, pp. 36 – 65.

SUPPORT FOR ENTREPRENEURS IN THE COVID-19 PANDEMIC IN THE CZECH REPUBLIC AND THE SLOVAK REPUBLIC

Nina Bočková[1], **Renata Pakšiová**[2]

[1]*Prague University of Economics and Business, Faculty of Business Administration*
nám. W. Churchilla 1938/4 130 67 Praha 3 Czech Republic
email: nina.bockova@vse.cz
[2] *University of Economics in Bratislava, Faculty of Economic Informatics,*
Dolnozemská cesta 1/b, 852 35 Bratislava 5, Slovak Republic
email: renata.paksiova@euba.sk

Abstract
The COVID-19 pandemic surprised with the rate of onset, the intensity of spread, the scale and, in particular, the consequences of crippling not only advanced economic states, transforming economies, and less developed economies. Despite the high vaccination rate of the population, it is not possible to definitively examine the effects of the pandemic since it is not known whether the next wave of paralysis is over or will come. The aim of our contribution is to compare the wage compensation and income shortfall support for entrepreneurs and companies in two transition economies in Central Europe and to identify the pandemic-led changes to the unemployment rate comparing the situation before and at present. The comparative was made in time sections and was unified into EUR because the Czech Republic is not yet a member of the Euro zone. By comparison, we found that the aid was granted in approximately the same time sections but on different principles. While in the Czech Republic, the aid was paid in several groups with a limitation of the maximum amount of the contribution, in the Slovak Republic the amount of aid was distinguished mainly in the bands of decrease in sales. The unemployment rate has risen more sharply in both countries, in the Slovak Republic, due to the higher original unemployment rate. The rate of increase was moderate and did not exceed an increase of more than 3%. It has not been established whether this is the effect of the pandemic, the aid paid or other economic phenomenon, but it can be assumed that the aid granted and the conditions for disbursement have halted the sharp rise in the unemployment in both economies under discussion following the subdued of multiple sectors due to the pandemic. The results of the analysis show that, while the aid system in the Czech Republic was more rugged and more generous in comparable periods, the aid in the Slovak Republic was fairer in view of the decrease in sales compared to previous periods. The overall effectiveness of the aid granted will only be assessed after the end of the pandemic with a time interval and will be subject to further analyses.

Keywords
COVID-19, Czech Republic, Slovak Republic, Subsidy, Unemployment rate.

JEL classification
H25, H71

1 Introduction

When WHO's Country Office in the People's Republic of China picked up a media statement by the Wuhan Municipal Health Commission from their website on cases of 'viral pneumonia' in Wuhan, People's Republic of China on December 31, 2019, no one knew what the global impact of the spread of the virus would be.

The development of the Covid-19 pandemic was very sharp and unexpected, whereas according to the theory of economic cycles after a longer period of economic growth, recession was expected to take place (Breeden, 2020, Duarte et al., 2020). In the Czech Republic, the first infected appeared on March 1, 2020, in the Slovak Republic the first case was recorded 6 days later. Fearing for the health of citizens, the economy of the two neighbouring states under review was severely crippled by the closure of schools and the introduction of a state of emergency, with many businesses closed by the day and the activities of others significantly restricted; life and entrepreneurship were given a completely different dimension. Governments in both states were forced to respond to the mitigation of the state of emergency and to try to compensate entrepreneurs and employees for income that was their only source of livelihood. Entrepreneurs are facing an unprecedented phenomenon. The obligations from their contracts remain with them, while the workforce goes into the quarantine, the entire operations where SARS-CoV-2 has occurred are closed. Some employees leave after the

closure of schools in the Czech Republic, as there is no alternative placement for children and it is strictly not recommended to contact the elderly, with whom most parents routinely placed children during illness. Groups of small entrepreneurs who must close their premises are affected. Commitments to suppliers remain with them, income is at zero. The group at risk was the employees of business entities who could not carry out business activities or had it significantly limited directly due to the closure of establishments, or indirectly due to restrictions on employees, customers, and suppliers.

The governments of all the states that have taken strong action to stop the spread of the deadly virus have been faced with the question of how to provide the productive population with incomes that will enable them to survive. Governments have mostly responded by deferral of tax obligations, looking for ways to compensate at least partially for shortfalls in incomes for entrepreneurs and productive populations.

The article aims to compare the financial compensation and relief granted to business entities to maintain their own business and jobs during the COVID-19 pandemic. Monitoring all alternatives to support options and their impact on the economy as a whole or on individual sectors can be a part of further research.

In the submitted article we compare the compensation and relief granted for entrepreneurs and employees in the Slovak Republic and the Czech Republic. The chapter is followed by brief research of the literature. The third chapter describes the measures taken in the Slovak Republic and the Czech Republic during the COVID-19 pandemic; from March 2020 to June 2021. The measures are broken down by different groups of beneficiaries. The next chapter provides a comparison of the impact of COVID-19 on the evolution of the unemployment rate in the two economies compared.

2 Literature review

The COVID-19 pandemic triggered a crisis that differs markedly from the systemic, endogenous crises of the previous quarter of a century, such as the Asian financial crisis of 1997 (Choi et al., 2020); Russian Financial Crisis in 1998 (Litvin, 2004); the dot.com bubble in 2000 (Cottier, Degen, and Lalive, 2020); the Global Financial Crisis in 2007 (Bhar and Malliaris, 2021) or the European Sovereign Debt Crisis in 2011 (Marques and Hörisch, 2020). These crises were based on the misconduct of society. Greed, excessive risk-taking and accounting fraud, which were made possible by a poor regulation and inadequate debt collection tools (Conyon et al., 2011). The COVID-19 pandemic creates an exogenous crisis. There is a global freeze on the economy, customers cancel contracts, the original trading strategies do not work. From November 2019 to May 2021, the COVID-19 pandemic affected virtually every nation and every economy. COVID-19 is a disease caused by a version of the coronavirus that appeared in 2019 and was named SARS-CoV-2 (Manojkrishnan and Aravind, 2020) Some employees stop going to work because they must stay quarantined after a contact with the infected. One of the most affected sectors was the hotel industry, hospitality, and the provision of personal services. (MacGregor Pelikanova et al., 2021). The pandemic, which can only be compared to Spanish flu, is compared to an event reaching a dimension of force majeure. According to the White Swan theory, which is compatible with statistical characteristics and the Black Swan, which is not compatible, the crisis should be key to overcoming oversized services (Higgins-desbiolles, 2020; Taleb, 2020). By August and 2020, the COVID-19 pandemic had caused almost a million deaths and affected various sectors and industries (Madero Gómez et al., 2020). Deaths peaked in January 2021, when more than 13,500 people a day die (Johns Hopkins University, 2021).

The situation around the world has been affected by the course of the disease and reports from Wuhan, China (Li et al., 2020). Some employees stop coming to work because they must stay quarantined after a contact with the infected person. The importance of traditional jobs as a safe source of income is diminishing, and the digital form of work is developing rapidly (Nagel, 2020). Governments were faced with the need to compensate for income shortfalls for affected population

groups and business entities day after day (Turečková and Buryová 2016 or Hamilton, 2020). Globally, wage subsidy packages are being adopted to encourage companies considering job cuts and withdrawals to retain and pay employees during the COVID-19 economic crisis (Latham, 2020; Wong and Wong, 2021; Zattoni, 2020).

3 Methodology and data

The aim of the paper is to draw up support measures for entrepreneurs during the COVID-19 pandemic in two neighbouring countries, the Slovak Republic, and the Czech Republic, which had a common geopolitical and economic past until 1993 and are now sovereign Member States of the European Union.

The paper presents a qualitative analysis of the creation of business sector support mechanisms in the countries under review during the Covid-19 pandemic. The basic research methodology is to compensate for the specified support based on an analysis of their target groups and the stated purpose of their provision. Due to the diversity of the head of specific support for individual categories of entrepreneurs, e.g., generally available to the business public after meeting the basic criteria without segment specifications. We monitored the way in which these criteria were set in both countries, the structure, and limits of their height, as well as their evolution in a time context. Due to the need to convert monetary units to comparable data, we chose the euro currency as the benchmark. In the case of the original data in CZK, these were converted at the uniform exchange rate of the ECB on 31 December 2020, namely EUR / CZK 26.25.

Monitoring the evolution of the unemployment rate in both countries is part of the contribution to assessing the impact of the aid granted on the development of the unemployment rate. Developments will be assessed solely in terms of time context and no further economic links and empirical evidence will be added to the analysis. The data for the compilation will be drawn from the official sources of the statistical authorities of both countries.

4 Empirical results

4.1 Support for job retention in Slovakia and Czechia during pandemic

Business support in the Slovak and Czech Republics was classified according to whom they were intended and to avert the adverse effects of the Covid-19 pandemic on business were determined with a time variability of validity depending on the phase and degree of limitations, taking into the account pandemic waves and the identified positivity in testing.

In the Slovak Republic, many general support schemes were included in the package of the Ministry of Labour, Social Affairs and Family of the Slovak Republic under the names "First aid" (spring, 2020), "First aid +" (autumn, 2020), " First aid ++" (spring, 2021). In particular, there were 4 basic support measures, broken down by who they concerned and the reimbursement of what costs they were intended for. The information is continuously updated by the Ministry of Labour, Social Affairs and Family of the Slovak Republic on the website https://www.pomahameludom.sk/, directly designed to communicate these measures, changes, obligations, and legal norms (MPSVaR, Prvá pomoc, 2021; Pakšiová, 2021a).

In the Czech Republic, the communique is carried out by the Ministry of Labour and Social Affairs (MoLSA), the Ministry of Finance and the Ministry of the Interior CZ under the names "Twenty-five", "Compensation Bonus" and "Antivirus". It was a set of measures, which were divided and supplemented according to the groups of affected entrepreneurs, employees, and persons whose original income did not fall into the category of income establishing the obligation to pay health and social insurance. The information was published on https://covid.gov.cz/.

As part of the following comparation, we will include individual measures in categories according to their primary purpose.

Maintaining jobs with employers

Slovakia: Measure 1 – employee compensation allowance – is granted to employers (including self-employed persons who are employers) who had to close their operations based on a decision of the Public Health Authority of the Slovak Republic. It is a contribution to pay compensation of the employee's salary for the time when the employee had an obstacle on the part of the employer pursuant to §142 of the Labour Code. Only employers who are obliged to close due to the decision of the Public Health Authority of the Slovak Republic can apply for a contribution under this measure. The allowance shall constitute the payment of compensation for the employee's salary. Compensation is calculated based on a gross salary, i.e., before tax and employee contributions, i.e., contributions paid to employees are also part of the gross salary. The employer is obliged to always pay the employee's contributions, otherwise he is not entitled to the support. However, it may take advantage of the possibility of deferring the employer's contributions to the Social Insurance Agency in certain months of support.

Czechia: A measure called Antivirus – this is a partial compensation of the total wage costs to employers in the form of compensation of wages due to employees for the period of obstacles to work caused by quarantine, extraordinary measures, crisis measures related to the covid-19 outbreak. That is, a situation in which employers had to reduce their operations partially or completely. Antivirus has four variants A, A Plus, B and C and is intended only for employers whose wages are not covered by public budgets. Employees working under work agreements and work agreements are excluded from performance. The Antivirus A program continues in the Czech Republic even after the end of state of emergency (MoLSA, 2021).

Slovak Republic	**Czech Republic**
Measure No. 1 / Measure No. 3A (Ministry of Labour, Social Affairs and Family of the Slovak Republic): Support for employers who closed or banned / reduced operations at the time of declaring an emergency, emergency, or state of emergency on the basis of the Measure of the Office of the Public Health Authority.	**Antivirus A (Ministry of the Interior CZ, 2021): This is compensation of costs for employers whose employees have been quarantined or have had to reduce their operations partially or completely.**
'First aid' (for March 2020 - September 2020)	**Antivirus A (March 2020 – December 2021)**
Amount of contribution: 80% of the employee's average gross salary, up to a maximum of EUR 1,100 / 800.	*Contribution amount: 80% of eligible employer expenses, maximum EUR 1,486 (CZK 39,000).*
'First aid +' (for October 2020 – January 2021)	*Use: impossibility to assign work to employees and obligation to pay wage compensation in the amount of 100% pursuant to § 208 ZP (Labour Code, 2006).*
Amount of contribution: 80% of the total labour cost of the employee (gross wage + contributions paid by the employer per employee), up to a maximum of EUR *1,100 / 1,100.*	
'First aid + +' (for February 2021 to June 2021)	**Antivirus A Plus (October 2020 – May 2021)**
Amount of contribution: 100% of the total labour cost of the employee (gross salary + contributions paid by the employer per	*Contribution amount for enterprises with forced restricted operation: 100% of eligible employer expenses, maximum EUR 1,905 (CZK 50,000).*

employee), up to a maximum of EUR 1,100 / 1,100.	
	Antivirus C (June – August 2020) (MoLSA, 2020b)
In the Slovak Republic, there is the possibility to forgive the payment of social insurance to employers and self-employed persons in case of decrease in revenues was at least 40% per month 4/2020 and the possibility to postpone social insurance payments in the months 5/2020 – 6/2020 and then 12/2020 – 5/2021.	*The remission of social security contributions and state employment policy contributions shall apply to the following conditions:* *The company employs a maximum of 50 employees in employment for which health insurance is paid,* *- not 10% of the number of employees will be made available as of 31 March 2020, and* *- maintain 90% of wages as in March 2020.*

Source: Own processing, according to MPSVaR „ Prvá pomoc." (2020 - 2021), MoLSA, 2020b and the Ministry of the Interior CZ, 2021.

This comparison shows a similar approach to promoting the maintenance of employment at the time of the Covid-19 pandemic in both the countries compared, Czechia and Slovakia. The differences mainly relate to the shift in changes in adjustments to the measures, the details of individual adjustments and a different approach to the payment of salary compensation in cases of quarantined employees. In the Slovak Republic, conditions are set more generally than in the Czech Republic. The maximum amounts of compensation per employee during the whole period were EUR 386-805 higher than in the Slovak Republic.

Measure 3: Support for employers affected by an emergency situation is part of the support for the job retention in the Slovak Republic. (3A, 3B). This allowance is granted to employers (including self-employed persons who are employers) who will keep their jobs even in the event of interruption or limitation of their activity during a declared emergency or emergency situation. 3A (Financial contribution to the compensation of the employee's salary for an employer or self-employed person who is an employer affected by an emergency situation) and 3B (Flat-rate contribution to cover the part of the employee's wage costs in lump sums graded in the light of the decrease in turnover for the employer or self-employed person who is the employer affected by the emergency situation) (Pakšiová, 2021a, Pakšiová, 2021c). It is precisely the 3B contribution that can be compared in the Czech Republic with "Antivirus B" (MoLSA, 2020a), where the obstacles on the part of the employer were divided according to the cause. The amount of support for employees was varied and set as a percentage (e.g. due to quarantine or childcare regulations, restrictions on the availability of inputs (raw materials, products, services) necessary for the activity, limiting the demand for services, products and other products of the company).

4.2 Support for self-employed persons who had to close down operations at the time of the pandemic or whose revenues decreased

Self-employed persons who had had to close their operations on the basis of an official decision or saw a decrease in their revenues had the opportunity to apply for these contributions in the Slovak Republic and the Czech Republic.

Slovak Republic	**Czech Republic**
Measure No. 2 / Measure No. 3B: Support for SZČO (monthly) / Support for employers (monthly), which at the time of declaring an emergency situation, emergency or state of emergency on the basis of the ÚVZ Measure closed or banned operations or whose sales decreased.	**Self-employed support which could not carry out self-employment wholly or partly beyond the usual level as a result of health threats or crisis measures.**
'First aid' (for March 2020 – September 2020)	**Compensation bonus; "Twenty five" (March –April 2020)**
The contribution to compensate for the loss of income from the gainful activity of self-employed persons was granted depending on the amount of the decrease in turnover: *The decrease in revenues from 20.00 to 39.99% – a contribution of EUR 180;* *The decrease in revenues from 40.00 to 59.99% – a contribution of EUR 300;* *The decrease in revenues from 60.00 to 79.99% – a contribution of EUR 420;* *The decrease in revenues from 80% or more – a contribution of EUR 540.*	*The compensation bonus is EUR 19 (CZK 500), per day. Maximum for the period is EUR 952.50 (25,000 CZK). There must be no run-in with the employment.*
	Compensation bonus (May – June 2020) (Ministry of Finance of the Czech Republic, 2020a)
	The compensation bonus is EUR 19 (CZK 500) per day. Maximum for the period is EUR 724 (19,000 CZK).
"First aid +" (for October 2020 – January 2021)	**Compensation bonus (October 2020 – February 2021)** (Financial Administration, 2020)
The contribution to compensate for loss of income from the gainful activity of self-employed persons is granted depending on the amount of the decrease in turnover: *- Decrease in revenues from 20.00 – 39.99% – a contribution of EUR 270.* *- Decrease in revenues from 40.00 – 59.99% – a contribution of EUR 450.* *- Decrease in revenues from 60.00 – 79.99% – a contribution of EUR 630.* *- Decrease in revenues from 80% or more – a contribution of EUR 810.*	*The compensation bonus is EUR 19 (CZK 500) per day, maximum for* *1. bonus period for 5.10.-4.11.2020 is EUR 590.5 (CZK 15,500)* *2. bonus period for 5.11.-21.11.2020 is EUR 324 (CZK 8,500)* *3. bonus period for 22.11.-13.12.2020 is EUR 419 (CZK 11,000)* *4. bonus period for 14.12.-24.12.2020 is EUR 438 (CZK 11,500)* *5. bonus period for 25.12.2020 - 23.1 is 2021 EUR 572 (CZK 15,000)* *6. bonus period for 24.1. – 15.2.2021 is EUR 419 (CZK 11,000)* *the concurrence with employment is not examined, but only the so-called dominant source of livelihood*
'First aid + +' (for February 2021 to June 2021)	**"New compensation bonus" (February - May 2021) (**Ministry of Finance of the Czech Republic, 2020b)

The contribution to compensate for loss of income from the gainful activity of self-employed persons is granted depending on the amount of the decrease in revenues for February 2021 (and later): *- The decrease in revenues from 20 to 29.99% – a contribution of EUR 330.* *- The decrease in revenues from 30 to 39.99% – a contribution of EUR 420.* *- The decrease in revenues from 40 to 49,99% – a contribution of EUR 510.* *- The decrease in revenues from 50 to 59.99% – a contribution of EUR 600.* *- The decrease in revenues from 60 to 69,99% – a contribution of EUR 690.* *- The decrease in revenues from 70 to 79,99% – a contribution of EUR 780.* *- Decrease in revenues from 80% or more – a contribution of EUR 870.*	*A compensatory bonus shall be granted if the revenues corresponding to sales of goods, goods or services decreased during the comparison period not exceeded 50% of the average monthly amount of such income resulting from the same activity in the comparative period. Compensation bonus active CZK 1,000 (exchange rate 26,245) EUR 38.1/day. The comparative period is a period of 3 consecutive calendar months from 1 November 2018 to 31 December 2020.* *Bonus periods:* *1. 1.2. -28.2.2021* *2. 1.3.-31.3.2021* *3. 1.4.-30.4.2021* *4. 1.5.-31.5.2021*

Source: Own processing, according to MPSVaR „ Prvá pomoc." (2020 - 2021) and Ministry of Finance of the Czech Republic, 2020a – 2020b .

The comparison of income loss aid shows once again a time lag in changes in support in both countries. In the Slovak Republic, the benefits in the payment of insurance premiums concerned only social insurance paid by self-employed persons and employers (Pakšiová, 2021c), in the Czech Republic it related to total social insurance as well as health insurance.

Slovak Republic	**Czech Republic**
Remission and deferral of social insurance	***Six-month health and social security holidays (March - August 2020)***
In the Slovak Republic, the possibility to forgive the payment of social insurance of self-employed persons with a decrease in revenues was at least 40% for the month of 4/2020 and the possibility to postpone social insurance payments in the months of 5/2020 – 6/2020 and then 12/2020 – 5/2021.	*The aim of the measure was to stabilize the low-income self-employed and at the same time partially relieve everyone else. Self-employed entrepreneurs did not have to pay monthly advances on insurance premiums between March and August 2020. In the annual settlement, the levies were reduced. Amount EUR 1,119 (CZK 29,376)* (Žurovec, 2020a)

Source: Own processing, according to MPSVaR „ Prvá pomoc." (2020 - 2021) and Žurovec, 2020a .

4.3 Support for self-employed and single-person Ltd. which have no other income at the time of declaring an emergency.

In the Slovak Republic, the contribution is provided by self-employed persons (4A) and one-person's Ltd. (4B), which have no other income in the respective month (Pakšiová, 2021a, Pakšiová, 2021c). In the Czech Republic, a compensatory bonus of the self-employed persons is granted according to the above rules (Žurovec, 2020b).

Slovak Republic	Czech Republic
Measure 4: Support for selected groups of self-employed persons who have no other income at the time of declaring an emergency. (4A, 4B).	**The compensation bonus applied to the self-employed persons, who were left without income and for those who had their income reduced**
'First aid' (for March 2020 – September 2020)	**Twenty five (March – April 2020)**
The flat-rate contribution to compensate for loss of income from gainful employment amounted to EUR 210.	*The compensation bonus is EUR 19 (CZK 500) per day. Maximum for the period is EUR 952.50 (CZK 25,000).*
"First aid +" (for October 2020 – January 2021)	**Compensation bonus (May – June 2020)**
The flat-rate contribution to compensate for loss of income from gainful employment amounted to EUR 315.	*The compensation bonus is EUR 19 (CZK 500) per day. Maximum for the period is EUR 724 (CZK 19,000).*
	Compensation bonus (October 2020 – February 2021)
	The compensation bonus is EUR 19 (CZK 500) per day. Maximum for 134 days is EUR 2,553 (CZK 20,000)).
"First aid + +" (for February 2021 – June 2021)	**"New compensation bonus" (February – May 2021)**
The flat-rate contribution to compensate for loss of income from gainful activity is EUR 360.	*A compensatory bonus shall be granted if the revenues corresponding to sales of goods, goods or services decreased during the comparison period not exceeded 50% of the average monthly amount of such income resulting from the same activity in the comparative period. Active compensation bonus of CZK 1,000 (exchange rate 26.245) – EUR 38.1/day. The comparative period is a period of 3 consecutive calendar months from 1 November 2018 to 31 December 2020.* *Bonus periods:* *1. 1.2. -28.2.2021* *2. 1.3.-31.3.2021* *3. 1.4.-30.4.2021* *4. 1.5.-31.5.2021*

Source: Own processing, according to MPSVaR „ Prvá pomoc." (2020 - 2021) and the Ministry of the Interior, 2021.

There is a specific categorization of the allowance for partners (only natural persons) s. r. o., who have a maximum of 2 partners or partners from one family in the Czech Republic (Morávek, 2020).

The contribution is provided to Ltd. partners with the predominant part of income from prohibited or limited activities under the Income Taxes Act. Members of small, limited liability companies and freelancers whose activities (or those of their company) have been immediately prohibited or restricted by anti-pandemic measures under the current state of emergency. These include restaurants, hairdressers, and some shops. Entrepreneurs who supply goods, services, or other outputs to those

entrepreneurs whose activities have been prohibited or restricted by government measures or persons active under an agreement on the performance of work or an agreement on work activities working for those entrepreneurs are also entitled. To receive the bonus, suppliers (whether they are a self-employed person or a partner) must fulfil the condition that their activities have been excluded from at least 80% due to restrictions or bans on the activities of their customers.

Czech Republic
Compensation bonus (March – June 2020)
The compensation bonus is EUR 19 (CZK 500) per day. Maximum for the period is EUR 1,695.50 (CZK 44,500). There must be no run-in with the employment. They could have applied for a bonus retroactively.
Compensation bonus (October 2020 – February 2021) (Ministry of Finance of the Czech Republic ,2020a)
The concurrence with the employment is not examined, but only the so-called dominant source of livelihood
Compensation bonus (February – May 2021) Ministry of Finance of the Czech Republic. 2020b)
The right to a new compensation bonus belongs to all entrepreneurs damaged not only by the effects of government measures, but also as a result of the pandemic as such. The decisive indicator is a decrease in income of more than 50% compared to the period before the pandemic. Compensation bonus active CZK 1,000 (exchange rate 26.245) – EUR 38.1/day.

Source: Own processing, according to the Ministry of Finance of the Czech Republic. 2020a, 2020b

Contributions for specific categories of entrepreneurs in the Slovak Republic and also in the Czech Republic, such as tourism and culture, are provided on the basis of special conditions following the impacts of government measures at the time of the pandemic and beyond and are not part of the analyses in this post.

4.4 Development of unemployment in Slovakia and Czechia

According to the Statistical Office of the Slovak Republic, unemployment increased to 6% in the year of the COVID-19 crisis. Unemployment grew year-on-year throughout 2020, while growth in the number of people out of work accelerated, especially in the third quarter, and similar developments in the fourth quarter. The unemployment rate of the Slovak Republic reached 7% in the last three months of 2020, up 1% year-on-year. 4 p.p. The unemployment rate, which occurred in the three quarters of last year, did not stop at the beginning of 2021. The unemployment rate has risen to the same level since the same period last year – 7.1%. (Statistical office of the Slovak Republic – Unemployment rate in the Slovak Republic, 2021)

Table 1. Unemployment rate in the Slovak Republic

Slovak Republic	2020					2021
Indicator	1. Q.	2. Q.	3. Q.	4. Q.	1. – 4. Q.	1. Q.
Total number of unemployed (thousand persons)	161.6	177.8	196.5	189.8	181.4	190.3
Index (same period last year = 100)	101.1	114.7	121.9	122.5	115.0	123.2
Unemployment rate (%)	6.0	6.6	7.2	7.0	6.7	7.1

Source: Own calculation; Statistical office of the Slovak Republic – Unemployment rate in the Slovak Republic, 2021

In the Czech Republic, the unemployment rate before the start of the COVID-19 pandemic (Mendlova, 2021) remained at 2%, with the average for 1Q 2020 being 1.95%. Over the next 12 months, average employment growth was 1.3 p.p. to 3. 29%. The loosen of the measures took place during the months of May and June 2021, when many companies were affected by contract restrictions and the loss of customers. Unemployment continued to rise despite the loosen of measures, reaching an average of 3.23% for 2Q 2021. The development of the number of unemployed and the unemployment rate is shown in Tab. 2. Despite significant support for entrepreneurs, both self-employed and legal entities, in the form of compensatory bonuses, the payment of wage compensation and the waiver of health and social insurance contributions, the number of unemployed increased. In the Czech Republic, the fall in employment was greater than in the Slovak Republic, but without further examination it is not possible to determine with certainty that this is the result of differences in the aid granted.

Table 2. Unemployment rate in the Czech Republic

The Czech Republic	2020					2021
Indicator	1. Q	2. Q	3. Q	4. Q	1. – 4. Q	1. Q
Total number of unemployed (thousand persons)	227.7	263.3	278.6	279.4	262.2	309.0
Index (same period last year = 100)	97.10	123.16	136.17	148.54	126.67	168.71
Unemployment rate (%)	1.95	2.51	2.87	3.15	2.62	3.29

Source: Own calculation; Mendlova, 2021.

The unemployment rate has increased in both countries, more sharply in the Czech Republic, due to the lower original unemployment rate. The rate of increase was moderate and did not exceed an increase of more than 3%. It has not been established whether there is an impact of the pandemic, the aid paid or other economic phenomenon, but it can be assumed that the aid granted and the conditions for its payment have stopped a sharp increase in unemployment in both economies under discussion following the subdued of multiple sectors due to the pandemic.

5 Conclusion

The COVID-19 pandemic paralyzed not only the healthcare sector, but especially the business sector, regardless of whether they are self-employed, small or medium-sized enterprises or large companies. Unless the company was forced to close as a result of government measures to prevent the spread of SARS-CoV-2, it was forced to restrict production or service due to staff shortages that went to long-term care for a family member in the event of school closures or contact with an infected or sick person. Entrepreneurs and employees were forced to pay their debts, but there were huge shortages of business income. In the presented paper, we compared the provision of support in the Czech Republic and the Slovak Republic. We also monitored the change in the unemployment rate in both countries. It is premature to comment on which types of support were more effective, it is necessary to identify other indicators, but it can be stated that while the support system in the Czech Republic was more fragmented and more generous in comparable periods, support in the Slovak Republic was fairer due to declining sales for the previous period. It will be possible to assess the overall effectiveness of the support provided only after the end of the pandemic with a time delay and will be the subject of further analyses and research.

6 Acknowledgement

This article is an output of the project VEGA No 1/0059/22.

References

[1] Bhar, R. and A.G. Malliaris, 2021. Modeling U.S. monetary policy during the global financial crisis and lessons for Covid-19. *Journal of Policy Modeling*, vol. 43, issue 1, pp. 15-33.

[2] Breeden, J. L., 2020. Measuring economic cycles in data. *Journal Of Risk Model Validation*, vol. 14, issue 1, pp. 1-17.

[3] Conyon, M., M. Q. Judge and M. Useem, 2011. Corporate Governance and the 2008-09 Financial Crisis. *Corporate governance: an international review*, vol. 19, issue 5, pp. 399-404.

[4] Cottier, L., K. Degen and R. Lalive, 2020. Can unemployment benefit cuts improve employment and earnings? *Empirical economics*, vol. 59, issue 2, pp. 659-699.

[5] Duarte, C., Maria, J.R. and S. Sazedj, 2020. Trends and cycles under changing economic conditions. *Economic Modelling*, vol. 92, pp. 126-146.

[6] Financial Administration. 2020. *Podmínky vzniku nároku na kompenzační bonus u osoby samostatně výdělečně činné*. Finanční správa. [online]. [2021-07-21]. Available from: https://www.financnisprava.cz/cs/financni-sprava/media-a-verejnost/nouzovy-stav/kompenzacni-bonus-podzim-2020/zakladni-informace/zakladni-informace-cast-a-osvc-11018.

[7] Hamilton, S., 2020. A TALE OF TWO WAGE SUBSIDIES. *National tax journal*, vol. 73, issue 3, pp. 829-846.

[8] Higgins-desbiolles, F., 2020. The "war over tourism: challenges to sustainable tourism in the tourism academy after COVID-19. *Journal of sustainable tourism*, vol. 29, issue 4, pp. 551-569.

[9] Choi, E. J., J. Choi and H. Son, 2020. The long-term effects of labor market entry in a recession: Evidence from the Asian financial crisis. *Labour economics*, vol. 67, pp. 101926-101926.

[10] Johns Hopkins University. *COVID 19 – Dashboard.* 2021. Center for Systems Science and Engineering. [online]. [2021-07-30]. Available from: https://www.arcgis.com/apps/dashboards/bda7594740fd40299423467b48e9ecf6.

[11] Labour Code. 2006. Vol. 84/2006. Praha: Parlament České republiky. [online]. [2021-07-30]. Available from: https://www.zakonyprolidi.cz/cs/2006-262.

[12] Latham, L., 2020. *Morrison's COVID-19 wage subsidy fails workers. Green left weekly*, no. 1259. pp.1-3. [online]. [2021-07-30]. Available from: https://search.informit.org/doi/10.3316/informit.364255973753004.

[13] Li, L., S. Liu, Y. He, J. Wang, and W. Ding. 2020. Prevention of and control measures for nosocomial coronavirus disease (COVID-19): 2020 recommendations by authors at Renmin Hospital of Wuhan University. *Asian biomedicine*, vol. 14, issue 4, pp. 169-174.

[14] Litvin, V. A., 2004. Multiscaling behavior of transition economies before and after 1998 Russian financial crisis. *Physica A*, vol. 344, issue 1, pp. 19-23.

[15] MacGregor Pelikanova, R., E. D. Cvik, and R. K. Macgregor, 2021. Addressing the COVID-19 challenges by SMEs in the hotel industry – a Czech sustainability message for emerging economies. *Journal of entrepreneurship in emerging economies ahead-of-print (ahead-of-print).*

[16] Madero Gómez, S., O. Eliud, O. Mendoza, J. Ramírez, and M. R. Olivas-luján., 2020. Stress and myths related to the COVID-19 pandemic's effects on remote work. *Management research* (Armonk, N.Y.), vol. 18, issue 4, pp. 401-420.

[17] Manojkrishnan, C.G. and M. Aravind, 2020. Covid - 19 pandemic and its impact on labor force: A new model based on social stress theory and prospect theory. *Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration*, vol. 28, issue 3.

[18] Marques, P. and F. Hörisch, 2020. Understanding massive youth unemployment during the EU sovereign debt crisis: a configurational study. *Comparative European politics*, vol. 18, issue 2, pp. 233-255.

[19] Mendlova, I., 2021. *Míry zaměstnanosti, nezaměstnanosti a ekonomické aktivity: červen 2021." Míry zaměstnanosti, nezaměstnanosti a ekonomické aktivity - červen* 2021. [online]. [2021-07-30]. Available from: https://www.czso.cz/csu/czso/cri/miry-zamestnanosti-nezamestnanosti-a-ekonomicke-aktivity-cerven-2021.

[20] Ministry of Finance of the Czech Republic. 2020a. *Kompenzační bonus pro podnikatele. Ministry of Finance of the Czech Republic*. [online]. [2021-07-30]. Available from: https://www.mfcr.cz/cs/o-ministerstvu/sluzby-verejnosti/komunikace-s-verejnosti/casto-kladene-otazky/novy-kompenzacni-bonus-2021-40923

[21] Ministry of Finance of the Czech Republic. 2020b. *Kompenzační bonus (podzim 2020). Ministry of Finance of the Czech Republic.* [online]. [2021-07-30]. Available from: https://www.mfcr.cz/cs/o-ministerstvu/sluzby-verejnosti/komunikace-s-verejnosti/casto-kladene-otazky/kompenzacni-bonus-podzim-2020-39799.

[22] MoLSA. 2020a. *Cílený Program podpory zaměstnanosti „Antivirus".* The Ministry of Labour and Social Affairs. [online]. [2021-07-30]. Available from: https://www.mpsv.cz/documents/20142/1443715/Manual_Program_Antivirus.pdf/eacabb67-657a-42d3-2279-82ae3280b1fa.

[23] MoLSA. 2020b. *Firmy do 50 zaměstnanců nebudou muset platit sociální pojištění.* [online]. [2021-07-30]. Available from: https://www.mpsv.cz/documents/20142/1248138/16_06_2020_TZ_Firmy+do+50+zamestnancu+nebudou+muset+platit+socialni+pojisteni_Snemovna+schvalila+navrh+ministryne+Malacove+na+rozsireni+programu+Antivirus_FINAL.pdf/35b611e6-1365-6e3f-8424-6d16d350829c.

[24] MoLSA 2021. *Program Antivirus v březnu neskončí! Pracovní místa bude chránit dál*. The Ministry of Labour and Social Affairs. [online]. [2021-07-21]. Available from: . https://www.mpsv.cz/documents/20142/2061970/22_02_2021_TZ_prodlouzeni_programu_Antivirus.pdf/.

[25] Ministry of the Interior CZ. 2021. *Antivirus A, A Plus – nucené omezení provozu a karantény. Covid Portal.* [online]. [2021-07-30]. Available from: https://covid.gov.cz/situace/kompenzace/antivirus-plus-nucene-omezeni-provozu-karanteny.

[26] Morávek, D., 2020. "Kdo, dokdy a jak u kompenzačního bonusu?" Podnikatel.cz. [online]. [2021-07-30]. Available from: https://www.podnikatel.cz/clanky/kdo-dokdy-a-jak-u-kompenzacniho-bonusu-pripravili-jsme-velky-prehled/#h20.

[27] Nagel, L., 2020. The influence of the COVID-19 pandemic on the digital transformation of work. *International Journal of Sociology and Social Policy*, vol. 40, issue 9/10, pp. 861-875.

[28] Pakšiová, R., 2021a. Podpory podnikateľom v dobe COVID-19 opatrení v roku 2021. *Účtovníctvo - audítorstvo - daňovníctvo: v teórii a praxi.* vol. 29, issue 3, pp. 2-8.

[29] Pakšiová, R., 2021b. Odklad splatnosti odvodov do Sociálnej poisťovne. *Účtovníctvo - audítorstvo - daňovníctvo: v teórii a praxis*, vol. 29, issue 2, pp. 2-5.

[30] Pakšiová, R., 2021c. Spresnenia k podpore „Prvá pomoc + +"od marca 2021. *Účtovníctvo - audítorstvo - daňovníctvo: v teórii a praxi*, vol. 29, issue 4, pp. 2-4.

[31] MPSVaR, Prvá pomoc. (2020 - 2021, different dates). *Prvá pomoc zamestnávateľom, zamestnancom, živnostníkom.* Actual information. [online]. [2021-07-21]. Available from: https://www.pomahameludom.sk/

[32] Statistical office of the Slovak Republic - Unemployment rate in the Slovak Republic, 2021. *Unemployment in individual quarters in the Slovak Republic*. [online]. [2021-07-21]. Available from: https://slovak.statistics.sk/wps/portal/ext/themes/demography/labour/news/!ut/p/z1/jZFPT4NAEMU_Sw9cd4Zd_izeFgywdaO2SIp7MbRBigG2oVi-vtUYExOlndskv_dm8h5oKED35ampy7Exfdme92ftvax8ycPQFoihYiiXd9l9GsXUQQabLyBKROr4CpGrxEUp0nwdrBhDwUBfo8d_RuB1-hlAz9tvQM-fsL-BOHukInCS6Hb9EKN8iijPlEcx8S4APw5zIV16cwm62XZk2nUECXIv8APmUNtn1LXtz5ZEv2W8Bj1Ur9VQDeR9OJe3H8fD8cZCC6dpIrUxdVuRneks_EuyN8cRit8kHLo8L7CRb257UmKx-ABlhxxX/dz/d5/L2dBISEvZ0FBIS9nQSEh/

[33] Taleb, N. N., 2020. *Corporate socialism: the government is bailing out investors and managers not you. Medium*. [online]. [2021-07-30]. Available from: https://medium.com/incerto/corporate-socialism-the-government-isbailing-out-investors-managers-not-you-3b31a67bff4a.

[34] Turečková K. and I. Buryová, 2016. Economic policy in context of income inequality gap: case study of Czech Republic in 2005-2015. *Proceedings of 14th International Scientific Conference Economic Policy in the European Union Member Countries*. Karviná: SU OPF Karviná, 777-785.

[35] Wong, J. and N. Wong, 2021. The economics and accounting for COVID-19 wage subsidy and other government grants. *Pacific accounting review ahead-of-print (ahead-of-print*).

[36] Zattoni, A. and A. Pugliese., 2021. Corporate Governance Research in the Wake of a Systemic Crisis: Lessons and Opportunities from the COVID-19 Pandemic. *Journal of Management Studies*, vol. 58, issue 5, pp. 1405-1410.

[37] Žurovec, M., 2020a. *Živnostníci ušetří na pojistném. Ministry of Finance of the Czech Republic*. [online]. [2021-07-21]. Available from: https://www.mfcr.cz/cs/aktualne/tiskove-zpravy/2020/zivnostnici-usetri-na-pojistnem-37960.

[38] Žurovec, M., 2020b. "*MF spouští přímou podporu pro zasažené OSVČ*." Ministry of Finance of the Czech Republic. [online]. [2021-07-21]. Available from: https://www.mfcr.cz/cs/aktualne/tiskove-zpravy/2020/mf-spousti-primou-podporu-pro-zasazene-o-38055.

IMPACT OF COVID-19 ON PASSENGER-KILOMETERS IN SELECTED EUROPEAN COUNTRIES

Nina Bockova[1], **Karel Doubravsky**[2]

[1]*Prague University of Economics and Business, Faculty of Business Administration*
nám. W. Churchilla 1938/4 130 67 Praha 3 Czech Republic
email: nina.bockova@vse.cz
[2]*Brno University of Technology, Faculty of Business and Management,*
Kolejní 2906/4, 612 00 Brno, Czech Republic
email: doubravsky@fbm.vutbr.cz

Abstract
The aim of the article is to compare government measures against the spread of COVID-19 and their impact on passenger rail transport in the Czech Republic, Poland, Slovakia, and Switzerland. In March 2020, measures were gradually introduced that significantly affected the number of passengers transported in all monitored countries. Several connections, especially international ones, were cancelled in all countries. A comparison of the impact of anti-COVID measures on passenger-kilometres for the Czech Republic, Slovakia, Poland, and Switzerland was carried out (i) using a growth coefficient, (ii) identifying the difference in changes in passenger-kilometres between countries. Secondary data from the Eurostat database were used. The resulting data were examined using meta-analysis, the verification of the hypothesis was carried out using statistical hypothesis tests – Shapiro-Wilk test and Friedman test. The calculations revealed differences in passenger-kilometre indicators in the first two quarters of 2020. However, the trends of the monitored indicator followed the same course in all states. The hypothesis test proved that the factor – the government's decision – does not affect the monitored indicator – the change in passenger-kilometres.

Keywords
COVID-19, Czech Republic, Passenger Rail Transport, Poland, Slovakia, Switzerland.

JEL classification
I18, N7, N70, R40,

1 Introduction

Passenger rail transport was fundamentally affected by the COVID-19 pandemic between 2020 and 2021. The COVID-19 pandemic arrived in Europe in early 2020. The extent of the restrictions on the so-called "lockdown" of individual states to stop or at least mitigate the pandemic, including interstate passenger transport, has no parallel in modern history since the end of World War 2.

Rail transport is literally the driving force behind modernization and the industrial revolution in Europe in modern times. The European institutions have declared 2021 the European Year of Rail. Rail transport is the only mode of transport that constantly reduced emissions and energy consumption and increased the use of renewable energy sources between 1990 and 2017. Estimated at 416 billion passenger-kilometres in 2019, rail passenger transport performance at EU level continued its increase by 3.4 % compared with 2018. In 2019, national transport (NT) represented more than two thirds of the total transport in all European countries (Eurostat, 2020b). Rail transport is also recommended as a safe mode of transport. Rail remains one of the safest modes of transport. Travelling by car is almost 50 times riskier than travelling by train (Rosa, 2021).

The crushing wave of the COVID-19 pandemic has spread to Central Europe, especially from Italy. Switzerland reported the first infected person on February 25, 2020 (Blick, 2020). In the Czech Republic, the first infections appeared on March 1, 2020, in Slovakia the first case was recorded 6 days later. Poland confirmed the first infected person on March 4, 2020. He came from Germany. Despite initial comparisons with the stronger flu, there are deaths and overcrowding of hospitals. SARS-CoV-2 does not choose. Men, women, and children die, regardless of age and state of health. The largest number of deaths was recorded in January 2021, when more than 13,500 people died daily (The Johns Hopkins Coronavirus Resource Center, 2021).

Concerned about citizens' health, most governments reacted relatively quickly. Limits have been set on many aspects of economic and social life. The ban on attending mass events, the transfer

of school lessons to online and the introduction of a state of emergency were the first to affect public transport and the activities of other areas were significantly restricted. Life, work in the state sector and business were given a completely different dimension.

The article aims to compare the impacts of COVID-19 measures on passenger-kilometres for the Czech Republic, Slovakia, Poland, and Switzerland. The monitored indicator is the passenger-kilometres for the fourth quarter of 2019 (the last period without measures) to the first quarter of 2021.

Since there are already the first studies examining the impact of the COVID-19 pandemic on different modes of transport and environmental (Axhausen, 2020; De Vos, 2020; Konečný et al., 2021) impacts, we decided to examine the impact of the measures of selected states on passenger rail transport. In the presented article, we focused on the development of the growth coefficient between two periods. The existence of a difference in changes in passenger-kilometres between individual states will be tested as the first hypothesis. The second hypothesis is whether the factor (Statemeasure) does not affect the indicator under review. The chapter is followed by research of the professional literature. The third chapter describes the data used and methods of statistical hypothesis testing. In the fourth chapter, the empirical results are discussed. With the conclusion of the paper, the limits and possibilities of further research are concentrated in the fifth chapter. This paper contains the first observation of a completely new situation, which is a large-scale decline in passenger rail traffic, because of government measures to stop the spread of the SARS-CoV-2 coronavirus. For this reason, the paper is mainly based on press releases, websites of railway carriers and official websites of the governments of the Czech Republic, Slovakia, Poland, and Switzerland.

2 Literature review

The quarter of a century preceding the COVID-19 pandemic was rich in systemic, endogenous crises across all continents, e.g. the Asian financial crisis of 1997 (Choi et al., 2020); Russian Financial Crisis in 1998 (Litvin, 2004); the dot.com bubble in 2000 (Cottier et al., 2020); the Global Financial Crisis in 2007 (Bhar and Malliaris, 2021) or the European Sovereign Debt Crisis in 2011 (Marques and Hörisch, 2020). The COVID-19 pandemic has triggered an exogenous crisis. Social and economic contacts are being cut off, production, transport of people and cargo are being reduced. From November 2019 to March 2020, the coronavirus that appeared in 2019 and was named SARS-CoV-2, spread throughout the world (Manojkrishnan and Aravind, 2020). When WHO's Country Office in the People's Republic of China picked up a media statement by the Wuhan Municipal Health Commission from their website on cases of 'viral pneumonia' in Wuhan, People's Republic of China on December 31, 2019, no one knew what the global impact of the spread of the virus would be. The COVID-19 pandemic affected virtually every nation and every economy (MacGregor Pelikánová and Hála, 2021). The effects of the COVID-19 pandemic on travel behaviour patterns have been already addressed in early studies in different countries around the Europe and the world (Axhausen 2020; Konečný et al., 2021). The situation around the world has been affected by the course of the disease and reports from the Chinese Wuhan (Li et al., 2020). By August 2020, the COVID-19 pandemic had caused nearly a million deaths and affected various sectors and industries (Madero Gómez et al., 2020).

Governments of all states tried to minimize the loss of human life through various measures, even at the cost of a sharp decline in economic activity (De Vos, 2020).

In March 2020, some employees stop going to workday by day because they must stay in quarantine after contact with an infected person. The importance of traditional jobs as a safe source of income is decreasing, there is a rapid development of digital forms of work (Nagel, 2020). Pupils and students stop travelling for the study, and some employees stop going to work every day because they must stay in quarantine after contact with an infected person. There are changes in the behaviour of different socio-economic groups.

The number of transport connections is decreasing dramatically (swissinfo.cz, 2020). On average, there have been reductions of trip frequencies and public transport ridership has been decreased around 40–80%. In Germany, Kolarova et al. found that travellers during the lockdown period switched to a unimodal travel mode, e.g., the use of a private car, and travel less often for daily needs (Kolarova, et al., 2021). The pandemic has been likened to an event reaching the dimension of force majeure. According to the White Swan theory, which is compatible, and Black Swan, which is not compatible with statistical properties, the crisis should be the key to overcoming oversized services (Higgins-desbiolles, 2020; Taleb, 2020). Among other things, significantly increasing passenger rail transport in previous years. In 2018, across the selected analysed EU countries, it was observing a growth in the number of passengers in comparison to 2010, on average by 27.5%. With respect to the dynamics of the changes in the number of passengers in comparison with the year 2010, the studied countries it can aligned in the following growing series: Spain (8.3%) < Romania (12.2%) < Czech Republic (15.0%) < France (16.0%) < Germany (21.6%) < Bulgaria (29.8%) < Austria (31.3%) < Sweden (37.4%) < Italy (39.3%) < Slovakia (66.1%) (Pieniak-Lendzion et al., 2021). Estimated at 416 billion passenger-kilometres in 2019, rail passenger transport performance at EU level continued its increase by 3.4 % compared with 2018 (EUROSTAT, 2020a). COVID- 19 pandemic is the content of several studies. Borca et al. (2021) identified the key finding from the COVID-19 crisis so far was that the demand decreased for each transport mode. There were also positive effects as well, e.g., the sharp decrease in worldwide emissions, which leaded to an increase in sustainability, thanks a less congestion on the roads and it facilitated road freight transportation. While public transport has been restricted, demand and supply in road freight transport have changed significantly in connection with the measures taken to prevent the spread of COVID-19 (Poliak et al., 2021).

There are several researches in the scientific literature, following rail transport performance, efficiency and environmental impact assessment in the rail sector (Prussi and Lonza, 2018; Catalano et al., 2019). Other study has analysed how the modal split will change with certain toll rates, whether rail transport can benefit from the increased burden on its intermodal competitors, or whether the car is the biggest beneficiary instead (Burgdorf and Eisenkopf, 2018). A passenger-kilometre is used as a unit of measure for comparison. The passenger-kilometre (PKM) is the unit of measurement representing the transport of one passenger by a defined mode of transport (road, rail, air, sea, inland waterways etc.) over one kilometre (Eurostat Statistics Explained, 2021). By doing so, PKM allows us to compare the performance in passenger rail transport in selected countries of the European Union.

2.1 Switzerland

Already in the first third of March 2020, there is a decrease in transported passengers in Switzerland by 10-20%, and the Federal Railway loses the amount of 500 thousand CHF (142.2 thousand EUR) per day.[i] Surrounding countries such as France and Italy report a more significant decline in the range of 60-90%. The news of the drop in transported persons comes just a few days after the announcement of record sales, growth in transported persons and growth in customer satisfaction in 2019 (swissinfo.cz, 2020).

After the drastic measures of March 2020, the Swiss government decided to relax the measures significantly earlier than other states. It limited itself to protecting the most vulnerable and banned all events involving more than 5 people. Since the end of April, services have been opened, and since 11 May 2020, direct teaching at primary, secondary, and upper secondary schools in smaller groups have resumed. In passenger rail transport, there was no obligation to wear masks or face protection. It was introduced later (Federal Office of Public Health FOPH, 2020). During the second wave, international and night services were again restricted due to the closure of bars and restaurants. Measures varied from canton to canton (The Local Europe AB, 2020). The resumption of connections occurred only in May 2021 (SWI swissinfo.ch. 2021). The State shall abolish charges for cancellation or changes to carriers for mitigation. The Swiss Government has not issued any measures under Regulation (EU) 2020/1429. Parliament has taken measures to assist public passenger and rail freight transport,

totalling approx. 900 mil. CHF, of which approx. 70 mil. CHF for rail freight measures. Parliament also adopted measures to ensure the liquidity of the Swiss railways infrastructure fund (BIF).

2.2 Poland

On March 14, 2020, there was a state of epidemic emergency imposed by the government. Six days later, it was changed to an epidemic state, with the decision to close kindergartens and schools on 11 March, and the universities closed a day later. On March 15, Poland closed its borders. Only Polish citizens were allowed to return, respecting the mandatory 14-day quarantine. These measures have been extended until 11 April for all international flights and until 14 April for land borders.

The movement of people was also restricted by the closure of all restaurants and shopping centres (except food and pharmaceutical establishments)(www.gov.pl 2020). Many people travelled in private cars on city and regional transport for their safety. Travel was limited and travellers were nervous, discouraged, and scared. The surveys conducted showed travel preferences that were appropriate for the early stages of a pandemic and related to government recommendations to stay home. Undoubtedly, this situation has influenced travellers' responses (Rosa, 2021).

The route cancellation fee was not charged to carriers from 13.3. until 31.8.2020. In connection with the epidemic, no additional discounts are provided for carriers.

2.3 The Czech Republic

In the Czech Republic, a state of emergency was declared during day 12. March 2020. The state of emergency marked the official transition to online teaching on 16. In March, the country closed the boundaries, banned foreigners from entering, a nationwide curfew was issued, travel to work was restricted, and exemptions for commuters were allowed. Some of the measures taken in the Czech Republic differed from other countries in key aspects. It was strict and long-term (Government of the Czech Republic, 2020a).

The Czech Republic is the first European country to introduce the use of facemasks, already on 18.3.2020 (Government of the Czech Republic, 2020b). The number of passengers after the introduction of the measures fell by more than 90%. The Czech Republic is the only country in the epidemic-friendly period to allow travel without masks in the summer of 2020. For the first half of 2020, the average transport distance per passenger and overall output decreased. After the easing of restrictions, rail sales began to rise, but did not reach 2019 sales (Cafourek, 2020). The largest state carrier, Czech Railways, carried 117.7 million passengers in 2020, which is about 64 million less than in 2019 (-35 %). Transport output decreased from 8,685 million passenger-kilometres in 2019 to 5,127 million passenger-kilometres in 2020 (-41 %). Overall, the loss of revenues from passenger transport for 2020 will be over four billion. Revenues from freight transport will be shortfalls of around one billion crowns. As a group, we will get over five billion. Even in 2021, a much better situation was not expected. In the first week of the harshest anti-epidemic measures, restrictions on movement between districts, only 30% of passengers were registered compared to 2019 (České noviny, 2020). Revenue shortfalls in the hundreds of millions were also reported by private carriers Leo Express, RegioJet and Arriva. Carriers asked the government for assistance.

2.4 Slovakia

Slovakia was one of the countries that reacted most strictly to the arrival. Already at the end of February 2020, temperature screening of air passengers was introduced, just after the first infected person was reported, a deep disinfection of public transport vehicles in Bratislava was carried out. Like the surrounding states, schools, shops, traffic is restricted, international passenger traffic is suspended. Holiday timetable has come into force for trains.

Konečný et al, 2021 pointed out how long an extraordinary situation had persisted in the Slovak Republic in connection to the COVID-19 pandemic, which continued to influence the decision and behaviour of passengers using public transport. There were reflected anti-pandemic measures in a

decrease in the mobility of the population in public passenger transport in the Slovak Republic. The change in mobility manifested to different extents in individual regions of the Slovak Republic. Impacts on other sectors followed (Pakšiová, 2021). The Ministry of Transport of the Slovak Republic has not taken any measures under Regulation (EU) 2020/1429. Railways of the Slovak Republic (ŽSR) levied fees for access to railway infrastructure, but still provided discounts on these charges, which, however, apply from 1 January 2020 (do not apply to measure COVID-19).

3 Methodology and data

The task of this study was to analyse an impact of COVID-19 measures on passenger rail transport in selected European countries in the period 2019Q4 - 2021Q1. The sources of collected data were Statistical Office of the European Union – EUROSTAT database (EUROSTAT 2020a). The thematic scope of the collected data covered an aspect typical of rail passenger transport in the quarters 2019Q4 – 2021Q1 Million Passenger-kilometres (MIO_PKM). To carry out an objective assessment, EUROSTAT data was recalculated by country and period by population. The unit to be used in the paper is Passenger-kilometers (PKM).

To compare the impact of the measures of individual governments, growth coefficients will be calculated. This coefficient expresses the rate of change of the monitored indicator PKM. It is a dimensionless indicator that will allow comparison between the monitored states after the launch of measures against the spread of the SARS-COV-2 coronavirus. To answer the questions of whether there is a difference in PKM changes between individual states, two hypotheses will be tested.

Ha_0: *We can work with the monitored indicator as if it had a normal distribution.*
Hb_0: *The state factor does not affect the change in PKM.*

Since we only work with a group of four states, we chose a single-factor variance analysis (ANOVA) to compare them. The Shapiro-Wilk normality test was used to verify the normality condition. In the event that the null hypothesis for the normality of the distribution will be rejected determination of the indicator in the same period, a non-parametric analogy of the analysis of variance Freidman test will be selected (Hindls, a další 2018).

4 Empirical results

4.1 Coefficient of growth of passenger-kilometres

In this part of the thesis, we will focus on comparing the impact of COVID-19 measures on PKM for the Czech Republic, Slovakia, Poland and Switzerland. To make it clear how the COVID-19 pandemic has affected passenger rail transport, the development of PKM for the period 2009 – 2020 is illustrated in Fig. 1. Switzerland is a country that prides itself on the most imprecise passenger rail transport, high standard of service provided and railway infrastructure. The number of kilometres travelled is significantly higher than in other monitored countries.

Fig. 1 shows that passenger rail transport in the Czech Republic has been on the rise since 2009 and the introduction of state subsidies for fares in September 2018 (Government of the Czech Republic 2018a) did not mean a significant increase in the number of km travelled per inhabitant. In Slovakia, on the other hand, after the introduction of free transport for pupils, students, and pensioners in 2015, the number of PKM (32%) and transported persons (23%) increased significantly. Although Poland is the largest in size and population of the selected countries, train travel is not as popular here as in its southern neighbours.

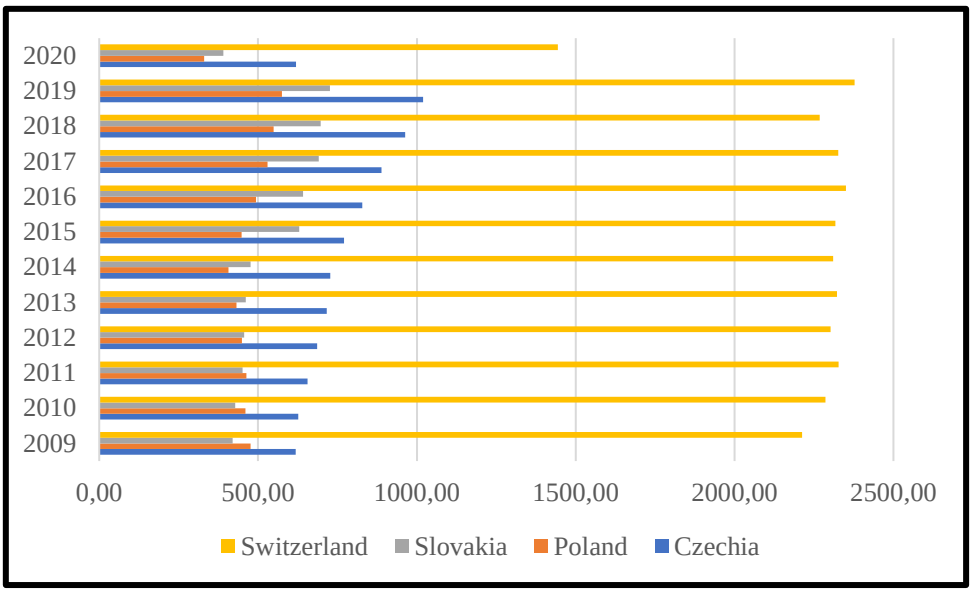


Fig. 1. Development of PKM in the period 2009 – 2020 (Source: EUROSTAT 2020)

Although the years 2009 – 2018 were not used for the calculations, the descriptive statistics for the reference period and selected countries are presented in Appendix 1. It will be possible to better compare the change in PKM caused by COVID-19. Descriptive statistics of the selected data set; the period 2019Q4 – 2021Q1 is listed in Appendix 2.

The monitored indicator is PKM for the fourth quarter of 2019 (the last period without measures) to the first quarter of 2021, see Table. 1. To make the comparison relevant, the EUROSTAT data were (EUROSTAT 2020a) converted into population.

Table 1. Per capita passenger-kilometres

	Czechia	Poland	Slovakia	Switzerland
2019Q4	261.70	140.65	192.46	610.10
2020Q1	192.07	114.28	147.31	511.04
2020Q2	106.32	43.50	57.71	216.13
2020Q3	200.95	108.62	130.82	414.24
2020Q4	106.98	63.46	65.78	333.14
2021Q1	90.61	65.47	42.14	288.40

Source: author's calculations; EUROSTAT, 2020a.

In the last quarter, which was not marked by the COVID-19 pandemic, passengers used rail transport the most in Switzerland, followed by the Czech Republic and Slovakia. In Poland, PKMs accounted for only 22.7% of the passengers transported in Switzerland. With the development of PKM in individual quarters, the measures introduced by individual states had a negative impact on passenger transport in all monitored states. While in the Czech Republic and Poland, after the end of government measures in the summer of 2020, more train travel began and the number of PKM travelled reached approximately 77% of the value from 2019Q4. Slovakia and Switzerland recorded only 67% of shipments in the same period relative to the last quarter without COVID-19. In Switzerland, this was also due to a decline in tourism.

The nationwide lockdown of late 2020 extended to 2021Q1, the shift of schooling to online, and the increase in home-office staff marked the biggest drop in rail mileage. According to EUROSTAT,

2020a, the first quarter measures had the least impact on passenger transport in Poland and Switzerland, which reached approximately 47% of the 2019Q4 level. In the Czech Republic, it was only 35% and the largest decrease was in Slovakia, where the value was the smallest, only 22%.

To compare the impact of COVID-19 measures, growth coefficients will be calculated. The growth coefficient expresses the rate of change of the values of the monitored indicator (Passenger-kilometres). In addition, it is a dimensionless indicator that will allow us to compare changes in the monitored indicator for individual states. The calculated values of the growth coefficient are given in the Tab. 2.

Table 2. Growth coefficients

	Czechia	Poland	Slovakia	Switzerland
2019Q4	-	-	-	-
2020Q1	0.734	0.813	0.765	0.838
2020Q2	0.554	0.381	0.392	0.423
2020Q3	1.890	2.497	2.262	1.917
2020Q4	0.532	0.584	0.503	0.804
2021Q1	0.847	0.847	0.641	0.866

Source: author's calculations; EUROSTAT, 2020a.

The individual values of the coefficient express the change in the monitored indicator between two periods. In the first quarter of 2020, PKM in the Czech Republic fell by 26 compared to the fourth quarter of 2019. 6%, Slovakia had a similar value (23.5%). In Switzerland, the impact of the COVID-19 pandemic has reduced PKM by only 16.2% and in Poland by 18.7%. In 2020Q2, the PKM decline was the largest in Poland and Slovakia. Switzerland recorded a decrease of more than 57%, while in the Czech Republic the decrease was only 44.6%. In the third quarter of 2020, after the easing of repression, the period of holidays and vacations, PKM grew by 89% in the Czech Republic, in Switzerland by almost 92%. Passenger transport on the railway in Slovakia and Poland increased even more significantly. In both states, the number of PKMs travelled increased by 126% and 150%, respectively. After the onset of the second wave of the COVID-19 pandemic, selected CEE states experienced a similar decrease in PKM – by about 50%. A significantly lower decrease was seen in Switzerland, where the measures taken were more moderate to reduce school teaching. The decrease was only 19.6%.

Table 2 shows that the trend of change in the indicator is similar for individual countries. Thus, in the first quarter of 2020 there was a decrease in the indicator, in the second quarter of 2020 there was a decrease in the indicator, in the third quarter of 2020 there was an increase in the indicator, in the fourth quarter of 2020 there was a decrease in the indicator again, and in the first quarter of 2021 there was a decrease in the indicator. From the point of view of specific figures, one can see differences in the values of growth coefficients. The question therefore arises as to whether there is a difference in the changes in PKM between the individual States.

To answer the question, we will use statistical hypothesis tests. Since we work with four states (four samples), a one-factor analysis of variance (ANOVA) is offered for their comparison. However, for its use, the conditions of normality, independence, and equality of variance (homoskedasticity) must be met. Due to the number of data, the normality condition can be verified using the Shapiro-Wilk normality test. In the case of this test, the null hypothesis H_{a0} is formulated in such a way that its acceptance entitles us to work with the character of interest as if it had a normal distribution. Rejecting it tells us that we cannot work with the trait as if it had a normal distribution. The test results at a 5 % significance level for the values from Table 2 are given in Table 3.

Table 3. Shapiro-Wilk test

Country	p-value	Significance level α	Null hypothesis H
Czechia	0.03	0.05	reject
Poland	0.03	0.05	reject
Slovakia	0.02	0.05	reject
Switzerland	0.1	0.05	confirmed

Source: author's calculations.

From Table 3 we can see that the condition of normality is met only for the last state, namely Switzerland. In other cases, we reject the null hypothesis, so we cannot assume that the trait under review has a normal distribution. For this reason, we have chosen to use one of the non-parametric analogues of variance analysis. Essential for the selection of a suitable non-parametric test is the condition of independence. Given that the monitored indicator is surveyed for the same periods, and moreover, the national governments followed each other when introducing the individual measures, we assumed that the selections were dependent. For this reason, the Friedman test was chosen as the non-parametric equivalent of variance analysis.

In the case of the Friedman test, the null hypothesis H_{b0} is formulated in such a way that all samples come from the same distribution. In other words, the factor (state) does not affect the monitored indicator (PKM change). Using the Friedman test, the test statistic is equal to 4. 592 and the corresponding p-value is 0. 204. If we compare the p-value with the significance level ($\alpha = 0.05$), we see that 0. 204 > 0. 05 and we leave the null hypothesis. The selections come from the same distribution. Regarding the problem we are solving, we can interpret this conclusion as if individual states do not differ in terms of changes in PKM after the introduction of government measures.

5 Conclusion

The aim of the submitted paper was to make a comparison of government measures against the spread of COVID-19 and their impact on passenger rail transport in the Czech Republic, Poland, Slovakia, and Switzerland. In Europe, the first disease appeared in Italy during February 2020, and from there it spread very quickly among other states. International transport has been restricted and measures introduced, such as the abolition of in-person school teaching at all levels of schools, the ordering of quarantines, and the state of emergency, have limited passenger transport on domestic rail transport. Despite the measures taken, Switzerland remained the country where citizens travelled by train the most. In second place was the Czech Republic. Poland before the COVID-19 pandemic was in the last place among the selected countries, but the measures taken in Slovakia were more vigorous, and therefore the number of PKMs travelled fell the most here.

Statistical data from the EUROSTAT database were recalculated per capita and tested according to established hypotheses. The Shapiro-Wilk test proved that the condition of normality of the distribution is met only for Switzerland. Since the normality condition was rejected for other countries, the data were further tested using a non-parametric test. The detected value of 0.204 is higher than the p-value, therefore the null hypothesis was left. From the point of view of the established government measures, individual states do not differ in terms of PKM change.

The passenger segment has been hit harder by the COVID-19 pandemic than the freight segment. The impact on commercial transport with significantly reduced supply in all EU Member States was significant. Some commercial carriers then stopped offering their services within a few months of 2020. This could have a significant impact on competition for passenger services.

The monitored period is very short and given that such a crisis has no parallel in the modern history of mankind, the scope for examining the impacts is very wide. Besides analysing potential mid- and long-term impacts, understanding how daily activities and travel behaviour change during such

a global crisis and the reasons behind is crucial for developing suitable strategies for similar future events.

References

[1] Axhausen, K. W., 2020. The impact of COVID19 on Swiss travel. *TRAIL and TU Delft webinar 2020*. [online]. [2020-07-22]. Available from: https://www.research-collection.ethz.ch/handle/20.500.11850/426441.

[2] Bhar, R. and A.G. Malliaris, 2021. Modeling U.S. monetary policy during the global financial crisis and lessons for Covid-19. *Journal of Policy Modeling*, vol 43, issue 1, pp. 15-33.

[3] Blick. *Erster bestätigter Coronavirus-Fall in der Schweiz.* [online]. [2020-06-25]. Available from: https://www.blick.ch/news/coronavirus-erster-bestaetigter-fall-von-coronavirus-in-der-schweiz-id15767285.html

[4] Borca, B., L. Putz and F. Hofbauer, 2021. Crises and their effects on freight transport modes: A literature review and research framework. *Sustainability*, vol. 13, issue 10, pp. 5740.

[5] Burgdorf, C. and A. Eisenkopf, 2018. Effects of road tolls for intercity buses on travel activities and the choice of means of transport in German long-distance passenger transport. *Research in transportation economics*, vol. 72, pp. 92-105

[6] Cafourek, T., 2020. *Třetinový pokles cestujících srazil ČD do dvoumiliardové ztráty.* idnes zpravodajství. [online]. [2021-06-27]. Available from: https://www.idnes.cz/ekonomika/doprava/ceske-drahy-koronavirus-pololeti-ztrata.A200910_103028_eko-doprava_cfr

[7] Catalano, G. et al., 2019. Efficiency, effectiveness, and impacts assessment in the rail transport sector: a state-of-the-art critical analysis of current research. *International transactions in operational research*, vol. 26, issue 1, pp. 5-40.

[8] Cottier, L. et al., 2020. Can unemployment benefit cuts improve employment and earnings? *Empirical economics.* vol. 59, issue 2, pp. 659-699.

[9] České noviny, 2020. ČD loni klesl počet cestujících o 35 procent na 117,7 milionu [online]. [2021-06-27]. Available from: https://www.ceskenoviny.cz/zpravy/cd-loni-klesl-pocet-cestujicich-o-35-procent-na-117-7-milionu/2006329.

[10] De Vos, J., 2020. The effect of COVID-19 and subsequent social distancing on travel behavior. *Transportation Research Interdisciplinary Perspectives*, vol. 5.

[11] EUROSTAT. 2020a. *Railway passenger transport statistics - quarterly and annual data.* [online]. [2021-07-12]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Railway_passenger_transport_statistics_-_quarterly_and_annual_data#Rail_passenger_transport_performance_continued_to_increase_in_2019 (přístup získán 12. 07 2021).

[12] EUROSTAT. 2020b. *Passenger transport by type of transport (detailed reporting only).* [online]. [2021-07-29]. Available from: https://ec.europa.eu/eurostat/databrowser/view/rail_pa_typepas/default/table?lang=en.

[13] Eurostat Statistics Explained. *Glossary:Passenger-kilometre.* [online]. [2021-06-12]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Passenger-kilometre.

[14] Federal Office of Public Health FOPH. *Coronavirus: Measures and ordinances 2020*. [online]. [2021-07-12]. Available from: https://www.bag.admin.ch/bag/en/home/krankheiten/ausbrueche-epidemien-

pandemien/aktuelle-ausbrueche-epidemien/novel-cov/massnahmen-des-bundes.html#-1863604723

[15] Government of the Czech Republic. 2018. *Vláda schválila nové slevy na jízdném pro seniory, žáky a studenty.* [online]. [2021-07-01]. Available from: https://www.vlada.cz/cz/media-centrum/aktualne/vlada-schvalila-nove-slevy-na-jizdnem-pro-seniory--zaky-a-studenty-a-koncepci-na-pomoc-statum-postizenym-migraci-164297/.

[16] Government of the Czech Republic. 2020a. [online]. [2021-07-01] Available from: *Vláda zavedla povinnost nosit ochranné prostředky a vyčlenila seniorům čas pro nakupování potravin.* 18. 03 2020b. https://www.vlada.cz/cz/media-centrum/aktualne/vlada-rozhodla-o-povinnosti-nosit-mimo-domov-ochranne-prostredky-a-vyclenila-seniorum-cas-pro-nakupovani-potravin-180451.

[17] Government of the Czech Republic. 2020b. *Vládní usnesení související s bojem proti epidemii koronaviru - rok 2020.* [2021-07-02] Available from: https://apps.odok.cz/attachment/-/down/IHOABMNHPBSV

[18] Higgins-desbiolles, F., 2020. The "war over tourism": challenges to sustainable tourism in the tourism academy after COVID-19. *Journal of sustainable tourism,* vol. 29, issue 4, pp. 551-569.

[19] Hindls, R. et al, 2018. *Statistika v ekonomii.* Praha: Professional Publishing.

[20] Kolarova, V. et al., 2021. Analysing the impact of the COVID-19 outbreak on everyday travel behaviour in Germany and potential implications for future travel patterns. *European Transport Research Review,* issue 13.

[21] Choi, E. J. et al., 2020. The long-term effects of labor market entry in a recession: Evidence from the Asian financial crisis. *Labour economics*, vol. 67, pp. 101926-101926.

[22] Konečný, V. et al., 2021. Impact of covid-19 and anti-pandemic measures on the sustainability of demand in suburban bus transport. The case of the Slovak Republic. *Sustainability,* vol. 13, issue 9, pp. 4967.

[23] Li, L.et al., 2020. Prevention of and control measures for nosocomial coronavirus disease (COVID-19): 2020 recommendations by authors at Renmin Hospital of Wuhan University. *Asian biomedicine*, vol. 14, issue 4, pp. 169-174.

[24] Litvin, V. A. 2004. Multiscaling behavior of transition economies before and after 1998 Russian financial crisis. *Physica A,* vol. 344, issue 1, pp. 19-23.

[25] MacGregor Pelikánová, R. and M. Hála, 2021. CSR Unconscious Consumption by Generation Z in the COVID-19 era – Responsible Heretics not Paying CSR Bonus?. *Journal of Risk and Financial Management*, vol. 14, issue 8, pp. 390.

[26] Madero G. et al., 2020. Stress and myths related to the COVID-19 pandemic's effects on remote work. *Management research (Armonk, N.Y.)*, vol. 18, issue 4, pp. 401-420.

[27] Manojkrishnan, C. G. and M. Aravind, 2020. Covid - 19 pandemic and its impact on labor force: A new model based on social stress theory and prospect theory. *Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration*, vol. 28, issue 3.

[28] Marques, P. and F. Hörisch, 2020. Understanding massive youth unemployment during the EU sovereign debt crisis: a configurational study. *Comparative European politics*, vol. 18, issue 2, pp. 233-255.

[29] Nagel, L., 2020. The influence of the COVID-19 pandemic on the digital transformation of work. *International Journal of Sociology and Social Policy*, vol. 40, issue 9/10, pp. 861-875.

[30] Pakšiová, R., 2021. Podpory podnikateľom v dobe COVID-19 opatrení v roku 2021. *Účtovníctvo - audítorstvo - daňovníctvo : v teórii a praxis*, vol. 29, issue 3, pp. 2-8.

[31] Poliak, M. et al, 2021. New paradigms of quantification of economic efficiency in the transport sector. *Oeconomia Copernicana,* vol. 12, issue 1, pp. 193–212.

[32] Pieniak-Lendzion, K. et al., 2021. Analysis and operations of passenger rail transport in Poland and selected EU states. *European Research Studies*, vol. 24, issue 1, pp. 1100-1113.

[33] Prussi, M. and Lonza, L., 2018. Passenger Aviation and High Speed Rail: A Comparison of Emissions Profiles on Selected European Routes. *Journal of advanced transportation*, pp.1-10.

[34] Rosa, G., 2021. Passenger Preferences in Rail Transport in Poland as Regards Travelling Time and Cost. *Sustainability, vol. 13, pp. 4737.*

[35] SWI swissinfo.ch. 2021. *International rail travel to and from Switzerland resumes* [online]. [2021-06-12]. Available from: https://www.swissinfo.ch/eng/international-rail-travel-to-and-from-switzerland-resumes/46602670.

[36] swissinfo.cz. 2020. *Coronavirus hits Swiss train passenger numbers.* 10. 03 2020. [online]. [2021-07-12]. https://www.swissinfo.ch/eng/federal-railways_coronavirus-hits-swiss-train-passenger-numbers/45607714.

[37] Taleb, N. N., 2020. Corporate socialism: the government is bailing out investors and managers not you. *Medium*. https://medium.com/incerto/corporate-socialism-the-government-isbailing-out-investors-managers-not-you-3b31a67bff4a.

[38] The Johns Hopkins Coronavirus Resource Center, 2021. COVID 19 - Dashboard. *Center for Systems Science and Engineering.* 01 2021. [online]. [2021-07-12]. https://www.arcgis.com/apps/dashboards/bda7594740fd40299423467b48e9ecf6.

[39] The Local Europe AB. 2020. *How do Covid-19 restrictions impact public transport in Switzerland?*. [online]. [2021-07-05]. Available from: https://www.thelocal.ch/20201105/how-do-covid-19-restrictions-impact-public-transportation-in-switzerland/

[40] www.gov.pl. *Special brief Coronavirus.* 2020. [online]. [2021-06-30]. Available from:https://www.gov.pl/web/norge/special-brief-coronavirus.

[i] https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/eurofxref-graph-chf.en.html

Apendix 1. Descriptive statistics; period 2009Q1 – 2019Q4

	Mean	Mean value error	Median	St. deviation	Min.	Max.	Number
Czechia	195.097	5.535	190.442	36.714	143.853	281.132	44
Poland	120.038	2.518	118.656	16.701	94.955	165.381	44
Slovakia	141.119	5.164	117.871	34.255	95.911	197.416	44
Switzerland	579.908	2.834	580.549	18.802	543.296	616.127	44

Apendix 2. Descriptive statistics; period 2019Q4 – 2021Q1

	Mean	Mean value error	Median	St. deviation	Min.	Max.	Number
Czechia	159.772	28.020	149.523	68.636	90.612	261.695	6
Poland	89.330	15.240	87.0432	37.331	43.495	140.653	6
Slovakia	106.037	24.375	98.2983	59.708	42.140	192.462	6
Switzerland	395.507	59.801	373.691	146.482	216.127	610.098	6

STATE AID MEASURES OF THE EU MEMBERS IN TIME OF COVID-19 PANDEMIC

Petra Doleželová[1], **Lenka Fojtíková**[2]

[1] *VSB -Technical University of Ostrava, Faculty of Economics,*
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
email: petra.dolezelova@vsb.cz

[2] *VSB -Technical University of Ostrava, Faculty of Economics,*
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
email: lenka.fojtikova@vsb.cz

Abstract
The Covid-19 pandemic is one of the greatest health crises in the history of modern humanity having a major impact on the whole world. State aid has become one of the main tools used to mitigate the negative effects of the pandemic on national economies and populations. To fulfill its purpose, State aid should be directed to key areas of the state's economy, to the most vulnerable sectors, and to areas most severely affected by pandemics. While the European Union provides a general framework for State aid, the form and focus of measures is decided by the states individually. The EU member´s economies are not homogeneous, and therefore different approaches to this issue are applied within the countries. The aim of the paper is to identify the State aid measures taken by individual states of the European Union in the context of the COVID-19 crisis and to examine them in terms of their number, type, and focus. This allows identifying which areas were considered either the most vulnerable or the most priority within each Member State. The analysis also provides a comprehensive view of the support measures provided throughout the European Union and helps to identify the most vulnerable and protected areas of the European Union's economy in the context of the Covid-19 pandemic.

Keywords
Covid-19, European Union, State aid, Support measures.

JEL classification
E61, E62, H50

1 Introduction

The first case of Covid-19 was recorded on December 31, 2019, in Wuhan, China. Within weeks, the disease had spread and engulfed the world. Due to the rapid increase in the number of infected people, the governments of the countries had to resort to the introduction of measures preventing further spread of the disease. Along with additional funds to national health services, governments also had to introduce restrictive measures. These measures were largely based on the restriction of people's encounters and their movement. As Demertzis et al. (2020) rightly points out, large parts of the economy, even in the digital era, depend on people-to-people interactions. Therefore, these restrictions inevitably led to a gradual reduction in economic activity and a reduction on both the demand and supply sides. In the spring of 2020, only the most important activities remained in place in most countries.

The countries of the European Union did not escape the pandemic either and were forced to take the necessary steps to support their economies. Since all countries of the EU approached the implementation of restrictive measures according to their needs, some similarities can be traced. Among the earliest interventions introduced by EU countries were quarantine for international travelers, limiting mass and public indoor gatherings, bans on events, and closures of educational institutions. Unfortunately, these measures were not enough to mitigate the spread of the disease, and most states had later to resort to unprecedented measures such as the closure of public spaces including restaurants, entertainment venues, nonessential shops, partial or full closure of public

transport, closure of places of worship, and the most stringent measure - stay home order, also referred as lockdown (ECDC, 2021). These interventions have resulted in a significant decline or even loss of income for many companies and citizens. To mitigate the effects of the Covid-19 pandemic, these restrictive interventions had to be followed by support measures. Like the restrictive interventions, the majority of support measures fell within the competence of the governments of the Member States and were therefore financed from the national budget. Most of the support measures took the form of *State aid*.

Both restricting measures and support measures including State aid introduced in individual Member States might affect the European Union as a whole. However, the effects of State aid can be more severe, as it has the potential to harm trade and competition in the European Union's single internal market and thus jeopardize its proper functioning. As Motta and Peitz (2020) state, the State aid to firms and sector-specific support schemes should be used only when there are market failures and should be effective and proportional. Therefore, all State aid granted by the Member States is subject to the rules laid down by the European Union, and with a few exceptions, all State aid measures must be approved by the Commission. For faster and easier recovery of the Member States' economies from the Covid-19 pandemic, the European Commission has decided to relax these rules. State aid has thus become a major driving force for recovery in most Member States.

The paper examines State aid measures introduced in the European Union in the context of Covid-19. The aim of the paper is to determine which types of measures provided by the legislation of the European Union were used most often and which areas were the most supported. The paper examines the measures put in place by the individual EU Member States, allowing comparisons in terms of the number, type, and focus of State aid. Based on the synthesis of results for individual states, a comprehensive picture of State aid provided within the European Union was created. The paper helps to identify the types of support that the countries of the European Union considered most appropriate for their needs and the economic areas that have been considered a priority in support.

2 Background

The European Union has played an important role in the context of Covid-19, not only by relaxing State aid rules. The EU has been actively involved in combating the spread of the pandemic by supporting vaccine and other Covid-19 related research. To mitigate the socio-economic impact of the pandemic, the EU launched several packages and other economic measures financed from the EU budget.

However, the majority of measures introduced in response to the economic shock caused by the Covid-19 pandemic were fully within the competence of Member States governments, therefore, it was up to governments to decide in which areas and in what amount would aid be directed. Although the concept of State aid suggests that the provision of support should be a matter of the government, in the case of the Member States of the European Union the situation is somewhat more complicated. The European Union has achieved a high degree of integration over the years and is one of the strongest country groupings in the world. The EU Member States have passed on part of their sovereignty on the European Union meaning that in some areas they cannot act fully independently and must take into account the effects of their actions on the European Union as a whole (Bifulco & Nato, 2020). This also applies to the issue of State aid.

One of the greatest successes of the European Union is the creation of the European Single Market, which enables the free movement of goods, services, capital, and persons. State aid can distort trade and competition not only on the domestic market but also on the EU common market by favoring certain undertakings. Therefore, the integrity and functioning of the European Single Market may be jeopardized by State aid measures taken by the individual Member States. This is enshrined in Article 107 of the Treaty on the Functioning of the European Union, in which State aid is defined as “*any*

aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, insofar as it affects trade between Member States be incompatible with the internal market" (European Union, 2016*).*

Treaty on the Functioning of the European Union states four main criteria which determine the presence of State aid. The State aid:

- is granted by a state or through state resources,
- brings an economic advantage to particular economic subjects,
- represents a threat of distortion of competition within the internal market of the EU,
- affects trade between EU Member States.

To prevent the Member States from granting aid that could distort competition, the EU has laid down State aid rules. If the measure introduced fulfills all the criteria of State aid the EU State aid rules shall apply. Nonetheless, under Article 107 (2) and (3) Treaty on the Functioning of the European Union, the European Union has also identified exemptions where State aid is compatible with the EU internal market. Member States are required to inform the European Commission of any proposed State aid so that the Commission can determine whether the aid fulfills the conditions for exemption. The Commission also monitors existing State aid on an ongoing basis and requires the Member States to provide annual reports. To make full use of the flexibility of State aid rules for the Member States, the Commission decided that the Covid-19 pandemic falls into exemptions enshrined in Article 107. The European Commission has declared that "*the COVID-19 outbreak qualifies as an exceptional occurrence for the purpose of Article 107 (2) (b)*". According to the Commission, State aid granted in the context of the Covid-19 pandemic is also under Article 107 (3) (b) of the TFEU considered "*to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest* " (European Union, 2016).

European Commission also issued on 13 March 2020 a communication on Coordinated economic response to the COVID-19 Outbreak which offers the overview of options available to the Member States to mitigate the impact of the pandemic. The Communication also identifies transmission channels through which the Covid-19 pandemic may affect the economy of the EU. These are:

- the shock resulting from China's initial contraction,
- the supply shock resulting from the disruption of supply chains and absences from the workplace,
- a demand shock caused by lower consumer demand,
- the negative impact of uncertainty on investment plans,
- and the impact of liquidity constraints for firms.

To complement the existing possibilities of State aid measures, the Temporary State Aid Framework was adopted by the European Commission on 19 March 2020. The Temporary Framework "*enables Member States to use the full flexibility foreseen under State aid rules to support the economy in the context of the coronavirus outbreak"* (European Commission, 2020). The Framework provides guidance on the Commission´s application of Article 107(3)(b) TFEU and further outlines the temporary State aid measures. Since its adoption, the Temporary Framework has been amended five times.

To sum up, the European Commission provides the Member States with the possibilities to grant State aid in the context of Covid-19 under 107 (2) (b), 107 (3) (b), and 107 (3) (c) of the TFEU, and the Temporary Framework.

Member States make varying use of these opportunities and seek to make the best use of them to support their economies in the context of the Covid-19 pandemic. Although the approval of State aid

measures is in the hands of the Commission, states themselves choose which of the offered measures they will use, and in which areas the State aid will be directed.

3 Methodology and data

For the analysis of the types of measures, State aid was divided into the groups listed in Table 1 based on the provisions contained in the amended State Aid Temporary Framework. (European Commission, 2020). Groups I to V include State aid measures aimed at ensuring sufficient liquidity for companies. Groups VI, VII, VIII, and XII include measures targeted at accelerating research and development, testing, and production of Covid-19 relevant products. Measures for protecting jobs in sectors severely hit by Covid-19 are included in groups IX and X. Measures focused on long-term solvency issues are in group XI.

Table 1. Types of State aid

I	Direct grants, equity injections, selective tax advantages, and advance payments
II	State guarantees for loans taken by companies
III	Subsidized public loans to companies, including subordinated loans
IV	Safeguards for banks that channel State aid to the real economy
V	Public short-term export credit insurance
VI	Support for coronavirus related research and development
VII	Support for the construction and upscaling of testing facilities
VIII	Support for the production of products relevant to tackle the coronavirus outbreak
IX	Targeted support in the form of deferral of tax payments and/or suspensions of social security contributions
X	Targeted support in the form of wage subsidies for employees
XI	Targeted support in the form of equity and/or hybrid capital instruments
XII	Support for uncovered fixed costs for companies facing a decline in turnover in the context of the coronavirus outbreak

Source: European Commission.

The next part of the analysis is the assessment of the focus of State aid granted in the context of Covid-19, i.e., the identification of the main areas to which State aid provided by the members of the European Union was most often directed. As Van Hove (2020) concludes most of the COVID-19-related State aid cases were sector-neutral. Since State aid was not always directed to specific sectors the breakdown of measures into groups formed on the basis of economic sectors would be for the analysis purposes insufficient. Therefore, we used horizontal and vertical State aid rules, and based on the information contained in the European Commission's publication Rules Applicable to State Aid (2014), we worked with groups that would best reflect the focus of the measures applied during the pandemic. The individual groups reflecting the focus of State aid of the European Union´s countries are listed in Table 2.

Table 2. Target areas of State Aid

1	Companies	11	Aquaculture and Fishery sector
2	SMEs	12	Audiovisual sector
3	Agriculture and forestry	13	Exporting companies
4	Airline companies	14	Maritime
5	Tourism, travel-related	15	Medias
6	Cultural sector	16	Non-profit organizations
7	Covid-19 relevant	17	Rail Freight
8	Economy	18	Sport and recreational infrastructures
9	HORECA	19	Road transport
10	Employment, Self-employed	20	Others

Source: Author´s creation.

The first group *Companies* includes State aid cases in which the target subjects of support were companies without any further specification regarding their size or economic activity. The aid measures in this group were most often measures specified as *State aid for companies of all sizes operating in all sectors* usually paired with certain exceptions. The second group *SMEs (Small and Medium-sized Enterprises)* includes all measures aimed at companies with a specification of their size, namely micro, small and medium-sized businesses. The third group includes measures aimed at *Agriculture and forestry*. These include extensive general support schemes for the agricultural sector, but also measures targeting narrow specific areas of agriculture, such as support for potato farmers, sheep breeders, wine producers, etc. The fourth group *Airline companies* consists of State aid measures focused on the aviation sector. This group is the only group that includes measures focused solely on individual companies with specific activities. Measures in this group are usually targeted at individual airlines in a given Member State. The fifth group *Tourism, travel-related sector* includes state measures designed to support tourism and the travel companies, namely operators of tourist attractions, tour operators, tourism organizations, travel organizers, etc. The sixth group includes all State aid measures targeted at the *Cultural sector*. These measures are open, for example, to theatres, cinemas, cultural venues, cultural centers, self-employed artists, or professional technicians active in the cultural sector. Measures in this group usually take the form of compensation for costs incurred in relation to canceled events.

All measures related to the support of companies and other organizations operating in the field of research and development, or the production of products relevant to the Covid-19 pandemic belong to the seventh group - *Covid-19 relevant*. As another of the groups of State aid measures, we also included the group *Economy*, which includes all general measures to support the national economy in the context of the coronavirus outbreak. Measures in this group are large schemes, often called "umbrella schemes", involving several different State aid instruments with a wide range of beneficiary entities. The ninth group is called *HORECA*, which is an official abbreviation for the hotels-restaurants-cafes. All measures concerning the foodservice industry and accommodation, therefore, fall into this group. All measures related to maintaining or supporting employment or supporting people in freelancing are included in the tenth group *Employment, Self-employed.* Other, less common groups are groups *Aquaculture and Fishery sector; Audiovisual sector; Exporting companies; Maritime; Medias; Non-profit organizations (NPOs); Rail Freight; Sport and multifunctional recreational infrastructures, spa; and Road Transport.*

All data related to types of individual measures were obtained from the database State aid cases of the European Union, which includes all notifications regarding State aid issued by members of the EU. To examine the focus of individual measures, information retrieved from the *List of Member*

State Measures approved under Articles 107 (2) b, 107 (3) b, and 107 (3) c of the TFEU and under the State Aid Temporary Framework (European Commission, 2021) were used.

Other detailed information on State aid measures has been obtained from the official websites of the European Commission, which provide a detailed overview of the measures issued in the EU countries. The analysis includes all State aid decisions issued from the beginning of the pandemic in March 2020 to May 2021.

4 Empirical Results

The number of State aid measures was determined based on notifications submitted to the European Commission by individual EU states. In May 2021, the number of notifications of State measures reached 530. The analysis took into account all measures taken under the State Aid Temporary Framework and under Articles 107 (2) b, 107 (3) b, and 107 (3) c of the TFEU. Fig. 1 shows the distribution of measures among the individual Member States of the European Union. The highest number of State aid cases was recorded in Italy, where the number of notifications reached almost 50. The high number of measures have also been introduced by Belgium, Czechia, Denmark, and Poland. The differences between the numbers of measures implemented by the rest of the countries were relatively small. The smallest number of measures was issued by Croatia and Spain.

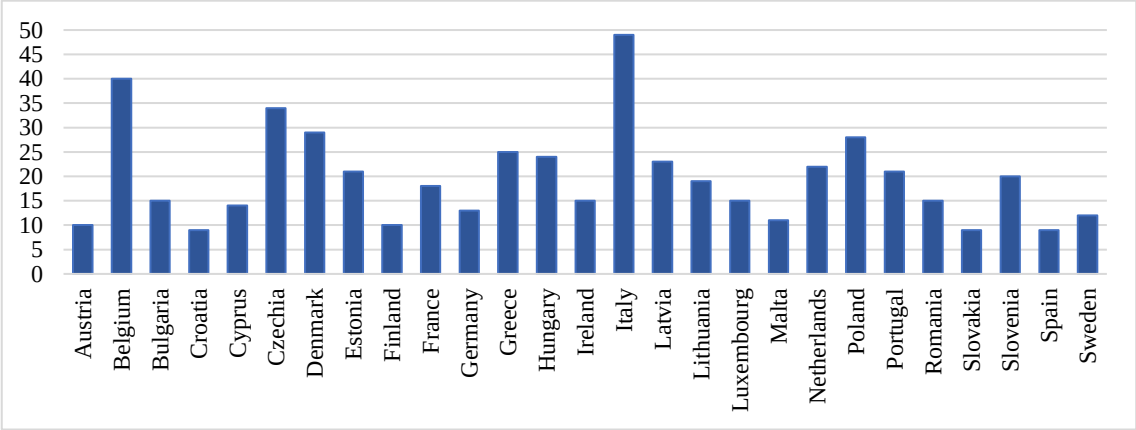


Fig. 1. Number of State aid measures (author´s creation)

In the second part of the analysis, the types of State aid measures were examined. Fig. 2 displaying type structure of measures across the EU Member States shows that the most commonly used types in all countries except Croatia, France, and Slovenia were *Direct grants, equity injections, selective tax advantages, and advance payments*.

In most countries, one or two types of measures predominated in State aid cases. The rest of the State aid instruments were relatively highly diversified in individual countries. The fewest used types of State aid were recorded in Croatia and Romania, which used only three of the twelve instruments offered by the legislative framework covering State aid within the European Union. Apart from Cyprus, Finland, and Hungary, all other countries used more than seven types of State aid measures.

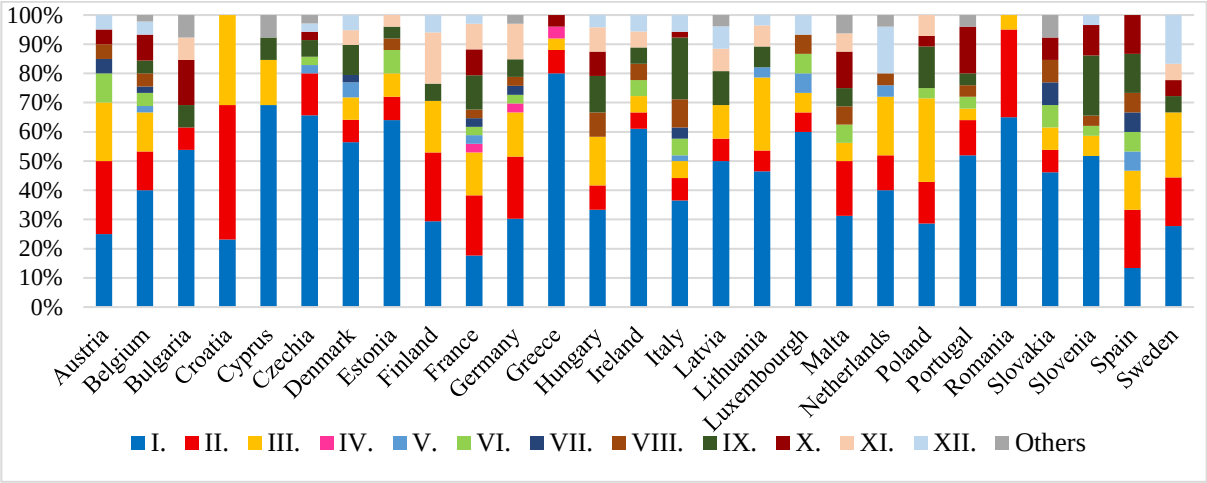


Fig. 2. Types of State Aid of EU Member States (author´s creation)

Shares of individual types of the State aid measures for the European Union as a whole are shown in Fig. 3. As could already be seen in Fig. 2., the most frequently used types of State aid were *Direct grants, equity injections, selective tax advantages, and advance payments*, which accounted for almost 45% of all measures introduced within the European Union during the Covid-19 pandemic. In this group of measures, direct grants predominated as the most commonly used instrument. Other instruments from Group I were used less often. The second-largest share of EU State aid measures was formed by group II *State guarantees for loans taken by companies*, closely followed by group III *Subsidized public loans to companies, including subordinated loans*.

The least used types of State aid in the European Union were types of measures from Group V - *Public short-term export credit insurance, Support for coronavirus related research and development,* Group IV - *Safeguards for banks that channel State aid to the real economy*, and Group VII - *Support for the construction and upscaling of testing facilities.* These measures together accounted for less than 4 % of EU State aid cases for the period under review.

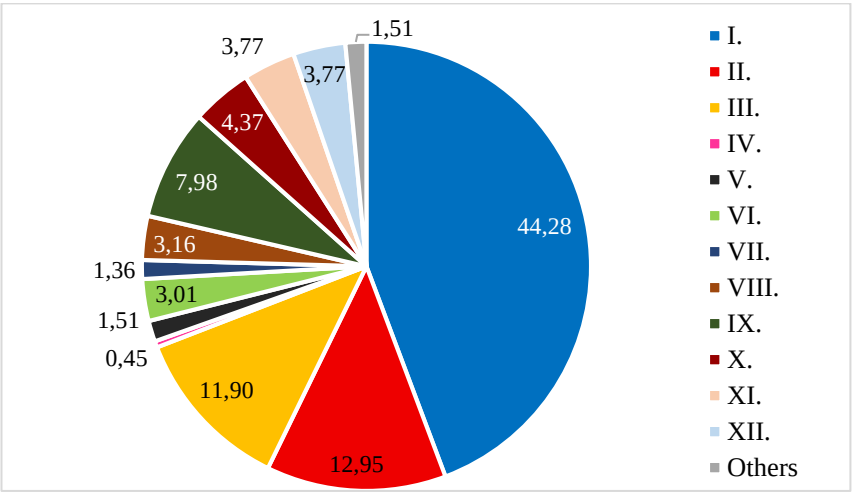


Fig. 3. Types of the EU´s State Aid (author´s creation)

Disruptions in supply chains and declines in demand caused by the Covid-19 pandemic had differential effects on individual economic sectors and areas. While some sectors have been affected by the pandemic only slightly, others have been hit hard and would not have been able to recover without state support. Therefore, the next part examines the focus of State aid measures in individual

Member States. The shares of areas to which State aid was directed in individual countries are shown in Fig. 4.

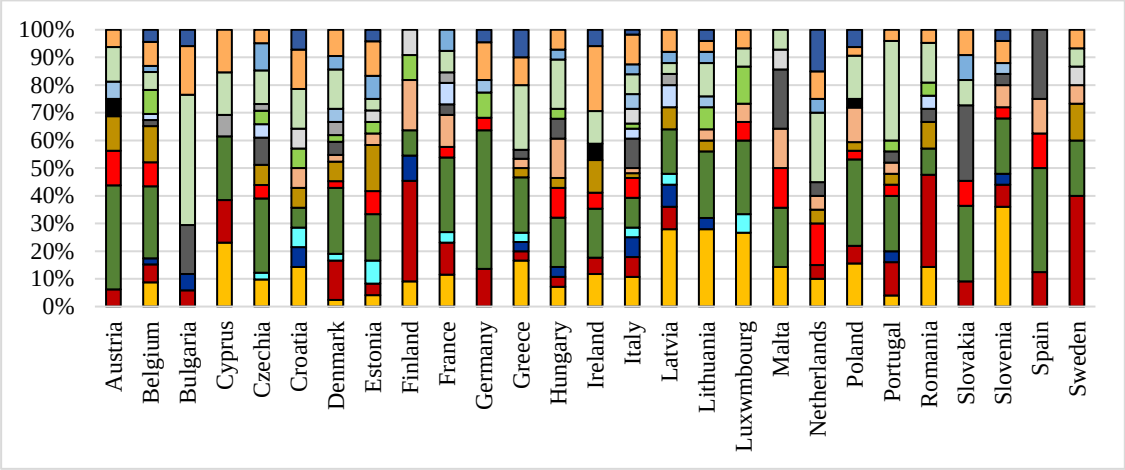


Fig. 4. Target areas of Members State´s State Aid measures (author´s creation)

For target areas, the identification of the group with the largest share is no longer as simple as for types of State aid measures. However, for each country, approximately two or three largest groups could be identified. While in most countries was State aid targeted at a wide range of areas, in Bulgaria, Cyprus, and Spain, measures were concentrated on only a few areas. However, this is mainly due to the low number of State aid cases in all these three countries.

Based on the synthesis of the results obtained for individual countries, an overview of the percentage of focus areas for the whole European Union was created. The graph on the left in Fig. 5 shows the ten areas on which the largest number of State aid measures have been focused. The graph on the right shows the percentage distribution of the group *Other*, which is a group that includes areas to which support was directed less frequently.

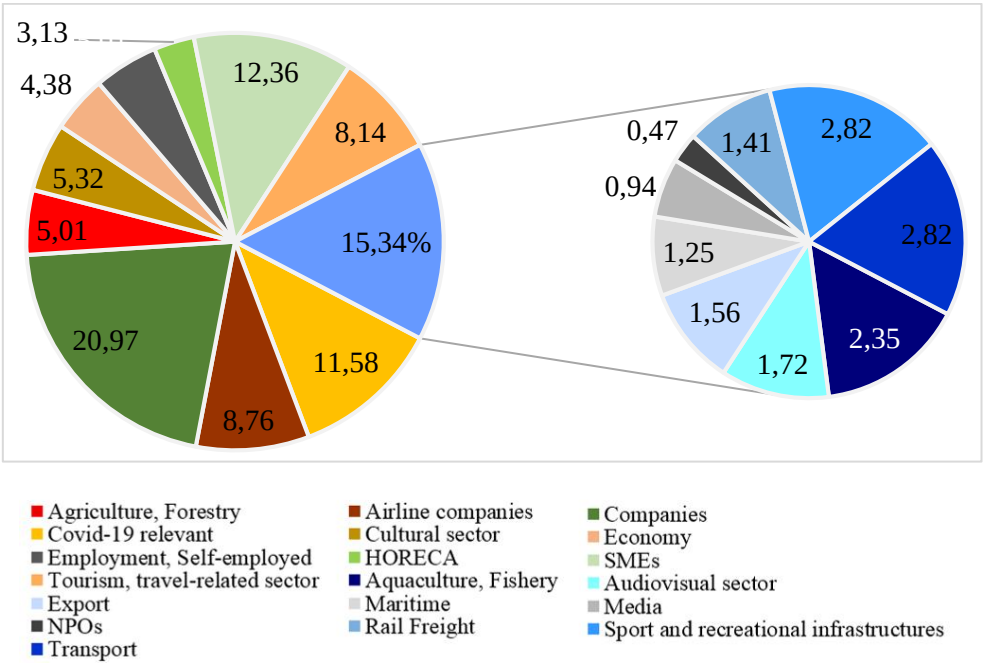


Fig. 5. Target areas of EU´s State Aid (author´s creation)

The largest number of State aid measures was aimed at supporting companies regardless of their size or activity. The group Companies accounted for around 20% of total State aid cases in the European Union. The second-largest group were measures aimed at supporting small and medium-sized enterprises. The groups *Companies* and *SMEs* together account for more than 30% of the total measures. A large amount of State aid was also focused on *Agriculture and forestry*, which is the third-largest group. While in some countries large general schemes have been implemented to support the agricultural sector (Poland), some countries have rather used smaller, more numerous measures with a very specific focus (Luxembourg, Slovenia).

Although State aid to aviation took the form of measures targeting individual airlines, these measures formed a significant part of State aid granted within the European Union and have reached relatively high amounts. This is mainly because aviation is one of the most important industries in the EU and generated more than € 250 billion of total turnover in 2019 and provided almost 900,000 direct jobs. The decline in air traffic reached more than 90 % in April 2020 compared to the same month of 2019 (De Vet et al., 2021). With such large loss, significant state support was unavoidable.

Due to restrictions on movement and border closures, large amounts of State aid also went to the tourism and travel sector, which was one of the most severely affected sectors due to the Covid-19. According to UNCTAD (2021) number of international tourist arrivals declined by 74 % in 2020 compared with the previous year. Despite the fact that developing countries were hit hardest, the reduction in tourism also had a significant impact on the EU, especially Spain, Portugal, Italy, and Greece.

5 Conclusion

Aim of the paper was to examine State aid provided by Member States of the European Union in the context of the Covid-19 pandemic. The European Union recognizes the Covid-19 pandemic as an exceptional situation that requires emergency measures to minimize the impact on countries' economies and lives of citizens. To this end, the European Union relaxes State aid conditions and offers Member States the use of several types of State aid measures that are otherwise incompatible with the internal market and are therefore prohibited or restricted. The analysis shows that, although there is a predominance of several forms of State aid, most of the Member States sought to make full use of the possibilities offered by the legislative framework provided by the European Union. With a few exceptions, there were no major differences in the number of measures implemented by the individual Member States. Based on the results, it cannot be said that the number of measures corresponds to the size of the economy, i. e., for both large and small economies, both high and low numbers of measures have been recorded. As for the types of measures, countries with larger economies generally used more types of State aid than countries with smaller economies. The most frequently used type of State aid was direct grants. However, many State aid cases included more than one aid instrument. Within the EU State aid cases, a combination of direct grants and subsidized public loans or subordinated loans was quite common.

Unjustified or excessive use of State aid by states could disadvantage other EU members and seriously damage the functioning of the European Union's internal market. Member States can sometimes neglect these consequences in their efforts to save businesses and protect the economy. The European Commission must therefore work actively to ensure that the State aid measures put in place are measures that serve their purpose but do not have long-term side effects. Fortunately, the analysis shows that most of the State aid measures examined focused on relatively broad areas and only exceptionally on narrowly defined economic activities or specific firms (except for aviation). In cases where State aid was sector-specific, it was targeted at sectors that were undoubtedly most severely affected by the pandemic, and therefore these measures appear to be justified. This

significantly reduces the threat of negative effects of State aid measures introduced in response to Covid-19.

It also cannot be ruled out that State aid granted within one state could have a positive impact on other countries, in the form of spill-over effects. However, it is difficult to quantify these effects or identify their exact sources.

6 Acknowledgement

This paper was created within the project Support of Talented Doctoral Students at VSB-TUO 2020. This research was supported by SGS grant from the VSB – Technical University of Ostrava (grant number SP2021/50).

References

[1] Bifulco, R. and A. Nato, 2020. *The concept of sovereignty in the EU -past, present and the future.* RECONNECT - Reconciling Europe with its Citizens through Democracy and Rule of Law. Libera Università Internazionale degli Studi Sociali.

[2] Collie, David R., 2000. State aid in the European Union: The prohibition of subsidies in an integrated market. *International Journal of Industrial Organization*, vol. 18, issue 6, pp. 867-884.

[3] Demertzis, M., A. Sapir, S. Tagliapietra and G. B. Wolff. 2020. *An effective economic response to the Coronavirus in Europe,* Policy Contributions 35323, Bruegel.

[4] De Vet, J. Met al. 2021. *Impacts of the COVID19 pandemic on EU industries*, Publication for the committee on Industry, Research and Energy, Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament.

[5] ECDC. European Centre for Disease Prevention and Control. 2021. *Data on country response measures to COVID-19*. [online]. [2021-07-12]. Available from: https://www.ecdc.europa.eu/en/publications-data/download-data-response-measures-covid-19

[6] European Commission. 2020. *Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak,* Communication of 19 March 2020, Official Journal of the European Union, C 091I, 1-9.

[7] European Commission, 2021. *Coronavirus Outbreak - List of Member State Measures approved under Articles 107(2)b, 107(3)b and 107(3)c TFEU and under the State Aid Temporary Framework.*

[8] European Union. 2016. Consolidated version of the Treaty on the Functioning of the European Union (TFEU), *Official Journal C202/1*, Available from: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AC%3A2016%3A202%3ATOC.

[9] Motta, M. and M. Peitz. 2020. *State Aid Policies in Response to the COVID-19 Shock: Observations and Guiding Priciples,* CRC TR 224 Discussion Paper Series crctr224_2020_179, University of Bonn and University of Mannheim, Germany.

[10] UNCTAD. 2021. United Nations Conference on Trade and Development. Covid-19 and tourism. An update. Available from: https://unctad.org/system/files/official-document/ditcinf2021d3_en_0.pdf

[11] Van Hove, J., 2020. Impact of State aid on competition and competitiveness during the COVID-19 pandemic: an early assessment. *Policy Department for Economic, Scientific and Quality of Life Policies*. European Parliament. December 2020.

THE COMPARISON OF V4 SOCIAL SECURITY SCHEMES WITH THE FOCUS ON MATERNITY AND PARENTAL BENEFITS

Danuta Duda[1], **Kamila Turečková**[2], **Ivona Buryová**[3], **Radka Kubalová**[4]

[1]*Silesian University in Opava, School of Business Administration in Karvina, Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic*
email: duda@opf.slu.cz

[2]*Silesian University in Opava, School of Business Administration in Karvina, Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic*
email: tureckova@opf.slu.cz

[3]*Silesian University in Opava, School of Business Administration in Karvina, Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic*
email: buryova@opf.slu.cz

[4]*Silesian University in Opava, School of Business Administration in Karvina, Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic*
email: kubalova@opf.slu.cz

Abstract
The paper contains an analysis and comparison of financial benefits during maternity and parental leave in the V4 countries. As an illustration, the chosen topic is processed in a form of individual diagrams of social security schemes for every V4 country. The diagrams represent an overview containing and focusing specifically on the birth grant, maternity, parental and paternity benefits. The aim of the paper is to present and compare the differences in the structure of social security schemes with the focus on the mentioned benefits, as well as their amount in the Czech Republic, Poland, Slovakia, and Hungary. The chosen methods used in the paper are description, analysis, and comparison. Both literature and the legislation of V4 countries were used to obtain the data and information used in the paper. The results of the analysis and the comparison shall contribute not only to the experts but also to the general public.

Keywords
Comparison, maternity benefit, birth grant, parental benefit, paternity benefit, maternity grant, social security.

JEL classification
H55, K31

1 Introduction

The support of motherhood and parenthood is a part of social policy and national family policy in every developed society. The ability to provide financial income to cover the child and parent needs in the form of maternity grants, together with the time needed for childcare, is one of the indicators of the social development of each country (Krebs, 2015, Koldinská, 2015). The topic of the paper is the social and financial issue of maternity and parental leave in the V4 countries. The focus of the investigation is the legislation of the selected countries (Czech Republic, Hungary, Slovakia and Poland) relating to the benefits during pregnancy, motherhood and parental leave. The aim of the paper is to present and compare the differences in the structure of social security schemes with the focus on the mentioned benefits, as well as their amount in the Czech Republic, Poland, Slovakia, and Hungary. The paper focused on the legislation of the selected countries and subsequently on the professional monographs written by the authors who deal with the relevant issue. The issue of maternity and parental leave in Poland is dealt by Babińska-Górecka (2015), in the Czech Republic and Slovakia the authors are represented for example by Dudová (2018), Koldinska (2015), Pakšiová

(2021), Krebs (2015),Tröster (2018), and in Hungary, the topic is pursued by Fodor and Popescu (2002) and others.

2 Social Security Schemes with the Focus on Maternity and Parental Benefits in the Czech Republic

Maternity and parental benefits in the Czech Republic include: maternity benefit, birth grant, paternity benefit and parental benefit.

The **maternity benefit** amounts to 70 % of the reduced daily basis of assessment per calendar day (Czech Social Security Administration, 2021). The application for the benefit must be submitted by the employee before they start to draw the benefit at their employer (the employer then presents it to the relevant Regional Social Security Administration), the self-employed person applies for the benefit at the relevant Regional Social Security Administration. In compliance with the Labour Code of the Czech Republic No. 195 on childbirth and childcare, the employee is eligible for maternity leave of 28 weeks; in case she gives birth to two or more children simultaneously, she is entitled to maternity leave of 37 weeks. The maternity leave usually starts six weeks before the expected day of childbirth, or at the earliest of eight weeks before the day of childbirth.

The right to maternity benefit can be claimed only when fulfilling two conditions. The beneficiary must participate in sickness insurance when claiming the maternity benefit (i.e. regular social premiums is paid from the beneficiary´s salary), or a protection period from the closed sickness insurance must be still running. The second condition that must be fulfilled – the beneficiary must have participated in sickness insurance for at least 270 days in the last two years before claiming this benefit (which is approximately 9 months of sickness insurance within two years) (Czech Social Security Administration, Labour Office, 2014).

Birth grant. In the past, the birth grant was paid to all people regardless of the amount of their income, yet since 2011 the state has been granting this social benefit only to low-income families. It can be only granted for the first and second child. The birth grant is a one-off benefit. It amounts to 13 thousand CZK for the first child, and 10 thousand CZK for the second child. There is no birth grant paid for the third and subsequent child. Only families whose income does not exceed 2.7 times the living minimum are entitled to the birth grant (Act No. 45 and 46 on social security benefit.[1]

Paternity benefit was introduced in the Czech Republic on February 1, 2018. According to Act No. 38b on sickness insurance, the length of this benefit is 1 week and starts with the commencement of the paternity leave. Paternity leave should start within 6 weeks after childbirth or on the date when the care for the child begins. The paternity leave amounts to 70% of the daily basis of assessment per calendar day.

Parental benefit can be claimed by a parent who personally provides full-time regular care for the youngest child in the family up to the age of four. The maximum amount to claim is 300 000 CZK. In the case of twins or multiple births, the total amount is increased to 450 000 CZK. The parent is free to decide the monthly amount of parental benefitThe amount of parental benefit is defined by the daily assessment base for defining maternity benefit, or by sickness benefit granted when giving birth or caring for a child according to sickness insurance act. The amount of parental benefit can be altered once every three months (The Ministry of Labour and Social Affairs, 2021).

Students and the unemployed registered at the Labour Office of the Czech Republic: When in education, no assessment base can be defined and so a student is not entitled to maternity benefit. This also applies to the unemployed who are not entitled to maternity benefit as they do not participate in sickness insurance. However, both these groups are granted **parental benefit** by the Labour Office of the Czech Republic. (Czech Social Security Administration, 2021).

See Figure 1 for an overview of all the benefits and grants in the Czech Republic.

[1]In the case of first-born twins or a multiple birth, the birth grant is 23 thousand CZK (i.e. the total for the first and second child). If a woman already has a child at home and twins are born, the birth grant amounts to only 10 thousand CZK.

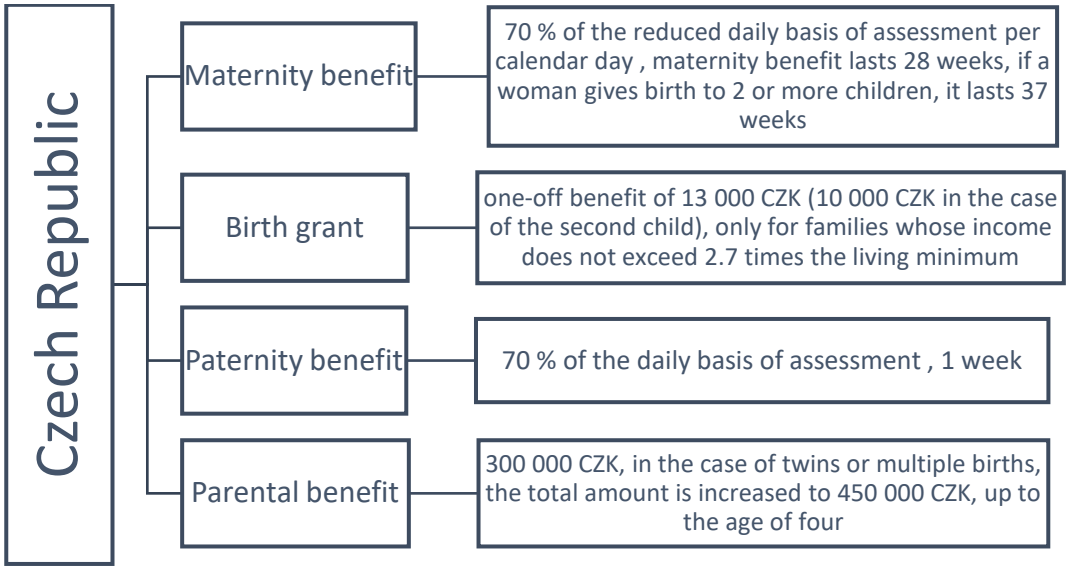


Fig. 1. Social Security Schemes with the Focus on Maternity and Parental Benefits in the Czech Republic (Source: own)

3 Social Security Schemes with the Focus on Maternity and Parental Benefits in Poland

Maternity and parental benefits in Poland: maternity benefit, parental benefit, one-off birth grant, supplementary family benefit at childbirth, one-off birth grant paid by the Commune Council (Babińska-Górecka, 2015).

Maternity benefit in Poland is granted for the period of **maternity leave, parental leave** and **paternity leave** (Article No.184 of the Labour Code of the Republic of Poland). The length of maternity leave depends on the number of live-born children. It ranges from 20 weeks (with one live-born child) up to 37 weeks (when giving birth to five and more children)[2]. The woman is entitled to a maximum of 6 weeks of maternity leave before giving birth (Article No. 180 of the Labour Code of the Republic of Poland).

At the end of maternity leave, the woman is entitled to **parental leave**. The length of parental leave depends on the number of live-born children and ranges from 32 weeks (with one live-born child) up to 34 weeks (with multiple birth) (Article No.182^{1a} of the Labour Code of the Republic of Poland). Parental leave in Poland is a bit problematic as it is part of maternity benefit and cannot be compared to parental leave in the Czech Republic.

In Poland, the term **"annual maternity leave"** is often used. Yet it needs to be emphasised that this term is solely informal, there is no term as "annual maternity leave" stipulated by the law. This informal term of "annual maternity leave" cumulates maternity leave and parental leave. The total of these two "leaves" equals 52 weeks, hence the term "annual maternity leave" (Infor.Kadry, 2020). All people that participate in sickness insurance are entitled to maternity benefit. Another condition of course is the birth of a child (Article No.29 on financial benefits from social insurance in case of sickness and maternity, the Republic of Poland).

The maternity benefit in Poland is: 100 % of the basis for calculating the maternity benefit for the length of 20 weeks, 100 % of the basis for the first 6 weeks of parental leave and 60 % of the basis for calculating parental leave for the rest of the parental leave, i.e. for the length of 26 weeks (Article No.31, paragraph1 and 2 on financial benefits from social insurance in case of sickness and maternity, the Republic of Poland). This is all in case that one child is born. If the mother decides that she wants to be granted the same amount of maternity benefit for the whole year, then the maternity benefit amounts to 80 % (ZUS, 2016).

Paternity leave: In compliance with Article $182^{3,}$ paragraph 1 and 1^{1} of the Labour Code of the Republic of Poland, the length of paternity leave is 2 weeks at maximum. Since January 2, 2016,

[2] The maternity leave amounts to 31 weeks when giving birth to two children, 33 weeks when giving birth to three children and 35 weeks in the case of four children.

paternity leave can be used in two separate periods. The minimum length of each period must be 7 days, so the employee has two options: the first option is paternity leave lasting 2 weeks, the second option are two paternity leaves, each lasting 1 week (i.e. 1 paternity leave taken in two separate periods). Paternity leave can be taken until the child is 24 months old. The employee on paternity leave is entitled to 100 % of the basis of an average income of the last 12 months preceding the month in which the paternity leave is taken. If the period of employment is shorter than one year, the basis for calculating maternity leave is based on the whole months (Infor.Kadry, 2021).

In Poland, if the person is unemployed or a student and does not participate in sickness insurance, they are entitled to **parental benefit**, known as "**kosiniakowe"[3], amounting to 1 000 PLN** monthly. The period during when this benefit is paid depends on the number of live-born children. It ranges from 52 weeks (with one live-born child) up to 71 weeks (with 5 and more live-born children) (Article 17c on family allowances of the Republic of Poland).

Maternity benefit is followed by the so-called **child-raising leave** and it is unpaid in Poland. The maximum length of child-raising leave is 36 months, i.e. 3 years. The leave can be taken until the end of the calendar year in which the child reaches 6 years of age.

See Figure 2 for an overview of all the benefits and grants in the Republic of Poland.

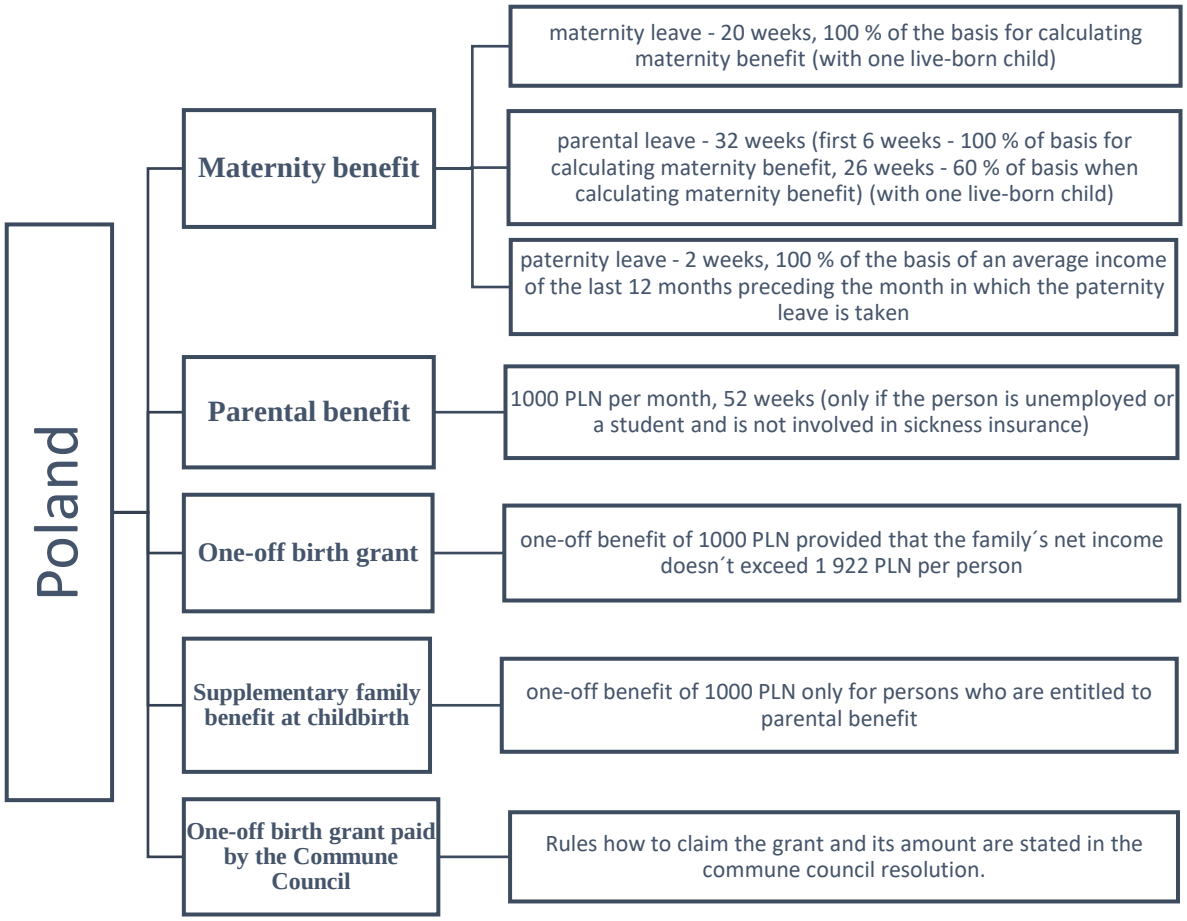


Fig. 2. Social Security Schemes with the Focus on Maternity and Parental Benefits in Poland (Source: own)

[3]The name of „kosiniakowe" originates from the surname of the former minister of labour in Poland, Władysław Kosiniaka-Kamysz. He was the initiator of this benefit in 2016.

One-off birth grant. One-off birth grant is paid for the birth of a live child amounting to 1000 PLN[4] provided that the family´s net income doesn´t exceed 1 922 PLN per person. The application must be submitted no longer than 12 months from the birth of the child. The grant is awarded if the woman had been in medical care from the 10th week of her pregnancy until giving birth (Article 15b on family allowances of the Republic of Poland).

Supplementary family benefit at childbirth. This one-off benefit amounts to 1 000 PLN[5] and is only granted to people who are entitled to family allowance (family allowance is only granted to families whose net income per person does not exceed 504 PLN) (MPS, 2021). The grant is awarded if the woman had been in medical care from the 10th week of her pregnancy until giving birth. The application must be submitted no longer than until the child reaches one year of age (Article 9 on family allowances of the Republic of Poland).

One-off birth grant paid by the Commune Council. The Commune Council has the right to grant one-off birth grant to people with permanent residence. Detailed rules on how to claim the grant are stated in the commune council resolution. The grant is financed from the own funds of the municipality.

4 Social Security Schemes with the Focus on Maternity and Parental Benefits in Slovakia

Maternity and parental benefits in Slovakia are: maternity benefit, parental benefit, birth grant, pregnancy benefit and pregnancy grant.

A woman is entitled to **maternity benefit** provided that she participated at least 270 days in sickness insurance in the last two years before childbirth. She is entitled to maternity benefit for the period of 34 weeks, or 37 weeks provided that she is a single mother. If she has given birth to two or more children simultaneously, she is entitled to maternity benefit for the period of 43 weeks (Dudová, 2018). Maternity leave usually starts six weeks before the expected date of childbirth, or eight weeks before the expected date of birth at the earliest (Article No. 48 on social insurance of the Slovak Republic). The maternity benefit amounts to 75 % of the daily assessment basis or probable daily assessment basis (Art.No.293 feg on social insurance of the Slovak Republic).

Parental benefit is paid to a person caring for a child up to the age of three, or to the age of six in the case of a child with long-term unfavourable health condition.

The amount of parental benefit in 2021 amounts to:

a) 275,90 euros per month provided that the beneficiary was not entitled to maternity benefit

b) 378,10 euros per month provided that the beneficiary was entitled to maternity benefit.

If the entitled person is caring for two or multiple live-born children, the amount increases by 25 % for each child. An absence of child (children) at school for at least three consecutive days results in a decrease of parental benefit by 50% (the Ministry of Labour, Social Affairs and Family of the Slovakian Republic, 2021). The provision of a pandemic parental allowance was also part of measures to mitigate the effects of the COVID 19 pandemic under the aid packages adopted. (Vitálišová, Borseková, Vaňová, Helie, 2021).

Birth grant is a one-off benefit. This benefit is granted to a mother who has given birth to the child, or the father provided that the mother passed away or the police have launched a search for her, or the father has been granted custody of the child based on a lawful judgement (Article 2, paragraph 1 on birth grant for one or multiple live-born children and amendment and completion of some acts). Birth grant amounts to:

- 829,86 euros for the first, second and third live-born child that has lived for at least 28 days,
- 151,37 euros for the fourth and subsequent child, or for the first, second and third live-born child that has lived less than 28 days.

[4] In the case of twins the benefit amounts to 2000 PLN, in the case of triplets it is 3000 PLN, etc.

[5] In the case of multiple childbirth, each child is entitled to this benefit.

If the mother has given birth to two or more live-born children simultaneously, and two of them has lived for at least 28 days, the grant is increased by 75,69 euros per each child that has lived for at least 28 days (Article 4 on birth grant for one or multiple live-born children and amendment and completion of some acts).

Since April 1, 2021, a new financial benefit called **pregnancy benefit** is paid by the Social Insurance Agency of the Slovakian Republic. Pregnancy benefit is to provide the pregnant woman with an income that will compensate for the increased expenses during her pregnancy, such as e.g. food, clothes, health care and others. Entitlement to the benefit arises from the beginning of the 27th week before the expected day of childbirth (i.e. from the 13th week of the pregnancy) and expires on the day of the termination of the pregnancy. The woman is entitled to the benefit provided she achieved at least 270 days of sickness insurance in the last two years that started before the beginning of the 27th week before the expected day of childbirth. The amount of the pregnancy benefit represents 15 % of the daily assessment basis or probable daily assessment basis (Article 47a-47c on social insurance of the Slovakian Republic).

Pregnant students are entitled to claim **pregnancy grant**. Since April 1, 2021 universities and secondary schools started to pay a new grant from the state budget for pregnant students called pregnancy grant, in compliance with Act No.245/2008, Article 149a on upbringing and education (school Act) and on amendments and completion of some acts – secondary school students and Act No. 131/2002, Article 96b on universities, as amended – university students. The entitlement to pregnancy grant begins the 27th week before the expected day of childbirth (i.e. from the 13th week of the pregnancy) and expires on the day of the termination of the pregnancy. The amount of pregnancy grant is 200 euros per month and it is granted by the secondary school headteacher or university rector (or the dean of faculty).

See Figure 3 for an overview of all the benefits and grants in Slovakia.

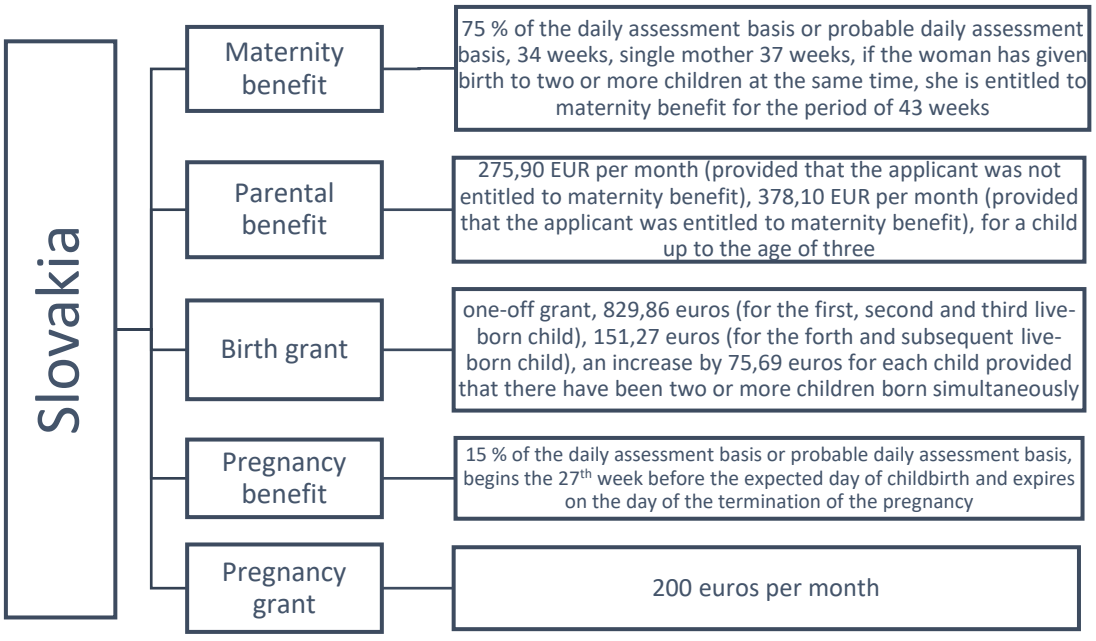


Fig. 3. Social Security Schemes with the Focus on Maternity and Parental Benefits in Slovakia (Source: own)

5 Social Security Schemes with the Focus on Maternity and Parental Benefits in Hungary

Maternity and parental grants and benefits in Hungary are: maternity benefit, child care benefit, child care benefit while in education, child care benefit for grandparents, one-off maternity grant, child home care benefit (Fodor et al., 2002).

Maternity benefit is entitled to a woman that has participated in sickness insurance for at least 365 days during the last two years. The woman is entitled to maternity benefit for the length of 24 weeks. Maternity benefit is paid no earlier than four weeks before the expected day of childbirth unless arranged otherwise. The right to claim the benefit starts on the day of childbirth at the latest. The benefit amounted to 70 % of the monthly gross income. Since July 1, 2021, maternity benefit amounts to 100 % of the monthly gross income (Magyar Államkincstár, 2021a).

Child care benefit is granted to parents (mother or father) under the health insurance scheme until the child has reached the age of 2 (or the age of 3 in the case of twins). Since 2020, foster parents are also eligible for this grant from the start of the foster care until the child has reached the age of 2 (or 3 in the case of twins) provided they participate in health insurance. The child care benefit is paid after the expiry of the period during which the beneficiary is eligible for maternity benefit. The beneficiary is entitled to child care benefit provided that they have participated in sickness insurance for at least 365 days during the last two years before the childbirth. Child care benefit amounts to 70 % of the monthly gross income, but not more than 70 % of the double amount of the minimum monthly income (225 400 HUF/per month in 2020) (Magyar Államkincstár, 2021b).

This benefit is not granted when:

- the beneficiary is eligible for other financial benefits based on Act III of 1993 on the administration of the social security scheme;
- the child has been temporarily placed in foster care or social institution for more than 30 days;
- the child has been placed in a day-care facility (with the exception when the parent is gainfully employed);
- the beneficiary is under arrest or in prison;
- the child dies during the period of eligibility for the child care benefit;
- the beneficiary is engaged in gainful employment based on a legal relationship before the 169th day following childbirth (Europa, 2021a).

Mothers (and, with an exception, fathers as well) without any gainful employment that would not be eligible for this benefit are entitled to **child care benefit while in education** provided that they have completed at least 2 semesters in higher education. Child care benefit while in education amounts to 70% of the minimum income (112 700 HUF in 2020) for bachelor´s degree students and 70% of the guaranteed minimum of income for master´s and postgraduate degree students (147 420 HUF in 2020) (Magyar Államkincstár, 2021b).

Since 2020, a grandparent can also apply for **child care benefit** on the basis of a joint statement by the parents. This benefit is not granted when:

- the grandparent is engaged in gainful employment (unless they solely work from home);
- the child has been placed in a day-care facility;
- the grandparent is eligible for other financial benefits based on Act III of 1993 on the administration of the social security scheme (with the exception of certain benefits);
- the grandparent is in the care of another person;
- the parent loses entitlement to child care benefit;
- parents withdraw from their consent that the benefit is paid to grandparents (Europa, 2021a).

Paternity leave in Hungary is granted for one week and paternity benefit amounts to 100% of monthly gross income.

One-off maternity grant is entitled to women who gave birth and legally live in Hungary; to foster parents; to guardians; to a father in case the mother dies; or alternatively to mothers who gave birth to a child with Hungarian citizenship or Hungarian birth certificate (provided that the law of other country prohibits dual citizenship) independently of the mother´s citizenship. Birth grant is not paid to parents who agreed to give up a child for adoption before its birth. One-off maternity grant is paid only if the woman has had at least four prenatal medical check-ups, or one check-up in the case of premature birth, or legal judgement on adoption or foster care is required no later than the 180th day from childbirth. One-off maternity grant amounts to a lump sum of 225% of the retirement pension or 300% in the case of twins, which equals to 64 125 HUF per child and 85 500 HUF per

child in the case of twins. The benefit can be applied for until 6 months after childbirth (Europa, 2021b).

Child home care benefit is entitled to a biological or adoptive parent, to their wife/husband, or alternatively to the guardian, who raise the child in one household until the child reaches 3 years of age. In the case of twins, the period is extended until the end of the first year of compulsory school education, or in the case of a chronically ill or a disabled child it is extended until the age of 10. The beneficiary cannot be engaged in gainful employment until the child reaches 6 months of age. Child home care benefit is also granted to a grandparent provided that the child is at least one year old and is raised in one household with parents that gave their written consent that the benefit is paid to grandparents. In this case, the grandparent cannot be engaged in gainful employment until the child reaches the age of 3, after that the beneficiary can work no more than 30 hours per week, or without limitation in case they work from home. The monthly amount of the benefit equals the minimum retirement pension (28,500 HUF in 2020) regardless of the number of children, except in the case of twins when the benefit is multiplied by the number of children (Magyar Államkincstár, 2021c).

See Figure 4 for an overview of all the benefits and grants in Hungary.

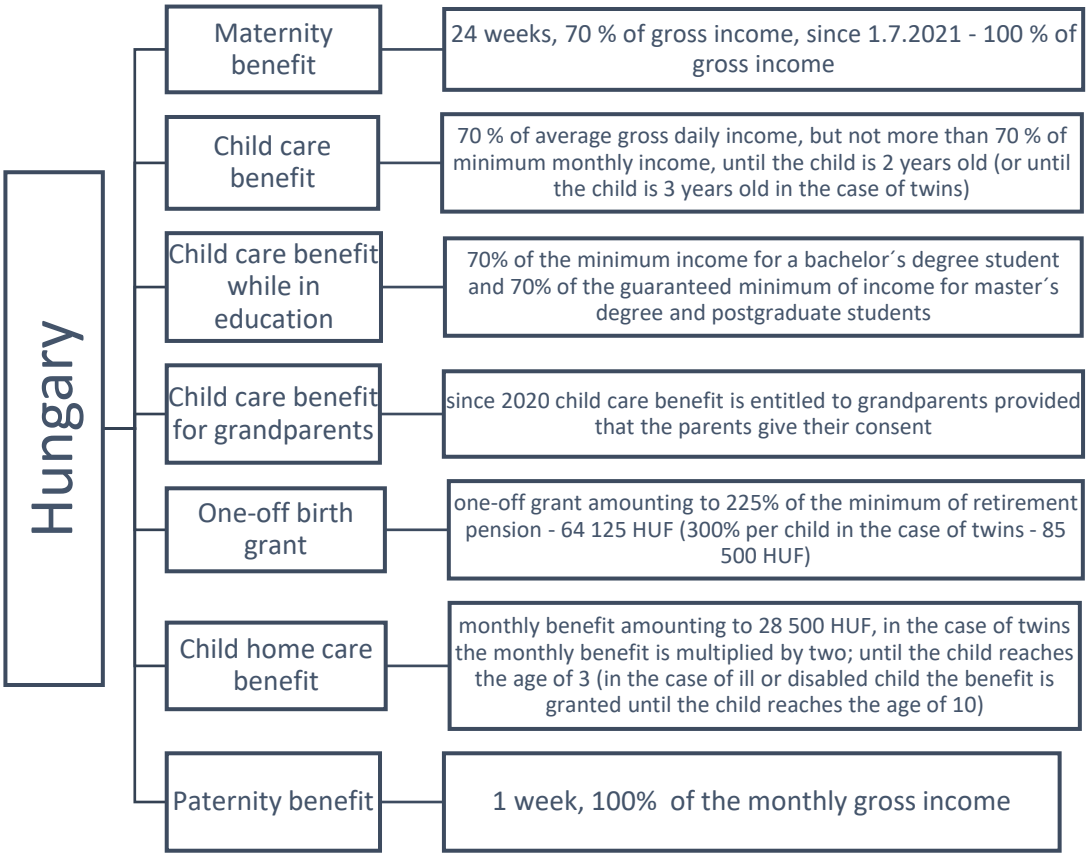


Fig. 4. Social Security Schemes with the Focus on Maternity and Parental Benefits in Hungary (Source: own)

6 Methodology and data

The aim of the paper is to describe and compare the schemes of social insurance with the focus on maternity and parental benefits and grants in V4 countries and specify, both visually and factually, their mutual similarities and partial differences. The descriptive part of individual schemes of motherhood and parenthood has been already introduced in the preceding chapters and was based on secondary sources represented mainly by the relevant laws and regulations of the authorized ministries or departments that administer the analysed areas of interest. These standard documents are supplemented by other relevant specialized sources that specify the text in more detail.

An added value of the paper is the a priori comparison based on the deductive comparison of the individual schemes of motherhood and parenthood between the Czech Republic, Slovakia, Poland and Hungary presented in chapters 2 to 5. It should be noted that with respect to the national specificities and the dynamics in the social schemes the performed comparison of the benefit and grant schemes during motherhood and parenthood is conditional on these restrictions and is objectively limited by them. The performed comparison of the four social schemes in the context of a range of factual differences is illustrative and simplified with the aim to clearly present the key factors of individual national schemes. The empirical part is not included in the paper.

7 Comparison

Taking into consideration the factual aim of the paper and its research methods, this chapter presents a simplified comparison of social security schemes with a specific focus on motherhood and parenthood. The comparative scheme is based on relevant information from individual countries relating to the actual period, and the national currencies are converted according to the exchange rate of the Czech National Bank on 23. 7. 2021, when the exchange rate of Polish zloty equalled 5,614 CZK/PLN, the exchange rate of Hungarian forint was 7,141 CZK/100 HUF and euro equalled 25,65 CZK/EUR. The compared information is processed in the following table (Table 1).

Benefits and grants in maternity and parenthood depend on the number of live-born children and the fact whether this is multiple birth or not. In Poland and Hungary, the one-off birth grant is entitled to mothers for each live-born child, in Slovakia, the amount differs if it is first to third childbirth or fourth and subsequent child. In the Czech Republic, the birth grant is paid only for the first or the second child, and it is granted only to low-income families. Concerning the birth grant, all four schemes reflect the birth of multiple children. Slovakia is the only V4 country that grants pregnancy benefit, or pregnancy grant of 200 euros per month for students. Entitlement to the pregnancy benefit arises from the beginning of the 27th week before the expected day of childbirth (i.e. from the 13th week of the pregnancy) and expires on the day of the termination of the pregnancy.

One-off birth grant (termed differently in each country) is granted by the social scheme in all of the researched countries. The most generous country is Slovakia where a one-off birth grant amounts to 86 euros (21286 CZK) in the case of the first to third childbirth. This amount will increase with multiple childbirth and is not conditioned by the family´s income. In the Czech Republic, the birth grant is 13000 CZK with the first live-born child (but only with low-income families), in Poland, the women are entitled up to 11228 CZK (2*1000 PLN) and the grant is limited by the family´s income as well. The situation is similar in Hungary where the birth grant amounts to 10303 CZK if calculated from the minimum retirement pension of 64125 forints that determinates the grant (2021). However, this grant is entitled to every mother-to-be regardless of her property or income status. The same holds for women in Slovakia.

Table 1. Comparative scheme of benefits and allowances in maternity and parenthood in the V 4 countries (1. 7. 2021; in CZK)

Section	**Maternity**					**Parent-hood**	**Maximum length of parent-hood**	**The scheme reflects:**
Region	*number of children*	*pregnan-cy benefit*	*birth grant*	*maternity benefit*	*paternity benefit*			
Czech Republic	first one	no	13000**	70%* 28 weeks if giving birth to one child	70%* 1 week	300000 in lump sum or 450000 in lump sum in the case of multiple birth	until the child is 4	- number of children (limited) - role of father - multiple birth
	the second		10000**					
	multiple birth		23000**	70%* 37 weeks				
	first to third childbirth	15%*	21286	75%*	No	9698 or 7077	until the child is 3	- number of children

Slovak Republic	fourth and another childbirth	from the 13th week of pregnancy or 5130 per month for student	3883	34 weeks one child/ 43 weeks multiples/ 37 weeks single parent		per month, an increase of 25% for each child if two or more children are born simultaneously		- single parent - student status - multiple birth - pregnancy
	multiple birth		+1941 per each child born in the one birth					
Poland	first one and another	no	5614** + 5614**	80%* 52 weeks	100%* 2 weeks	unpaid	3 years	- number of children - role of father - multiple birth
	multiple birth		11228**+ 11228**/ 16842**+ 16842** etc.	80%* 65/67/69/ 71 weeks				
Hungary	first one and another	no	225% minimum retirement pension	100%* 24 weeks	100%* 1 week	70%* per month	until the child is 2 (until the child is 3 in the case of multiple birth)	- number of children - role of father - multiple birth
	multiple birth		300% minimum retirement pension in multiple birth					

* benefit limited or depends on the assessment base
** only for low-income families

Source: own

Maternity benefit and its length reflects in all countries except Hungary the number of live-born children and ranges from 70 to 100% of the assessment basis of the individual country. In Hungary, maternity benefit is granted for the shortest period (24 weeks). The longest period of maternity benefit with one live-born child is in Poland (52 weeks), however, the maternity leave here is unpaid. Recently, "paternity leaves" have been incorporated into the schemes and are granted in all countries except Slovakia. In Poland, paternity leave is granted for 2 weeks, in the Czech Republic and Hungary for the length of 1 week. The length of maternity leave thus differs in each V4 country. Maternity leave is followed by parental leave that grants parental benefit (excluding Poland where parental leave is included in maternity benefit followed by child-raising leave that is not paid). The amount of parental benefit depends on the specific assessment basis represented by a fixed amount or by a percentage, and it is calculated per one month. This does not apply to the Czech Republic where the parental benefit is represented by an amount that is based on the selected length of parental leave. For example, parental leave for one child of the age of 3 amounts to approximately 9500 CZK per month. In the Czech Republic, the total length of the period when the parent can stay at home with one child is the longest (though the length is optional) and can last until the child reaches the age of 4. The shortest parental leave is in Hungary and with one child it lasts until the child reaches the age of two. An interesting fact is which groups of people are reflected by the individual national schemes. In this respect, Slovakia´s benefit scheme is the best as it reflects single parents, multiple children, mothers in education and pregnant women. It only neglects fathers. Based on what has been mentioned above we can subjectively claim that the most appealing social scheme with the focus on maternity and parenthood is in Slovakia where the birth grant for the first to the third childbirth is the highest, pregnant women are entitled to a special benefit, women in education are favoured, and maternity leave is the second longest. Women can stay at home until their children reach the age of 3 and they are entitled to a monthly parental benefit of 9700 CZK provided that they are raising one child.

8 Conclusion

The comparison of maternity benefits in the Czech Republic, Slovakia, Poland and Hungary has exposed that there are differences in the legislation of the selected countries, in the conditions regarding the entitlement to maternity benefits, parenthood, and in the length of maternity and parental leave. The authors based their data on the secondary sources – on the legislation of the selected V4 countries and on expert papers by Czech, Slovakian, Polish and Hungarian authors. In order to objectively compare the legislative and contributory scheme, the authors have chosen such a research method that reflects whether the researched schemes are similar and which country is more financially generous and socially empathic.

Due to the above-mentioned reasons, the schemes were contrasted and graphically processed (see Figures 1, 2, 3, 4). In the next part of the paper, financial benefits and grants for the period of pregnancy, motherhood and parenthood are compared. The amount of the benefits and grants can differ.

Based on the existing results, it cannot be accurately determined which country is financially more generous and performs more intensive and prosocial family policy. Each country provides certain benefits for its citizens, be it birth grant paid regardless of family´s income or the length of parental leave, or pregnancy benefit paid in Slovakia. The researched social schemes are influenced by the traditional attitude to family in the respective countries, by the political elite in each country and by the relation to Christian values. The existing results of the research thus create space for more detailed research, the answered questions arouse new ones that present a challenge for further research.

Acknowledgement
This paper was supported by the project SGS/13/2021 "Comparison of social security schemes in the V4 countries with a focus on family policy".

References

[1] Babińska-Górecka, R., 2015. Ewolucja funkcji zasiłku macierzyńskiego: (uwagi na tle ostatních zmian przesłanek nabycia prawa do zasiłku macierzyńskiego dla ubezpieczonego ojca dziecka). *Praca i Zabezpieczenie Społeczne*, issue 11, pp. 9-15.

[2] Dudová, I. and kol., 2018. *Sociálna politika.* Praha: Wolters Kluwer.

[3] Česká správa sociálního zabezpečení, Úřad práce, 2014. *Peněžitá pomoc v mateřství, rodičovský příspěvek.* [online]. [2021-08-28]. Available from: https://www.mpsv.cz/documents/20142/953091/PPM_RP_2015_m.pdf/11af7ea9-217c-6a83-d129-22ff0ebe1e8b

[4] Europa, 2021a. *Hungary – Family benefits.* [online]. [2021-08-28]. Available from: https://ec.europa.eu/social/main.jsp?catId=1113&langId=en&intPageId=4574

[5] Europa, 2021b. *Hungary – Maternity and paternity benefits.* [online]. [2021-08-28]. Available from: https://ec.europa.eu/social/main.jsp?catId=1113&langId=en&intPageId=4575

[6] Fodor, E., C. Glass, J. Kawachi and L. Popescu, 2002. Family policies and gender in Hungary, Poland and Romania. *Communist and post-communist studies*, vol. 35, issue 4, pp. 475-490. DOI: 10.1016/S0967-067X(02)00030-2.

[7] Infor. Kadry, 2020. *Wniosek o roczny urlop macierzyński.* [online]. [2021-08-28]. Available from: https://kadry.infor.pl/urlopy/macierzynski/3609958,Wniosek-o-roczny-urlop-macierzynski-2020-wzor.html.

[8] Koldinská, K., 2015. Slaďování pracovního a rodinného života z pohledu práva EU. In. Pracovní právo 2015: *Slaďování pracovního a rodinného života: sborník příspěvků z mezinárodní vědecké konference*, Brno: Masarykova univerzita. Právnická fakulta, pp. 12-23.

[9] Krebs, V. and kol., 2015. *Sociální politika.* 6. přeprac. vyd. Praha: ASPI.

[10] Magyar Államkincstár, 2021a. [online]. [2021-08-28]. Available from: https://egbiztpenzbeli.tcs.allamkincstar.gov.hu/ell%C3%A1t%C3%A1sok/gyermekv%C3%A1llal%C3%A1s-t%C3%A1mogat%C3%A1sa/csecsem%C5%91gondoz%C3%A1si-d%C3%ADj.html

[11] Magyar Államkincstár, 2021b. [online]. [2021-08-28]. Available from: https://egbiztpenzbeli.tcs.allamkincstar.gov.hu/ell%C3%A1t%C3%A1sok/gyermekv%C3%A1llal%C3%A1s-t%C3%A1mogat%C3%A1sa/gyermekgondoz%C3%A1si-d%C3%ADj.html

[12] Magyar Államkincstár, 2021c. [online]. [2021-08-28]. Available from: https://cst.tcs.allamkincstar.gov.hu/ell%C3%A1t%C3%A1sok/gyermekgondoz%C3%A1si-seg%C3%A9ly.html

[13] Ministerstvo práce a sociálních věcí, 2021. *Rodičovský příspěvek.* Available from: https://www.mpsv.cz/-/rodicovsky-prispevek.

[14] Ministerstvo práce, sociálnych vecí a rodiny Slovenskej republiky, 2021. *Rodičovský príspevok.* [online]. [2021-08-28]. Available from: https://www.employment.gov.sk/sk/rodina-socialna-pomoc/podpora-rodinam-detmi/penazna-pomoc/rodicovsky-prispevok/

[15] MPS, 2021. *Pismo z dnia 30 stycznia 2006 r. Ministerstwo Rodziny, Pracy i Polityki Społecznej Świadczenia rodzinne związane z urodzeniem dziecka.* [online]. [2021-08-28]. Available from: https://sip.lex.pl/orzeczenia-i-pisma-urzedowe/pisma-urzedowe/swiadczenia-rodzinne-zwiazane-z-urodzeniem-dziecka-pismo-184556550.

[16] Pakšiová, R., 2021. Zákonné sociálne a zdravotné poistenie v roku 2021. *Účtovníctvo - audítorstvo - daňovníctvo: v teórii a praxi.* Bratislava: Slovenská komora certifikovaných účtovníkov, vol. 29, issue 1, pp. 11-16.

[17] Tröster, P. and kol., 2018. *Právo sociálního zabezpečení.* 7. přepracované vyd. Praha: C. H. Beck.

[18] Vitálišová, K., K. Borseková, A. Vaňová and T. Helie, 2021. Impacts of the COVID-19 pandemic on the policy of cultural and creative industries of Slovakia. *In Scientific papers of the University of Pardubice: Faculty of Economics and Administration.* series D. - Pardubice: Univerzita Pardubice, vol. 29, issue 1, pp. 1-11.

[19] Zákon č. 117/1995 Sb., o zákon o státní sociální podpoře. [online]. [2021-08-28]. Available from: https://www.zakonyprolidi.cz/cs/1995-117.

[20] Zákon č. 131/2002 Z. z. o vysokých školách a o zmene a doplnení niektorých zákonov. [online]. [2021-08-28]. Available from: https://www.zakonypreludi.sk/zz/2002-131.

[21] Zákon č. 187/2006 Sb., zákon o nemocenském pojištění. [online]. [2021-08-28]. Available from: https://www.zakonyprolidi.cz/cs/2006-187.

[22] Zákon č. 245/2008 Z. z. o výchove a vzdelávaní (školský zákon) a o zmene a doplnení niektorých zákonov. [online]. [2021-08-28]. Available from: https://www.zakonypreludi.sk/zz/2008-245.

[23] Zákon č. 262/2006 Sb., zákoník práce, ve znění pozdějších předpisů. [online]. [2021-08-28]. Available from: https://www.zakonyprolidi.cz/cs/2006-262.

[24] Zákon č. 383/2013 Z.z., zákon o prispevku pri narodení dieťaťa a prispevku na viac súčasne narodených detí a o zmene a doplnení niektorých zákonov

[25] Zákon č. 461/2003 Z.z., zákon o sociálnom poistení Slovenské republiky. [online]. [2021-08-28]. Available from: https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2003/461/#paragraf-55

[26] Zákoník práce Polské republiky ze dne 26. června 1974 – Kodeks pracy.Dz. U. 1974 Nr 24 poz. 141. [online]. [2021-08-28]. Available from: https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU19740240141/U/D19740141Lj.pdf.

[27] Zákon o peněžitých dávkách ze sociálního pojištění pro případ nemoci a mateřství Polské republiky z 25. června 1990 – Ustawa z o świadczeniach pieniężnych z ubezpieczenia społecznego w razie choroby i macierzyństwa. Dz. U. 1999 Nr 60 poz. 636. [online]. [2021-08-28]. Available from: https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU19990600636/U/D19990636Lj.pdf

[28] Zákon o rodinných příspěvcích Polské republiky ze dne 28. listopadu 2003 – Ustawa o świadczeniach rodzinnych. Dz. U. 2003 Nr 228 poz. 2255. [online]. [2021-08-28]. Available from: https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20032282255/U/D20032255Lj.pdf.

[29] ZUS, 2016. *Wysokość.* [online]. [2021-08-28]. Available from: https://www.zus.pl/swiadczenia/zasilki/zasilek-macierzynski/wysokosc.

MIGRATION AND INTEGRATION AT SCHOOL LEVEL: A CZECH PRELIMINARY STUDY PAPER

Jarmila Duháček Šebestová[1], **Roman Šperka**[2], **Martin Klepek**[3]

[1]*Silesian University in Opava, School of Business Administration in Karvina,*
Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic
email: sebestova@opf.slu.cz

[2]*Silesian University in Opava, School of Business Administration in Karvina,*
Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic
email: sperka@opf.slu.cz

[2]*Silesian University in Opava, School of Business Administration in Karvina,*
Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic
email: klepek@opf.slu.cz

Abstract
Increased migration brings pressure on the local education system. Parents' migration has the effect of acquiring their children's skills and developing their intellectual capital. The article assesses how primary schools in a selected locality are prepared to inform, support and integrate pupils from a foreign language environment. The pilot analysis was performed from secondary data of schools involved in the system support project for teaching Czech in Prague. The surprising result is that only one school achieved the result of a prepared and active school. The second group consists of another five schools. Six schools do not reach even a quarter of points.

Keywords
Education, migration, integration process.

JEL classification
I21, O15, J15.

1 Introduction

Migration concerns the relocation of the population and the economic impact on other countries, and the integration of migrant children into the local education system. Although the current statistics show that the unemployment rate of migrants is 0.8%, the problem is becoming more critical because, in 2020, there were 7.1% of them in the age group of migrants under 19 years. (UN DESA, 2020). This trend has been almost unchanged since 2015. Many other European countries have similar proportions of children with migrant backgrounds, which is not valid in the Czech Republic (World Migration report 2020). However, good concepts for dealing with these changes to help with disadvantages are lacking (Diehl, Hunkler and Kristen 2016). Existing intercultural competence, communication, and integration (Deardorff, 2008, Ryan et al. 2013, Nenička et al., 2020) could help, but concepts related to primary schools do not exist (Weiss, 2018). Challenges for research arise for schools evaluation concerning, for example, pupils' academic performance, their social behaviour and the interaction between schools and parents or the possibility of counselling to prevent bullying or critical school behaviour (Lahdenperä et al. 2016, Weiss et al., 2018).

This article aims to provide a comparative study of the preparedness of selected primary schools for children from migrant family backgrounds. Several indicators were collected within a previous literature review about educational problems in the context of growing migration. Those factors were divided into three groups as informative, supportive and integrative. All of them were categorised using qualitative content analysis (Hsieh and Shannon 2005; Mayring 2000). The final part of this article discusses and illustrates how the results can contribute to developing ideas and measures of preparedness of primary schools on multicultural education based on a comparative case study of 21 primary schools within the Prague region.

2 Literature review

Migration can generally be divided into voluntary and involuntary or forced, according to its causes (Dederová et al., 2018, Titěrová et al., 2014). Voluntary migration is based on the migrant's free initiative. Involuntary migration, on the other hand, is one in which a migrant is forced to leave his or her country of origin or place of residence. The causes of forced migration can be various - from war, humanitarian disasters to politically motivated persecution. For these reasons, the term "push factors" is used. On the contrary, "pull factors" are the reasons and circumstances under which migrants leave, most often it is study, work, and family.

2.1 Migration problem in education within society

Even if people migrate voluntarily, this does not mean they can move freely to the destination country. Voluntary migration is often regulated by sovereign states, either relatively liberally, such as the right to free movement within the European Union, or very strictly, as is the case for migrants from third countries coming to the EU. Conversely, involuntary migration often crosses borders in violation of the law, e.g. without a travel document or a valid visa, all the more so in the section on refugees and refugees. It is necessary to realize that the differences between voluntary and involuntary migration can be relatively easily blurred, or in the migrant's story, the decision to leave the country of origin is pull and push factors.

Generally speaking, a migrant is a person (Titěrová et al., 2014):

- *"Who lives temporarily or permanently in a country in which he or she was not born and has significant social ties had that country".*
- *"Persons outside the territory of the home State of which they are nationals not subject to its legal protection and are located in the territory of another State".*
- *"Persons who do not enjoy the protection of their fundamental rights under diplomatic or other agreements".*

It is estimated that there are currently 258 million migrants globally or about 3.4 per cent of the global population. The number of migrants has been growing for a long time, in 1990 there were 153 million migrants in the world and in 2010 as 220 million. Most migrants live in Asia (80 million), followed by Europe (78 million). The majority of the world's migrant population lives in only the 20 wealthiest countries in the world (67 percent of the population). Most migrants, 50 million, live in the United States, followed by 12 million migrants in Saudi Arabia, Germany and the Russian Federation, followed by the United Kingdom with nine million and the United Arab Emirates with eight million migrants. However, the estimated number and proportion of international migrants already surpasses some projections made for the year 2050, which were in the order of 2.6 per cent or 230 million (World Migration Report, 2020).

As a result of the increased migration of people to industrialized countries, whether due to pandemics, wars or poverty, a larger group of families with different ethnic and linguistic backgrounds is increasing in society, which affects the educational needs of migrant children in particular. From a sociological point of view, we can observe significant differences in involvement in the educational process in the host country according to individual ethnic groups (Vallet and Caille, 1999).

Closely related to migration is the integration of migrants into society and the need for recipient countries to face integration challenges. This group of youth people present diversity within the society as a cultural minority, which could meet established stereotypes and exclusion, especially in education (Schachner et al., 2018). These young people are more at risk of academic failure and thus the inability to build a career in the host country. An effective educational policy and support should help prevent this risk, helping integrate young people into the macro-educational curriculum from primary school onwards (Bronfenbrenner and Morris, 2006; Dimitrova et al., 2016). It depends on how pupils will be involved in the educational process and, above all, on how teachers manage the diverse and multicultural teaching environment (Celeste et al., 2021; Cohen et al., 2006).

A balanced approach by teachers, migrant pupils, and majority society creates pressure that can negatively affect the study results of both groups (Pulinx et al., 2015). Ultimately, therefore, it depends on the climate within the school, the set educational strategy and the multicultural policy of the state or the ways of integration of foreigners (Schachner et al., 2018).

Current studies have shown (Schachner et al., 2018; Lancer, 2016; Lee and Lam, 2016; Mendenhall et al., 2017) that a positive approach by schools, teachers helps to integrate foreigners, develop intellectual capital and also reduce the gap between pupils of immigrant and non-immigrant background. In this context, the effect of language skills for the effects of language policies and teaching in schools must not be forgotten. In school development research, increasing interest has also been paid for the role of the principal, which is responsible for the educational program and the offer of an intensive language course in which the education takes place (for other pupils, it is the mother tongue; Khalifa et al., 2016). One of the risks to be highlighted is the problem with pupils experiencing bullying, discrimination and social exclusion. This situation could have roots in insufficient school background, cooperation with parents, language barriers or no support or counselling services as outcomes could be named poorer mental health (Benner et al., 2018). Promotive and protective factors build resilience (Suárez-Orozco et al, 2018). Juang and Schachner (2020) mentioned that a good dual and multicultural background supports pupil integration (Verkuyten et al., 2019).

Within Europe, the process of integration is similar in several models:

- The model of integrated teaching, where pupils of national minorities attend classes with pupils of the same age. Here, together with the majority of pupils, the typical curriculum is taught. Support in language teaching is provided individually by "tutoring". We encounter this model most often in the Czech Republic. Pupils are often placed in a regular classroom even without knowledge of the language of instruction.
- The model of separate teaching can occur in two forms (Ježková et al., 2011):
    - *as a transitional measure*: Minority pupils form a group which is initially taught separately from other pupils. Teaching is therefore adapted to their individual needs, with the possibility of participating in teaching in regular classes.
    - *as a long-term measure*: For one or more school years, special classes will be created, in which only the children of immigrants are included. Pupils are then assigned to special classes according to their knowledge of the language of instruction.

For the children of citizens of another Member State of the European Union, language training classes are set up in each region as part of improving mobility between Member States.

An effect of Covid-19. COVID-19 has shut down schools, businesses and travel. In the current pandemic, intergroup conflicts and inequality are made more visible by ethnicity and class, exposing deep inequities and divisions within societies. (UNESCO, 2020).

2.2 Current situation in the Czech Republic

Most foreigners stay in the Czech Republic for 12 months or more. Whatever reasons people move to the Czech Republic, they often come with the whole family. This situation is also caused by the increasing number of children of foreigners in Czech schools. In 2019, the integration framework, called "In Mutual Respect", was also updated. Starting in 2021, all newcomers will be required to complete an 8-hour adaptation-integration course within the first year of their stay in the country. In addition, this update includes some supporting measures for the integration of newcomers in a longer-term perspective, such as language and socio-cultural courses, as well as a focus on vulnerable migrants (SIMI, 2021). According to a survey conducted by META in 2019 and the Institute of Sociology of the Academy of Sciences of the Czech Republic, the number of pupils with migration experience and possible language support is approximately the same as the total number of foreigners (75-97%). This fact means that in 2019/20, approximately 20 to 25.7 thousand pupils would need support in the Czech language. Of these, approximately 1400 to 1800 would need intensive teaching

of Czech language. Foreign pupils have the right to free language courses to acquire sufficient knowledge of the Czech language to participate in primary education. According to the authorities' calculations, 70 hours of Czech language instruction for children whose mother tongue is not Czech should suffice for this purpose. Language training for foreigners with a different mother tongue lacks reliable funding (ECRI, 2020).

The concept of *integration of foreigners* is divided into four key areas (Titěrová et al., 2014, Concept of Integration of Foreigners, 2011). These areas are also seen as prerequisites for successful integration, namely:

- *Knowledge of the Czech language* - knowledge of Czech will simplify the process of integration for immigrants, provide them with the opportunity for further education or retraining and, of course, the related opportunity to get a job, which will ensure their economic and social independence. For children, knowledge of the Czech language is a condition for completing primary education and schooling itself. The Ministry of Education should then support such a fact, Youth and Sports in the form of subsidies for teaching assistants and primary schools to establish close contact with parents in extracurricular integration activities.
- *Economic self-sufficiency of a foreigner* - a prerequisite for economic self-sufficiency of foreigners is knowledge of the rights and obligations defined by the Constitution of the Czech Republic and awareness of employment and business opportunities in the Czech Republic.
- *Orientation of a foreigner in society* - the basis for successful integration of foreigners is quality information. This activity is realized in the form of adaptation-integration courses, in which newly arrived foreigners get acquainted with the value system of society, equality of women and men, the protection of rights and freedoms and acquaintance with all areas of everyday life (e.g. health care). The courses are implemented in the Czech language to interpret into a language understandable to foreigners.
- *Mutual relations of foreigners and the majority society* - the effort to maintain harmonious and conflict-free relations of foreigners with the majority society is the basis of the state's integration policy. It is also essential to inform the majority society about the problems, culture and religion of the minority society. In this way, we can prevent the segregation of foreigners from the majority society or social and cultural isolation and the possible resulting problems.

The representation of foreign pupils in the Czech education system is constantly growing. This number also means an increasing number of those who may need support in language training due to successful participation in the educational process in the Czech Republic. The representation of foreign pupils in primary schools is growing the fastest, while the number of foreign pupils in secondary schools has been stagnant for a long time. It should be noted that according to professional estimates, around 6% of pupils have a different mother tongue in Czech schools according Table 1.

Table 1. Inflows of foreign population by nationality 2008-2018

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Ukraine	18.7	8.1	3.5	2.0	5.9	3.7	8.4	5.5	5.8	10.3	16.7
Slovakia	7.6	5.6	5.1	4.4	4.8	6.5	6.9	6.7	6.7	6.3	6.7
Russia	5.8	4.1	3.7	2.1	3.2	3.1	4.9	2.9	2.4	2.9	3.4
Vietnam	13.4	2.3	1.4	0.7	1.6	1.2	1.7	1.3	1.8	2.2	2.3
Romania	0.6	0.5	0.4	0.4	0.7	0.9	1.2	1.3	1.6	1.8	2.2
Bulgaria	1.0	0.6	0.6	0.5	0.7	1.0	1.1	1.0	1.3	1.6	2.0
Mongolia	3.5	0.5	0.3	0.2	0.3	0.1	0.2	0.6	0.7	1.2	1.5
Hungary	0.1	0.1	0.1	0.1	0.1	0.4	0.7	0.8	0.9	1.2	1.3
India	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.6	0.8	1.0	1.2

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Belarus	0.6	0.4	0.3	0.2	0.4	0.4	0.5	0.3	0.4	0.7	1.1
China	0.9	0.6	0.5	0.3	0.4	0.4	0.5	0.5	0.6	0.8	1.1
USA	2.2	2.5	1.7	1.3	1.1	0.8	0.9	0.8	1.1	1.1	1.1
Serbia	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.4	1.0
Poland	1.2	0.9	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.8	1.0
Kazakhstan	0.7	0.8	0.7	0.5	0.6	0.6	1.0	0.7	0.6	0.6	0.8
Other Countries	19.1	10.9	8.7	7.0	7.7	7.7	9.1	7.9	9.2	10.6	12.5
Total	76.2	38.2	28.0	20.7	28.6	27.8	38.5	31.6	34.8	43.5	55.9

Source: WORLD MIGRATION REPORT, 2020

Foreigners are not evenly distributed in primary schools in the Czech Republic but are significantly concentrated in Prague. Almost a third of all foreigners (32.7%) who attend primary school in the Czech Republic attend one of Prague's schools. Schools in Prague traditionally record the most significant number of foreigners across education (38.5%). The Středočeský (12.8%) and Jihomoravský (8%) regions follow with a large gap (Table 2).

Table 2. Primary education – pupils sorted by citizenship in the school year 2020/2021

	Czech	Slovak	other EU 27	Other Europe	Other countries	Without information
Czech Republic	962348	933968	5569	2930	11477	8404
Prague Rg.	110975	100787	1378	1058	5172	2580
Středočeský Rg.	136710	132661	1158	396	1710	785
Jihočeský Rg.	58146	57032	173	105	454	382
Plzeňský Rg.	52501	50176	563	353	716	693
Karlovarský Rg.	25151	23986	118	88	341	618
Ústecký Rg.	75890	74119	344	102	510	815
Liberecký Rg.	41772	40526	223	125	447	451
Královéhradecký Rg.	49850	49013	108	69	402	258
Pardubický Rg.	47454	46612	194	69	292	287
Vysočina Rg.	45419	44795	110	63	239	212
Jihomoravský Rg.	106890	104631	524	209	789	737
Olomoucký Rg.	55948	55443	151	44	146	164
Zlínský Rg.	50813	50330	186	33	121	143
Moravskoslezský Rg.	104829	103857	339	216	138	279

Source: MŠMT, 2021.

Compared to kindergartens and primary schools, secondary schools are the only ones where foreigners have not increased significantly in recent years. Given that, in general, the number of foreigners in the Czech Republic is constantly growing, this fact means less opportunity to study at a secondary school with a lower level of Czech at all. In 2019/2020, there were more than 20,000 young foreigners aged 15–19 in the Czech Republic (Table 3).

Table 3. Nursery, basic, and secondary schools – foreign pupils

School year	Nursery schools	Basic schools	Secondary schools
2003/04	3 252	12 973	3 584
2004/05	3 244	12 113	4 250
2005/06	3 213	12 279	4 940
2006/07	2 811	12 504	5 615

School year	Nursery schools	Basic schools	Secondary schools
2007/08	3 078	12 963	6 314
2008/09	3 535	13 583	7 134
2009/10	3 963	13 839	7 900
2010/11	4 223	14 109	8 458
2011/12	4 714	14 315	8 852
2012/13	5 434	14 551	9 024
2013/14	6 307	15 109	9 147
2014/15	7 214	16 477	8 837
2015/16	8 302	18 281	8 763
2016/17	9 494	20 237	9 063
2017/18	10 469	21 992	9 195
2018/19	11 343	24 026	9 305
2019/20	11 942	26 527	9 496

Source: MŠMT, 2021.

As many as 9,000 young people who should study at secondary schools are thus out of the education system (Heriban Kalíková and Čerychová, 2020).There is a reason for systematic national support.

Legal framework for pupil´s support. The school principal must inform the pupil's legal representative about learning possibilities (School Act, §20, Decree No. 48/2005 Coll., §10, 11), not only according to the Education Act but also the State Integration Program under the responsibility of the Ministry of Education and the Ministry of the Interior of the Czech Republic. If no school would offer language training to minority pupils, then pupils must be placed in regular primary school classes individually. The research also showed that until 2011 this teaching was provided only to persons older than 16 years. Another situation occurs for students from the so-called third countries, ie countries outside the European Union. The law does not allow these students any language training, and therefore the especially for quality cooperation between parents and the school. (Radostný et al., 2011). The consequence of insufficient language support is that all teaching of minority pupils is taken over by the primary school, which the pupil attends, which is often not materially or professionally equipped for such a pupil. It is also important to mention that it takes a person about ten years to master the academic language of the country in which the teaching takes place. Therefore, minority pupils in regular classes must be educated with differentiated care (Bačáková, 2012). At the same time, the school plays a significant role in shaping the values of tolerance and respect for all pupils and is an irreplaceable part of the socialization of immigrants. The essence remains that the school mediates contact with children and their parents with the local population, giving them the opportunity to regain a sense of security. It also supports the independence of immigrants and their psychological and intellectual development.

In the Czech Republic, the children of applicants for international protection or the children of asylum seekers are classified as pupils "with special educational needs". Support and compensation measures are then defined for these pupils in the Czech education system. This type of support means a "compensation plan" and the help of a "teaching assistant".

Covid-19 effect. The closure of schools due to the Covid-19 pandemic has hit children with special needs challenges in particular, whose disadvantages have multiplied with the crisis. This situation was particularly difficult for children and pupils with a different mother tongue, as distance learning was very difficult for pupils and parents with insufficient knowledge of the Czech language. In addition, children with a deficient level of Czech also lost contact with their teachers and classmates during the quarantine. They found themselves isolated only in the very narrow environment of their family, often entirely without contact with the majority of society, and thanks to non-profit

organizations, tutoring with volunteers took place. However, their teaching was insufficient for these pupils. Tutoring was accompanied by intensive cooperation with participating educators, intercultural workers' involvement, and methodological support for volunteers (SIMI, 2021). New information for immigrants were also implemented in several languages. In addition, the legality of residence was ensured for those whose legal stay expires during the state of emergency and integration measures switched mostly to online and telephone services (International Migration Outlook 2020).

3 Methodology and case study background

At the end of 2019, almost 600,000 foreigners lived in the Czech Republic. The number of foreigners in the Czech Republic is growing every year. Most foreigners live in Prague, with 35% of all foreigners living in the Czech Republic. Foreigners living in the Czech Republic most often come from Ukraine (25%), Slovakia (20%), Vietnam (10%), Russia (6%) and Poland (4%). The share of foreigners from EU countries is almost 42% in the Czech Republic (SIMI, 2021).

The highest concentration of foreigners was the main reason for choosing the project named "*System Support for Teaching Czech as a Foreign Language in 22 city districts of Prague*". The Czech language is taught in the morning for four hours a day for about three to five months in a selected school. The course is filled with about ten students, with approximately 30 students per year taking the course. Due to the persistent pandemic situation and closed schools, the courses are conducted remotely and accessible. The costs of this service are part of the budget of the City of Prague when it complements and follows up on the project "Systemic Support of Teaching the Czech Language as a Foreign Language in the City Districts of the Capital City of Prague". The city of Prague - a network of schools, the implementation of which began in 2016. The benefit of intensive Czech language courses for children who do not understand Czech and speak Czech is undeniable. Thanks to teaching, they are better integrated into their "home"class and improved access to education. (Beldík, 2019).

In this pilot phase a selection of schools listed in the programme was made. To get relevant information an evaluation checklist was made to evaluate their preparedness for foreign pupil's integration. Finally, a weighting criteria have been made to be able to calculate their strategic position in each area main area as informative, supportive and integrative. All of them were categorised using qualitative content analysis – school curriculum, websites, annual reports (Hsieh and Shannon 2005; Mayring 2000). A mixed methods has been used for that case studies, when fully mixed sequential dominant status research design was used. It means, that in the first phase a qualitative approach was use, than a form of questionnaires, because qualitative evaluation is predominant (Leech and Onwuegbuzie, 2009). The evaluation process was made in following steps:

- ***Phase One***: A checklist for an evaluation. To be able to compare examined organizations, a table with all criteria was made. To get information about the integration goals included in their strategy a Likert scale was used, when 1 means "we do not care", 5 means "we are fully involved in that area".
- ***Phase Two***: To be able to compare organizations an evaluation weights for each group was developed, when each sign means a weight to the criteria as follows:
    - Meets all criteria (√√√) – weight of 1.
    - Meets all criteria in 75 % (√√ -) – weight of 0.75.
    - Meets all criteria in 50 % (√--) – weight of 0.5.
    - Meets all criteria in 25 % (---) – weight of 0.25.

Each criteria have to be finally re-calculated as weight × scale. When all areas were evaluated, the score in each area is made to get final position and orientation of each school organization. Authors were inspired for this type of evaluation by the methodology for non-profit organizations, presented by Brunclíková et al. (2020).

4 Empirical results

The evaluation criteria were based on a literature search and on the possibility of comparing information. For this reason, the information support included an available website in English or another language of the minority that has affiliation to the relevant school, information for the parents of a foreign pupil and subsequently information on participation in the project and the possibility of tutoring the Czech language. The analysis of documents and legislative support showed that there should be a school psychologist, a special pedagogue and teaching assistants in these schools, preferably with the possibility of communicating in a foreign language. If the information was not available on the web but only in the annual report or school curriculum, the criterion was assessed as partially met. In the last part, the integration process or work with talents was evaluated, accompanied by leisure and integration activities such as clubs, summer camps, and school events. As already mentioned, the information on the websites, annual reports and educational schedules of the individual schools involved were compared. The following table 4, based on a compromise, evaluates the individual criteria for 21 schools.

Table 4. Qualitative evaluation of criteria

		Informative (max. 15 points)			Supportive (max. 10 points)		Integrative (max. 15 points)		
city district	**school**	**Website in English/other**	**Special site for parents-foreigners**	**Info about Czech as foreign language**	**School psychologist**	**School spec-pedagogics/ assistants**	**Integration in school curriculum**	**Work with talents**	**extra activity for integration – clubs, camps**
PRG 1	SCH1	1	1	1	5	5	5	5	5
PRG 2	SCH2	3	5	5	5	5	5	3	5
PRG 3	SCH3	1	1	1	5	5	3	3	5
PRG 4	SCH4	1	1	1	1	3	3	3	3
PRG 5	SCH5	1	1	1	1	5	3	3	5
PRG 6	SCH6	1	1	5	5	5	5	3	3
PRG 8	SCH7	1	1	1	5	5	5	3	3
PRG 9	SCH8	1	1	1	1	1	3	3	1
PRG 10	SCH9	1	1	1	5	5	3	3	3
PRG 11	SCH10	1	5	5	1	1	3	3	5
PRG 12	SCH11	1	1	1	5	5	3	3	5
PRG 13	SCH12	1	1	1	5	5	3	3	5
PRG 14	SCH13	3	1	1	5	5	5	3	5
PRG 15	SCH14	5	1	1	5	5	5	3	5
PRG 16	SCH15	1	1	5	5	5	3	3	5
PRG 17	SCH16	1	1	3	3	3	5	5	3
PRG 18	SCH17	1	1	1	3	3	3	3	3
PRG 19	SCH18	1	1	1	5	5	5	5	3
PRG 20	SCH19	1	1	1	5	5	5	5	3
PRG 21	SCH20	1	1	1	5	5	3	3	3
PRG 22	SCH21	1	1	1	5	1	3	3	3

Source: Authors evaluation based on secondary data

After that, a scale was used, where each group of criteria was determined. Each school potential could be ranked, and the strengths or weaknesses of the integration of migrants in education could be found (Table 5).

Table 5. Qualitative evaluation of criteria - ranking

		Informative (max. 15 points)				Supportive (max. 10 points)				Integrative (max. 15 points)				Max.40 points
city district	**school**	**subtotal**	Scale	**weight**	**score**	**subtotal**	**scale**	**weight**	**score**	**subtotal**	**scale**	**weight**	**score**	**total score**
PRG 1	SCH1	3		0.25	0.75	10	√√√	1	10	15	√√√	1	15	25.75
PRG 2	SCH2	13	√√ -	0.75	9.75	10	√√√	1	10	13	√√ -	0.75	9.75	29.5
PRG 3	SCH3	3	---	0.25	0.75	10	√√√	1	10	11	√√ -	0.75	8.25	19
PRG 4	SCH4	3	---	0.25	0.75	4	√--	0.5	2	9	√--	0.5	4.5	7.25
PRG 5	SCH5	3	---	0.25	0.75	6	√--	0.5	3	11	√√ -	0.75	8.25	12
PRG 6	SCH6	7	√--	0.5	3.5	10	√√√	1	10	11	√√ -	0.75	8.25	21.75
PRG 8	SCH7	3	---	0.25	0.75	10	√√√	1	10	11	√√ -	0.75	8.25	19
PRG 9	SCH8	3	---	0.25	0.75	2	---	0.25	0.5	7	√--	0.5	3.5	4.75
PRG 10	SCH9	3	---	0.25	0.75	10	√√√	1	10	9	√--	0.5	4.5	15.25
PRG 11	SCH10	11	√√ -	0.75	8.25	2	---	0.25	0.5	11	√√ -	0.75	8.25	17
PRG 12	SCH11	3	---	0.25	0.75	10	√√√	1	10	11	√√ -	0.75	8.25	19
PRG 13	SCH12	3	---	0.25	0.75	10	√√√	1	10	11	√√ -	0.75	8.25	19
PRG 14	SCH13	5	---	0.25	1.25	10	√√√	1	10	13	√√ -	0.75	9.75	21
PRG 15	SCH14	7	√--	0.5	3.5	10	√√√	1	10	13	√√ -	0.75	9.75	23.25
PRG 16	SCH15	7	√--	0.5	3.5	10	√√√	1	10	11	√√ -	0.75	8.25	21.75
PRG 17	SCH16	5	---	0.25	1.25	6	√--	0.5	3	13	√√ -	0.75	9.75	14
PRG 18	SCH17	3	---	0.25	0.75	6	√--	0.5	3	9	√--	0.5	4.5	8.25
PRG 19	SCH18	3	---	0.25	0.75	10	√√√	1	10	13	√√ -	0.75	9.75	20.5
PRG 20	SCH19	3	---	0.25	0.75	10	√√√	1	10	13	√√ -	0.75	9.75	20.5
PRG 21	SCH20	3	---	0.25	0.75	10	√√√	1	10	9	√--	0.5	4.5	15.25
PRG 22	SCH21	3	---	0.25	0.75	6	√--	0.5	3	9	√--	0.5	4.5	8.25

Source: Authors evaluation based on secondary data

The comparison showed that schools generally have a strong point in the form of psychological and pedagogical support for students within the school. However, the weakness is that there is no easy access to information about admission and other Czech courses. Another complication is that online supporting materials were published (90%) only in the Czech for the most part. Only two schools have specialized websites in multiple languages, such as Ukrainian or Vietnamese. The other two schools offer bilingual education beyond their educational program. These schools are ranked in a high score table.

Based on this pilot analysis, we can divide schools into three groups - those that are proactive in integration (achieved a score of 100 - 70%, i.e. 40 - 28 points), others are ready, but do not use all the tools (70-50%, to 20 points and the last group probably does not work actively with students, even if the plan is ready, less than 20 points).

A prepared and active school was achieved by only one school (SCH1), and the other is approaching the score (SCH2). The second group consists of six other schools (SCH 6, 13-15, 18, 19). The others do not reach even a quarter of points (SCH 4, 7, 8, 17, 21). It follows that external communication is critical from the school and foreign parents who are looking for education for the child.

5 Conclusion

The article aims to evaluate the readiness of the Czech education system for the increased migration rate caused by the Covid-19 pandemic based on secondary data. Therefore, some schools have created integration programs that help children overcome the culture shock and use the education system. The solved the problem has finally three dimensions - school management and a prepared school educational plan, as well as the approach of teachers and cooperation of parents, which contributes to the improvement of the school climate and the integration of the child of foreigners. Research results will be used to design a set of activities with primary schools and to design a communication platform to open the dialogue to enrich school environment and prevent bullying and risk behaviour.

6 Acknowledgement

This paper was financially supported by the COST EU project CA18115 "Transnational Collaboration on Bullying, Migration and Integration at School Level".

References

[1] Beldík, 2019. *Systémová podpory výuky ČJ jako cizího jazyka ve 22 MČ HMP.* [online]. [2021-08-12]. Available from:https://skoly.praha.eu/88358_Systemova-podpory-vyuky-CJ-jako-ciziho-jazyka-ve-22-MC-HMP

[2] Benner, A. et al., 2018. Racial/ethnic discrimination and well-being during adolescence: A meta-analytic review. *American Psychologist*, vol. 73, pp. 855–883.

[3] Bronfenbrenner, U. and P. A. Morris,2006. The bioecological model of human development. In W. Damon and R. M. Lerner (Eds.). *Handbook of child psychology* (6th ed., Vol. 1), pp. 793–828). Hoboken, NJ: Wiley.

[4] Brunclíková et al., 2020. *Metodika Marketingového Řízení.* [online]. [2021-06-11]. Available from: https://emanno.zcu.cz/formular/EMANNO-metodika.pdf.

[5] Celeste, L. et al. , 2021. Selfaffirmation and test performance in ethnically diverse schools: A new dual-identity affirmation intervention. *Journal of Social Issues,* https://doi.org/10.1111/josi.12418.

[6] Cohen, G. L. et al., 2006. Reducing the racial achievement gap: A social-psychological intervention. *Science*, vol. 313, pp. 1307–1310.

[7] Deardorff, D. K., 2008. Intercultural competence: a definition, model and implications for education abroad. In *Developing intercultural competence and transformation: theory, research, and application in international education*, pp. 32–52. Sterling, VA: Stylus.

[8] Dederová, K. et al., 2018. *Metodika vzdělávacího workshopu pro pedagogy a pracovníky škol* Praha: Sdružení pro integraci a migraci.

[9] Diehl C., C. Hunkler C. and C. Kristen, 2016. Ethnische Ungleichheiten im Bildungsverlauf. Eine Einführung. In Diehl C., Hunkler C., Kristen C. (eds) *Ethnische Ungleichheiten im Bildungsverlauf*. Springer VS, Wiesbaden. [Ethnic inequalities on educational pathways].

[10] Dimitrova, R., A.Chasiotis, and F. J. R. van de Vijver, 2016. Adjustment outcomes of immigrant children and youth in Europe: A meta-analysis. *European Psychologist*, vol. 21, 150–162.

[11] ECRI, 2020. Sixth report on the Czech Republic (adopted on 1 October 2020 / published on 8 December 2020). [online]. [2021-06-11]. Available from: https://rm.coe.int/sixth-report-on-the-czech-republic-czech-translation-/1680a0a2b6.

[12] Heriban Kalíková, S. and P. Čerychová, 2020. M*anuál lokální integrace migrantů v České republice*. Praha: Sdružení pro integraci a migraci.

[13] Hsieh, H-F., and S. E. Shannon, 2005. Three approaches to qualitative content analysis. *Qualitative Health Research*, vol.15, issue 9, pp. 1277–1288.

[14] International Migration Outlook, 2020. [online]. [2021-06-11]. Available from: https://www.oecd-ilibrary.org/sites/ec98f531-en/1/4/1/index.html?itemId=/content/publication/ec98f531-en&_csp_=6cecdc0fb3b3828a41a7f738372ed214&itemIGO=oecd&itemContentType=book#tablegrp-d1e39136.

[15] Ježková, V., 2011. Jazykové vzdělávání v Německu, Velké Británii, Švédsku a České republice. *Orbis Scholae*, vol.5, issue 1, pp. 107-121.

[16] Juang, L. P. and M. K. Schachner, 2020. Cultural diversity, migration and education *International Journal of Psychology*, vol.55, issue 5, pp. 695–701.

[17] Khalifa, M. A., M. A. Gooden and J. E. Davis, 2016. Culturally responsive school leadership: A synthesis of the literature. *Review of Educational Research*, vol. 86, 1272–1311.

[18] Lahdenperä, P. et al., 2016. The key role of the school principal's leadership in the schooling of newly arrived immigrant pupils in Sweden. *Open Journal of Leadership*, vol.5, pp. 20–30.

[19] Lancee, B. ,2016. The negative side effects of vocational education: A cross-national analysis of the relative unemployment risk of young non-western immigrants in Europe. *American Behavioral Scientist*, vol. 60, 659–679.

[20] Lee, M., and B. O.-Y. Lam, 2016. The academic achievement of socioeconomically disadvantaged immigrant adolescents: A social capital perspective. *International Review of Sociology*, 26, 144–173.

[21] Leech, N. L. and A. J Onwuegbuzie, 2009. A typology of mixed methods research designs. *Quality & Quantity*, vol.43, issue 2, pp. 265-275.

[22] Mayring, P. , 2000. Qualitative Content Analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, vol.1, issue 2, pp. 1-10.

[23] Mendenhall, M., L. Bartlett and A. Ghaffar-Kucher, 2017. If you need help, they are always there for us: Education for refugees in an international high school in NYC. *The Urban Review*, vol. 49, pp. 1–25.

[24] Nenička, L., K. Heinz and M. Chylková, 2020. Perspectives of the Entrepreneurial Education in the European and National Contexts:Case of International Project ECMT+. In Šebestová, J.(ed). *Developing Entrepreneurial Competencies for Start-Ups and Small Business*. New York: IGI Global, pp. 236-252.

[25] Pulinx, R., P. van Avermaet and O. Agirdag, 2015. Silencing linguistic diversity: The extent, the determinants and consequences of the monolingual beliefs of Flemish teachers. International *Journal of Bilingual Education and Bilingualism*, vol. 20, pp. 542–556.

[26] Ryan, L., A. D'Angelo, R. Sales, and Magda L. Rodriguez, 2013. *Newly arrived migrant and refugee children in the British educational system*. Middlesex University: Social Policy Research Centre (SPRC). [online]. [2021-06-11]. Available from: http://www.diversityliving.org.uk/wp-content/uploads/2013/05/AFSI_Newly-ArrivedMigrants-and-schools-Executive-Summary-final.pdf.

[27] Schachner, M. K. et al., 2018. How all students can belong and achieve – Effects of the cultural diversity climate amongst students of immigrant and non-immigrant background. *European Psychologist* , vol.23, issue 1, pp. 44–56.

[28] SIMI, 2021. *Doučování.* [online]. [2021-07-02]. Available from: https://www.migrace.com/adm/_upload/docs/factsheet_doucovani_1613554454.pdf

[29] Suárez-Orozco, C. et al., 2018. An integrative risk and resilience model for understanding the adaptation of immigrant-origin children and youth. *American Psychologist,* vol. 73, pp. 781–796.

[30] Titěrová, K., 2014. *Vzdělávání a začleňování žáků s odlišným mateřským jazykem*. Praha: Meta.

[31] UNESCO, 2020. *Startling disparities in digital learning emerge as COVID-19 spreads.* [online]. [2021-04-12]. Available from:https://news .un.org/en/story/2020/04/1062232

[32] Vallet, L.-A., and J.-P. Caille, 1999. Migration and integration in France. Academic careers of immigrants' children in lower and upper secondary school. *European Science Foundation conference on Migrations and inter-ethnic relations in Europe, Obernai, France*, pp 1-16.

[33] Verkuyten, M. et al., 2019. To be both (and more): Immigration and identity multiplicity. *Journal of Social Issues,* vol. 75, pp. 390–413.

[34] Weiss, S., M. Syring, and E. Kiel, 2018. Challenges for the School in a Migration Society – A Critical Incidents Analysis *Intercultural Education,* vol.30, issue 1, pp. 1-18.

[35] World Migration Report, 2020. *World Migration Report.* [online]. [2021-06-11]. Available from: https://www.un.org/sites/un2.un.org/files/wmr_2020.pdf.

THE IMPACT OF THE COVID-19 PANDEMIC ON DIGITAL EXCLUSION IN SLOVAKIA

Mária Horehájová[1], Ivana Kuráková[2], Žaneta Lacová[3], Anna Vallušová[4]

[1]Matej Bel University in Banska Bystrica, Faculty of Economics,
Tajovského 10, 975 90 Banska Bystrica, Slovak Republic
email: maria.horehajova@umb.sk

[2]Matej Bel University in Banska Bystrica, Faculty of Economics,
Tajovského 10, 975 90 Banska Bystrica, Slovak Republic
email: ivana.kurakova@umb.sk

[3]Matej Bel University in Banska Bystrica, Faculty of Economics,
Tajovského 10, 975 90 Banska Bystrica, Slovak Republic
email: zaneta.lacova@umb.sk

[4]Matej Bel University in Banska Bystrica, Faculty of Economics,
Tajovského 10, 975 90 Banska Bystrica, Slovak Republic
email: anna.vallusova@umb.sk

Abstract
Digital exclusion has been presented in society since the emergence and spread of ICT, especially internet. Firstly, it seemed to be mainly a simple technological and economic difficulty in accessing digital media. Over time, it has become a complex social problem that affects all domains of contemporary society, including economic aspects. The differences between various social groups, which are generally perceived as inequalities, have been influenced by the oncoming development of digital media. Moreover, due to the COVID-19 pandemic and the measures taken in this context, many business activities have moved to online forms and this shift has highlighted the need to explore the problem of digital exclusion in order to minimize it. The paper aims to examine the problem of digital exclusion and to find out what effect the COVID-19 pandemic had and still has on it. In the paper, we used aggregated and microdata from Standard Eurobarometer Survey in order to identify the pandemic effects in EU Member States from the supply-side perspective of the labour market. To complete the picture of pandemic effects from the demand-side perspective, we use the original questionnaire survey data gained from large and medium-sized enterprises in Slovakia in the first half of 2021. The implications are proposed to develop a more inclusive digital society.

Keywords
digital exclusion, digital divide, COVID-19 pandemic, labour market, DESI, European Union, Slovakia

JEL classification
J24, Z13.

1 Introduction

During the last decades, the economies have rapidly move to ICT-driven systems and the structure of all their sub-systems, including labor market, have been influenced. The jobs are changing (as an output of processes like automatization and digitalisation) and the requirements and competencies for numerous positions are evolving, too. Not surprisingly, adaptation to new structures is a complex process and the people differ in levels of achieved digital skills. They are different at the level of technologies they use (e-mail, social networks, mobile applications etc.), but also at the level of knowledge how the online systems are organized, the problems in digital area are structured, the information is transformed into an output in digital (e.g. basic software skills) etc. Different forms of general or specific digital skills are no longer merely important, but central to the labour market. Thus, digital skills and their differences in population are of central interest by jobseekers, employees, employers, policy makers and scholars.

One of the risks of digitisation of economies is that it can become a source of increased inequalities and eventually, an initiator of new forms of inequalities. On the labour market, certain social groups cannot be able to adapt to changing market due to the lack of necessary digital skills and if so, one can talk about digital exclusion. Thus, the policymakers are interested in identification of these groups by searching their socio-economic characteristics, helping them to adopt the appropriate policy measures. But the distribution of digital skills in the population is interesting not only at the macroeconomic level (supply side perspective). From the microeconomic perspective, the companies as active entities on the labour market (demand side perspective) are also facing the new challenges when preparing human resources management strategies (skill-up strategies, reskill strategies, vacancies strategies etc.) and the business strategies.

The COVID-19 pandemic has led to a sudden and unprecedent rise in digitalization. Many companies turned to remote work to limit the spread of the virus and to foster modern forms of communication and selling of their products and services (like e-shops). For the moment, there is only very limited empirical evidence on the effect of COVID-19 pandemic on the digital skills distribution and the problem of digital exclusion. The novelty of our research consists on the combination of macro- and micro- perspective in the EU Member States, extended by our own survey data from the Slovak companies.

2 Literature review

The issue of the digital divide and digital inequality is a serious societal problem. In the beginning, it seemed that this is more or less just simple technological and economic problems related to access to digital media, but over time they became broad-spectrum social problem that affects all domains and aspects of contemporary society. Antonelli (2003) defines digital divide as the gap between digital riches and digital poor. It can be seen that the concept evolved from the dichotomous category of computer access (DiMaggio and Hargittai, 2001), which was the original idea of the concept (Ragnedda, Kreitem, 2018), to focus on ICT skills and digital outcomes. This development can be named as three levels of digital divide. The first level of the digital divide was highly topical until 2010 and focused mainly on physical access to the Internet and ICT equipment. After some time both researchers and policymakers were convinced that digital literacy or skills and usage are in fact more important in talking about digital inequality. This is called the second level. Since about 2015 the outcomes of computer and Internet use came forward in a third level of digital divide research and policy (van Dijk, 2020).

It is possible to perceive that digital inequality is a kind of precursor to digital exclusion. Digital exclusion refers to those individuals who do not use the internet either at home, work, place of study or elsewhere (Bunyan, Collins, 2013). Digital exclusion involves the unequal access and capacity to use information and communication technologies that are seen as essential to fully participate in society (Schejter et al., 2017). The research led by Śmiałowski, Ochnio (2019) has shown that digital exclusion affects every socio-economic group and every income group. People who are disadvantaged in areas of economic, social, and personal wellbeing also tend to be ones least likely to engage with ICTs (Helsper, Reisdorf, 2017). It means that social exclusion leads to digital exclusion, which in turn leads to deeper inequalities, new social exclusion – the vicious digital cycle (Warren, 2007).

Most initial investigations of the digital divide tended to look at basic demographic and socioeconomic predictors of mere access such as gender, age education, income, and employment status (DiMaggio et al., 2004). Likewise, other important studies use mainly socio-economic variables such as age, education, gender and income (Ono, Zavodny, 2007).

In the past, it seemed rather that income was the most important factor in this regard, followed by age and education (van Dijk, 2006). Declining ICT prices have recently reduced the importance of income, which, however, remains the most important factor in terms of the so-called material approach. Higher household incomes are strongly associated with broadband access while very low-income households do not have broadband connections in their homes (Reddick et al., 2020). When looking at the expansion of Internet use, low-income individuals are less likely to use the Internet than higher-income individuals, or start using it later (Martin, Robinson, 2007). Along with an increase in income the scale of digital exclusion is decreasing (Śmiałowski, Ochnio, 2019).

In terms of age, younger individuals have, on average, higher levels of digital skills than older individuals. On the other hand, it must be seen that individuals over the age of 60 are a highly heterogeneous group with different education, income levels, work experience and skills, and all other factors also have an impact on digital skills levels (Hargittai et al., 2019).

Regarding the socio-economic variable of gender, it was a significant factor influencing the level of digital skills at the advent of ICT, but at present its influence has significantly weakened (Ono and Zavodny, 2002). Some studies (Campos-Castillo, 2015) even state that in some countries, age-related results have reversed and women are those with better internet access and associated better digital skills. The opposite conclusion is reached by the study of Non et al. (2021), where they find out, that individuals with low digital skills are generally older, lower educated and more often female. However, it constantly remains a variable whose influence makes sense to examine (Scheerder, et al., 2017). The last most frequently researched factor is the level of education achieved. This factor can be considered as the most consistent variable, and in general, the higher the level of education attained by individuals, the higher their level of digital skills (van Deursen et al., 2011).

With regard to rural areas, the Internet offers the rural citizen significant benefits, helping to overcome the disadvantages of distance and social dispersion (Warren, 2007). On the other side, rural areas are at a digital disadvantage due to their lower Internet and broadband connectivity. The study led by Rath (2016) identified two factors that drive a country's digitalization divergence level: the growth of per capita income and the ratio of urban to rural population.

The COVID-19 pandemic has unveiled and thrown a spotlight on deep seated inequalities across different societies, from the most advanced economies to the economically underdeveloped (Zheng, Walsham, 2021). Since the arrival of the covid-19, several studies have emerged that provide interesting findings.

People with greater existing socioeconomic and digital privilege had better chances of increasing their digital communication and lesser chances of decreasing such communication. Younger people, those with higher income and education, and people with more Internet skills and experiences were more likely to have taken up digital communication. In turn, their counterparts were more likely to have decreased digital communication (Nguyen et al., 2021). This conclusion confirms the study of Huang et al., where they argue, that among technologically oriented individuals, pandemic stress prompts adoption of virtual reality technology for privileged segments of the population such that COVID-19 is accelerating the adoption of technology and leaving the digitally disadvantaged even further behind (Robinson et al., 2021). The pandemic has brought the world to a situation where those not connected to the internet are facing total exclusion (De' et al., 2020).

In the study led by van Deursen (2020), several groups of people were identified as vulnerable, such as older people, less educated people, and people with physical health problems, low literacy levels, or low levels of internet skills. Generally, people who are already relatively advantaged are more likely to use the information and communication opportunities provided by the internet to their benefit in a health pandemic, while less advantaged individuals

are less likely to benefit. Therefore, the COVID-19 crisis is also enforcing existing inequalities. This conclusion confirms also van Dijk (2020), while claiming, that because social inequality is increasing in many parts of the world, digital inequality will follow. The simple reason is that digital media are important tools that tend to support people with high position more than those with low positions.

3 Methodology and data

The goal of our analysis is to identify the impact of COVID-19 pandemic on digital exclusion in the European context. The pandemic experience from 2020 proposes a research opportunity to test whether more dynamic digitization of an economy can lead to an acceleration of mitigation of digital exclusion, and/or to the increased long-term exclusion of some disadvantaged social groups. The digital exclusion is perceived as a phenomena having important consequences on the contemporary labour markets. Because of this labour market context, we rely on supply-side data covering digital skills of the labour force and on demand-side data based on survey outcomes from business sector.

From the supply-side perspective, we decided to focus on Internet non-users (answering „Never" when asked about frequency of their internet use or declaring to have no access to internet at home) to capture the part of the population that we perceived as being the most vulnerable to digital exclusion problem. We use the autumn waves of the Standard Eurobarometer data (2011-2020) which includes a question how often the respondents use the internet. The survey provides variety of information about the respondents: gender, age, education, type of community (rural vs. urban) and financial distress as an indicator of low income. These socio-economic characteristics were applied in order to identify the changes in the most digitally disabled groups of population. The Eurobarometer data are representative to the population according to sex, age and region NUTS II.

As a next step in our analysis, we were focusing on distribution of levels of digital skills measured by ICT Usage by Individuals and Households Survey, realized by European Commission. The data for EU Member States for the period 2016-2019 were applied to capture the main tendencies in development of part of population having above basic digital skills.

From the demand-side perspective, we decided to proceed our own questionnaire survey between medium- and large enterprises in one EU Member State - Slovakia. The choice of the size criterion for companies was made in order to increase probability of achieving the representative set of answers. In addition, the small companies are facing more barriers for digital upskilling of their workforce. The research was realized in the spring 2021 and was carried out on a basic set of 2 944 companies. The questionnaire addressed 2 326 medium-sized and 618 large companies (the whole sample of medium- and large enterprises in Slovakia according to the Statistical Office). In this paper, we present the answers of 199 companies, including 133 medium-sized and 66 large enterprises. Although the sample of 199 enterprises is not representative according to size of the basic statistical set (at a confidence level of 95 % and a confidence interval of 5 %), the data obtained provide useful information on digital skills and digital exclusion issues amid the COVID-19 pandemic. In the examined sample of 199 enterprises, the most represented ones were in the field of industrial production (34 %), wholesale and retail trade, repair of motor vehicles and motorcycles (15 %), other activities (13 %) and transport and storage (7 %).

4 Empirical results

In general, various aspects of economic systems have been affected by the COVID-19 pandemic. Concerning the labour markets, the situation was deteriorated in 2020. In the majority of the EU Member States (with the exemption of Greece, Italy, Poland and France),

the annual unemployment rate has increased (table 1). However, only a limited number of European countries has experienced the annual unemployment rate in 2020 exceeding its 5-years average unemployment rate (2015-2019): Austria, Estonia, Latvia, Luxembourg, Malta and Sweden. Partially, these results were achieved by important fiscal measures taken by national governments in order to reduce the decline in employment.

Table 1. Unemployment rate in EU

Member State	Average 2016-2019	2016	2017	2018	2019	2020
AT	5,23	6,0	5,5	4,9	4,5	5,4
BE	7,39	7,8	7,1	6,0	5,4	5,6
BG	8,93	7,6	6,2	5,2	4,2	5,1
CY	11,82	13,0	11,1	8,4	7,1	7,6
CZ	4,78	4,0	2,9	2,2	2,0	2,6
DE	4,49	4,1	3,8	3,4	3,1	3,8
DK	6,46	6,0	5,8	5,1	5,0	5,6
EE	7,43	6,8	5,8	5,4	4,4	6,8
EL	22,56	23,6	21,5	19,3	17,3	16,3
ES	20,57	19,6	17,2	15,3	14,1	15,5
FI	8,14	8,8	8,6	7,4	6,7	7,8
FR	9,66	10,1	9,4	9,0	8,4	8,0
HR	13,32	13,1	11,2	8,5	6,6	7,5
HU	7,01	5,1	4,2	3,7	3,4	4,3
IE	10,28	8,4	6,7	5,8	5,0	5,7
IT	11,04	11,7	11,2	10,6	10,0	9,2
LT	9,77	7,9	7,1	6,2	6,3	8,5
LU	5,72	6,3	5,5	5,6	5,6	6,8
LV	10,64	9,6	8,7	7,4	6,3	8,1
MT	5,09	4,7	4,0	3,7	3,6	4,3
NL	5,61	6,0	4,9	3,8	3,4	3,8
PL	7,21	6,2	4,9	3,9	3,3	3,2
PT	11,73	11,2	9,0	7,1	6,5	6,9
RO	5,96	5,9	4,9	4,2	3,9	5,0
SE	7,36	7,0	6,7	6,4	6,8	8,3
SI	7,79	8,0	6,6	5,1	4,5	5,0
SK	10,73	9,7	8,1	6,5	5,8	6,7
EU-27	**9,33**	**9,1**	**8,1**	**7,2**	**6,7**	**7,0**

Source: Eurostat.

In Slovakia, the aggregated data presented the rise of annual unemployment rate from 5,8% in 2019 to 6,7% in 2020. Our survey data confirmed the moderate effects of the COVID-19 pandemic on the labour market. 82 % of enterprises stated that they were not forced to make any personnel changes, meaning that they did not have to lay off or reassign anyone during the pandemic. Of the remaining 18 % of enterprises, 10% had to reassign employees, 5 % of companies had to lay off employees and 3% of enterprises made redundancies and at the same time reassigned employees to other jobs.

Although most companies did not lay off or reassign employees, the COVID-19 pandemic changed working conditions in many enterprises. Employees were forced to use digital skills to a much greater extent than they did before the pandemic. In response to these changes, 34 companies confirmed to start training their employees in order to increase their digital skills. Most enterprises (8) trained 10 % of their employees, 5 companies trained 15 % of their employees, in two cases it was 50 % of employees and in two companies they involved up to 100 % of their employees in training.

Table 2. Internet non-users (as a % of the whole population of up to 15) in EU

Member State	Average 2011-2019	2016	2017	2018	2019	2020
AT	21	18	15	17	16	9
BE	15	12	12	10	8	2
BG	37	37	29	29	26	22
CY	33	30	28	25	20	17
CZ	22	19	18	19	14	13
DE	20	20	14	15	14	10
DK	7	8	6	6	4	3
EE	20	20	19	16	16	0
EL	28	26	24	23	19	8
ES	14	13	12	11	11	0
FI	19	17	17	14	13	11
FR	37	34	33	31	29	21
HR	31	30	26	24	18	13
HU	31	28	29	25	21	19
IE	15	13	14	10	11	0
IT	26	27	22	19	20	14
LT	29	28	29	25	22	18
LU	13	11	10	9	6	0
LV	21	22	20	16	18	13
MT	28	25	22	25	21	19
NL	4	3	1	2	1	1
PL	29	28	24	25	24	20
PT	40	31	29	29	26	23
RO	42	40	42	37	30	28
SE	5	6	5	4	2	0
SI	24	21	22	22	20	16
SK	26	24	25	26	21	17
EU-27	**23,64**	**21,89**	**20,26**	**19,04**	**16,70**	**11,77**

Source: Eurostat.

The increased digital up-skilling in 2020 could be visible at the aggregate level, too. Although the EU Member States differed considerably in portions of Internet non-users as a % of population (table 2), all countries manifested a decline in this indicator in 2020 (table 3), especially Estonia, Greece, Spain and Ireland. At the EU-27 level, the decline by 4,94 p.p. in 2020 comparing to average decline by 1,81 p.p in 2011-2019 is declaring the magnitude of the pandemic effect on digital up-skilling.

Table 3. Decline in portion of internet non-users (as a % of the whole population of up to 15) in EU

Member State	Average 2011-2019	2016	2017	2018	2019	2020
AT	-2	-5	-3	2	-1	-7
BE	-2	-4	0	-2	-2	-6
BG	-3	0	-8	0	-3	-4
CY	-4	-3	-2	-3	-5	-3
CZ	-2	-6	-1	1	-5	-1
DE	-2	2	-6	1	-1	-4
DK	-1	2	-2	0	-2	-1
EE	-1	-3	-1	-3	0	-16
EL	-2	-6	-2	-1	-4	-11
ES	-1	-1	-1	-1	0	-11
FI	-2	-2	0	-3	-1	-2
FR	-3	-5	-1	-2	-2	-8
HR	-3	1	-4	-2	-6	-5
HU	-2	-5	1	-4	-4	-2

IE	-1	-3	1	-4	1	-11
IT	-2	-4	-5	-3	1	-6
LT	-1	-2	1	-4	-3	-4
LU	-1	-5	-1	-1	-3	-6
LV	-2	-4	-2	-4	2	-5
MT	-1	-1	-3	3	-4	-2
NL	-2	-1	-2	1	-1	0
PL	-4	2	-4	1	-1	-4
PT	-3	-7	-2	0	-3	-3
RO	-1	-4	2	-5	-7	-2
SE	-1	0	-1	-1	-2	-2
SI	-1	-6	1	0	-2	-4
SK	-1	-4	1	1	-5	-4
EU-27	**-1,81**	**-2,74**	**-1,63**	**-1,22**	**-2,33**	**-4,94**

Source: Eurostat.

The process of up-skilling of labour force had been evident even before 2020 at the EU level (table 4). The highest portion of the population with above basic digital skills could be found in Finland, Netherlands, Denmark and Sweden according to available data from 2019.

Table 4. Portion of individuals with above basic level of digital skills (as a % of the population aged 16-74) in EU Member States

Member State	Increase 2015-2019	2015	2016	2017	2018	2019
AT	6,44	32,79	34,59	36,22	36,22	39,23
BE	3,05	31,13	31,53	30,99	30,99	34,18
BG	-1,46	12,75	10,07	11,05	11,05	11,29
CY	9,88	15,36	20,44	18,71	18,71	25,23
CZ	2,87	22,93	20,42	24,06	24,06	25,79
DE	3,55	35,30	33,48	36,71	36,71	38,84
DK	0,07	48,46	52,98	47,22	47,22	48,53
EE	-0,41	37,44	34,74	34,84	34,84	37,03
EL	7,22	16,11	19,36	21,66	21,66	23,32
FI	9,13	40,94	43,74	45,23	45,23	50,07
FR	4,07	26,85	27,57	29,24	29,24	30,92
HU	2,94	22,42	23,82	25,75	25,75	25,36
IE	9,13	25,01	24,80	27,74	27,74	34,14
IT	2,70	19,32	19,47	n.a.	n.a.	22,02
LT	2,01	30,29	29,15	31,94	31,94	32,30
LU	-	55,89	54,15	55,25	n.a.	n.c.
LV	-1,09	25,54	26,63	26,80	26,80	24,45
MT	3,71	34,54	31,95	38,70	38,70	38,25
NL	7,04	42,52	44,87	47,85	47,85	49,56
PL	6,23	15,07	19,40	21,13	21,13	21,29
PT	4,22	27,88	28,34	30,75	30,75	32,10
RO	1,36	8,97	8,59	10,15	10,15	10,33
SE	10,80	35,24	38,80	46,38	46,38	46,04
SI	5,45	25,62	27,78	29,69	29,69	31,07
SK	0,99	26,07	29,12	33,07	33,07	27,07
EU	**5,08**	**28,23**	**29,30**	**31,19**	**31,19**	**33,31**

Source: Eurostat.

The need to acquire new digital skills was also related to the survey question of the ability or the inability of employees to adapt to the new increased digital skills requirements during the COVID-19 pandemic. In more than half of the enterprises (52%), the employees did not have a problem adapting to the new digital skills requirements in a pandemic. In 96 enterprises,

they experienced this problem, the most numerous being the group of 30 enterprises that answered in the questionnaire survey that 5% of their employees had a problem adapting to the new requirements for digital skills. These enterprises were mainly in the fields of industrial production (10) and transport and storage (5), with medium to large enterprises being represented in a ratio of 2 to 1. The second largest group of 18 enterprises estimated that 10% of their employees had the problem of adapting to new requirements on digital skills during the COVID-19 pandemic. In only one enterprise did this problem occur in up to 90% of employees. It was a large enterprise classified according to SK NACE in the category of activity: wholesale and retail trade, repair of motor vehicles and motorcycles.

During the COVID-19 pandemic, the need to use the employees' digital skills became more evident. In this context, one of the questions in the questionnaire survey concerned the barriers that prevented enterprises from using and also increasing their employees' digital skills. We have divided these barriers into four groups: digital illiteracy, motivational, mental and material barriers. By digital illiteracy, we mean a lack of basic digital knowledge and experience, or a reluctance to get a PC and overcome this illiteracy. Mental barriers are linked to a lack of awareness of today's need to master a certain level of digital skills. Motivational barriers lie in the absence or in weak motivation to develop digital skills. Material barriers are related to the objective situation in which a person finds himself in terms of material security, e.g. low income, living in poverty and for these reasons the inability to own a computer or connect to the Internet.

Most enterprises perceive motivational (42%) and mental (38%) barriers as a problem, while 18% of enterprises mention a combination of both obstacles. On the one hand, it is satisfying that material barriers to improving digital skills do not play a significant role (18% of companies cited material reasons as an obstacle), on the other hand, there is a relatively high percentage of those who see a problem in their employees' mental attitudes to digital skills.

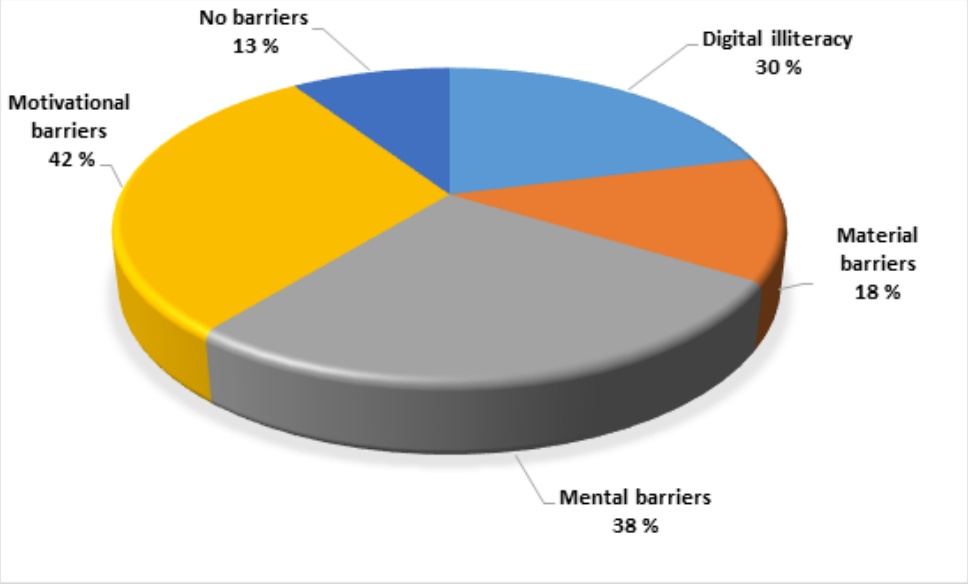


Fig. 2. Barriers that enterprises face in the field of digital skills (Source: own survey)

At the macroeconomic level, one crucial aspect of digital exclusion is linked to an identification of digitally disadvantaged groups of population. The Eurobarometer data from 2020 allowed us to depict different factors playing the role in the probability of an European to be an internet-non user. The table 5 presents the results as the average marginal effects of the estimated coefficients from logit regressions with the dependent variable indicating that an

individual does not use the internet. All the determinants - female sex, low education, rural area of living, age above 55 and financial distress - were presenting themselves as being statistically significant. The results confirm that year 2020 represents a factor declining the probability of being an internet non-user in the EU. On the other hand, the more dynamic digitalisation of the economies is contributing to this probability less than other relevant factors. A persistence of digital exclusion is based on age, level of education and financial situation in household.

Table 5. Factors of probability of being an internet Non-user in EU Member States

Member State	Average marginal effects	Standard error	[95% conf. interval]	
Female	.0169298	.0026533	.0117295	.0221301
Low Education	.1772609	.0037561	.169899	.1846227
Rural Area	.039922	.0028461	.0343438	.0455002
Age 55 and over	.2531027	.0028847	.2474487	.2587567
Financial Distress	.1173994	.0057546	.1061207	.1286781
Year 2020	-.0537398	.0026673	-.0589676	-.0485119

Source: Eurostat.

The goal of one question in our micro-level survey was also to find out which characteristics are typical for labour market participants who have unsatisfactory digital skills. In the survey, we defined 6 characteristics: age over 50, secondary education, higher education, language barriers typical of minorities (foreigners, national minorities), long-term unemployment (longer than 1 year) and also the gender distribution (men, women).

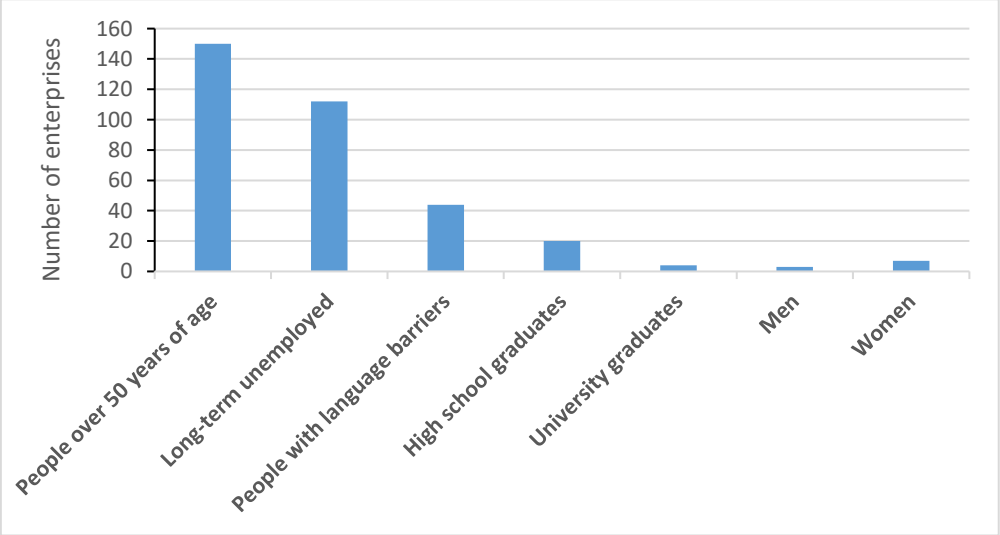


Fig. 3. Jobseekers disadvantaged in the labour market due to inadequate digital skills (Source: own survey)

Our survey confirmed the findings of other foreign studies (Ertl et al. 2020, Hargitai et al. 2002) when the largest number of companies identified age as one of the decisive factors of the insufficient level of digital skills. As many as 150 out of 199 companies reported that people over the age of 50 are among the disadvantaged jobseekers in terms of digital skills. Although at the beginning of the development of information and communication technologies, gender differences were perceived as one of the important factors that determine the level of digital skills of job seekers, gender no longer plays such a role, which was confirmed by our study. Only 10 companies reported gender as a characteristic related to the level of digital skills, with women being mentioned in seven cases and men in three cases.

More than half of enterprises (56%) consider long-term unemployment to be a problem that determines unsatisfactory digital skills. The bad news is that among the factors related to insufficient digital skills, there were high school graduates (44 enterprises) and 20 enterprises have mentioned in this sense even university graduates. In this context, it should be mentioned that the last information and communication technology skills test in Slovakia (European Commission, 2020) showed that although 59% of adults have basic digital skills, there are shortcomings among young people, especially in terms of office software such as work with text or spreadsheet editors.

5 Conclusion

The goal of our analysis was to identify the impact of COVID-19 pandemic on digital exclusion in the European context. Our attempt was to contribute to discussion whether more dynamic digitization of an economy which occured in 2020, can lead to an acceleration of mitigation of digital exclusion leaving long-term exclusion of some disadvantaged social groups. Our results are rather promising concerning the mitigation of digital exclusion during pandemic in the European Union. The portion of internet non-users in the population declined considerably. However, we identified a possibility of persistence of digitally disadvantaged groups of population between those who are at least 55 years old, population with low education level and population in financial distress.

Policymakers must design digital inclusion initiatives that ultimately lead to diversity in media ownership, expand digital literacy, and teach participants to create meaningful content (Bach et al., 2013). The priority needs to be put on policies to ensure that older individuals, individuals with low education level and individuals with low income are not left behind by the digital transformation.

Active labour market policies can be one successful strategy to overcome the challenges imposed by automation and digitalization, our results also highlight the danger of persisting inequality. Unemployed workers who have the skills to adopt to new situations face better labour market outcomes with higher wages and job stability. Those workers who lack the ability to cope with technological change have prolonged unemployment duration and end up in worse matches (Schmidpeter, Winter-Ebmer, 2021).

Our results underline that companies themselves can also help people develop their digital skills and resilience. Initiatives at the local level (for instance at the company level) could be an efficient supplement to initiatives of policy-makers. We assume that the situation caused by the COVID-19 pandemic increased demands on work that requires digital skills, which could help remove the digital exclusion, at least partially. At the same time, it can be expected that this situation will not only lead to an awareness of the need to increase digital skills, but will also increase the motivation of employees to learn and develop their knowledge in the field of digital technologies. Digital illiteracy is also a serious problem, which only confirms the reluctance or weak motivation to acquire at least elementary digital skills. The survey shows that this situation is not just the result of poverty, low income, or the inability to obtain a computer for financial reasons. There is a relatively high percentage of those managers who see a problem in the employees' motivation and mental attitudes to digital skills.

The problem of a persisting inequality and social exclusion demands a deeper understanding of the intersection between technology and inequality and, correspondingly, a more aggressive and nuanced plan to address this problem. Bach et al. (2013) argue for a Digital Human Capital framework. The concept is meant to build on and extend the call for an additional technology access and basic training programs, taking into account the complex nature of social exclusion in the information age

6 Acknowledgement

This research was financially supported by the Research Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic grant no. VEGA 1/0668/20 "Digital inequality and digital exclusion as a challenge for human resources management".

References

[1] Antonelli, C., 2003. The Digital Divide: Understanding the Economics of New Information and Communication Technology in the Global Economy. *Information Economics and Policy*, vol.15, issue 2, pp. 173–99.

[2] Bach, A., G. Shaffer and T. Wolfson, 2013. Digital Human Capital: Developing a Framework for Understanding the Economic Impact of Digital Exclusion in Low-Income Communities. *Journal of Information Policy*, vol. 3, issue 1, pp. 247-266.

[3] Bunyan, S. and A. Collins, 2013. Digital Exclusion Despite Digital Accessibility: Empirical Evidence from an English City. *Journal of Economic and Human Goegraphy*, vol.104, issue 5, pp. 588-603.

[4] De', R., N. Pandey, N. and A. Pal, 2020. Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. *International Journal of Information Management*, vol. 55, issue December.

[5] DiMaggio, P. and E. Hargittai, 2001. *From the "Digital Divide" to "Digital Inequality": Studying Internet Use as Penetration Increases*, Centre for Arts and Cultural Policy Studies (Working Paper Series, 15), Princeton University

[6] DiMaggio, P., E. Hargittai, C. Celeste and S. Shafer, 2004. *From unequal access to differentiated use: A literature review and agenda for research on digital inequality*. In K. Neckerman (Ed.), Social inequality (pp. 355–400). New York, NY: Russell Sage Foundation.

[7] Ertl, B., Csanadi, A., Tarnai, Ch. 2020. Getting closer to the digital divide: An analysis of impacts on digital competencies based on the German PIAAC sample, *International Journal od Educational Development*, vol.78.

[8] European Commission. 2020. *European Semester: Country report - Slovakia*. [online]. 2020. [cited 14. 06. 2021]. Available at 2020 European Semester: Country Reports | European Commission (europa.eu)

[9] Hargittai, E., 2002. Second Level Digital Divide: Differences in People's Online Skills, *First Monday*, n°7.

[10] Hargittai, E., A. M. Piper and M. R. Morris, 2019. From internet access to internet skills: digital inequality among older adults, *Universal access in the information society*, vol. 18, issue 4, pp. 881-890.

[11] Helsper, E. J. and B. C. Reisdorf, 2017. The emergence of a "digital underclass" in Great Britain and Sweden: Changing reasons for digital exclusion. *New Media & Society*, vol.19, issue 8, pp. 1253-1270.

[12] Steven, P., J. Martin and P. Robinson, 2007. The Income Digital Divide: Trends and Predictions for Levels of Internet Use, *Social Problems*, vol.54, issue 1, pp. 1-22.

[13] Nguyen, M. H. et al., 2021. Digital inequality in communication during a time of physical distancing: The case of COVID-19. *Computers in Human Behavior*, vol.120, issue 7.

[14] Non, M., M. Dinkova and B. Dahmen, 2021. *Skill up or Get Left behind? Digital Skills and Labor Market Outcomes in the Netherlands*. CPB Discussion Paper. https://doi.org/10.34932/EYZ0-4G11.

[15] Ono, H. and M. Zavodny, 2002. *Is there a gender gap in internet usage?* SSE/EFI Working Paper Series in Economics and Finance, n°495

[16] Ono, H. and M. Zavodny, 2007. Digital inequality: A five country comparison using microdata. *Social Science Research*, vol.36, issue 3, pp. 1135-1155.

[17] Ragnedda, M. and H. Kreitem, 2018. The Three Levels of Digital Divide in East EU Countries, *World of Media. Journal of Russian Media and Journalism Studies*, vol.6, issue 4, pp. 5-26.

[18] Rath, B. N., 2016. Does the digital divide across countries lead to convergence? New international evidence. *Economic Modelling*, vol. 58, issue November, pp. 75-82.

[19] Reddick, Ch. G. et al., 2020. Determinants of broadband access and affordability: An analysis of a community survey on the digital divide. *Cities*, vol.106, issue 11.

[20] Robinson, L., J. Schulz, Ch. Ball et al., 2021. Cascading Crises: Society in the Age of COVID-19, *American Behavioral Scientist*, Available from: https://journals.sagepub.com/doi/full/10.1177/00027642211003156

[21] Schejter, A., O. R. Ben Harush and N. Tirosh, 2015. *Re-theorizing the "digital divide": Identifying dimensions of social exclusion in contemporary media technologies*. FACE Conference: European Media Policy 2015: New Contexts, New Approaches. Available from: https://eprints.qut.edu.au/86701/.

[22] Scheerder, A., A.J.A.M. van Deursen, and J.A.G.M. van Dijk, 2017. Determinants of Internet skills, uses and outcomes. A systematic review of the second- and third-level digital divide, *Telematics and Informatics*, vol.34, issue 8, pp. 1607-1624.

[23] Schmidpeter, B. and R. Winter-Ebmer, 2021. Automation, unemployment, and the role of labor market training. *European Economic Review*, vol. 137, issue August.

[24] Śmiałowski, T. and L. Ochnio, 2019. Economic context of differences in digital exclusion. *Acta Scientiarum Polonorum*, vol.18, issue 2, pp. 119-128.

[25] van Deursen, A.J.A.M., J. A. G. M. van Dijk and O. Peters, 2011. Rethinking Internet skills: The contribution of gender, age, education, Internet experience, and hours online to medium- and content-related Internet skills, *Poetics*, vol.39, issue 2, pp.125-144.

[26] van Deursen, A.J.A.M., 2020. Digital Inequality During a Pandemic: Quantitative Study of Differences in COVID-19–Related Internet Uses and Outcomes Among the General Population, *Journal of Medical Internet Research*, vol.22, issue 8.

[27] van Dijk, J.A.G.M., 2006. Digital divide research, achievements and shortcomings. *Poetics*, vol.34, issue 4,5, pp. 221-235.

[28] van Dijk, J. A. G. M., 2020. *CLOSING THE DIGITAL DIVIDE, The Role of Digital Technologies on Social Development, Well-Being of All and the Approach of the Covid-19 Pandemic*, Conference: Virtual Expert Group UN Meeting on "Socially just transition towards sustainable development: The role of digital technologies on social development and well-being of all" : 4-7 August 2020, New York

[29] van Dijk, J., 2020. *The Digital Divide.* Cambridge: Polity Press.

[30] Warren, M., 2007. The digital vicious cycle: Links between social disadvantage and digital exclusion in rural areas. *Telecommunications Policy*, vol.31, issue 6-7, pp. 374-388.

[31] Zheng, Y. and G. Walsham, 2021. Inequality of what? An intersectional approach to digital inequality under Covid-19. *Information and Organization*, vol.31, issue 1, Available from: https://doi.org/10.1016/j.infoandorg.2021.100341.

THE IMPACTS OF COVID-19 PANDEMIC ON YOUNG PEOPLE IN THE LABOUR MARKET AND THEIR FUTURE PROSPECTS

Roman Klimko[1], **Eva Rievajová**[2]

[1]*Ekonomická univerzita v Bratislave,*
Dolnozemská cesta 1, 852 35 Bratislava, Slovenská republika
e-mail: roman.klimko@euba.sk

[2] *Ekonomická univerzita v Bratislave,*
Dolnozemská cesta 1, 852 35 Bratislava, Slovenská republika
e-mail: eva.rievajová@euba.sk

Abstract
The transition from school into the labour market has never been easy. The youth unemployment rate is in general higher than the overall unemployment rate, in some countries two or even three times higher. The impact of the Covid-19 pandemic on the labour markets is unevenly distributed and vulnerable groups, including the young people, are affected disproportionately. The Covid-19 pandemic has had very negative consequences on the situation of the young people in the labour market and has significantly worsened their prospects of integrating into the labour market. Ten years after the end of the Great Recession youth employment never fully recovered in some European Union countries. The prolonged unemployment of young people during Covid-19 pandemic is likely to result in wage scars and may have consequences for many years to come. The aim of the paper is to analyse the recent trends in the European Union labour markets. We focus on the young people, their present and future labour market prospects, potential challenges they have to face and issues they have to cope with.

Keywords
COVID-19. Labour market. Vulnerable group. Unemployment. Youth.

JEL classification
J01, J64

1 Introduction

The Covid-19 pandemic has changed our lives. There are winners and there are losers. The existing economic uncertainty created by the Covid-19 pandemic means that the future is expected to be very challenging for all of us. Unfortunately, young people are a vulnerable group in the labour market. Therefore, they are likely to be particularly hard hit.

Even before the onset of the Covid-19 pandemic, the youth unemployment rates (15-24) were still at very high levels and have not yet returned to the pre-financial crisis levels in some EU countries. It was due to the fact that the 2008-2009 crisis increased youth unemployment significantly in most of the EU countries and the subsequent recovery was uneven across the EU countries. The fact that more than ten years was not enough to deal with the youth labour market issues and get back to the pre-2008 rates in the EU as a whole suggests that the problem will only get worse due to the Covid-19 crisis.

The aim of our paper is to examine the recent trends in the EU labour markets with an emphasis being placed on the young people, their present and future labour market prospects, potential challenges they have to face and issues they have to cope with.

2 Literature review

How much will Covid-19 cost? Well, we do not know now. Unfortunately, we will not know even the pandemic is over. The reason is that it is not only about how much do we have to pay now, but how much we have to pay in total. Therefore, we have to consider future negative consequences of today's economic and labour market difficulties. Experience from previous crises suggests that even short-term shock can have adverse long-lasting consequences. History shows us that the economic shocks can have a major impact on human development and their effects are distributed unequally.

The evidence shows that young people are affected disproportionately (UNDP, 2020). Choudhry et al. (2012) assessed the impact of financial crises on the youth unemployment rate. Their findings show that the impact of financial crises on the youth employment rate is greater that the effect on the overall unemployment rate. Moreover, their results suggest that financial crises affect the youth employment rate up to five years after their onset. Greg and Tominey (2005) focused on the male youth unemployment and they estimated a male wage scar between 13-21% at age 42. According to them the penalty is lower between 9-11%, if it is possible to avoid recurrent spells of unemployment. Bruno et al. (2017) used the data for a panel of OECD countries, they chose the period 1981-2009 and point out that financial crises have large short- and long-run effects on youth unemployment rate. The short-term effects on youth unemployment rate are approximately 1.9 times higher than the short-term effects on the overall unemployment rate. More importantly, if we take a look at the long-term effects of the financial crises on the youth unemployment rate, they are circa 1.5-1.7 times higher than the long-term effects on the overall unemployment rate. Dettling (2016) in her study suggests that if young people enter the labour market during a recession, there is a possibility that they constitute a scarred generation. It is because the young people experience a decline in both, employment and earnings during the recession. Lower earnings and unemployment spells during the early years in the labour market may lead to the lower earnings in the future. Cockx (2016) states that the cost of recessions can be huge and their impact long-lasting, so that it is very important to invest more to shorten the duration of the recession. Labour market policies should aim at those entering the labour market for the first time during the recession. He concludes that for the young people they are about to enter the labour market and their future perspectives are important two things, their educational level and the flexibility of the labour market in a country. In fact, it is not easy to reduce youth unemployment, so the governments and labour market policies should do as much as possible to help young people with the transition from education to work. As Kluve (2014) points out the focus should be on earlier intervention in the education system and he adds that it seems to be successful to incorporate vocational training into the education system. It leads to a smooth school-to-work transition. On the other side, we can also find some disadvantaged among young people facing complex barriers that prevent them from being able to find a decent job after graduation. The examples of above-mentioned barriers are a poor educational experience, the lack of labour market experience, a financial pressure, a low level of confidence and personal motivation (Buzzeo et al., 2016).

O'Higgins (2017) concludes that young people have limited access to decent jobs that would match their qualifications as well as meet their aspirations. Their transition into the world of work is difficult and can have long-lasting impacts on young people, their families, and communities. In the early beginning of the career it is typical for young workers to work on a temporary contract because they could not find a permanent job. However, it is also the main reason why young people are significantly impacted by the adverse economic conditions. The firms prefer to apply last in, first out principle to adjust the number of employees. The manager fires the employees with the shortest length of service what is easier and cheaper. His intention is to retain workers who possess more firm-specific human capital and it could be too expensive to hire them back or find employees for senior positions when economic conditions get better (Pastore, 2018). O'Higgins (2010) points out that young people are very important for the economic growth and development and youth unemployment result in missed opportunities. He adds that every single not usefully occupied young person represents a wasted potential. It means that relatively high youth unemployment rates imply large amounts of wasted potential in a country.

3 Methodology and data

In the article we use and analyse the most recent data available from the Eurostat database. We focus on the youth unemployment rate of people aged 15-24 as a percentage of population in the labour force of the same age. The emphasis is being placed on the youth labour market developments across

the EU countries. We analyse data for all 27 EU countries and compare the youth unemployment developments between 2009 and 2019 on the annual basis. Then we take a look at the period from the January 2020, before the onset of the Covid-19 pandemic in the EU, to the June 2021 on the monthly basis. To achieve the paper's objectives, a systematic literature review was conducted. Based on the comprehensive literature review and the empirical results we recommend actions that might be taken to deliver a significant impact.

4 Empirical results

A recession is a period that leads to worsening conditions in the economy and labour market. Some of the workers use to be hit harder than the others. Young people are usually hit hardest because firms stop hiring what makes it more difficult to find the first job after the graduation. Moreover, many jobs are at risk of being redundant, specifically the jobs occupied by least-skilled and/or least experienced workers. Nicolas Schmit, the Commissioner for Jobs and Social Rights, in June 2020 wrote (European Commission, 2020a): *"I am particularly concerned about the rise of youth unemployment as we cannot accept that another generation is sacrificed."* He also pointed out that first quarter of 2020 was a quarter when the EU experienced a decline in employment after nearly seven years of growth. But first of all, it is important to realize how different was the situation across the EU before the onset of the Covid-19 crisis. As can be seen in Figure 1, some EU countries were unable to tackle high youth unemployment rate in 2019, approximately ten years after the financial crisis hit the EU. As the economic conditions deteriorated, the worst was yet to come in some EU countries.

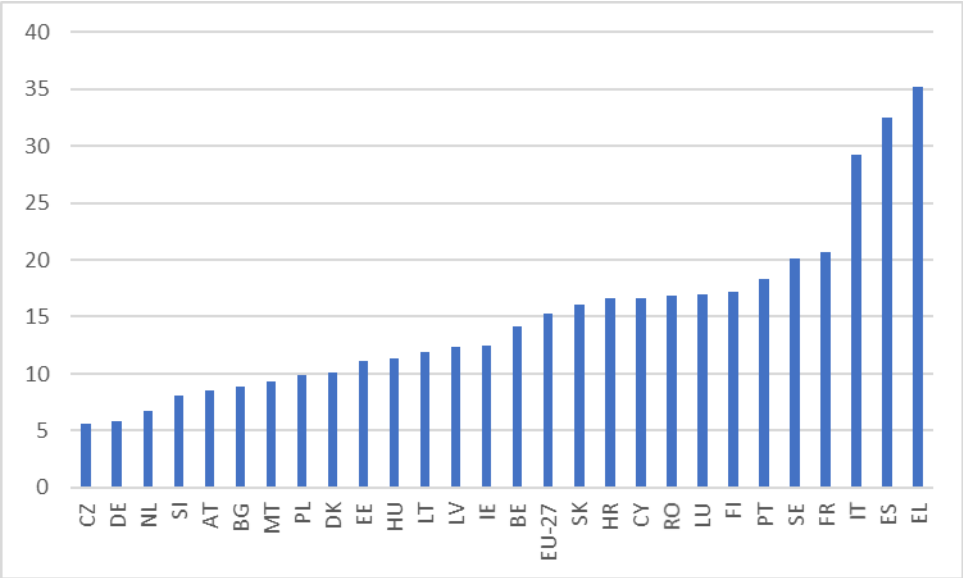


Fig. 1. Youth unemployment rate in 2019 (15-24, percentage of population in the labour force) (Source: Eurostat)

The report Employment and Social Development in Europe 2021 (European Commission, 2021) concludes that young people were among the groups worst affected by the fall in employment, particularly during the second quarter of 2020. Some sectors suffer more than the other ones during the lockdown measures and the hardest-hit sectors typically absorb a significant share of youth. But how can we explain large differences in youth unemployment across the EU countries? Pastore (2018) points out that the differences in school-to-work transition systems matter and their structure is important, too. According to him, the best examples of how to build the education system we can find in Anglo-Saxon countries because their systems combine high-quality education with flexible labour market. Germany is well known for its dual education system in which the young people can acquire work-related competences during their studies. Figure 1, Figure 2 and Table 1 clearly confirm that German education and school-to-work system work very well. Scandinavian countries are typical

examples of using the active labour market policies to prevent a long-term unemployment. Southern and eastern European countries have still a lot to do in order to come with an appropriate solution how to reform their institutions and improve school-to-work transition systems. As seen in Figure 1 and Table 1, the three worst performing countries in 2019 were southern European countries – Greece, Spain, and Italy. Sanz-de-Galdeano and Terskaya (2020) present findings that in the aftermath of the Great Recession Spain introduced three consecutive labour market reforms between 2010 and 2012. However, there are still many challenges to solve. The dual nature of employment protection legislation in Spain is the one of the main issues. It means that there is a large firing-cost gap between permanent and temporary contracts. This is also the reason why the youth unemployment in Spain is very volatile over the business cycle. They also add that the previous reforms were not successful to come with targeted and effective active labour market policies aimed at vulnerable groups and more specifically young people. Marelli and Signorelli (2017) point out that the EU labour markets flexibilization in the last decades was insufficient to reduce the unacceptably high levels of youth unemployment in some countries. They add that firstly, the effective active and passive labour market policies need to be put in place. Secondly, the focus should be on the school-to-work transition, innovative educational and training schemes, and the specific labour market measures that would help young people to acquire the required skills and competencies.

The active labour market policy is very important and its focus should be primarily focused to prevent a situation when short-term unemployment becomes structural or long-term. As shown in Figure 1, Figure 2 and Table 1, it seems that for some countries the biggest problem is to prepare a comprehensive labour market policy reform in which they would use the innovative instruments suggested by the best practices used in other EU countries. The European Court of Auditors (2017) in its report assesses the Youth Guarantee and the Youth Employment Initiative. Youth Guarantee was the one of the most important EU initiatives to tackle the youth unemployment issues in the EU. The aim of the Youth Guarantee, adopted in 2013, was to ensure that every single person under 25 receive a good quality offer of employment, continued education, apprenticeship or traineeship within a period of four months of leaving formal education or becoming unemployed. The auditors visited seven EU countries, including Spain and Italy where tackling youth unemployment seems to be a great issue (Figure 1, Figure 2 and Table 1). The report (European Court of Auditors, 2017) concludes that none of the EU countries visited ensured that all members of the target group were reached within four months. One of the reasons was limited financial resources from the EU budget. For future employment initiatives it recommends to set realistic objectives that could be achieved as well as to carry out market analyses and market needs assessment prior to setting up various schemes. However, there is also the Study for the Evaluation of ESF Support to Youth Employment (European Commission, 2020b) with different conclusions on the effectiveness of the Youth Employment Initiative and the Youth Guarantee. It concludes the Youth Employment Initiative had a positive impact on the integration of the young people into the labour markets. Well, it is difficult to say how effective the Youth Employment Initiative and the Youth Guarantee were, because the EU experienced very positive labour market developments in the past years before the onset of the Covid-19 pandemic. But, what can we say is that at least in some countries, namely Spain, Italy and Greece, the Youth Guarantee in general did not help young people that much. In the future it will be crucial to come up with youth schemes that really work in practice. In October 2020, the EU countries have committed to the implementation of the reinforced Youth Guarantee and the target group is broader now. It focuses on young people aged 15-29 and one of the main objectives is to reach out more young people. The question is whether it is possible to reach out all young people under the age of 30, or not. The former Youth Guarantee was unable to help every single young person under 25.

If we take a look at the youth labour market developments in the EU countries after the onset of the Covid-19 crisis the situation is very different. Figure 2 shows the development of the youth unemployment rate in the Czech Republic, Germany, Greece, Spain and the EU-27 average. Firstly, it is necessary to highlight the levels of the unemployment rate across selected countries before and during the recent crisis. We have chosen the Czech Republic and Germany because their youth labour

market outcomes are impressive and both countries experienced very low levels of youth unemployment before the onset of the Covid-19 crisis. On the other side, Greece and Spain have been struggling for many years to lower youth unemployment. Labour markets in Greece and Spain rely more on sectors that suffer a lot during the lockdowns and other restrictions. The lockdown measures hit some sectors of their economies harder than the others, such as tourism, recreation activities, accommodation and food services. The International Labor Organization (2020) also mentions that the policy response to the Covid-19 crisis must be immediate, targeted and comprehensive. It is due to the fact that even in the normal times, the labour market situation of the youth is tough. The young people are over represented in types of work which make them vulnerable during the crises and they experience job and /or income losses. The employment in gig economy, fixed-term and another non-standard contracts make the situation even worse for them. All in all, the governments should try to implement a modern system of flexicurity. However, as Pastore (2018) indicates that the efficient flexicurity needs some aspects of labour security connected with the proactive training schemes and passive income support. We would like to highlight that in some countries is very hard to talk about flexicurity meanwhile speaking about young people. The example could also be Spain where temporary and part-time jobs provide flexibility to firms on one side, and the employment opportunities on the other side. But the problem is when it seems like that those non-standard types of employment are becoming increasingly involuntary, mainly for young people (Sanz-de-Galdeano and Terskaya, 2020).

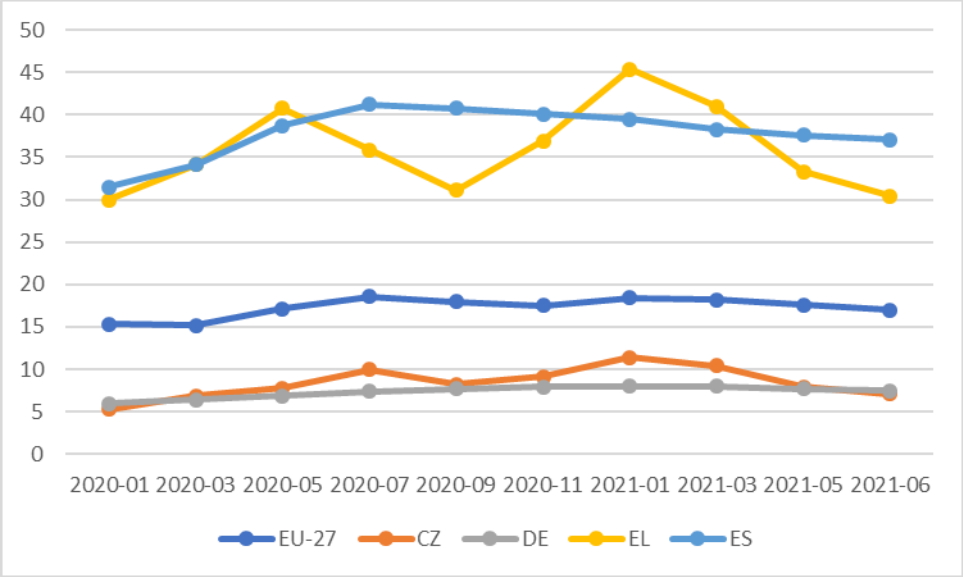


Fig. 2. Youth unemployment rate in selected countries (15-24, percentage of population in the labour force)

(Source: Eurostat)

As mentioned above some EU countries and their youth labour markets were badly affected by the Great Recession. They tried to introduce a number of measures and incentives to promote youth employment and get back to the pre-2008 youth unemployment rates. Marelli and Signorelli (2017) point out that there are significant adverse social, economic and political consequences of youth unemployment. They add that youth unemployment rate is generally higher than the overall unemployment rate and is more sensitive to changes in economic cycle. They conclude that there are large differences in youth unemployment rates among EU countries, both in dynamics and levels. The Figure 2 shows the youth unemployment development in the EU-27, the Czech Republic, Germany, Greece and Spain between January 2020 and June 2021. Indeed, it is very interesting to analyse the youth unemployment rate levels and dynamics. The starting point in January 2020 before the onset of the crisis for the Czech Republic and Germany was very similar. They recorded the youth unemployment rates 5.3% and 6,0% respectively. Both countries experienced a slight increase in

youth unemployment and the most recent data available show that in June 2021 the youth unemployment rates are 7.1% and 7.5% respectively. Considering the severity of the Covid-19 pandemic, it is a great success how they could handle the crisis so far. The reasons of positive youth labour market outcomes in the Czech Republic and Germany we could find in education system, school-to-work transition system and active labour market policy. In January 2021 Spain and Greece recorded the youth unemployment rates 31.5% and 30.0% respectively. Despite a significant increase in the second half of 2020, the most recent data show that Greece got back to the pre-Covid-19 crisis youth unemployment rate level as it recorded 30.4%. However, the case of Spain is very different. Due to the crisis Spain have experienced a sharp increase in youth unemployment and its situation of young people in the labour market is much worse than during the pre-Covid-19 crisis period. Sanz-de-Galdeano and Terskaya (2020) conclude that very high numbers of long-term unemployed are unsustainable and risky for social cohesion and the economic growth alone will not be sufficient to substantially lower long-term unemployment in Spain. It should be a high priority for public employment services to ensure that as many young people as possible move into, or back into the labour market in order to prevent them from remaining unemployed for too long. Moreover, the emphasis should be put on policies and programmes focused on maintaining and upgrading their skills.

Table 1. Youth unemployment rate in 2009 and 2019 (15-24, percentage of population in the labour force)

YUR/Year	2009	2019
5-9.9%		BG, CZ, DE, MT, NL, AT, PL, SI
10-14.9%	DK, DE, CY, MT, NL, AT, SI	BE, DK, EE, IE, LV, LT, HU
15-19.9%	BG, CZ, LU	HR, CY, LU, PT, RO, SK, FI
20-24.9%	BE, IE, PL, PT, RO, FI	FR, SE
25-29.9%	EE, EL, FR, HR, IT, LT, HU, SK, SE	IT
30-34.9%	ES, LV	ES
35-39.9%		EL

Source: Eurostat.

If we take a look at Table 1, we see the changes in youth unemployment rate between 2009 and 2019 in the EU countries. It is obvious that even ten years after the end of the Great Recession youth employment never fully recovered in some EU countries. In Greece, Spain and Italy we do not see any improvements between 2009 and 2019. After the Great Recession the EU took massive steps to improve the situation in the labour market. Youth Guarantee, adopted in 2013, was the one of the most important EU initiatives to tackle the youth unemployment issues in the EU. However, as seen in Table 1, it failed to bring significant and sustainable change at least in Italy, Spain and Greece. In October 2020, the reinforced Youth Guarantee was adopted as a part of the Youth Employment Support package focused on all young people under the age of 30 (European Commission, 2021). However, it is very unlikely that the main objective of the reinforced Youth Guarantee will ever be met.

5 Conclusion

Youth unemployment is heterogeneous across the EU countries and there are large differences in youth unemployment rates within the EU. Apparently, one decade was not enough to reduce high levels of youth unemployment and get back to the pre-Great Recession youth unemployment rates for countries like Italy, Spain and Greece. Similarly to the Great Recession, there is empirical evidence that last in, first out approach has been widely used by companies. Young people are often forced to work on precarious contracts and it leads to uncertainty and exacerbate their problems, especially during the recessions. It is obvious that the EU labour market flexibilization in the last decades was insufficient to tackle high levels of youth unemployment. Unfortunately, there is no easy

and fast solution. Comprehensive youth labour market reforms have to be implemented to address main challenges and issues. On the other side, we can learn from the best performing countries. Empirical evidence shows that it may be very important to primarily focus on earlier intervention in the education system that could lead to a smooth school-to-work transition. There is no need to invent something new. It is not only about Germany's well-known dual education system in which the young people can acquire work-related competences during their studies. Table 1 shows the examples of successful EU countries that recorded relatively low levels of youth unemployment in 2019, ten years after the Great Recession and before the onset of the Covid-19 pandemic. The EU countries have taken massive steps to support their economies and to improve the situation in the labour market. On the other side, it is very important now to focus specifically on young people in the labour market in order to minimize potential long-term negative effects.

6 Acknowledgement

This paper is an output of VEGA research project no. 1/0037/20 "New challenges and solutions for employment growth in changing socio-economic conditions".

References

[1] Buzzeo, J., R. Marvell, C. Everett and B. Newton, B, 2016. *Tackling unemployment among disadvantaged young people*. Brighton: Institute for Employment Studies.

[2] Bruno, G., M. Choudhry, E. Marelli and M. Signorelli, 2017. The short- and long-run impacts of financial crises on youth unemployment in OECD countries, *Applied Economics*, vol 49, issue 34, pp. 3372-3394.

[3] Choudhry, M.T., E. Marelli and M. Signorelli, 2012. Youth Unemployment Rate and Impact of Financial Crises, *International Journal of Manpower*, vol. 33, 76-95.

[4] Cockx, B., 2016. *Do youths graduating in a recession incur permanent losses?* IZA World of Labor. [online]. [2021-08-12]. Available from https://wol.iza.org/uploads/articles/281/pdfs/do-youths-graduating-in-recession-incur-permanent-losses.pdf?v=1.

[5] Dettling, L., 2016. *Effects of entering adulthood during a recession.* IZA World of Labor. [online]. [2021-08-12]. Available from https://wol.iza.org/uploads/articles/242/pdfs/effects-of-entering-adulthood-during-recession.pdf?v=1.

[6] European Commission, 2020a. *Employment and Social Developments in Europe: Quarterly Review. June 2020*. Luxembourg: Publications Office of the European Union. [online]. [2021-08-17]. Available from https://op.europa.eu/en/publication-detail/-/publication/c0a14095-c4b1-11ea-b3a4-01aa75ed71a1/language-en#.

[7] European Commission, 2020b. *Study for the Evaluation of ESF Support to Youth Employment*. Luxembourg: Publications Office of the European Union. [online]. [2021-08-18]. Available from https://www.adcoesao.pt/sites/default/files/study_for_evaluation.pdf.

[8] European Commission, 2021. *Employment and Social Developments in Europe: Annual Review 2021*. Luxembourg: Publications Office of the European Union. [online]. [2021-08-17]. Available from https://op.europa.eu/en/publication-detail/-/publication/e823d46f-e518-11eb-a1a5-01aa75ed71a1/language-en.

[9] European Court of Auditors, 2017. *Youth unemployment – have EU policies made a difference?* Luxembourg: Publications Office of the European Union. [online]. [2021-08-18]. Available from https://www.eca.europa.eu/Lists/ECADocuments/SR17_5/SR_YOUTH_GUARANTEE_EN.pdf.

[10] Gregg, P. and E. Tominey, 2005. The wage scar from male youth unemployment. *Labour Economics*, vol. 12, issue 4, pp. 487.

[11] International Labor Organization, 2020. Preventing exclusion from the labour market: Tackling the COVID-19 youth employment crisis. [online]. [2021-08-18]. Available from https://www.ilo.org/wcmsp5/groups/public/ed_emp/documents/publication/wcms_746031.pdf.

[12] Kluve, J., 2014. *Youth labor market interventions*. IZA World of Labor. [online]. [2021-08-12]. Available from https://wol.iza.org/uploads/articles/106/pdfs/youth-labor-market-interventions-in-oecd-countries.pdf?v=1.

[13] Marelli, E. and M. Signorelli, 2017. *Young People in Crisis Times: Comparative Evidence and Policies.* CESifo Forum, 18(2), 19-25.

[14] O'Higgins, N., 2010. *The impact of the economic and financial crisis on youth employment: Measures for labour market recovery in the European Union, Canada and the United States.* Geneva: International Labour Organization.

[15] O'Higgins, N., 2017. *Rising to the youth employment challenge: New evidence on key policy issues.* Geneva: International Labour Organization.

[16] Pastore, F., 2018. *Why is youth unemployment so high and different across countries?* IZA World of Labor. Available from https://wol.iza.org/uploads/articles/420/pdfs/why-is-youth-unemployment-so-high-and-different-across-countries.pdf?v=1.

[17] Sanz-de-Galdeano, A. and A. Terskaya, 2020. *The labor market in Spain, 2002–2018*. IZA World of Labor. Available from https://wol.iza.org/uploads/articles/529/pdfs/the-labor-market-in-spain.pdf?v=1.

[18] UNDP, 2020. *Covid-19 and Human Development: Assessing the Crisis, Envisioning the Recovery*. [online]. [2021-08-13]. Available from: http://hdr.undp.org/sites/default/files/covid-19_and_human_development_0.pdf.

DEVELOPMENT OF TRADES IN SLOVAKIA FROM A SECTORAL PERSPECTIVE WITH EMPHASIS ON CRISES PERIODS

Miroslava Knapková[1], **Mariana Považanová**[2]

[1]*Matej Bel University in Banská Bystrica, Faculty of Economics,*
Tajovského 10, 975 90 Banksá Bystrica, Slovakia
email: miroslava.knapkova@umb.sk

[2]*Matej Bel University in Banská Bystrica, Faculty of Economics,*
Tajovského 10, 975 90 Banksá Bystrica, Slovakia
email: mariana.povazanova@umb.sk

Abstract
The trades represent the most widespread form of business in Slovakia. At the same time, the dynamics of their development is different from the dynamics of other business entities. One of the possibilities to examine their development dynamics is in relation to cyclical fluctuations in the economy. The paper focuses on analysing the dynamics of trade development in selected sectors of the economy to identify the specifics in their development with respect to the economic cycle of Slovakia. The focus is on two hard recessions in the 21st century (namely 2008-2009 recession and Covid-19 pandemic recession). Several indicators describe economic cycle; in the article, the emphasis is on the development of GDP, employment, and industrial production index. For better understanding of specifics of Covid-19 pandemic recession, article also provides description of state measures to support trades during the pandemic. The dynamics of business development is monitored using the number of established and extinct trades. In the article, the quarterly data from Finstat and Eurostat are used. The results suggest that the overall development of the economy, including both economic crises, influence the examined dynamics of trades' development. However, because of the specific nature of Covid-19 recession and adopted state measures, the differences in the dynamics of trades during the Covid-19 recession are visible different from the dynamics during the Great recession.

Keywords
Dynamics of trades development, Sectors of economy, crisis, 21st century, self-employment.

JEL classification
E32, L26, M21

1 Introduction

Self-employment as part of small and medium sized enterprises (SME) in Slovakia belongs to the entrepreneurship (act 513/1991 Coll. Business Code) and self-employed person is a person, who gain income from business activities (act 461/2003 Coll. On Social insurance). The most common form of self-employment is a trade business, covering 53.75% of all economic subjects and 93.72% of self-employed persons (source: based on data from Statistical office SR,2020). A trade is a systematic activity performed independently by entrepreneur (trader), in his own name and on his own account, conducted for earning the profits or for achieving a measurable positive social impact. Trader shall be a natural person older than 18 years of age, with the full capacity to act, who possess integrity (act no. 455/1991 Coll. Trade Business Act).

Dynamics of trades' development is an important part of the Slovak economic system. Due to their specific nature (flexibility of creation and termination, relatively low number of employees eventually no employees, administrative simplicity of their creating and terminating, frequent dependence of supplier-customer relations on large companies, etc.), their development is different from other business entities. The simple establishment and extinction of trades, low financial and administrative costs in establishing trades, result in the development of the number of established and extinct trades in response to various changes in the economic environment.

This paper examines the dynamics of trade development in general and in selected sectors of the economy (construction, information technologies, tourism, automotive industry), with respect to the economic cycle of Slovakia. The focus is on two hard recessions in the 21st century (namely 2008-2009 recession and Covid-19 pandemic recession). The paper is divided into five parts: introduction,

literature review (including literature gap and paper´s main research idea), methodology and data, empirical results (focusing on state measures to support self-employment during Covid-19 pandemic, economic cycle in Slovakia, trade dynamics), and conclusion.

2 Literature review

In the long run, the state's economy is growing, but this growth is not uniform over the time, and it is influenced by various factors. Almost in every country, economic expansions had been interrupted by incidents of declining production, investment and employment and rising unemployment. The repeated sequence of economic expansion followed by decline of economic activity and then again followed by recovery and so on is known as a business cycle. The business cycle is a central concern in macroeconomics (Abel, Bernanke and Croushore, 2017), because it influences every individual and economic entity in the state, including self-employment.

There are several foreign studies focusing on the influence of business cycle on the development and dynamics of self-employment. Shapiro (2014) elaborated the linkage between the self-employment and business cycle. He stresses the idea that self-employment tends to expand during downturns through higher inflows from unemployment. Furthermore, countries with higher self-employment shares exhibit lower cyclical output persistence. Fossen (2020), according to whom entry rates into self-employment increase during recessions and decrease during economic upswings, also confirmed this. This could be explained by the higher unemployment rate during a recession, together with the fact that unemployed persons have a relatively high propensity to become self-employed out of necessity. Based on the UK data, Parker et al. (2012) pointed that entrepreneurship both causes and is caused by business cycles.

Contreras (2019) reported the interconnection between the financial crisis in Spain and self-employment. He focused on the determinants of entry into self-employment during the 2008 Spanish Crisis. Marín (2020) found out that economic recession in Spain has been accompanied by a fall in the number of new self-employed between 2008 and 2013 (in the contrast to Shapiro and Fossen findings), along with a significant change in their socio-demographic and occupational profile. Henley (2017) pointed to increase of self-employment after the crisis in UK, mostly in those areas where local wages are higher and unemployment lower.

There are, however, only few studies focusing on so-far influence of economic crisis caused by Covid-19 pandemic on self-employment. Blundell and Machin (2020) analysed weekly worked hours and monthly income in April 2019 and April 2020 in the UK. Beland et al. (2020) analysed number of active business owners before and during COVID-19 (May 2019 – May 2020) in Canada. Influence of reductions of worked hours on the subjective well-being of self-employed in the UK were analyzed by Yue and Cowling (2021). Besides worked hours, Kalenkoski and Pabilonia (2020) focused also on the changes in unemployment in the USA.

In Slovakia, the systematic analysis of the interconnection between the business cycle with emphasis on crisis, including Covid-19 pandemic crisis, and self-employment (particularly trades) dynamics are missing. Intention of the authors is to partly fill the research gap and to provide insight into the trades´ dynamic in Slovakia in connection with two hard recessions in the 21st century.

Based on the literature review and availability of the official data, the article focuses on the business cycle in Slovakia, described by development of selected macroeconomics indicators namely GDP and index of production in construction industry and trend in trades development (establishment and mortality of trades). Mortality includes the overall mortality (without considering the reason for the termination of the self-employed person).

3 Methodology and data

Business cycles phenomena were studied by Burns and Mitchel (1946, p. 3), who defined them as a "type of a fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises. A cycle consists of expansions occurring at about the same time in

many economic activities, followed by similarly general recessions, contractions and revivals which merge into the expansion phase of the next cycle; this change is recurrent, but not periodic." Their definition of the business cycle is widely accepted to this day. However, as stated by Krugman and Wells "Some readers may be wondering exactly how recessions and expansions are defined. The answer is that there is no exact definition!" (2012, p.11). Usually, two approaches are employed to identify the turning points of the business cycle: a statistical method and a judgmental method (Kose et al., 2020). For this article, we apply methodology introduced by Centre for Economic Policy Research (https://cepr.org) and Euro Area Business Cycle Network (https://eabcn.org). This methodology employs broad sets of economic indicators and applies a judgmental method to identify the turning points of national or regional cycles. Table 1 summarises the turning points of business cycle in Euro Area, which are used as a reference in this paper.

Table 1. Chronology of Euro Area business cycle (from 2004)

Date	Peak / Trough
Q4 2019	Peak
Q1 2013	Trough
Q3 2011	Peak
Q2 2009	Trough
Q1 2008	Peak

Source: Own processing according to Euro Area Business Cycle Network (https://eabcn.org/dc/chronology-euro-area-business-cycles).

Authors rely on above-mentioned chronology, even that Slovakia became a member of Euro Area only in 2009 (however, in the examined period, Slovakia was part of the European Union). In this paper, authors analyse the development of selected indicators related to business cycle and trades development in the years 2004 to 2021. Data of all indicators are processed as quarterly data, starting from the first quarter of 2004 (Q1 2004) (in 2021, the last data are for the second quarter, corresponding to the situation on 30.6.2021). The reason for starting with the first quarter of 2004 is the fact that Slovakia became a member of the European Union in 2004. Time series thus contain data for a total of 70 time periods (quarters).

Quarterly data on the number of newly established trades and number of extinct trades are processed according to Finstat data (www.finstat.sk). Quarterly data on the GDP, and industrial production index for construction are processed according to Eurostat dat.

To compare the data and to avoid the influence of seasonality, authors used a percentage change compared to same period in previous year, calculated as follow:

$$\left(X_{ij} - X_{i(j-1)}\right)/X_{i(j-1)} * 100 \qquad (1)$$

where *i* is a quarter in year (from 1 to 4),
j is a year,
X stands for data on: GDP in market prices, industrial production index for construction, newly established trades, terminated trades.

Authors' intention is not only to describe interconnection between the business cycle and trade dynamic development in general, but also to focus on specifics of trade development from the sectorial point of view. Industries generally react in different ways to the business cycle fluctuations. Some of them are very sensitive to business cycle, while the other are relatively immune to them. According to Ruddock et al. (2014) economic recessions have huge effects on the construction industry, huger than on most other industries. Authors Grebler and Burns (1982) found that there are relationships between cycles in total construction and its components and between construction and GDP cycles. Also, Berman and Pfleeger (1997) confirmed, that construction is one of those industries

most affected by the business cycle. As the main aim of the article is to describe trade dynamic during the business cycle, particularly during the Great recession and Covid-19 recession, authors have chosen construction as particular sector to analyse. Construction is an important sector of the Slovak economy, accounting 10% of the overall employment and 6% of gross domestic product in 2017 (source: Eurostat).

Using the available data, the article attempts to answer following research questions:

1. What is the trade dynamic development (establishment of new trades, extinction of trades) in the turbulent economic environment of the last two economic crises in Slovakia?
2. What are the specifics of trade development in the construction sector during the examined period?

4 Empirical results

4.1 Business cycle development in Slovakia (2004 – 2021)

To examine the business cycle in Slovakia, authors used data on GDP at market prices as a variable that most closely measures aggregate economic activity. The percentage change of GDP compared to same period in previous year was used. As authors rely on the business cycle periods defined for Euro Area (table 1), the comparison with peaks and troughs of Euro Area and Slovakia was performed.

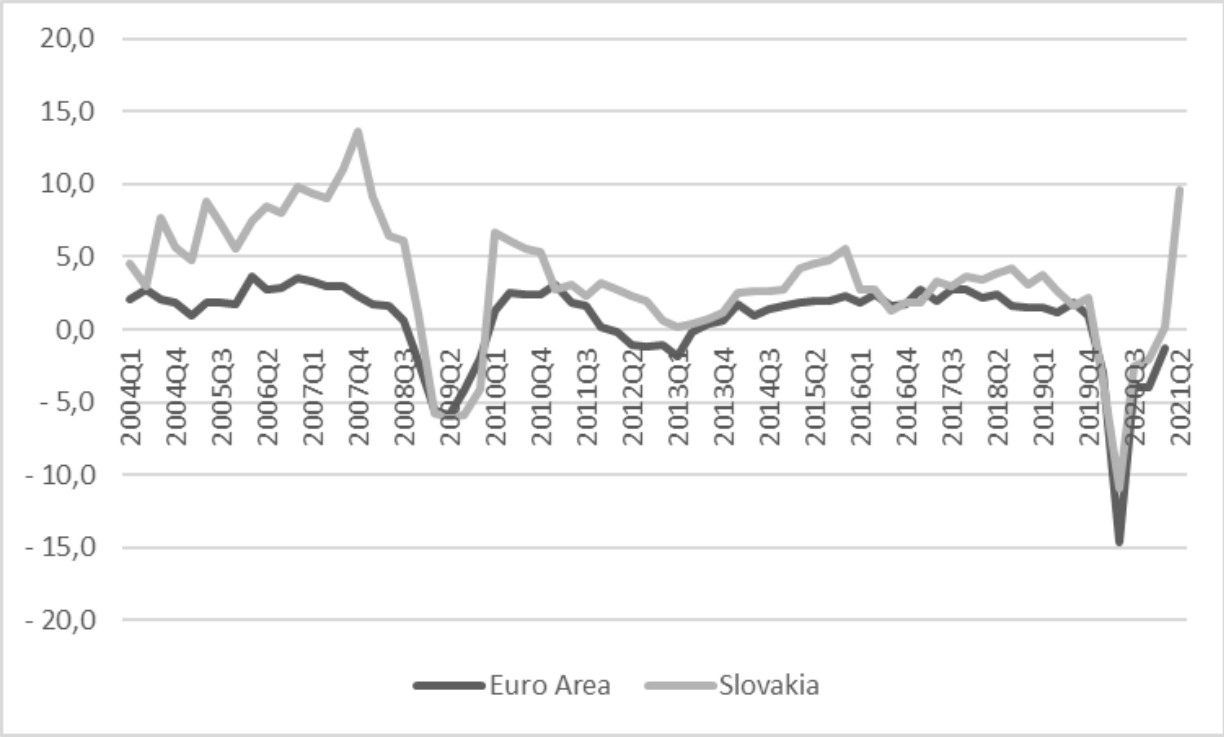


Fig. 1. GDP at market prices in Slovakia and in Euro Area in Q1 2004 – Q2 2021, percentage change compared to same period in previous year (Source: own processing according to Eurostat data)

In Fig. 1 authors plot the percentage change of GDP compared to same period in previous year in Euro Area and in Slovakia. The results show that the development of GDP in Slovakia has a similar pattern that development of the whole Euro Area GDP, although until the outbreak of The Great recession Slovakia has been one of the fastest growing economies in Europe. Slovak GDP recorded the largest drop at about the same time as the Euro Area GDP. Based on the last EACP announcement (18th March 20021): "the available data do not allow us to conclude whether the euro area recession

that started after the 2019 Q4 has ended" (https://eabcn.org/dc/29th-march-2021); we can deduce that nowadays the economy still not reached the low point of contraction (the trough).

4.2 Dynamics of trade development

In Fig. 2 authors plot dynamics of newly established trades and terminated trades. Because of the available data and methodological changes in the methodology of statistical reporting the number of newly established and terminated trades, authors excluded years 2004 – 2007 from data processing. As percentage change compared to same period in previous year is used, the first displayed data is for Q1 2009. It can be seen that from 2009 there is a balanced and steady growth of newly established trades dynamic until peak in Q2 2010, followed by decrease until trough in Q4 2010. Steady growth continues until Q3 2011, followed by slight decrease until Q4 2012. Next peak in the establishment of new trades was in Q1 2013, followed by further decrease with the trough in Q1 2014. In 2014 – 2016 there was higher volatility in the new trades' development with few slight growths and decreases. In Q1 2017 another peak occurred, followed by relatively stable period until Q4 2017. In Q1 2018 there was a decline in new trades establishment followed by another relatively stable development, with only a slight increases and decreases. Sharp decline of new trades establishment was caused by Covid-19 pandemic with a trough in Q2 2020 (decrease comparing to the same period of previous year was 39.3 %). Afterwards, despite the continuing pandemic, the number of newly established trades began to grow sharply, which may also be because the unemployed persons (who terminated employment according to the Labour Code) are looking for alternative employment opportunities through self-employment.

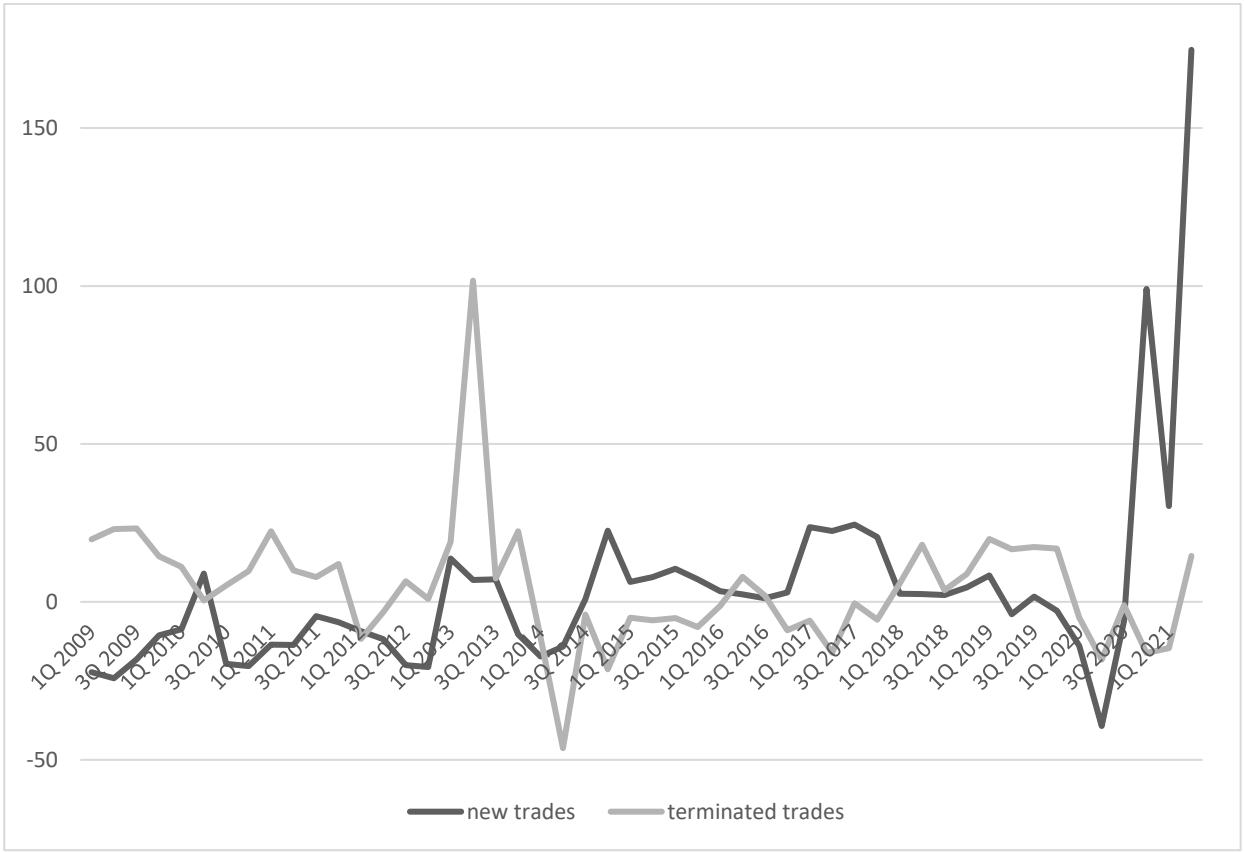


Fig. 2. Dynamics of trade development in Q1 2009 – Q2 2021, change compared to same period in previous year (Source: own processing according to Finstat data)

The dynamics of the terminated trades developed in the opposite way to the dynamics of established trades. Exceptions are the periods of 2013 (when compared to the same period of the

previous year the number of the established trades and the number of the terminated trades increased), and the beginning of the Covid-19 pandemic (Q2 2020), when the number of established trades and number of terminated trades decreased significantly. The decrease in the number of terminated trades may be related to the fact that the government has introduced several state measures aimed at maintaining the self-employment.

4.3 Dynamics of trade development in construction industry

As documented in earlier work (e.g. Ruddock et al., 2014; Grebler and Burns, 1982; Berman and Pfleeger, 1997) construction industry is one of the industries most affected by business cycle. That is why authors focused also on analysis of trades development dynamics in construction sector. The dynamics of trades development in construction sector is displayed on Fig. 3. The new trades development in construction has very similar dynamics as dynamics of new trades in general (with only a slight time shift of individual peaks and throughs) in the period of 2009 – 2015. From 2016, the dynamics of newly established trades in construction is more volatile than dynamics of all trades' establishment. In 2016 and 2017 new trades in construction develop even counter-cyclical to all new trades' development. On the other side, development of terminated trades in construction is almost similar to development of all terminated trades (with slight time shift of the peak at the end of 2018 and beginning of 2019).

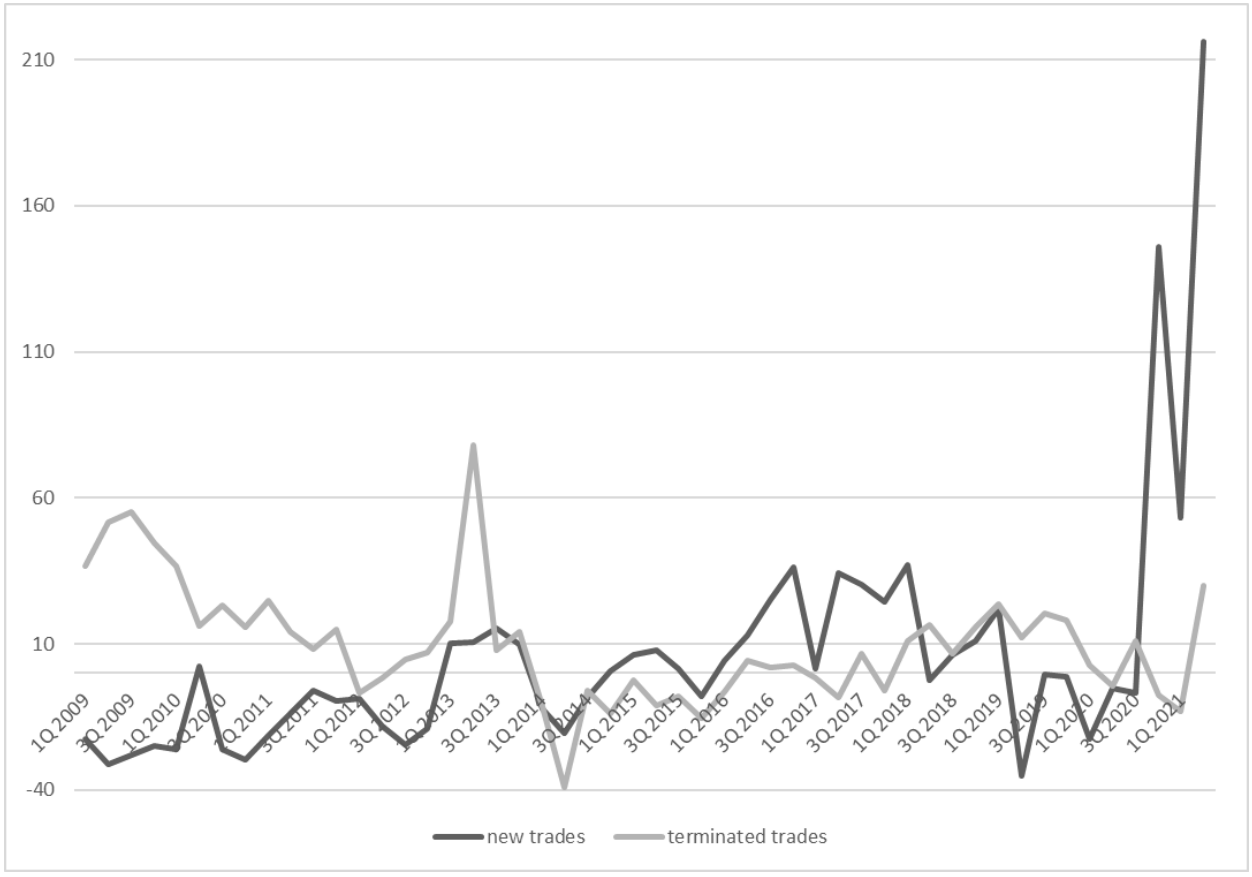


Fig. 3. Dynamics of trade development in construction in Q1 2009 – Q2 2021, change compared to same period in previous year (Source: own processing according to Finstat data)

In case of construction sector, authors examined also dynamics of industrial production index (Fig. 4). Until 2014, it developed similarly as terminated trades in construction. From 2015 to 2017, the opposite development to trades in construction occurred. Starting from Q1 2018 (peak for both trades in construction and industrial production index), the same trends in development of newly established

trades in construction and industrial production index are predominant (with the trough linked with Covid-19 pandemic in Q1 eventually Q3 2020).

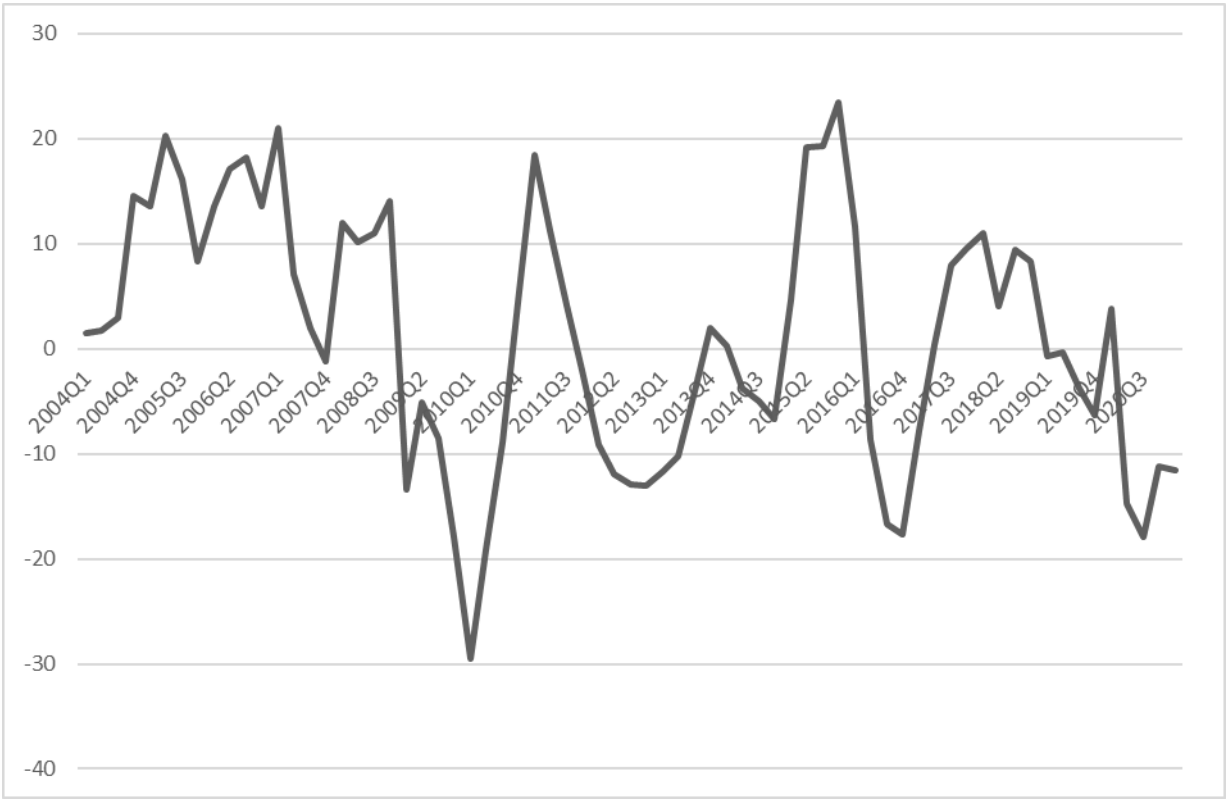


Fig. 4. Volume index of production in construction industry in Q1 2004 – Q2 2021 (Source: own processing according to Eurostat data)

4.4 State measure to protect self-employment during Covid-19 pandemic crisis

The first official occurrence of Covid-19 disease in Slovakia was in March 2020. On 12th March 2020, the extraordinary situation and consequently emergency situation were declared and the first state measures to protect and to support private sector were adapted. From 16th March 2020, based on Regulation of the Public Health Office no. OLP/ 2595/2020, all retail establishments and all establishments providing services were closed. To minimize the negative impact of Covid-19 pandemic and quarantine measures in the field of law, the National Council adopted an act no. 62/2020 Coll. on certain emergency measures in relation to the spread of the dangerous human disease COVID-19 and the judiciary. These measures include the non-expiry of legal deadlines, the failure to conduct court hearings, as well as the prevention of the exercise of liens and auctions. Several specific measures were adopted also in the area of self-employment, and particularly trades. Authors describe the most important of them in the following text.

Based on the Government regulation no. 131/2020 Coll. on the Maturity of Social Insurance Premiums in the Event of an extraordinary situation declared in Connection with Covid-19, the self-employed persons have right to apply for the postponement of payment of obligatory social insurance levies (all monthly payments for March 2020 – March 2021 were postponed to June 2021). From 17th June 2020, self-employed persons can claim reimbursement of part of the rent for leased facilities which they cannot effectively use in connection with Covid-19 pandemic (up to 50% of the rent; amendment to the Act no. 71/2013 Coll. on the provision of subsidies within the competence of the Ministry of Economy of the Slovak Republic).

Starting from the 6th of April 2020, self-employed persons could apply for the financial aid within the project "First aid" (www.employment.gov.sk). The "First aid" is a project that is covered by 85%

from European Union budget (as part of Human resources operational program) and by 15% from Slovak state budget. There are two groups of self-employed persons that can apply for the financial aid in the amount of 330 to 870 euro (the average wage was 1,133,- euro in 2019 in Slovakia): 1.the self-employed person which at the time of the declared emergency situation interrupted the performance or operation of self-employment on the basis of a decision of the Public Health Office of the Slovak Republic, or 2. self-employed person whose sales decreased by at least 20%.

Beside above-mentioned direct support of self-employment, the Act no. 67/2020 Coll. on Certain Extraordinary Measures in the Financial Area in Relation to the Spread of Dangerous Infectious Human Disease Covid-19 introduced an indirect support to self-employed. The support includes guarantees for loans and the payment of interest on a loan, as part of the financial assistance to support the maintenance of operations in small or medium-sized enterprises.

5 Conclusion

This article combines micro-level data on new trades establishment and trade extinction (Finstat data) and macro-level data (GDP, industrial production index for construction) to examine trends in the trades' development dynamics over the business cycle. The research was conducted by finding, analysing and interpreting time series data on GDP, industrial production index for construction, newly established trades, extinct trades (quarterly data for Q1 2004 – Q2 2021). Our findings show that there is a relationship between the business cycle and the trade development dynamics (in general, and also in construction industry). Table 2 summarised the peaks and troughs of GDP, trades establishment, trades termination, trades establishment and termination in construction industry, and industrial production index in construction.

Table 2. GDP development, trades dynamics cycle and Industrial production index for construction cycle in Slovakia

GDP	A	B	C	D	E
P Q4 2007					T
T Q2 2009		P Q3 2009		P Q3 2009	P Q4 2008
P Q1 2010	P Q2 2010	T Q2 2010	P Q2 2010		T
	T Q4 2010		T Q4 2010		
	P Q3 2011		P Q3 2011		P Q1 2011
	T Q4 2012		T Q3 2012	T Q1 2012	T Q4 2012
T Q1 2013	P Q1 2013	P Q2 2013	P Q3 2013	P Q2 2013	
	T Q1 2014	T Q2 2014	T Q2 2014	T Q2 2014	P Q4 2013
	P Q4 2014				T Q4 2014
			P Q2 2015		
P Q4 2015			T		P
T Q3 2016	T	P Q2 2016	P Q4 2016		T Q4 2016
	P Q1 2017	T Q2 2017	T Q1 2017		
P Q3 2018		P Q2 2018	P Q1 2018		P Q1 2018
			T Q2 2019	P Q1 2019	
			P Q4 2019		
T Q2 2020	T	T	T Q1 2020	T	T Q3 2020

Source: own processing.

A = Established trades cycle, B = Extinct trades cycle, C = Established trades in construction cycle, D = Extinct trades in construction cycle, E = Industrial production index for construction cycle, P = Peak, T = Trough

Results indicate that trades dynamic (in general, and also in construction industry) is more volatile than business cycle (expressed by GDP). During the Great Recession (in Slovakia, the trough was in

Q2 2009), the development of trades was pro- cyclical (with the peak of terminated trades in general and also in construction industry in Q3 2009). During the Covid-19 pandemic, the dynamics of trades is also pro-cyclical, with the trough in the Q2 2020).

These results are only preliminary, without considering any specifics of Slovak economy, entrepreneurship, or other specifics. The research was limited by the availability of official statistical data mostly for the period of Covid-19 pandemic. The changes in the methodology in trades (and their classification) over the examined period decrease the data availability and accuracy.

For the future research, analysis of influence of self-employment on business cycle and vice-versa in Slovakia should be examined. Also the analysis of the interconnection between the employment, unemployment and self-employment, in connection with business cycle and its impact on overall labour market is inevitable to better understand the specifics of self-employment in Slovakia..

6 Acknowledgement

This work was supported by the National Research Agency of Slovakia (VEGA 1/0366/21 "Dependent Entrepreneurship in Slovakia – Reflection, Measurement and Perspectives) at the Faculty of Economics, Matej Bel University in Slovakia.

References

[1] Abel, A., B., Bernanke, B. S. and D. Croushore, 2017. *Macroeconomics*, 9th edition. Pearson education.

[2] Beland, L. P., O. Fakoreden and D. Mikola, 2020. Short-Term Effect of COVID-19 on Self-Employed Workers in Canada. *Canadian Public Policy*, vol. 46, issue S1, pp. 66-81.

[3] Berman, J. and J. Pfleeger, 1997. Which industries are sensitive to business cycles? *Cyclical Sensitivity, Monthly Labour Review, Office of Employment Projections*, Bureau of Labour Statistics, 19-25. [online]. [2021-08-27]. Available from: https://www.bls.gov/mlr/1997/02/art2full.pdf

[4] Blundell, J. and S. Machin, 2020. *Self-employment in the Covid-19 crisis*. Centre for Economic Performance, London School of Economics and Political Science.

[5] Burns, A.F. and W. C. Mitchell, 1946. *Measuring business cycles*. NBER Book Series Studies in Business Cycles, 2. New York: NBER.

[6] Contreras, S. A., 2019. Self-Employment in Times of Crisis: The Case of the Spanish Financial Crisis. *Economies*, vol. 7, issue 3, pp. 1-14.

[7] Fossen, F. M., 2020. Self-employment over the business cycle in the USA: a decomposition. *Small Business Economics*, pp. 1-19.

[8] Henley, A., 2017. The post-crisis growth in the self-employed: volunteers or reluctant recruits?. *Regional Studies*, vol. 51, issue 9, pp. 1312-1323.

[9] Kalenkoski, C. M. and S. W. Pabilonia, 2020. Initial impact of the COVID-19 pandemic on the employment and hours of self-employed coupled and single workers by gender and parental status. *IZA Discussion paper* no. 13443. [online]. [2021-08-27]. Available from: http://ftp.iza.org/dp13443.pdf

[10] Kose, M. A., N. Sugawara and M. E. Terrones, 2020. *Global Recessions*. *Policy Research Working Paper* No. 9172. World Bank, Washington, DC. [online]. [2021-08-27]. Available from: https://openknowledge.worldbank.org/handle/10986/33415 License: CC BY 3.0 IGO."

[11] Krugman, P. and R. Wells, 2012. *Macroeconomics in Modules*. New York: Worth Publishers.

[12] Marín, A. J. T., 2020. Learning Lessons from the Economic Crisis in Self-employment. *Contemporary Economics*, vol. 14, issue 1, pp. 3-22.

[13] Parker, S. C., E. Congregado and A. A. Golpe, 2012. Is entrepreneurship a leading or lagging indicator of the business cycle? Evidence from UK self-employment data. *International Small Business Journal*, vol. 30, issue 7, pp. 736-753.

[14] Ruddock, L, A. Kheir and S. Ruddock, 2014. 'UK construction companies' strategies in the face of business cycles', *International Journal of Strategic Property Management*, vol. 18, issue 3, pp. 225-237.

[15] Shapiro, A. F., 2014. Self-employment and business cycle persistence: Does the composition of employment matter for economic recoveries? *Journal of Economic Dynamics and Control*, vol. 46, issue C, pp. 200-218.

[16] Yue, W. and M. Cowling, 2021. The Covid-19 lockdown in the United Kingdom and subjective well-being: Have the self-employed suffered more due to hours and income reductions?. *International Small Business Journal*, vol. 39, issue 2, pp. 93–108.Bould, J. P. et al., 1970. Smoothing Technique. New York: Springer Verlag.

[17] https://cepr.org

[18] https://eabcn.org

[19] https://ec.europa.eu/eurostat

[20] https://www.finstat.sk

[21] www.employment.gov.sk

IMPACT OF THE COVID - 19 ON THE LABOUR MARKET IN THE EUROPEAN UNION COUNTRIES

Daniela Mališová[1], **Jana Štrangfeldová**[2]

[1]*Faculty of Economics, Matej Bel University in Banská Bystrica*
Tajovského 10, 974 01 Banská Bystrica, Slovakia
email: daniela.malisova@umb.sk

[2]*Faculty of Economics, Matej Bel University in Banská Bystrica*
Tajovského 10, 974 01 Banská Bystrica, Slovakia
email: jana.strangfeldova@umb.sk

Abstract
The COVID - 19 pandemic has significantly affected the functioning of the world economy. Developed countries have put their economies at risk in the form of economical lockdowns to maintain the health of population. For this reason, we can now observe the presence of long-term consequences of a pandemic, which are strongly reflected in the labour market. The labour market is influenced primarily by economic and secondarily by social (including health) factors. For this reason, the aim of the paper is to identify disparities in the labour market between the European Union countries due to the COVID-19 pandemic. The main method of the paper is absolute β-convergence, supplemented by regression analysis, cluster analysis and σ-convergence. The subject of the research is the labour market, observed by means of the unemployment indicator expressed quantitatively (number of unemployed) and percentage (unemployment rate). In the paper, we consider important changes caused by the I. and II. wave of COVID-19 pandemic. We use monthly data collected for the period from October 2019 to March 2021. From the results we find that a significant increase in unemployment was recorded in the countries of the European Union in II. wave of a pandemic. This wave affected the labour market in Greece, Portugal, Italy, France, and Spain the most. In Sweden the unemployment rate increased by 2.4 % in the third quarter of 2020 (an increase of 137,000 unemployed) compared to the first quarter of 2020. On the contrary, the pandemic had the least marked effect on Malta's labour market. The unemployment rate fell to 4.1 % in the first quarter of 2021. The research results may serve as a precursor for further investigation of the impact of the COVID-19 pandemic on the national or world economy.

Keywords
Labour Market, Unemployment, Convergence, Disparity, European Union.

JEL classification
C58, F63, J21.

1 Introduction

At the beginning of 2020, a threat in the form of the COVID-19 pandemic shook society. Although this threat is primarily related to threats to the health and lives of the world's people, it has also left an indelible mark on the development of the world economy. By 2021, 4.5 million people had succumbed to the disease (WHO, 2021), the disease had permanently damaged the health of many infected, as well as shaking society's social security. Countries such as welfare states were not prepared for such an onslaught. In this context, we note that the political direction of governments has had a significant impact on tackling the pandemic. It has been shown (Adolph, et al., 2021) that conservative governments have implemented anti-pandemic measures more slowly. It is the slow response to the rapidly spreading threat that has contributed to a critical situation, whether from a health or economic point of view.

Tightening anti-pandemic measures of countries accompanied by lockdowns, restrictions on the movement of inhabitants or changes in the working regime have caused economic as well as social fluctuations. Low-income groups, ethnic minorities and the elderly have suffered disproportionately more in health, economic or social aspects because of the pandemic (Ali, Asaria, Stranges, 2020). Related to the first group is the finding (Weill, et al., 2020) that adherence to social distance varied significantly depending on the income group of the population. While the wealthier sections of the population adhered to government-mandated conditions, lower income groups showed low levels of

social distance, which, combined with low access to health care, contributed to the escalation of the spread of the COVID-19 pandemic. Among the wealthier income group, it was adolescents with higher education who were referred to as non-pandemic groups (Nivette, et al., 2021). This group of adolescents also showed high scores of antisocial potential or low acceptance of moral rules. In the next chapter, we will take a closer look at the labour market. Based on a review of the literature, we will present not only the already mentioned socio-psychological consequences, but especially the economic consequences caused by the COVID-19 pandemic.

2 Theoretical framework of the impact of the COVID-19 pandemic and literature review

McGreal (2021) calls the COVID-19 pandemic an "inequality virus." These inequalities are reflected both in the uneven burden on health care and in the differences in economic or social losses between countries. Research on the economic consequences of the pandemic was carried out by Borio (2020). He states that this is a unique crisis because the economic recession has no economic origin and thus refutes the theories that are common. Unlike classical economic approaches, in the case of the COVID-19 crisis, the increase in aggregate demand did not lead to an increase in supply. The reason for the disruption of the theoretical framework of macroeconomic stimuli was the introduction of lockdowns and the prevention of consumer consumption by measures of social distancing and domestic retention of the population.

On the contrary, central banks (Disemadi, Shaleh, 2020) have played a significant role in maintaining the stability of the economy, making large-scale purchases of private and public sector securities to stabilize markets. As a result, financial markets have stabilized, especially private companies, have been able to request, for example, deferral of loan repayments or financial support. Banks also did not reduce other forms of lending during the crisis, and the world economy withstood the economic shock despite the initial downturn. Of course, some sectors of the economy have experienced a more severe recession, such as manufacturing or services. This also had consequences on the labour market.

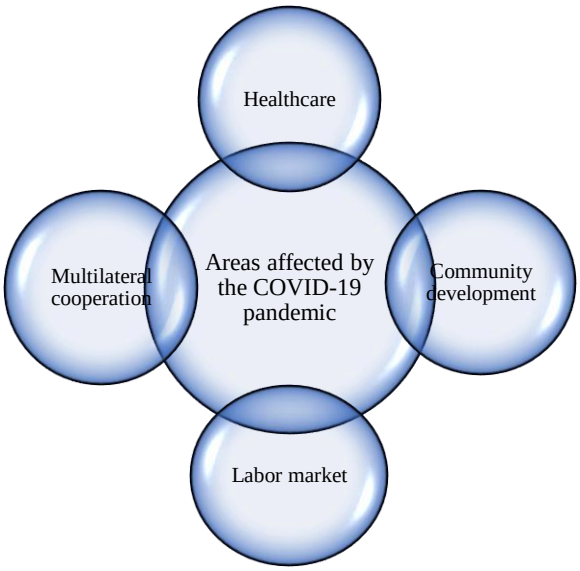


Fig. 1. The context of COVID-19 pandemic: affected areas (Source: own processing according to Feyisa, 2021)

Lee, Schmidt - Klau, Verick (2020) state that despite financial incentives from government agencies, many businesses and jobs are lost and cannot be restored. The persistent damage to labour markets and difficult global economic conditions point to the need to maintain financial support for business recovery in the context of fiscal and monetary conditions, even after the pandemic. Government support must be rapid, extensive and reach the most severely affected. Premature fiscal consolidation would risk further destabilizing already weak labour markets. The authors state that the

world will emerge from this pandemic with higher rates of unemployment, poverty, debt and political frustration. For these reasons, it is necessary to build social dialogue - bringing together governments, employers, trade unions and employees. It is social dialogue that can help shape sustainable recovery in the next post-pandemic period.

Feyisa (2020) defined four main areas (Figure 1) affected by the COVID-19 pandemic, which we will work with in this paper. The first area is the healthcare sector. Even in developed countries, public health care has proven to be undersized under the onslaught of infected populations. Medical facilities and medical staff (Bedford, 2020; Kurita, Sugawara, Ohkusa, 2020) were of great importance. In public health care, it is necessary to place emphasis on functional and strategic management in health care facilities, material and technical equipment or the effective allocation of financial resources. There is also a need to motivate, protect and educate health professionals in this area, which is key to success in overcoming the consequences of a pandemic (Pasayan, 2020).

Several authors (Singh, 2020; Zheng, et al, 2020; Sittig, Singh, 2020) agree that in the event of a future outbreak of a pandemic, or a recurrent return of another wave of current COVID-19 disease, it is necessary to focus on public health to support the concept *Health Information Technology* (HIT). This term refers to a system of interactive work, data and message collection, cloud connectivity and information sharing accessed by a doctor, a nurse, another authorized person (such as a pharmacist) as well as the patient himself. HIT makes available and monitors patient data, thus accelerating the delivery of healthcare, especially to patients in remote areas.

Research is also needed to support health. Because it is research on active substances and vaccinations that has proven to be a functional tool for preventing the spread of the disease. Research (Moghadas, et al., 2021) showed that vaccination reduced the overall rate of COVID-19 infection from 9% to 4.5%, with the highest relative reduction in the incidence of the disease in people over 65 years of age. Vaccination also significantly reduced hospitalizations and mortality (down 63.5%). It was the development of vaccines that was the subject of international cooperation, which is also related to the next area affected by the pandemic.

Feyisa (2020) states that multilateral cooperation is related to the cooperation of world countries in several areas. The manifestation of multilateral cooperation is the harmonization of economic, political, health or social measures at the global and national levels, as well as the sharing of experiences. De Mesquita, Meier (2020) point out the currently declining level of multilateralism and the need for solidarity in international cooperation, which would help to face the threat of a pandemic to low-income third countries. In the ongoing II. wave of the COVID-19 pandemic, we note that it is international cooperation and multilateralism that have succeeded to some extent. Based on good practice, countries have incorporated appropriate and proven treatment measures into their treatment regimens (Deb, et al., 2020). Examples of good practice of anti-pandemic measures were not avoided in public policies (Chubarová, Malý, Nemec, 2020), where they were used for the movement of people in public spaces (for example, the measure for wearing an FFP 2 respirator came into force in January 2021 in Austria). However, the speed of implementation of the measure was already mentioned in the case of application to public policies.

As we suggest in the introduction to the article, the COIVD-19 pandemic has also significantly affected community development. Fryis (2020) connects this area with work with marginalized groups and low-income communities. In order to meet the health and social needs of these groups, it is necessary to develop a public policy aimed at improving socio-economic conditions on the one hand. On the other hand, to implement a health policy to strengthen prevention in these communities as well (Bluestein, Guarino, 2020, Laskar, 2021). Conditions set in this way will prevent the potential spread of the disease due to poor or no access to health care for the population. Health literacy also plays a significant role in this area. Health literacy can help people understand the reasons for ordering measures against the spread of the disease or reflect on their results (Abel, McQueen, 2020). Taking social responsibility, thinking beyond personal interests, and understanding how people make decisions are important aspects of health literacy. It turns out that the development of health literacy is even more relevant in the event of a pandemic than ever before. Health literacy is strongly linked

to social responsibility and solidarity and needs to be built in society to prevent the spread of misinformation (Paakkari, Okan, 2020).

The last area affected is the labour market. In the case of labour market measures, Feyisa (2020) states that there is a need to focus on differentiating work activities in order to avoid socio-psychological exclusion. The COVID-19 pandemic has significantly changed working conditions in most developed countries. Research has been conducted in this area (Collins, et al., 2020; Yildirim, Eslen-Ziya, 2020), which has shown that women performed less than men when working at home (in professions that allowed this). As schools and childcare facilities were closed during the pandemic, households with children had a daily duty of home (distance) education, which was often provided by mothers.

Lemieux, (2021) in a study on the exact effects of the pandemic, states that the COVID-19 pandemic in Canada in February-April 2020 reduced the total weekly working fund in hours by 32%, and employment fell by 15% during this period. in accommodation, catering, and retail services. It is reaffirmed that job losses have affected the segment of employees, who are often over-substitutable and low-skilled - employees whose income is the lower quartile of weekly earnings. For this reason, the challenge for the future is to create policies that will help the recovery of the labour market.

Fouad, (2020) states that the COVID-19 pandemic has caused a severe crisis in youth employment. A large increase in unemployment, a high level of competition between workers and an increase in digitization are causing dislocation and demanding conditions for the performance of work for young people who no work experience. The crisis has also changed society's job search priorities. Currently, there are a number of job offers on the labour market with the possibility of performing work in the home environment (home-office) or part-time work. However, these job offers often require highly qualified employees with an independent and responsible approach to work. Long-term change of working regime or loss of work causes socio-psychological exclusion, which can have health effects. Ramires-Ortiz, et al. (2020) state that the COVID-19 pandemic is a major test for mental health. There are several demonstrable psychological disorders that have occurred in employees because of social exclusion, from symptomatic (insomnia, anxiety, apathy) to complex disorders (depression, post-traumatic stress disorder). In the case of a long-term change in the work environment, it is appropriate for the employer to create a strategy of development and assistance (work-life balance) for employees (Kumar, Nayar, 2020).

3 Materials and methods

Based on the theoretical basis of the impact of the COVID-19 pandemic on the labour market, we move on to the analytical part of the paper. The aim of the paper is to identify disparities in the labour market between the countries of the European Union due to the COVID-19 pandemic. In this paper, we follow the COVID-19 pandemic through I. and II. waves of the course of the disease. And we perceive the I. wave as the period from January to August 2020. II. we perceive the wave of the pandemic as the period from September 2020 to March 2021. The main method of the paper is absolute β-convergence, supplemented by regression analysis, cluster analysis and σ-convergence. The subject of the research is the labour market, observed by means of the unemployment indicator expressed quantitatively (number of unemployed) and percentage (unemployment rate). The object of the research is the member states of the European Union in the period 2019 - 2020. The database was created from monthly data published by the Eurostat portal (2021). Monitoring the monthly change in the unemployment rate helps to better understand the consequences of the impact of the pandemic on the labour market (Petrosky-Nadeau, Valletta, 2020).

Convergence is considered a dynamic tool based on the neoclassical theory of growth. The presence of β -convergence (Barro, Sala-i-Martin, 1992) exists if an economically weaker country tends to grow faster than an economically stronger country. β-convergence expresses a negative relationship between the initial value and the average growth rate coefficient (Kováč, Gerulová, Buček, 2011). Based on the β-convergence calculation, it is possible to calculate the σ-convergence

using the coefficient of variation. β-convergence is a necessary condition for the study of σ-convergence. Using the σ-convergence method, we examine how the distribution between indicator levels has changed or how the differences in indicators within groups of countries change compared to the average (Barro, Sala-i-Martin, 1992). The econometric expression of the absolute β-convergence formula (1) is as follows:

$$\frac{1}{T} log \left(\frac{Y_{iT}}{Y_{i0}}\right) = \alpha - \beta \log Y_{i0} + \varepsilon_i \quad (1)$$

It holds that if the parameter β <0, then there is absolute convergence. We will determine the absolute β-convergence based on the result of the linear regression function (2) according to the formula (Ostertágová, 2013):

$$Y_{iT} = b_0 + b_1 * Y_{i0} + \varepsilon \quad (2)$$

We use p – value for statistical evaluation, setting the significance level at 95% (α = 0.05). In the linear regression analysis, we also present the coefficient of determination. The coefficient of determination predicting the outcome of a given event, examines how differences in one variable can be explained by differences in the other variable. This coefficient of determination is also called R-square. The coefficient of determination evaluates how strong is the linear relationship between the two variables (Wang, Jiang, Liu, 2017).

To calculate σ-convergence (3), we use the expression using the coefficient of variation (Simionescu, 2014):

$$\sigma^2 = \frac{1}{n} \sum_{i=1}^{N} \left[\log(Y_{iT}) - \overline{logY_T}\right] \quad (3)$$

σ-convergence occurs when the value of the coefficient of variation decreases during the observed period. σ-convergence is present if the value of the indicator σ decreases during the observed period. Convergence means bringing the indicator of a given country closer. The opposite term is called divergence, which means the distance of the landscape and the emergence of disparities. To evaluate disparities, it is appropriate to apply multidimensional statistical methods (Stankovičová, Vojtková, 2007) such as cluster analysis, in-depth data analysis, factor analysis, correlation analysis, etc. From the mentioned methods in the paper, we use the non-hierarchical method of K-means cluster analysis. This method is characterized by the fact that it calculates exactly k-clusters (clusters, groups) so that the sum of squares within the group is minimal (Kožiak, et al., 2014).

4 Convergence of unemployment in the European Union countries during the COVID-19 pandemic

At the beginning of the convergence analysis, we calculated for each country the average monthly change in the period 2011-2020 for both examined indicators. Subsequently, we determined the logarithm of the initial value (log Y_{i0}) and the average monthly change (log Y_{iT}). Graphical processing of the result of absolute β-convergence for the development of the unemployment rate in the monitored European countries is presented in Figure 2. The calculated linear regression function is as follows: log Y_{iT} = - 0.0092x + 0.0124, the result of the p-value is as follows: α = 0.05 , p-value = 0.032. Based on that p-value <α, the result of the linear regression analysis is of statistical significance. However, the value of the coefficient of determination 100R2 = 17.95% is low. When examining the development of the unemployment rate, disparities arise between countries. For verification we perform σ-convergence.

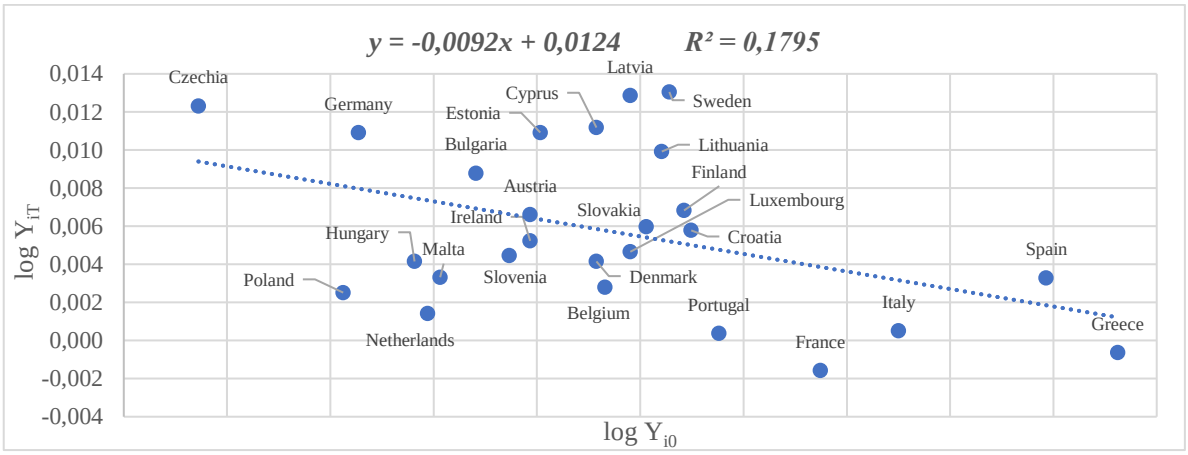


Fig. 2. Result of absolute β-convergence of unemployment rate in the European Union countries (in percentage)
(Source: own processing according to Eurostat, 2021)

From the performed σ-convergence we state (Figure 3) that divergences occur in the period before the I. wave of the pandemic. At the beginning of the I. wave of the pandemic, we can observe convergence. Thus, the unemployment rate in the countries of the European Union began to grow at about the same rate. Subsequently, at the end of the I. wave of the pandemic, countries diverged again. At the end of 2020, unemployment is rising. Petrosky-Nadeau, Valletta (2020), put similar conclusions in their research claiming that in the I. wave of the pandemic between March and April 2020, about 20 million jobs were removed worldwide. It was the biggest fluctuation in labor markets globally. For a deeper analysis of developments in individual countries, we will perform a cluster analysis.

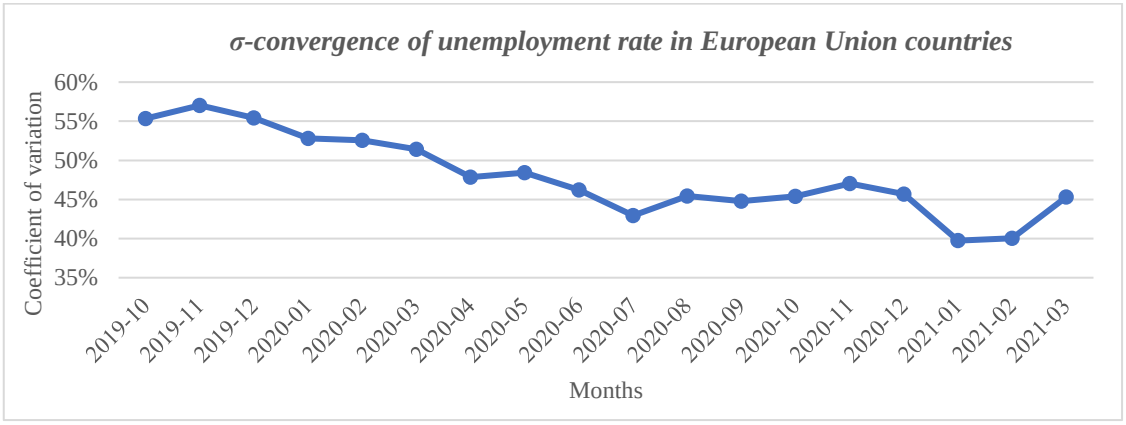


Fig. 3. Result of σ-convergence of unemployment rate in European Union countries (in percentage)
(Source: own processing, 2021)

To perform cluster analysis, we use the division into 5 clusters (Table 1). The first group included the countries of Belgium, Denmark, Croatia, Luxembourg, Slovakia, and Finland. These countries recorded an above-average unemployment rate in the initial period of the survey (October 2019), but over the months their unemployment rate rose below the average of the European countries surveyed (average monthly increase in unemployment at 0.005%). We can say that the impact of the pandemic on the unemployment rate in these countries was not so significant. The second group included the countries of Hungary, Ireland, Malta, the Netherlands, Austria, Poland, and Slovenia. These countries show a low level of unemployment in the initial period, but during the period under review below-average growth in the value of unemployment (average monthly increase in unemployment in the country at 0.004%). Based on these results, we state that the labour market in these countries was not significantly affected by the pandemic and the countries tend to diverge, i.e. move away from other countries.

Table 1. The result of the cluster analysis: the division of the countries of the European Union

Cluster Membership				*Case Number*	*Country*	*Cluster*	*Distance*
Case Number	*Country*	*Cluster*	*Distance*	14	Latvia	4	0,097
1	Belgium	1	0,073	15	Lithuania	4	0,128
2	Bulgaria	3	0,052	16	Luxembourg	1	0,097
3	Czechia	3	0,020	17	Hungary	2	0,112
4	Denmark	1	0,065	18	Malta	2	0,087
5	Germany	3	0,155	19	Netherland	2	0,099
6	Estonia	3	0,011	20	Austria	2	0,010
7	Ireland	2	0,002	21	Poland	2	0,140
8	Greece	5	0,003	22	Portugal	5	0,174
9	Spain	5	0,069	23	Slovenia	2	0,020
10	France	5	0,076	24	Slovakia	1	0,113
11	Croatia	1	0,156	25	Finland	1	0,149
12	Italy	5	0,001	26	Sweden	4	0,135

Source: own processing in SPSS Statistics (2021)

The third group included the countries of Bulgaria, Czechia, Germany, and Estonia. These countries showed a below-average level of unemployment among European countries at the beginning of the survey, but over the months, unemployment rose above average (average monthly increase in unemployment in the country at 0.011%). Despite good starting conditions, the labour market was hit by the COVID-19 pandemic and reflected in rising unemployment. Unless these countries take early intervention for stabilization, the unemployment rate may widen further. The same recommendation can be addressed to the countries of Sweden, Cyprus, Latvia, and Lithuania, which form the fourth cluster. These countries showed an above-average deepening of the unemployment rate (average monthly increase of 0.012%). The last cluster consists of outliners, which include Greece, Spain, France, Italy, and Portugal. These countries were affected by the pandemic in I. and II. waves most pronounced. All the countries mentioned showed high values of the unemployment rate at the beginning of the observed period. At the same time, the level of the unemployment rate has risen or stagnated over time. In comparing the results with the research of Lambovska, Sardinha, Belas (2021), we find that the conclusions presented by us are confirmed. At the same time, the research carried out by the authors ranks the Swedish labour market among the significantly endangered labour market by the pandemic. Looking at the results of the least squares distance, we find that in the analysis presented by us, the distance of Sweden's assignment to cluster 4 is the largest, so we confirm the assumption stated by the authors.

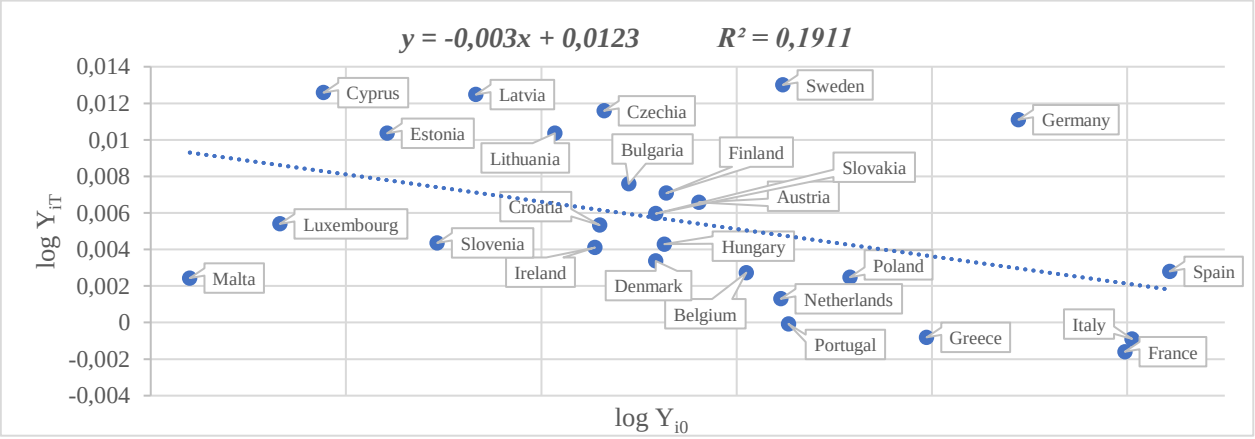


Fig. 4. Result of absolute β-convergence of number of unemployed people in the European Union countries (in thousand people) (Source: own processing according to Eurostat, 2021)

To complement the view of the labour market, the following analysis contains a quantitative observation (Figure 4) focused on the number of unemployed persons in the countries of the European Union. The calculated linear regression function is as follows: $\log Y_{iT} = - 0.003x + 0.0123$, the result

of the p-value is as follows: α = 0.05, p-value = 0.026. Based on this p-value <α, the result of the linear regression analysis is of statistical significance. However, the value of the coefficient of determination 100R2 = 19.11% is low. We reiterate that when examining the development of the number of unemployed, disparities arise between countries. It confirms the previous result - the labour market in the countries of the European Union has been affected unevenly. For verification we perform σ-convergence.

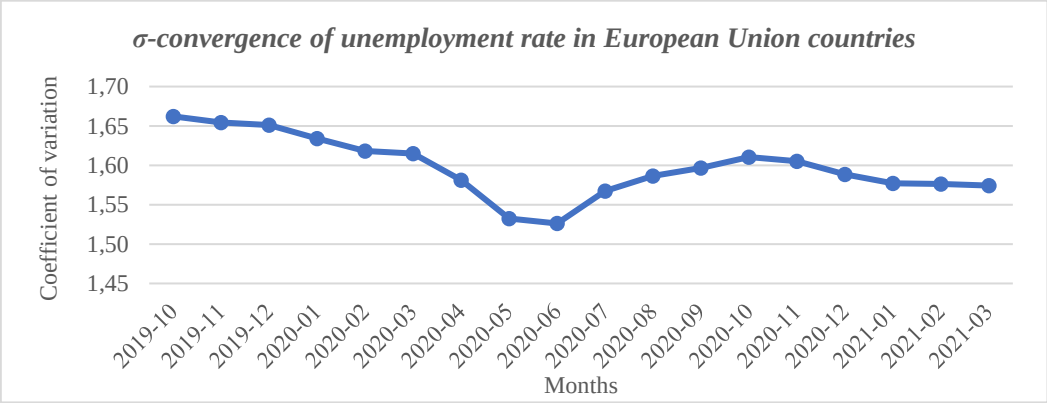


Fig. 5. Result of σ-convergence of unemployed people in European Union countries
(Source: own processing, 2021)

From the performed σ-convergence we state (Figure 5) that in period II. waves of pandemic are causing divergences of countries. In the II. wave of pandemics, the number of unemployed increased the most in Sweden (by 137,000 people) or Germany (by 102,000 people). The smallest fluctuation in the number of unemployed was recorded in France, where it was advised to reduce the number of unemployed in the six months since the peak in August 2020 by 3,000 people per month. From a global point of view, the number of unemployed people in the surveyed countries during the II. wave increased by an average of 52,000 people compared to the I. wave. II. the wave of the pandemic thus significantly affected the labour market and deepened unemployment.

5 Conclusion

The aim of the paper was to identify disparities in the labour market between the European Union countries due to the COVID-19 pandemic. From the results we find that the COVID-19 pandemic during its I. and II. waves significantly increased unemployment in quantitative and percentage terms. At the same time, even in our research, it was confirmed that it is a virus of inequality. Not all labour markets in the countries surveyed were affected in the same way. The Netherlands, Malta, Austria, and Poland did not record a significant increase in the unemployment rate in the period under review. Based on associated research (Lambovska, Sardinha, Belas, 2021; Su, et al., 2021), we can consider early intervention in the implementation of anti-pandemic measures as well as state support for job retention as reasons for the good results of these countries. It is necessary to point out that the loss of work mentioned in the introduction is associated with the loss of social security, which can also cause a disruption of the mental health of the population mentioned in the introduction. To prevent the negative development of the COVID-19 pandemic in the future, we recommend prioritizing public policies aimed at eliminating educational, health, housing, or work inequalities among the population. However, in addition to systemic changes, we recommend that employers focus on job counselling, which would help employees find new job opportunities or develop their skills and competencies. The results interpreted by us can be extended to the level of a multidimensional model in the future. Alternatively, the results can serve as a basis for further research. In conclusion, we state that the uniqueness of the COVID-19 pandemic teaches society to respond to new challenges or cooperate at

the international level, but also draws attention to weaknesses in the social, economic and health systems of countries.

References

[1] Abel, T. and D. McQueen, 2020. Critical health literacy and the COVID-19 crisis. *Health Promotion International*, vol. 35, no. 6, pp. 1612 – 1613. DOI: 10.1093/heapro/daaa040.

[2] Adolph, Ch., et al., 2021. Pandemic Politics: Timing State-Level Social Distancing Responses to COVID-19. *Journal of Health Politics, Policy and Law*, vol. 46, no. 2, pp. 211 – 233. DOI: 10.1215/03616878-8802162.

[3] Ali, Sh., M. Asaria and S. Stranges, 2020. COVID-19 and inequality: are we all in this together? *Canadian Journal of Public Health*, vol. 111, pp. 415 – 416. DOI: 10.17269/s41997-020-00351-0

[4] Barro, J. R. and X. Sala-i-Martin, 1992. Convergance. *Journal of Political Economy*, vol. 100, no. 2, pp. 223 – 251. ISSN 1537-534X.

[5] Bedford, J., et al., 2020. COVID-19: towards controlling of a pandemic. *The Lancet*, vol. 395, no. 10229, pp. 1015 – 1018. DOI: 10.1016/S0140-6736(20)30673-5.

[6] Bluestein, L. D. and P. A. Guarino, 2020. Work and Unemployment in the Time of COVID-19: The Existential Experience of Loss and Fear. *Journal of Humanistic Psychology*, vol. 60, no. 5, pp. 702 – 709. DOI: 10.1177/0022167820934229.

[7] Borio, C., 2020. The Covid-19 economic crisis: dangerously unique. *Business Economics*, vol. 55, no. 1, pp. 181 – 190. DOI: 10.1057/s11369-020-00184-2.

[8] Chubarová, T., I. Malý, I. a J. Nemec, 2020. Public policy responses to the spread of COVID-19 as a potential factor determining health results: a comparative study of the Czech Republic, the Russian Federation, and the Slovak Republic. *Central European Journal of Public Policy*, vol. 14, no. 2, pp. 60–70. DOI: 10.2478/cejpp-2020-0008

[9] Collins, C., 2020. COVID-19 and the gender gap in work hours. *Gender, Work and Organization*, vol. 28, no. 1, pp. 101 – 112. DOI: doi.org/10.1111/gwao.12506

[10] De Mesquita, J. B. and B. M. Meier, 2020. Moving Towards Global Solidarity for Global Health through Multilateral Governance in the Covid-19 Response. In: C. Ferstman, and A. Fagan, (eds.) *Covid-19, Law and Human Rights: Essex Dialogues.* Essex: School of Law and Human Rights Centre, pp. 31 - 39. ISBN 978-1-5272-6632-2

[11] Deb, P., et al., 2020. The Effect of Containment Measures on the Covid-19 Pandemic. *CEPR Discussion Paper*, no. DP15086, pp. 1 – 15.

[12] Disemadi, S. H. and A. I. Shaleh, 2020. Banking credit restructuring policy amid COVID-19 pandemic in Indonesia. *Journal Inovasi Economi*, vol. 5, no. 02, pp. 280 – 286. DOI: 10.22219/jiko.v5i3.11790

[13] Eurostat, 2021. *Employment and unemployment (Labour force survey)*. [online]. [2014-04-12]. Available from: https://ec.europa.eu/eurostat/web/lfs/data/database

[14] Fayisa, L. H., 2020. The World Economy at COVID-19 Quarantine: Contemporary Review. *International Journal of Economics, Finance and Management Sciences*, vol. 8, no. 2, pp. 63 – 74. DOI: 10.11648/j.ijefm.20200802.11

[15] Fouad, N., 2020. Unemployment in the time of COVID-19: A research agenda. *Journal of Vocational Behavior*, vol. 119, no. 103436, pp. 1 – 4. DOI: 10.1016/j.jvb.2020.103436

[16] Kováč, U., K. L. Gerulová a M. Buček, 2011. Metodologické prístupy k meraniu konvergencie. *Prognostický ústav SAV*, vol. 3, no. 5, pp. 395 - 407. ISSN 1338-3590.

[17] Kožiak, R., et al., 2014. Využitie zhlukovej analýzy pri skúmaní medziregionálnych rozdielov. In: V. Klímová, V. Žítek, (eds.) *17th International Colloquium on Regional Sciences. Conference Proceedings*. Brno: Masarykova univerzita. pp. 37–44. ISBN 978-80-210-6840-7.

[18] Kumar, A. and R. K. Nayar, 2020. COVID 19 and its mental health consequences. *Journal of Mental Health,* vol. 30, no. 1, pp. 11 – 20. DOI: 10.1080/09638237.2020.1757052

[19] Kurita, J., T. Sugawara and I. Ohkusa, 2020. *Forecast of the COVID-19 outbreak, collapse of medical facilities, and lockdown effects in Tokyo, Japan*. [online]. [2014-04-12]. Available from:https://www.medrxiv.org/content/medrxiv/early/2020/04/16/2020.04.02.20051490.full.pdf

[20] Lambovska, M., B. Sardinha and J. Belas, 2021. The impact of the Covid-19 pandemic on youth unemployment in the European union, *Ekonomicko-manažérske spektrum*, vol. 15, no. 1, pp. 55 – 63. DOI: 10.26552/ems.2021.1.55-63

[21] Laskar, B. I. ,2021. Development, Marginalization and Health in India – Implications of Covid-19. *Indian Journals*, vol. 11, no. 1, pp. 42 – 64. DOI: 10.5958/2231-4555.2021.00003.6

[22] Lee, S., D. Schmidt-Klau and S. Verick, 2020. The Labour Market Impacts of the COVID-19: A Global Perspective. *The Indian Journal of Labour Economics*, vol. 63, no. 1, pp. 511 – 515. DOI: 10.1007/s41027-020-00249-y

[23] Lemieux, T. et al., 2021. Initial Impacts of the COVID-19 Pandemic on the Canadian Labour Market. *Canadian Public Policy*, vol. 46, no. 51, pp. 55 – 65. DOI: 10.3138/cpp.2020-049

[24] Moghades, S. M., et al., 20201. The impact of vaccination on COVID-19 outbreaks in the United States. *Clinical Infectious Diseases*, vol. 07, no. 9, pp. 24 – 35. DOI: 10.1093/cid/ciab079

[25] Nivette, A., et al., 2021. Non-compliance with COVID-19-related public health measures among young adults in Switzerland: Insights from a longitudinal cohort study. *Social Science and Medicine*, vol. 268, no. 113370, pp. 1 – 9. DOI: 10.1016/j.socscimed.2020.113370

[26] Ostertágová, E., 2013. *Aplikovaná štatistika*. Equilibria: Košice. ISBN 978-80-8143-067-1.

[27] Paakkari, L. and O. Okan, 2020. COVID-19: health literacy is an underestimated problem. *The Lancet Public Health*, vol. 5, no. 5, pp. 249 – 250. DOI: 10.1016/S2468-2667(20)30086-4

[28] Pasayan, A., 2020. Exploring the vulnerability of frontline nurses to COVID-19 and its impact on perceived stress. *Journal of Taibah University Medical Sciences*, vol. 15, no. 5, pp. 404 – 409. DOI: 10.1016/j.jtumed.2020.07.003

[29] Petrosky-Nadeau, N. and G. R. Valletta, 2020. An Unemployment Crisis after the Onset of COVID-19. *FRBSF Economic Letter*, vol. 12, pp. 1 – 5.

[30] Poole, M. A. and P. O'farrell, 1971. The Assumptions of the Linear Regression Model. *Transactions of the Institute of British Geographers*, vol. 52, pp. 145 – 158. ISSN 0020-2754.

[31] Ramírez-Ortiz, J. et al., 2020. Consecuencias de la pandemia de la COVID-19 en la salud mental asociadas al aislamiento social. *Colombian Journal of Anesthesiology*, vol. 48, no. 4, pp. 1 – 8. DOI: 10.5554/22562087.e930

[32] Simionescu, M., 2014. Testing Sigma Convergence Across EU-28. *Economics and Sociology*, vol. 7, no. 1, pp. 48 – 60. ISSN 2071–789X.

[33] Singh, P. R., et al., 2020. Significance of Health Information Technology (HIT) in Context to COVID-19 Pandemic: Potential Roles and Challenges. *Journal of Industrial Integration and Management*, vol. 5, no. 4, pp. 1 – 14. DOI: 10.1142/S2424862220500232

[34] Sitting, F. D. and H. Singh, 2020. COVID-19 and the Need for a National Health Information Technology Infrastructure. *JAMA: American Medical Association*, vol. 323, no. 23, pp. 2373 – 2374. DOI: 10.1001/jama.2020.7239

[35] Stankovičová, I. a M. Vojtková, 2007. *Viacrozmerné štatistické metódy s aplikáciami*. Bratislava: Wolters Kluwer. ISBN 978-80-8078-152-1

[36] Su, et al., 2021. COVID-19 pandemic and unemployment dynamics in European economies. *Ekonomska Istraživanja*, vol. 34, no. 1, pp. 1-13. DOI: 10.1080/1331677X.2021.1912627

[37] Wang, X., B. Jiang and J. S. Liu, 2017. Generalized R-squared for detecting dependence. *Biometrika*, vol. 104, no. 1, pp. 129 – 139. ISSN 0006-3444.

[38] Weill, A. J., et al., 2020. Social distancing responses to COVID-19 emergency declarations strongly differentiated by income. *Procceding of the National Academy of Sciences of the United States of America.* vol. 117, no, 33, pp. 19658–19660. DOI: 10.1073/pnas.2009412117

[39] WHO, 2021. *COVID-19 SPRP monitoring framework – global overview*. [online]. [2021-08-12]. Available from: https://app.powerbi.com/view?r=eyJrIjoiMDk2MTQwMzAtZWVjNC00NmE3LWE1ZTEtYmE4NzM5NTdlYTZmIiwidCI6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MCIsImMiOjh9&pageName=ReportSectionc35b8bd8278bcae587e9

[40] Yildirim, T. M. and H. Eslen-Ziya, 2020. The differential impact of COVID-19 on the work conditions of women and men academics during the lockdown. *Gender, Work and* Organization, vol. 28, no. S1, pp. 243 – 249. DOI: 10.1111/gwao.12529

[41] Zheng, Q. et al., 2020. HIT-COVID, a global database tracking public health intervention to COVID-19. *Scientific Data*, vol. 7, no. 286, pp. 40 – 52. DOI: 10.6084/m9.figshare.12724058

REFLECTIONS AND PERSPECTIVES OF THE ASYLUM POLICY IN THE EUROPEAN UNION AND CZECH REPUBLIC

Lubomír Nenička

Silesian University in Opava, School of Business Administration in Karvina,
Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic
email: nenicka@opf.slu.cz

Abstract
The paper deals with new tendencies of European and Czech asylum policy and its causes and reflections. The changes of the European and Czech asylum policy will be analysed in the context of the European and national migration policy in the past and in the present. Special attention will be paid to impacts of increasing criticism towards European asylum policy in the time of the so-called refugee crisis. The main goal of the article is to show which factors influenced different approaches to asylum policy on the European and national level. The paper will deal with new perspectives of European asylum policy represented by the New Pact on Migration and Asylum. In comparison with Western countries, Czech asylum policy has been influenced by different historical experience. In the connection with refugee crisis and with rise of terrorism the immigration has changed into acute political topic in Czech Republic too. The main tendencies of Czech asylum policy in the present time are influenced by specific historical development including post-war national homogenization of the country and emphasizing of potential negative social and security impacts of migration.

Keywords
Migration, Refugees, Asylum Policy, European Union.

JEL classification
J15, J61, K37,

1 Introduction

New conflicts, political instability in the Middle East and Africa lead to growth of number of political refugees heading to Europe. Efforts of European Commission to strengthen principles of solidarity aroused very contradictory reactions in member states of EU. Experiences from so called migration (or refugees) crisis have influenced suggestions of new European asylum policy. The main goal of the article is to show which factors influenced different approaches to asylum policy on the European and national level using the example of the Czech Republic. The paper will focus on the approach towards refugees in the connection with reform of European asylum system represented by the New Pact on Migration and Asylum. The paper will also remind consequences of COVID-19 pandemics.

First part of the paper introduces changes and new perspectives of European asylum policy. Main attention will be paid to introduction and reflections of the New Pact on Migration and Asylum. Second part of the paper focuses on characteristic features and specifics of asylum policy on the national level using the case of Czech Republic. The term refugee is used here according to the definition from United Nations Conventions Relating to the Status of Refugees from 1951. In parts about Czech migration will be used term "asylee" and "foreigners" in accordance with official terminology in the Czech Republic.

2 Literature review

Asylum policy is subject of many publications focusing on various aspects of approach to asylum seekers and refugees. How reminded Malkki (1995), the perception of refugees as a specific social category was connected with consequences of Second World War. Changes in policy to the refugees represented by United Nations Convention Relating to the Status of Refugees have influenced also research related to the asylum policy. As this article is limited by space, this part of the paper will mention only several important and interesting publications dealing with migration, refugees and asylum policy in the past and in the present. Kunz (1973) defined different forms of displacement and

refugee movement. The same author later analysed various identification categories of refugees and different approaches to displacement (Kunz, 1981). Malkki (1995) reflected development of refugee policies and theories. Demuth (2000) summarized theoretical aspects of migration – including forced migration and its specifics. Many researchers focused on actual context of migration and migration policy in Europe. Huysmans (2000) analysed changes in the perception of migration in the EU – especially the emphasize on security dimension of the European migration policy. This tendency strengthened during the migration crisis. Its consequences were also analysed by various scholars. For example, book edited by Menjívar, Ruiz and Ness (2019) showed various aspects and consequences of migration crisis. Several chapters of mentioned book analysed critically changes of the asylum policy in chosen European countries in years 2015 and 2016. Buonanno (2017) dealt with connection between the migration crisis and different ideas about the European integration. Kotyrlo (2017) reminded the influence of the better access to information which according to her supported the growth of migration. Various authors also focused on influence of the COVID-19 pandemics – its impacts on social work with refugees using by example of Turkey (Nisanci et al., 2020), its connection with changes of refugee protection (Crawley, 2021) or its consequences on anti-immigration opinions in Europe (Macias Vega, 2021).

This paper will show different historical experiences in Europe related to refugees using the example of the Czech Republic. Therefore, it is appropriate to remind the main monographs dealing with migration in the Czech environment. Drbohlav et al. (2010) offered the basic overview of Czech migration policy (including asylum policy). Barša and Baršová (2005) analysed changes of the Czech policy toward migrants in the wider theoretical perspective and in European context. The particular attention was paid to the situation of the refugees in the period of the First Czechoslovak Republic Čapková and Frankl (2008) reflected critically several myths about liberal approach toward asylum seekers in the interwar Czechoslovakia. Detailed research was focused on the Greek immigration after Second World War (Hradečný, 2001; Botu and Konečný, 2005).

3 Methodology and data

The paper shows reflections and perspectives of the European and Czech asylum policy using the method of content analysis and the comparison of chosen materials – documents of the European commission, non-papers related to New pact on Migration and Asylum, electoral programs of Czech political parties or opinion polls. The paper uses secondary data from publicly available sources (Eurostat, Czech Statistical Office, documents of the Czech Ministry of the Interior etc.). The part of the paper dealing with historical context of Czech asylum policy is based partly on Czech archival sources.

4 Changes of European and Czech Asylum policy

Consequences of COVID-19 pandemic (movement restrictions, border closures and other measures related to the asylum procedures) have influenced also the situation of asylum seekers in Europe. According the Eurostat, the number of first-time asylum applicants in the EU (416 600) decreased by 34 % in comparison with year 2019. Large numbers of first-time asylum applicants came from Syria (15, 2 %), Afghanistan (10,6 %), Venezuela (7,3 %) and Colombia (7 %). Main country of destination in the EU were Germany, Spain and France (Eurostat, Asylum statistics, 2021). The number of asylum seekers decreased also in the first quarter of 2021 – by 37 % in comparison with the same quarter of 2020. The main citizenship of asylum seekers in the EU remained Syrian (Eurostat, Asylum quarterly report, 2021). The problems associated with the previous migration crisis have not been resolved. About 3,6 millions Syrians under temporary protection remain in Turkey, which still host the largest number of refugees in the world (UNHCR, Refugees and Asylum Seekers in Turkey, 2021). Many Syrian and other refugees still live in provisional conditions of refugee camps. In this context can be mentioned the exploiting of refugees as "weapon" against European Union by Belarussian dictator Lukashenko. COVID-19 pandemic and its impacts have reduced possibilities of

help for asylum seekers – not only in Europe. How remind Nisanci et al. (2020), COVID-19 pandemic significantly complicated social work with refugees. Crawley (2021) argued that COVID-19 "has acted as an accelerator" for the acceptation of restrictive tendencies of migration policies, which according to her represents also New Pact on Migration and Asylum of the European Union.

4.1 New perspectives for the asylum policy of the EU

The New Pact on Migration and Asylum have become the result of discussion about the reform of European asylum policy connected with consequences of so-called migration crisis. European Commission (EC) introduced this draft on 23 September 2020 as "new start". The Pact follows partly several EC legislative proposals which were prepared with connection of the migration crisis (Hein, 2021). Draft of the EC shows clear effort to reach a compromise. EC reflected the controversies connected with relocation system. The New Pact on Migration and Asylum includes as main points:

- New procedures to establish status on arrival – pre-entry screening including identification, health and security checks, asylum border procedures.
- New solidarity mechanism – flexible options for Member States contribution (primarily relocation and return sponsorship in case of persons with no right to stay on behalf of another Member State, immediately operational support, long term support). (European Commission, New Pact on Migration and Asylum, 2020).

Human rights organisations evaluated critically these suggestions. For example, EuroMed rights as network representing the 65 human rights organisation criticised both key principle of the New Pact: new border procedures and the mechanisms of solidarity. EuroMed rights reminded various problematic points of border procedures – especially using of the detention for asylum applicants connected with limited access to legal information and legal assistance. Mentioned organisation also draws attention to problematic dimension of return sponsorship which can "lead to serious violations of human rights" (Romeo, 2021). Critical reflections of the New Pact remind strong focus on "externalization" in suggested reform of the European asylum system. Hein (2021) mentions the importance of concept "return", which is according to him "key term in the strategic part of the New Pact". European Council on Refugees and Exiles also criticizes the continued efforts to "externalization". Council considers as "unwelcome" the transfer responsibilities for refugees to third countries (European Council on Refugees and Exiles, 2021).

Various reactions of Member States of the EU confirm differences in priorities of European asylum policy. Representatives of Italy, Greece, Spain and Malta in their non-paper related to New pact still supported idea of the obligatory relocation "as the main solidarity tool". Leading politicians of mentioned Southern European countries demanded also the revision of border procedures. They warned against establishing large closed centres for asylum seekers at the external borders, which they consider as an unacceptable (New Pact on Migration and Asylum: comments by Greece, Italy, Malta and Spain). Representatives of Visegrád group, Estonia and Slovenia declared joint position emphasising the importance of external dimension of European migration and asylum policy. They prefer effective returns in cooperation with third countries and ensuring of strong protection of the EU external borders. According to non-paper of mentioned countries, the internal dimension of asylum policy should be based on responsibility represented by more effective asylum procedures. Representatives of Visegrád group emphasized, that a relocation of migrants have to be only of voluntary. (Non-paper, New Pact on Migration and Asylum. Joint position of Poland, Hungary, Slovakia, Czech Republic, Estonia and Slovenia, 2020). Both groups of countries agreed to strengthen the external dimension of the European asylum policy. Reasons for critical approach of Visegrád group can be explained by the example the asylum policy one of its member – Czech Republic.

4.2 Asylum policy in the Czech Republic and its specifics

After 1989 Czechoslovakia and later the Czech Republic has gradually become a target country for increasing numbers of work-oriented immigrants. Continuous increase in the number of immigrants is one of the most typical feature of migration development. Temporary decreases were caused by changes of asylum and immigration laws after 2000, and by consequences of economic crises in 2008 (Drbohlav et al., 2010). The numbers of foreigners with residence permit grew from around 78 000 in 1993 to 668 238 at the end of June 2021. The main source countries of foreigners are Ukraine (183 250), Slovakia (126 720), Vietnam (64 261), Russia (45 488), Poland (20 805) and Germany (20 799). (Czech Statistical Office, Foreigners in the CR). Mentioned source countries are historically connected with Czechoslovakia – even immigration from Vietnam has here longer tradition. The decreasing number of foreigners with asylum status after 2017 is another typical tendency of migration to the Czech Republic (see Table 1).

Table 1. Numbers of foreigners in the Czech Republic

	2014	2015	2016	2017	2018	2019	2020
Foreigners (including Asylee)	451 923	467 562	496 413	526 811	566 931	595 881	634 790
Asylee	2 556	2 892	2972	2 669	2 586	2 515	2 220
Permanent residence	249 856	260 040	271 957	281 489	289 459	299 453	308 379

Source: Czech Statistical Office.

How reminded Czech Republic Drbohlav and Valenta (2014), asylum seekers play a marginal role in a situation of prevailing economic migration. Mentioned authors explain this trend by geographic position of the Czech Republic and by rather restrictive asylum policy including "the demanding nature of the procedure to obtain asylum". The change in the relationship to refugees was brought by the new Asylum Act of 1999 which incorporated the EU legislation. This Act also introduced new terminology. A person recognized as a refugee was newly called „an asylee, and people applying for the refugee status were defined as asylum seekers". The Act greatly expanded some rights of asylees. They were allowed to reside outside the asylum facilities and also enter the Czech labour market without the need of work permits. Asylees were also entitled to financial support up to the subsistence level. The Act also addressed the program of integration which had previously been delimited by government regulations. In 2002, an amendment to the Asylum Act was adopted. It introduced new restrictive elements in response to the growth in applications for asylum in the previous years. The aim of the amendment was to reduce the abuse of asylum as an instrument to be granted legal residence in the country and get a job. Refugees who were situated in detention centers for foreigners (in the so-called detention facilities) had to apply for asylum within seven days after being admitted there. Another change occurred in 2006 when the possibility of obtaining asylum was extended by the so-called subsidiary protection. It was focused for foreigners who did not meet the conditions for being granted the asylum, but they would be in great danger if they returned to their country of origin.

Pandemic of COVID-19 have influenced also the area of international protection in the Czech Republic. Situation in this area is characterised by decrease of applicants (40 %) in the comparison with years 2018 and 2019. The most source countries of asylum seekers were Ukraine (351), Georgia (144), Belarus (65), Vietnam (65). Asylum was granted to 42 applicants – mostly from Russia (19), subsidiary protection was granted to 72 applicants – from Syria (24), Ukraine (11), Libya (9) and

from other countries. (Zpráva o situaci v oblasti migrace a integrace cizinců na území ČR, 2020). Numbers of asylum applicants in years 2014-2020 see in Table 2.

Table 2. Numbers of applications for international protection, Decisions on international protection

	2014	2015	2016	2017	2018	2019	2020
Numbers of applicants	1 156	1 525	1447	1450	1 702	1 922	1 164
Asylum granted	82	71	148	29	47	61	42
Subsidiary protection granted	294	399	302	118	118	86	72

Source: Ministry of the Interior of the Czech Republic Department for Asylum and Migration Policy.

In the Czech Republic – similarly as in other Central European countries – the migration was not important political topic before so-called migration/refugee crisis. Anti-immigrant rhetoric was typical only for populist Dawn of Direct Democracy – especially before election to the European parliament in 2014. In this election the party obtained 3,12 % and no mandate. In elections in 2017, the populist and anti-immigration party Freedom and Direct Democracy (Svoboda a přímá demokracie, SPD) obtained more than 10, 6 % and its leader (former leader of Dawn) was elected as one of the vice-presidents of the Chambers of Deputies. In 2018, the migration became the important topic of the campaign before presidential elections. This development shows how the perception of the migration has changed also in Czech Republic. During the migration crisis the country joined to the another Visegrád group states, which rejected EU's quota system.

Migration is a strong topic also for the Czech public. Various opinion polls confirm negative approach to refugees and the support for the restrictive asylum policy. For example, according to survey of STEM (Středisko empirických výzkumů, Centre of empirical surveys) In 2018, the majority of population (71 %) declared fears from refugees, who could obtain the asylum in the Czech Republic. According to this opinion poll, majority of Czech population agreed with government´s asylum policy. Simultaneously, almost half of citizens considered the government's policy towards refugees as an unintelligible (STEM, 2018). Fears from refugees are typically connected with danger of terrorist attacks or islamisation of Europe.

Key point of Czech position in the question of the European migration and asylum policy remained the refusing of mandatory quotas. Czech minister of the Interior Jan Hamáček summarised the official position of the Czech Republic during a meeting with European Commissioner for Home Affairs Ylva Johansson. He declared the support for the strengthening of external border protection, acceleration of returns and support of the cooperation with third countries. Minister also labelled as sufficient tools for solution pre-entry screening, border procedures, faster asylum procedures or strengthening financial or technical solidarity. He again rejected mandatory relocations and quotas. According to Czech Minister of the Interior, the solidarity should stay flexible, with possibility of election and without duty of relocation. (Ministry of the Interior of the Czech Republic, 2020). Press release related to this meeting typically emphasised the rejecting of obligatory quotas, although the New pact suggest various ways of solidarity. All parliamentary parties also in its electoral programs declared negative attitude to obligatory quotas for refugees.

Czech political parties focus almost only on security dimension of migration. For example, leading party in Czech Republic ANO presents itself as a defender of national position in the question of illegal migration. Electoral program typically promises the protection before imaginary threats: "We not allow to change our culture and our way of living violently." (Až do roztrhání těla, ANO, 2021). Coalition of ODS, TOP 09 and KDU-ČSL enforces free choice of the migration and asylum policy. Mentioned coalition also prefers the solution of the migration outside the borders of EU (Změna, které můžete věřit, SPOLU, 2021). The Czech Pirate Party and Mayors and Independent deal with migration in its program in the section named "security". Coalition of this parties supports the solution of the migration in the place of its origin, and also declare the support for several proposals of EC – namely pre-screening or asylum procedures at borders. (Programové priority pro parlamentní volby. Piráti a starostové, 2021). Social Democracy in its electoral program supports prevent measures to restrict illegal measures. Party also rejected "Union solution based on the principle of mandatory redistributive quotas" (Vize ČSSD pro Česko 2030) Electoral programs and proclamations of Czech politicians reduce discussion about migration policy to resistance against the mandatory quotas for relocation of refugees. Political statements mostly ignore new European suggestions of flexible solidarity. Missing humanitarian dimension of asylum policy and ignoring the international commitments are further typical features of public debates about migration in the Czech Republic. How Stojanov et al. (2021) remind, after the migration crisis Czech politicians and representatives of relevant institutions emphasise primarily a connection of the migration with security risks and economic problems.

Political scientists Ivan Krastev and Stephen Holmes in their article for Guardian interpreted the anti-immigrant approach of Visegrád Group as "declaration of independence…from western world and its ethos of openness to the world" (Krastev and Holmes, 2019). Again Krastev (2016) in inspiriting article about changing perception of the liberal democracy after the migration crisis argued, that anti-immigration policy in Central and East Europe was influenced by different historical development. According to him, post-communist countries know also "the dark sides of multiculturalism" connected with disintegration of empires and ethnical cleansings. Krastev reminded the example of Poland which has changed from pre-war multicultural society to one of the ethnically homogenous state in the world. Same author mentioned also other factors related to negative perception of the migration in Central and East Europe: impacts of the demographic decrease, mistrust of the cosmopolitan mindset or changes of political identity in the post-communist countries. Most of these factors are related to specifics of the Czech historical development and its interpretations. Representatives of Czech institutions also used historical arguments. For example, director of the Public Diplomacy Department at the Ministry of the Foreign Affairs of Czech Republic during the interview with a German journalist in 2015 argued, that Czech approach to refugees is possible to explain by lack of experiences with Muslims. She also reminded an "extreme" ethnic homogeneity of Czech society in comparison with "European standards" (Ministry of the Foreign Affairs of the Czech Republic, 2015). Following brief overview of typical trends of the asylum policy in Czechoslovakia could show the influence of specific historical experiences for the current approach to refugees in the Czech Republic.

4.3 Historical context of the Czech policy to refugees

In the past, Czechoslovakia had limited experiences with some groups of refugees. Until 1989, the predominance of emigration was typical for Czechoslovakia. Between 1918 and 1938, more than 230,000 Czechoslovak citizens emigrated abroad, mainly heading for Western countries (Drbohlav et al., 2010). Nonetheless, after First World War, the country became one of the most important centres of Russian political emigration. Later according to estimations, more than 22 000 Germans, Austrians and Jews found their temporary home in the First Republic. Real conditions of refugees were influenced by the fact that Czechoslovakia was supposed to be only a transit country offering just a temporary resort for refugees coming from Germany and Austria. The right to asylum was not

anyhow published by the legislature and also the status of a refugee was not legally defined. Implementation of some immigration policies was also constrained by disagreements between „the castle-sided" Ministry of the Foreign Affairs and the agrarian Ministry of the Interior. (Čapková and Frankl, 2008) Ministry of the Interior and its institutions preferred restrictive policy which became dominant in the second half of the 1930´s. Solidarity was limited by social and economic factors. The right-wing parties argued that a part of these refugees had used the asylum in an economic way at the expense of the Czechoslovak citizens and domestic production (National Archives in Prague, a). The representatives of business corporations also complained on generosity towards refugees from Germany. Czech corporations suggested strengthening of control and concentration of refugees in camps in the inland (National Archives in Prague b) The restrictive approach was fully enforced after the Munich Agreement, at the time of so-called Second Republic. The state aid was stated only to Czech re-settlers. According to the prevailing public opinion, the country could not extend help to Jewish refugees from occupied borderlands.

Post-war Czechoslovakia was being reconstructed as a nation of Czechs and Slovaks. After war almost 3 million Germans were banished and transferred from Czechoslovakia to Germany or Austria. Expulsion of Germans was one of the important steps in homogenization of country, which was typical trend of Czechoslovak post-war development. The typical emphasizing of "purification" expressed the determination to create a homogeneous society. The new trend was ethnically and politically selective immigration policy. After 1948, Czechoslovakia became a refuge more than 12 000 Greeks who left their war-torn country. Coordination of care for the members of Greek emigration occurred in partisan line. International department of the Central Committee of the Communist Party of Czechoslovakia played the key role (Hradečný, 2001). Relations of Czech inhabitants to Greek refugees included not only natural solidarity, but also xenophobic prejudices. For example, according to one of the official reports from 1948, majority population in all municipalities with child homes for Greeks and Macedonian showed the lack of understanding to help for refugees (National Archive in Prague c, f. International department of the Central Committee of Communist Party of Czechoslovakia, 1948). As another example can be mentioned a rumour about of crimes committed by the Greeks spread in Třinec in 1950. Local organisation of Communist Party refused these rumours as "a hostile political act" (National Archive in Prague d, International department of the Central Committee of Communist Party of Czechoslovakia, 1950). Czechoslovak authorities presented the care for refugees from Greece as a significant social and political task. This political dimension represented the fundamental principle of care for refugees in communist countries. Mentioned examples show the importance of the approach of politician representation and also the influence of the contemporary context. Case of Czechoslovak asylum policy confirm limited experiences with culturally different refugees and narrow connection with changes of political system.

5 Conclusion

Experiences from the migration crisis and consequences of COVID-19 pandemic have influenced changes in the European policy towards refugees. The New Pact on Migration and Asylum as the draft of the European Commission has become a new starting point for discussion about new asylum policy in Europe. Typical feature of mentioned draft is stronger external dimension of the approach towards asylum seekers. Various reactions of Member States show persistent differences in opinions about the common European asylum system. Representatives of several countries emphasize the priority of European external border protection, and they problematize the requirement for European solidarity represented by the relocation of refugees. Czech Republic belongs to these countries.

In comparison with Western-European countries, Czech asylum policy has been influenced by different historical experience and political factors which had a stronger effect. The country became an asylum for tens of thousands political refugees during the interwar period as well as when the Communist regime started. Their admission was presented as an act of solidarity as well as an

expression of a political opinion and international orientation. Yet Czechoslovak asylum policy was not based on general social consensus in these cases. Starting with the First Czechoslovak Republic, there were various approaches to political refugees which mirrored several political, economic and social preferences. Since 1948, the asylum policy was limited by the country's integration into the Soviet bloc. These factors then formed specific experience with migration policy in the Czech environment and also influenced its development after 1989.

Is possible to say, that main tendencies of Czech asylum policy in the present time are influenced also by this specific historical development including postwar national homogenization of the country and emphasizing of potential negative social and security impacts of migration. Part of Czech politician representation uses different historical experiences with a migration for the legitimization of xenophobic attitudes. Migration is here used typically as substitutive pre-election topic serving for the mobilization of voters. Discussions about European asylum policy are mostly reduced only to rejection of the mandatory relocations system, which actually is not included in the New Pact on Migration and Asylum. Simplified perception of the asylum policy only as a security issue limits possibility of factual discussion about the reform of European asylum system.

6 Acknowledgement

This research was financially supported by the Ministry of Education, Youth and Sports Czech Republic within the Institutional Support for Long-term Development of a Research Organization in 2021.

References

[1] ANO, 2021. *Až do roztrhání těla*. [online]. [2021-08-28]. Available from: https://www.anobudelip.cz/file/edee/2021/ano-volebni-program.pdf

[2] Barša, P. a A. Baršová, 2005. *Přistěhovalectví a liberální stat. Imigrační a integrační politiky v USA, západní Evropě a Česku.* Brno: Masarykova univerzita v Brně, Mezinárodní politologický ústav.

[3] Botu, A. a M. Konečný, 2005. *Řečtí uprchlíci. Kronika řeckého lidu v Čechách, na Moravě a ve Slezsku 1948-1989.* Praha: Řecká obec Praha.

[4] Buonanno, L., 2017. The European Migration Crisis. In D. Dinan, N. Nugent, and W. E. Patterson (Eds.), *The European Union in Crisis* (pp. 100-130). London: Palgrave Macmillan.

[5] Crawley, H., 2021. The Politics of Refugee Protection in a (Post)COVID-19 World. *Social Sciences*, vol. 10., n. 81. [online]. [2021-08-28]. Available from file:///C:/Users/nen0001/AppData/Local/Temp/socsci-10-00081-v2.pdf

[6] Czech Statistical Office. Foreigners in the CR [online]. [2021-08-28]. Available from: https://www.czso.cz/csu/cizinci/4-ciz_pocet_cizincu#cr

[7] Czech Statistical Office. Foreigners in the CR – provisional data – quarterly; [online]. [2021-08-28]. Available from: https://www.czso.cz/csu/cizinci/predbezne-udaje-zverejnovane-rs-cp

[8] Čapková, K. a M. Frankl, 2008. *Nejisté útočiště. Československo a uprchlíci před nacismem 1933-1938.* Praha – Litomyšl: Paseka.

[9] Demuth, A., 2000. Some Conceptual Thoughs on Migration. In: Agozino, B. ed. *Theoretical and Methodological Issues in Migration Research,* pp. 21-58. Budapest: HAS RCAES Geographical Institute.

[10] Drbohlav, D. et al., 2010. *Migrace a (i)migranti v Česku. Kdo jsme, odkud přicházíme, kam jdeme?* Praha: SLON.

[11] Drbohlav, D. and O. Valenta, 2014. Czechia: the main immigration country in the V4. In Eröss, A. and Karácsonyi, D., eds. *Discovering migration between Visegrad countries and Eastern Partners.*

[12] European Commission, 2020. New Pact on Migration and Asylum documents adopted on 23 September 2020 [online]. [2021-08-27]. Available from: https://ec.europa.eu/info/publications/migration-and-asylum-package-new-pact-migration-and-asylum-documents-adopted-23-september-2020_en

[13] European Council on Refugees and Exile, 2021. ECRE Comments on the European Commission Proposal for a Regulation on Asylum and Migration Management. [online]. [2021-07-30]. Available from: https://www.ecre.org/wp-content/uploads/2021/03/ECRE-Comments-RAMM.pdf

[14] Eurostat. 2021. Asylum quarterly report. [online]. [2021-08-30]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Asylum_quarterly_report

[15] Eurostat. 2021. Asylum statistics. [online]. [2021-08-30]. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Asylum_statistics

[16] Hein, CH., 2021. Old wine in new bottles? Monitoring the debate on the New EU Pact on Migration and Asylum. Heinrich Böll Stiftung. [online]. [2021-08-27]. Available from: https://eu.boell.org/en/2021/06/16/old-wine-new-bottles-monitoring-debate-new-eu-pact-migration-and-asylum

[17] Hradečný, P., 2000. *Řecká komunita v Československu. Její vznik a počáteční vývoj (1948-1954).* Praha: Ústav soudobých dějin.

[18] Huysmans, J., 2000. The European Union and the Securitization of Migration. *Journal of Common Market Studies*, vol. 38, no. 5, pp. 751-777.

[19] Krastev, I., 2016. The Unraveling of the post-1989 Order. *Journal of Democracy*, vol. 27, no. 4, pp. 5-15.

[20] Krastev, I. and S. Holmes, 2019. How liberalism became "the god that failed" in Eastern Europe. *The Guardian.* [online]. [2021-08-28]. Available from: https://www.theguardian.com/world/2019/oct/24/western-liberalism-failed-post-communist-eastern-europe

[21] Kotyrlo, E., 2017. European Migration Crisis as an outcome of globalization. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, no. 323, pp. 75-89.

[22] Kunz, E. F., 1981. Exile and Resettlement: Refugee Theory. *The International Migration Review*, vol. 15, no.1/2, pp. 42-51.

[23] Kunz, E. F., 1973. The Refugee in Flight: Kinetic Models and Forms of Displacement. *The International Migration Review*, vol. 7, no. 2, pp. 125-146.

[24] Macias Vega, D., 2021. The COVID-19 pandemic on anti-immigration and xenophobic discourse in Europe and the United States. *Estudios Fronterizos*, vol. 22

[25] Malkki, L., 1995. Refugees and Exile: From „Refugee Studies" to the National Order of Things. *Annual Review of Anthropology*, vol. 24, pp. 42-51.

[26] Menjívar, C., M. Ruiz and I. Ness, (eds.)., 2019. *The Oxford Handbook of Migration Crisis.* New York: Oxford University Press.

[27] Ministry of the Foreign Affairs of the Czech Republic, 2015. Česko-německé vztahy a český postoj k migraci. [online]. [2021-08-28]. Available from:

https://www.mzv.cz/jnp/cz/zahranicni_vztahy/cr_v_evrope/x2015_10_14_cesko_nemecke_vztahy.html

[28] Ministry of the Interior of the Czech Republic, 2020. Solidarita a ochrana hranic ano, povinné kvóty ne. [online]. [2021-08-22]. Available from: https://www.mvcr.cz/clanek/zpravodajstvi-solidarita-a-ochrana-hranic-ano-povinne-kvoty-ne-probehla-videokonference-ministru-vnitra-eu-o-migraci.aspx

[29] Ministry of the Interior of the Czech Republic, 2020. Zpráva o situaci v oblasti migrace a integrace cizinců na území České republiky. [online]. [2021-08-28]. Available from: https://www.mvcr.cz/migrace/clanek/vyrocni-zpravy-o-situaci-v-oblasti-migrace-a-integrace.aspx

[30] National Archive of Prague (c), f. International department of the Central Committee of Communist Party of Czechoslovakia, (1948)

[31] National Archive of Prague (d), f. International department of the Central Committee of Communist Party of Czechoslovakia, (1950)

[32] National Archive in Prague (a), f. Ministry of Social Affairs, cart. 2932, sign. E 4200. Interpellation of Agrarian member of Parliament (1933).

[33] National Archive in Prague (b) f. Ministry of Social Affairs, cart. 2932, sign. E 4200. Complaint of National Unity of Northern Bohemia (1933).

[34] New Pact on Migration and Asylum: comments by Greece, Italy, Malta and Spain. [online]. [2021-08-26]. Available from: https://www.lamoncloa.gob.es/presidente/actividades/Documents/2020/251120-Non%20paper%20Pacto%20Migratorio.pdf

[35] New Pact on Migration and Asylum. Joint position of Poland, Hungary, Slovakia, Czech Republic, Estonia and Slovenia. [online]. [2021-08-26]. Available from: https://www.visegradgroup.eu/download.php?docID=457

[36] Nisanci, A. et al., 2020. Working with refugees during COVID-19: Social worker voices from Turkey. *International Social Work*, vol. 63, no. 5, pp. 685-690.

[37] Piráti a starostové, 2021. Programové priority pro parlamentní volby [online]. [2021-08-30]. Available from: https://www.pirati.cz/assets/pdf/PROGRAM_Pirati_a_Starostove.pdf

[38] Romeo, G., 2021. *The new Pact on Migration and Asylum. The Global Impact.* Brussel: EuroMed Right´ Migration and Asylum Programme.

[39] SPOLU, 2021. Změna, které můžete věřit. [online]. [2021-08-31]. Available from: https://www.spolu21.cz/program/spolu-pro-bezpecnou-zemi

[40] Stojanov, R. et., 2021. *Rizika a výzvy české migrační politiky v kontextu „migrační krize".* Brno: Provozně ekonomická fakulta, Mendelova univerzita v Brně.

[41] STEM, 2018, Česká veřejnost má stale strach z uprchlíků. [online]. [2021-07-30]. Available from: https://www.stem.cz/ceska-verejnost-ma-stale-strach-z-uprchliku/

[42] The Office of the United Nations High Commisioner for Refugees (UNHCR), Refuegees and Asylum seekers in Turkey. [online] [cit. 2021-08-25] Available from: https://www.unhcr.org/tr/en/refugees-and-asylum-seekers-in-turkey

[43] Vize ČSSD pro Česko 2030. [online]. [2021-08-28]. Available from: https://www.cssd.cz/data/files/cssd-program-vize-2030.pdf

UNCERTAINTY EFFECTS OF THE EUROPEAN INTEGRATION

Daniel Pastorek

[1]*Mendel University in Brno, Faculty of Business and Economics,*
Zemědělská 1, 613 00 Brno, Czech Republic,
email: xpastore@mendelu.cz

Abstract
We developed a new monthly index of European integration uncertainty based on a textual analysis of major European newspapers in 1986 – 2020 (more than 20 million newspaper articles). We find that our index seems to correspond to the real-world events stressing the European integration process. Using vector autoregression framework, our results suggest that European integration uncertainty is likely to have a real impact on a number of financial integration and structure indicators.

Keywords
uncertainty, integration, European Union, media news

JEL classification
D80, F36

1 Introduction

The European integration process is a result of the interaction of interests, which outcomes are not a priori clear to be positive or negative. The economic integration is an integral part of this process with visible results achieved, begin the European Payments Union and the European Coal and Steel Community to a common currency. All economic associations aim to reach the benefit of integration, and whatever their eventual aim is, all economies always receive both positive and negative implications arise from enhanced competition and trade liberalization.

Despite the plethora of analysis attempts to quantify the economic effects of the Euro-pean integration, they state different results. These differences are not only in the magnitude of effect but also in sign. Especially in short term, when empirical data are not fully available. As an actual example, the expected economic development of the UK after Brexit or the EU itself. Wide spreads in estimations points outs studies themselves like a meta-analysis of Brexit impact by Bush and Mattes (2016), a report by Tetlow and Stojanovic (2018) attempting to make clear why different studies lead to such diverse conclusions or study by Mathieu (2020) giving a summary of a large part of studies. Besides Brexit, the same diversity in estimations we could find in various events of the European integration e.g., deployment of the euro and its expected immense but unfilled effect on international trade (Rose, 2000), still ongoing de-bates on benefits and costs of the euro and more. Factually, the purpose for which states are willing to sacrifice part of their national sovereignty may not be purely economic.

In this paper, we assume that uncertainty about European integration affects the be-haviour of economic agents, which has an impact on market forces. Negative real-world events may represent uncertainty shock about integration effects and stress the European integration process e.g., the European debt crisis. To measure this uncertainty, we develop the monthly uncertainty index of the European integration based on a textual analysis of major European newspapers in 1986 – 2020 (more than 20 million newspaper articles). We examine the effects of our new uncertainty index for a number of integration and structure variables within a vector autoregression framework.

We differ from authors who used newspapers text quantification framework because we focus explicitly on articles relevant to uncertainty and the European integration. Although measuring the European uncertainty is interesting per se, this exercise helps us to 1) provide empirical evidence for ongoing debates about the European integration challenges, 2) examine the consequences of European uncertainty on (dis)integration, which is important especially since market fragmentation remains higher now than before the crisis, 3) examine the sources of uncertainty in process of European integration.

Our index seems to correspond to the real-world events stressing the European integration process. As we were expecting, the most dramatic measured spike is in time of the UK referendum. An interesting finding is that levels of uncertainty persist significantly higher above average even after and at historically the highest values.

The results suggest that European uncertainty have an economic impact. Our analysis using vector autoregression (VAR) models shows that uncertainty is likely to have a real im-pact on cross-border activities within the Euro area. We find that a greater uncertainty translates into higher cross-border activities but with the reduced use of collateral.

The paper is structured as follows. Section 2 provide a brief literature review. Section 3 present the construction of our uncertainty index of the European integration. Section 4 presents the effects of uncertainty on integration and structure variables. Section 5 concludes and finally appendix with additional details on our index and VAR models.

2 Literature review

Various methods were proposed to measure uncertainty in the euro area. Disagreement among professional forecasters or stock market volatility (VSTOXX) is a traditional proxy, but it has several known drawbacks. Jurado et. al. (2015) argues that disagreements in the forecasts have limited numbers of expectations and not certainly capturing expectations of the economy as a whole, problems of known systematic biases and results are likely to reflect rather differences in opinions than uncertainty. Market volatility indexes are designed as a proxy for financial uncertainty and substantial variations may be associated rather with risk-aversion than uncertainty (Bekart et. al. 2013). Other approaches deriving uncertainty from macro-econometric models (Carriero et. al., 2017; Jurado et. al., 2015; Mumtaz, 2018).

The usefulness of analysing newspapers articles confirms various contributions and it is suggested not only for capturing uncertainty. Significant relation of the newspapers text quantification and economic variables suggest e.g., Garcia (2013) using a fraction of negative/positive words in relation with stock market returns. Husted et. al (2019) developed a news-based index to capture the monetary uncertainty of the Federal Reserve using a similar approach as the economic policy-uncertainty index (EPU) by Baker et. al. (2016). Index of geopolitical risk by Caldara and Iacoviello (2018) and others such as index of American partisan conflict (Azzimonti, 2018). Most of these types of studies were originally for autarkic economies like the United States (even some European variants were developed e.g., EPU for EU). But importantly and to prior our knowledge, none of these indexes investigates uncertainty stemming directly from the European integration process.

Economic integration is an integral part of the European integration process. It is clear from the financial markets that we are still far from perfectly integrated markets, and its level of convergence varies over time. Several studies have tried to examine the driving factors in global activities and the role of uncertainty. VIX as a proxy for a measure of global uncertain-ty has been suggested to be the important push factor of international capital flows (Bruno and Shin, 2014; Cerruti et. al., 2017; Passari and Rey, 2015). Further studies are focused on examining cross-country heterogeneity in uncertainty and its effects on international capital flows (Julio and Yook, 2015; Choi and Furceri, 2019; Biswas and Wei, 2021) and only a few studies are particularly focused on the Euro area (e. g., Schmit and Zwick, 2015). Therefore, we will examine uncertainty about the effect of European integration for a number of integration and structure variables.

3 Constructing an Uncertainty Index of European Integration

This section is structured as follows. First, we present the data use to construct our European integration uncertainty index. Second, we present the results of aggregate data in 1986:1 to 2020:12 and discuss its changes over time. Finally, we compare our index with the existing economic-policy uncertainty index.

3.1 Data

We use the data from 2 newspapers which represent wide market share for every of 5 selected countries: Germany (*Handelsblatt* and *Frankfurter Allgemeine Zeitung*), the United Kingdom (*The Times* and *The Financial Times*), Italy (*Corriere Della Sera* and *La Repubblica*), Spain (*El Mundo* and *El Pais*) and France (*Le Monde* and *Le Figaro*).[1]

We extract the data from the digital newspaper's archives of Factiva, ProQuest and for Germany using each own archives. To generate the European uncertainty, we use automatized textual search for a triple combination of following keywords: "Europe" or "EU" or "Europe-an"; and "integration" or "enlargement" or "Brexit" or "Grexit"; and "concern/s" or "problem/s" or "doubt/s" or "uncertain/ty".[2]

We search for the frequency of articles meeting the condition of keywords combinations and following Baker et. al (2016), then normalize and sum over 10 newspapers. The aggregate European uncertainty index (EUI) is defined as

$$EUI_{i,t} = \frac{\frac{1}{P}\left(\sum_{p=1}^{p} \frac{X_{i.p,t}}{stdev\left(X_{i,p,t}\right)}\right)}{\frac{1}{T}\left(\sum_{t=1}^{T} \frac{1}{P}\left(\sum_{p=1}^{p} \frac{X_{i.p,t}}{stdev\left(X_{i,p,t}\right)}\right)\right)} x\ 100 \quad (1)$$

where

$$X_{i,p,t} = \frac{n_{i.p,t}}{N_{p,t}} \quad (2)$$

n represents a number of articles meeting the condition of keyword combination *i*, *p* stands for a concrete newspaper with $p = 1, \ldots, P$, where *P* is a total number of newspapers. *t* denotes the used time interval with $i = 1, \ldots,$ T and N is the total number of articles published in time *t* and newspaper *n*, without condition *i*. Therefore, expression (2) represents the normalized frequency of articles.

Our index construction is based on aggregating data with monthly frequency from January 1986 to December 2020. We work with more than 20 million published newspaper articles over time. Note that not all mentioned newspapers have been available from the be-ginning of our sample period (see Appendix – Table A1).

3.2 Empirical results

We present the European uncertainty index in 1986:1 – 2020:12 in Figure 1. We find that began our sample period to the late 1990s the European uncertainty has been typically below the long-term average. Subsequently, until the mid-2000s, uncertainty was slightly above average with occasional spikes such as in a period of the Constitutional Treaty rejection in French and Netherland in May/June 2005. Except for the uncertain period of the European debt crisis peaks, a considerable shift in long-term average started shortly after the Greek referendum in July 2015. The highest spike in index occurred after the United Kingdom membership referendum or "Brexit" in June 2016. The index values persist significantly higher above average even after. In line with our findings, Hobolt (2016) argue that the UK referendum is likely to be the most significant event in the EU's history and cannot be dismissed as just a sign of British exceptionalism. The explanation of high values persistence could be prolonging and unprecedent negotiations between the EU and UK. However, some authors point to the possibility of disintegration or the so-called domino effect due to Brexit (Schimmelfennig, 2018; Hobolt, 2016).

[1] The selection of countries is based on the availability of data. The representing countries are Europe's five con-sistently largest economies from 1980 until 2021.

2 The selection of words is chosen to refer to Europe, integration, and uncertainty. The words "Brexit" and "Grexit" have been added as they represent differences in language usage over time. Note that searched words are the same in every language, but may contain different language variants (see Appendix – Table A1).

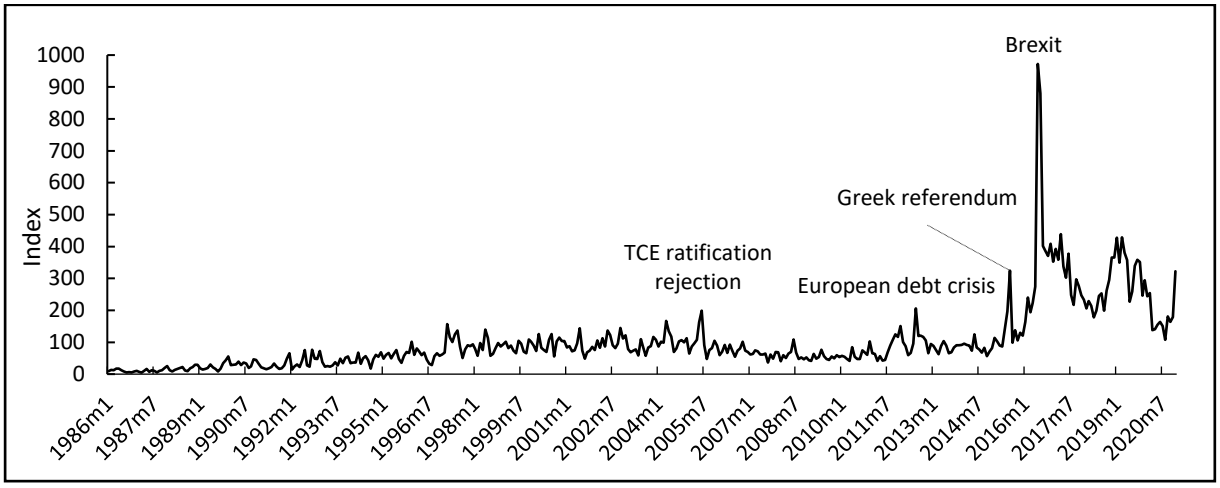


Fig. 1. European Integration Uncertainty Index

Notes: The European Integration uncertainty index is compiled from 2 main newspapers for every selected country. These are: Germany, the United Kingdom, Italy, Spain and France. The newspapers articles have to contain a triple combination of the following keywords: "Europe" or "EU" or "European"; and "integration" or "enlargement" or "Brexit" or "Grexit"; and "concern/s" or "problem/s" or "doubt/s" or "uncertain/ty". The index is at the monthly normalized frequency from 1986:1 to 2020:12 with a mean of 100.

The highest spike in index occurred after the United Kingdom membership referendum or "Brexit" in June 2016. The index values persist significantly higher above average even after. In line with our findings, Hobolt (2016) argue that the UK referendum is likely to be the most significant event in the EU's history and cannot be dismissed as just a sign of British exceptionalism. The explanation of high values persistence could be prolonging and unprecedent negotiations between the EU and UK. However, some authors point to the possibility of disintegration or the so-called domino effect due to Brexit (Schimmelfennig, 2018; Hobolt, 2016).

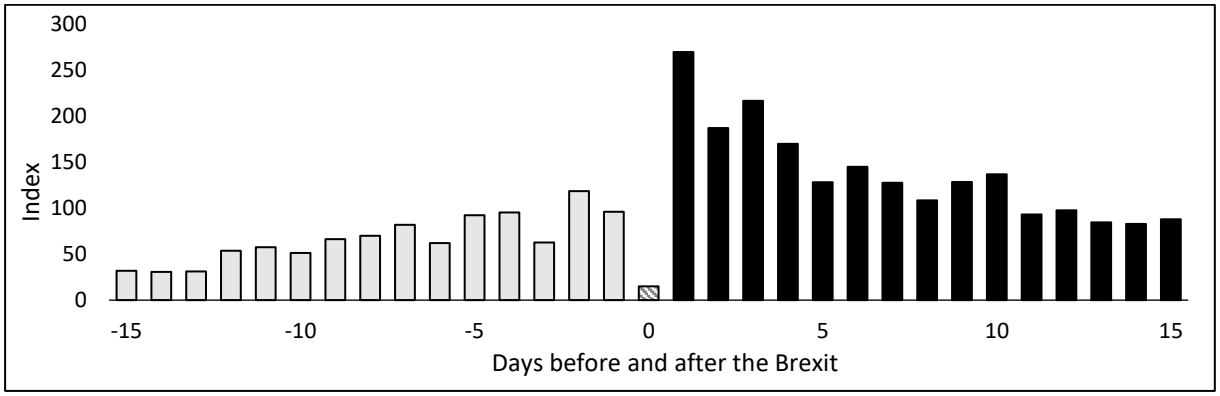


Fig. 1. European Integration Uncertainty before and after the Brexit: Daily Frequency

Notes: The index is compiled from 2 main newspapers for every selected country. These are: Germany, the United Kingdom, Italy, Spain, and France. The newspapers articles have to contain a triple combina-tion of the following keywords: "Europe" or "EU" or "European"; and "integration" or "enlargement" or "Brexit" or "Grexit"; and "concern/s" or "problem/s" or "doubt/s" or "uncertain/ty". The index is provided at the daily frequency, 15 days before and after the result of the UK referendum (the announcement of referendum results is detonated as day 0 in the figure. The index is scaled with a mean of 100.

As a robustness check, we generate indexes only by national newspapers. We compare the total of 5 different indexes and resulting indexes in Figure A1 and Table A1. We find a strong positive correlation of all indexes for the whole period. Although after Brexit there is higher dispersion in

level between national indexes, the pattern in data remains the same and does not contradict our observations.

In addition, to review the newspaper articles focusing on the uncertainty of the European integration, we provide daily data around the major spike in our index, i.e., Brexit. We choose 15 days before and after the event. We present the resulting index in Figure A2. The index construction and newspaper selection remain the same with a mean of 100. With the referendum approaching, the level of uncertainty started increasing. After referendum results on 24 June 2016 and following spike, uncertainty began to decline slowly. However, the average values remain higher after this event.

3.3 European Integration Uncertainty vs Economic Policy Uncertainty

We present the comparison of our European integration uncertainty index with economic policy uncertainty (EPU) for EU by Baker et. al. (2016) in 1997:1 to 2020:12 in Figure 2.[3]

The economic policy uncertainty index using the same text quantification framework, but we differ from the authors at a key point. We are focusing on articles relevant to uncertainty and European integration. The original EPU index was designed for the autarkic United States economy, which differ from the uncomplete European Union. While the economic-policy uncertainty naturally differs more across the states of the European Union, integration is a common process. The EPU variant for EU is compiled from national sub-indexes, and we are comparing datasets for the same countries as in our selection.

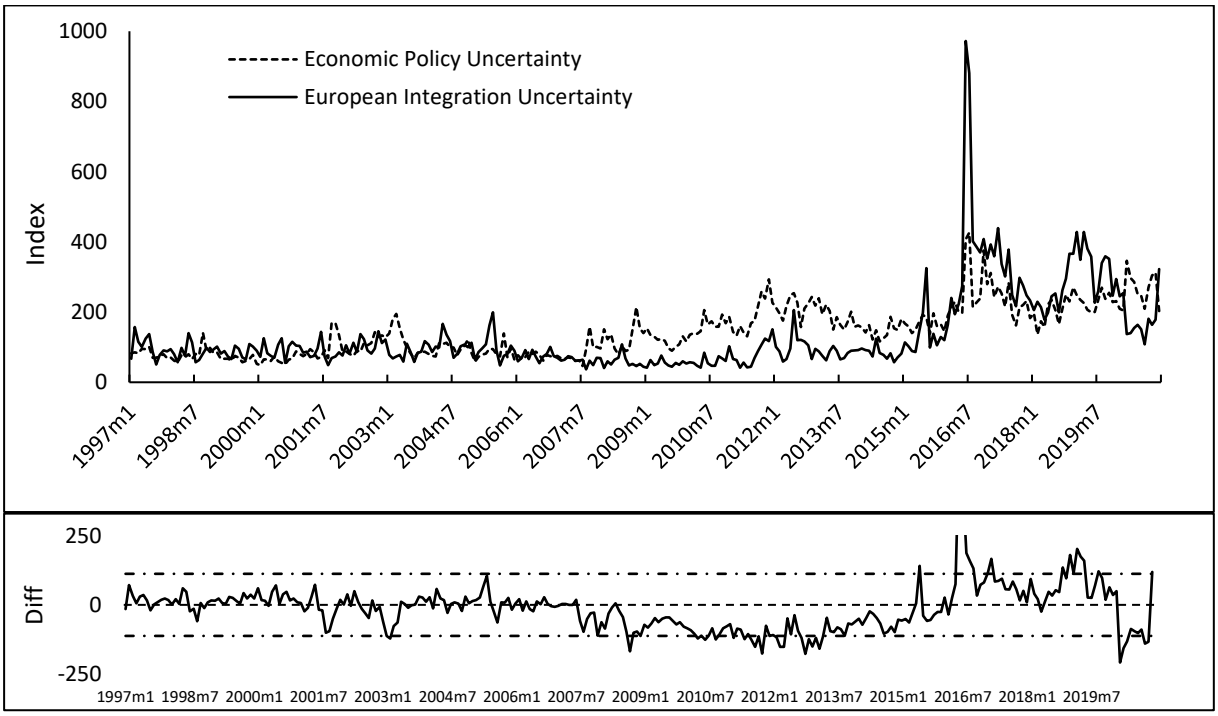


Fig. 3. Comparison of European Integration Uncertainty and Economic Policy Uncertainty

Notes: The European Integration uncertainty index is compiled from 2 main newspapers for every selected country. These are: Germany, the United Kingdom, Italy, Spain and France. The newspapers articles have to contain a triple combination of the following keywords: "Europe" or "EU" or "European"; and "integration" or "enlargement" or "Brexit" or "Grexit"; and "concern/s" or "problem/s" or "doubt/s" or "uncertain/ty". The economic policy uncertainty index is from Baker et. al. (2016). The indexes are at the monthly normalized frequency from 1997:1 to 2020:12 with a mean of 100. The lower figure represents differences between European integration uncertainty and

[3] We are comparing indexes since 1997:1 because more data have been available since that year. The data for economic policy uncertainty by Baker et. al. (2016) is from their website policyuncertainty.com.

economic policy uncertainty. The dashed upper and lower bands represent the value of one standard deviation of our European integration uncertainty index

We find that our index is positively correlated with the Baker et. al. (2016) uncertainty index, but not fully and differ. To the outburst of the global financial crisis, our indexes do not seem to vary much. However, from this point, dispersion in our indexes is visible. While economic-policy uncertainty increased above the long-term average, the European integration uncertainty remains below with spike expectation in the European debt crisis period. This dispersion in indexes lasts until the beginning of 2016. After that, an evident increase in levels is in both indexes. Besides the level's differences over time, the indexes differ in occasional spikes and empathize with real-world events differently.

The result of the comparison is interesting but not surprising at all. Very after the sub-prime mortgage crisis, the world was facing a financial crisis on a global scale with uncertain macroeconomic consequences. As of early 2010, these consequences mutated from banking crisis to sovereign debt crisis threatening the credibility of the euro currency (Overbeek, 2012), with a peak between 2010 and 2012. Some similarities and correlation of indexes are expecting as the different types of uncertainty are interrelated. In the case of differences, indices emphasize real world-events variously in depends on the nature of indexes. As an example, in the case of Brexit.

4 Uncertainty integration effects and cross-border activities

To examine the economic consequences of the European integration uncertainty for a number of integration and structure variables, we estimate the vector autoregression (VAR) models. Models are defined as follows: European integration uncertainty, integration variable, interest rates, inflation. As an uncertainty proxy, we use a log of our newly developed index, the integration variable represents the share of cross-border activity in TARGET2 for the first model and in the second model, we use the percentage use of cross-border collateral in the Eurosystem monetary policy operations. For interest rates, we are following common practice in literature and we use shadow short term interest rates for the euro area and inflation is measured as HICP.[4] We report responses of our integration variables, interest rates and inflation to one standard deviation the European integration uncertainty shock with 90% confidence bands.

The impulse response function shows that one standard deviation shock to the Europe-an uncertainty index increased cross-border activity and becomes statistically significant after 3 months after the shock (Figure 3). The effect lasts for approximately 9 months after. In the case of the use of cross-border collateral, shock cause a decrease with statistical significance after 2 months (Figure 4). The effect lasts for approximately up to 2 years. Our results also show that interest rates loosening after unexpected uncertainty shock and indicate the following response of an increase in inflation.

The results seem to be consistent with the literature concerning uncertainty and fluctuations in capital flows. When uncertainty shock occurs, total cross-border claims increases be-cause banks are likely to rebalance their portfolios (Choi and Furceri, 2019). Explanation of increased cross-border activities and decline in the use of collateral may be explained possibly due to this portfolio rebalancing. If banks credit supply would be driven by fundamental factors (seeking higher returns) one would expect an increase in collateral requirement. Still, these results confirm the economic and statistical significance of our index on a number of integration and structure variables.

[4] Shadow interest rates (SSR) aims to measure the accommodation in monetary policy when the short rate is at the zero-lower bound (Meinem and Roehe, (2017)). The data of indicators of financial integration and structure in the euro area (cross-border activity and use of collateral) and inflation are from www.ecb.europa.eu websites.

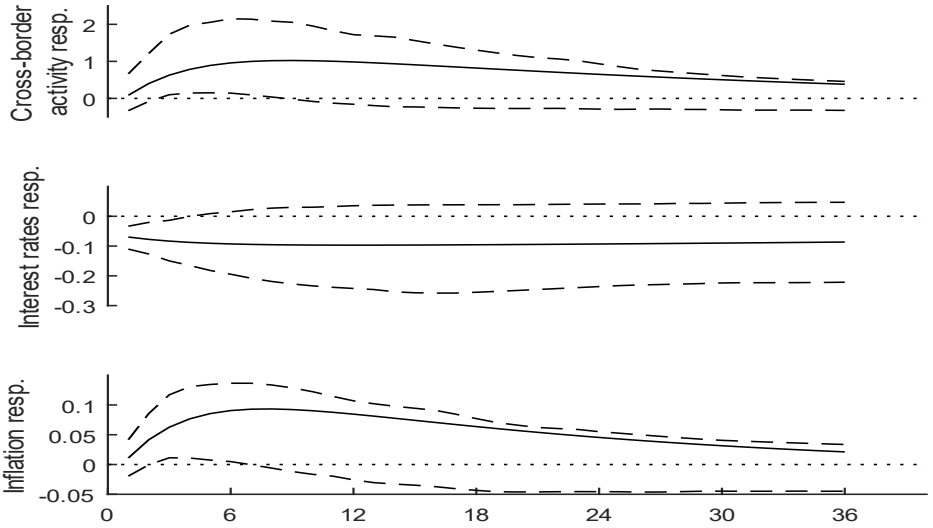


Fig. 2. Responses to European Integration Uncertainty Shock (1)

Notes: Impulse response functions of one standard deviation to the European integration uncertainty index with 90% confidence bands. The vector autoregression model covers monthly data from 2008:1 to 2020:12.

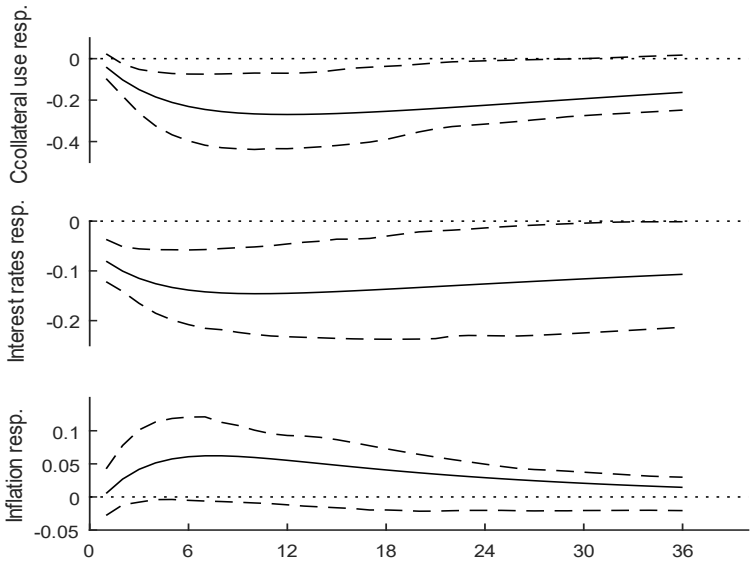


Fig. 3. Responses to European Integration Uncertainty Shock (2)

Notes: Impulse response functions of one standard deviation to the European integration uncertainty index with 90% confidence bands. The vector autoregression model covers monthly data from 2008:8 to 2020:12.

5 Conclusion

We developed a proxy for European integration uncertainty based on textual analysis of more than 20 million articles from 10 major EU newspapers from January 1986 – December 2020. Our index seems to correspond to the real-world events stressing the European integration process. In line with other authors, our results suggest that the United Kingdon referendum is likely to be the most significant event in the EU's history. These results also correspond with the overall assessment of a challenging last decade of the European Union. This empirical evidence supports ongoing debates and current literature about the European integration challenges. Also, the index allows examining the sources and magnitude of uncertainty in European integration process over time. We find that even our index is correlated positively with economic-policy uncertainty (EPU), it differs. The

significant difference is in the time of the outburst of the global financial crisis when the European integration uncertainty remains be-low the long-term average. Visible spikes in this selected period only occur after the banking crisis transformed into a sovereign debt crisis.

Using our newly developed measure of European integration uncertainty, we examine its effects on a number of financial integration and structure indicators. With the use of VAR models, we find that uncertainty increased cross-border activity within the Euro area but reduce the use of cross-border collateral. The fact of increased cross-border activities and a de-cline in the use of collateral may suggests banks portfolio rebalancing. Our results also show that interest rates loosening after unexpected uncertainty shock and indicate the following response of an increase in inflation. Importantly the results show the significance of uncertainty stemming from European integration on a number of integration and structure variables within the Euro area.

Our index seems to be a relevant proxy for the European integration uncertainty. It allows examine the sources and broader uncertainty consequences in the process of European integration. Besides empirical examination, it may be supportive evidence in the theoretical literature. This proxy open potential for further research not only in measuring uncertainty.

6 Acknowledgement

This research was funded by the internal grant agency of the Mendel University.

References

[1] Azzimonti, M., 2018. Partisan conflict and private investment. *Journal of Monetary Economics*, 93, pp. 114–131.

[2] Baker, S. R., N. Bloom and S. Davis, 2016. Measuring Economic Policy Uncertainty. *The Quarterly Journal of Economics*, vol. 131, issue 4, pp. 1593-1636.

[3] Bekaert, G., M. Hoerova and M. Lo Duca, 2013. Risk, uncertainty and monetary policy. *Journal of Monetary Economics*, vol. 60, issue 7, pp. 771–788.

[4] Biswas, S. and Z. Wei, 2021. Economic policy uncertainty and cross-border lending. *Journal of Corporate Finance*, Elsevier, vol. 67, issue C.

[5] Bruno, V. and H. S. Shin, 2014. Cross-border banking and global liquidity. *Review of Economic Studies*, vol. 82, issue 2, pp. 535-564.

[6] Busch, B and J. Matthes, 2016. *Brexit - the economic impact: A meta-analysis*, IW-Reports 10/2016, Institut der deutschen Wirtschaft (IW) / German Economic Institute.

[7] Caldara, D., and M. Iacoviello, 2018. *Measuring Geopolitical Risk*. International Finance Discussion Paper, pp. 1–66.

[8] Carriero, A., T. E. Clark and M. Marcellino, 2017. Measuring Uncertainty and its Impact on the Economy. *The Review of Economics and Statistics*, vol. 100, issue 5, pp. 799-815.

[9] Cerutti, E., S., Claessens, and L. Ratnovski, 2017. Global liquidity and cross-border bank flows. *Economic Policy*, vol. 32, issue 89, pp. 81-125.

[10] Choi, S., and D. Furceri, 2019. Uncertainty and cross-border banking flows. *Journal of International Money and Finance*, vol. 93, pp. 260–274.

[11] García, D., 2013. Sentiment during Recessions. *The Journal of Finance*, vol. 68, issue 3, 1267–1300.

[12] Hobolt, S. B., 2016. The Brexit vote: a divided nation, a divided continent. *Journal of European Public Policy*, vol. 23, issue 9, pp. 1259–1277.

[13] Husted, L., J. Rogers and B. Sun, 2019. Monetary Policy Uncertainty. *Journal of Monetary Economics*, vol. 115(C), pp. 20-36.

[14] Julio, B., and Y. Yook, 2016. Policy uncertainty, irreversibility, and cross-border flows of capital. *Journal of International Economics*, vol. 103, pp. 13–26.

[15] Jurado, K., S. C. Ludvigson and S. Ng, 2015. Measuring Uncertainty. *American Economic Review*, vol. 105, issue 3, pp. 1177–1216.

[16] Mathieu, C., 2020. Brexit: What Economic Impacts Does the Literature Anticipate? *Revue de l'OFCE,* vol. 167, pp. 43–81.

[17] Meinen, P., and O. Roehe, 2017. On measuring uncertainty and its impact on investment: Cross-country evidence from the euro area. *European Economic Review*, vol. 92, pp. 161–179.

[18] Mumtaz, H. , 2018. *Measuring the origins of macroeconomic uncertainty*. Working Papers 864, Queen Mary University of London, School of Economics and Finance.

[19] Overbeek, H., 2012. Sovereign Debt Crisis in Euroland: Root Causes and Implications for European Integration. *The International Spectator*, vol. 47, issue 1, pp. 30–48.

[20] Passari, E., and H. Rey, 2015. Financial Flows and the International Monetary System. *The Economic Journal*, vol. 125, issue 584, pp. 675–698.

[21] Rose, A. K., 2000. One money, one market: the effect of common currencies on trade. *Economic Policy*, vol. 15, issue 30.

[22] Schimmelfennig, F., 2018. Brexit: differentiated disintegration in the European Union. *Journal of European Public Policy*, vol. 25, issue 8, pp. 1154–1173.

[23] Schmidt, T., and L. Zwick, 2015. Uncertainty and episodes of extreme capital flows in the Euro Area. *Economic Modelling*, vol. 48, pp. 343–356.

[24] Tetlow, G. and A. Stojanovic, 2018. *Understanding the economic impact of Brexit*. Institute for Government.

7 Appendix

Table A 1

Germany (1986-, monthly). Newspapers: Handelsblatt (1986) and Frankfurter Allgemeine Zeitung (1993). Database: using each newspapers own archives. Key words: integration or erweiterung or Brexit or Grexit and Europa or EU or europäisch and unsicher or unsicherheit or problem or probleme or besorgnis or sorge or sorgen or bedenked or Zweifel
United Kingdom (1986, - monthly). Newspapers: the Times of London (1986) and Financial Times (1986). Database: Factiva. Key words: integration or enlargement or Brexit or Grexit a Europe or EU or European and uncertain or uncertainty or concern or concerns or problem or problems or doubt or doubts
Spain (1995, - monthly). Newspapers: El Mundo (1995) and El Pais (2001). Database: Factiva. Key words: integración or amplición or Brexit or Grexit and Europea or Europeo or Europa or EU and incierta or incierto or incertidumbre or preucupación or preocupaciones or problema or problemas or duda or dudas
France (2001, - monthly). Newspapers: Le Monde (2011) a Le Figaro (2001). Database: Factiva for Le Monde, ProQuest for Le Figaro. Key words: l´inégration or élargissement or Brexit or Grexit and L´Europe or EU or européène or européen and incertaine or incertain or incertitude or préoccupation or soucis or problème or problèmes or inquietude or doute or les doutes

Italy (1997, - monthly). Newspapers: Corriere Della Sera (1997) and La Repubblica (2005). Database: Factiva. Key words: integrazione or allargamento or Brexit or Grexit and Europa or EU or Europea or Europeo and incerta or incerto or incertezza or preoccupazione or preoccupazionni or problema or i problem or dubbi or dubbio

Table A 2 European Integration Uncertainty Sub-indexes: Correlations

European Integration Uncertainty:	Germany	United Kingdom	Italy	Spain	France
Germany	1				
United Kingdom	0.94*** (0.000)	1			
Italy	0.81*** (0.000)	0.75*** (0.000)	1		
Spain	0.92*** (0.000)	0.90*** (0.000)	0.80*** (0.000)	1	
France	0.78*** (0.000)	0.75*** (0.000)	0.73*** (0.000)	0.80*** (0.000)	1

EU COHESION POLICY: EFFECTIVE TOOL OF RESPONSE TO THE COVID-19 PANDEMIC?

Eva Poledníková[1]

[1]*Department of International Economic Relations, Faculty of Economics, VŠB – Technical University of Ostrava*
Sokolská třída 33, 702 00 Ostrava 1, Czech Republic
email: eva.polednikova@vsb.cz

Abstract
The paper provides an overview of EU Cohesion Policy measures in response to the COVID-19 pandemic and analyses the main opportunities and risks of these measures for future recovery of European economy. To tackle the urgent needs in European cities and regions, the EU adopted policy measures relevant to EU Cohesion Policy since spring 2020 following the others measures within new Multiannual Financial Framework 2021-2027. EU Cohesion Policy resources contribute to the fight against coronavirus with various projects across EU countries and with adoption of the new rules of programmes that enable to use allocations with higher flexibility. Besides the opportunities related to increased volume of available funding, the potential negatives should be taken into account, for example in terms of the lack of EU funding coordination and strategic orientation.

Keywords
Cohesion Policy, COVID-19, EU, recovery, regions

JEL classification
O18, R11, R58

1 Introduction

More than 30 years, EU Cohesion Policy plays the main role in promoting of economic, social and territorial cohesion and competitiveness of the European regions and cities. Since 1986, all EU countries have benefited from the financial assistance of European funds in order to increase economic growth, employment and quality of life of citizens. During the programming periods, the policy has been continuously adapted while remaining faithful to the original principles: aid to the most disadvantaged regions, multiyear programming, strategically focused investments, and involvement of regional and local partners. Cohesion Policy can be seen as the primary European investment policy that supported investment during the financial and debt crisis that also had a regional dimension. In programming period 2007-2013 hit by economic recession, the financial interventions of EU Cohesion Policy corresponded to 35.7% of the EU budget (EUR 347 billion) (Poledníková, 2018). Cohesion Policy had a cushioning effect to reduce the negative impacts of the crisis by stimulating demand, through boosting public and private investment (e.g. 25% of total EU Cohesion Policy resources were earmarked for research and innovation). In fact, the funding had a leverage effect through the requirement of its own contribution to the investment benefiting from Cohesion Policy support. (Smętkowski, Dąbrowski, 2019)

Unprecedented coronavirus disease (COVID-19) that hit the Europe at the beginning of the year 2020 has exposed fundamental shortcomings in pandemic preparedness, socioeconomic safety nets and global cooperation. COVID-19 outbreak is the first global pandemic to be caused by a coronavirus, leading to a crisis with considerable losses in health and much of the worldwide economy, with high social costs (Staníčková, Melecký, 2021, p. 94). The regional and local impact of the COVID-19 crisis is highly heterogeneous, with a strong territorial dimension (Staníčková, Melecký, 2021, p. 95). To ensure the recovery spending, as in the previous economic and political European crises, within COVID-19 pandemic situation, EU Cohesion Policy has been earmarked as instrument to support investments in the most affected EU areas and regional and local stakeholders. Compared to period 2007-2013 when it was not easy to adjust Cohesion Policy provisions in response to the economic crisis started in 2008 and adaptation to this new economic context could only be slight, EU Cohesion Policy 2021-2027 that since spring 2020 adopted the new measures to tackle the urgent needs in European cities and regions following the arrangements within new Multiannual

Financial Framework (MMF) 2021-2027 could bring more potential positive effects. As also mentioned Smętkowski, Dąbrowski (2019, p. 3) interventions could not only have a counter-cyclical effect, by stimulating investment in times of recession and austerity, but are also the most likely to offer a concrete manifestation of what the EU does for its citizens. Understanding the regional differences and debate on appropriate EU Cohesion Policy reactions is considered as topical see e.g. Smętkowski, Dąbrowski (2019), Urminsky (2016), Suchacek (2014), Dańska-Borsiak, Laskowska (2014), Viturka, et al. (2009), Campo, et al., (2008), Staníčková, Melecký (2021), Kolundzic and Tijanic (2021), Crescenzi, et al. (2021), Bachtler, et al. (2020), Neto (2020).

The paper can be seen as topical contribution to discussion on the European economy recovery after coronavirus pandemic and mobilization of adequate financial resources. Main aim of the paper is to provide an overview of EU Cohesion Policy measures in response to the COVID-19 pandemic and analyse the main opportunities and risks of these measures for future recovery of European economy.

2 Methodology and data

The paper is based on research investigation of description type. To achieve the goal of paper, the general logical methods of analysis and synthesis of secondary data are used. Literature review and analysis consider the European research studies, discussion papers and statements of European Commission - Directorate-General for Regional and Urban Policy (DG REGIO) and other European government or research institutions (including papers from worldwide renowned citation databases Web of Science database). The description of evolution of adopted measures and their current state of implementation is the initial and essential phase for the further research in measures' utility and effectiveness evaluation.

3 Cohesion Policy as a response to Covid-19 pandemic

As early as in 2018, when the first proposal of MMF 2021-2027 and proposal of Cohesion Policy regulations were submitted[1], it was obvious the EU Cohesion Policy after 2020 must react on the new European integration challenges as Brexit, migration, border control or defence, insufficient level of research and innovation and later on the health crisis caused by the Covid-19. Regions and cities have faced to challenges of economic and social revival after the limitation of economic activities related to coronavirus restrictions.

3.1 Cohesion Policy in the context of MMF 2021-2027

Although the financial importance of EU Cohesion Policy in the EU budget has been increasing since 2007, the Cohesion Policy should remain the EU's main investment policy and one of its most concrete expressions of solidarity after the year 2020. For the period 2021-2027, the European Commission (EC) proposes to modernise Cohesion Policy with following main features, see eg. Poledníková (2018). These facts were reflected in the new MFF 2021-2027 that was adopted by the EC on 2 May 2018 for Union of 27 Member States. "Economic, social and territorial cohesion" is defined in heading II. The EC proposed for the MFF 2021-2027 a ceiling for commitments of EUR 1 134.6 billion in constant prices of 2018 equal to 1.11% of EU GNI. The 2018 Commission's proposal for the MMF 2021-2027 set out an amount of Eur 330 624 million (in 2018 prices) for economic, social and territorial cohesion. (European Commission, 2018)

[1] Proposal for a Common Provisions Regulation (CPR) set out common provisions for seven shared management funds. The proposal reduces fragmentation of rules, delivering a common set of basic rules for seven funds: Cohesion Fund (CF), EuropeanMaritime and Fisheries Fund (EMFF), European Regional Development Fund (ERDF), European Social Fund Plus (ESF+), Asylum and Migration Fund (AMIF), Border Management and Visa Instrument (BMVI), Internal Security Fund (ISF). The Cohesion Policy legislative package, including also the regulations for Just Transition Fund and for European territorial cooperation goal (Interreg) has been published in June 30, 2021.

On 27 May 2020, in response to the crisis caused by the coronavirus, the EC proposed the temporary recovery instrument NextGenerationEU, as well as targeted reinforcements to the long-term EU budget for 2021-2027. On 10 November 2020, the European Parliament and the Council reached an agreement on the MMF package (long-term budget 2021-2027 made up of EUR 1.074 trillion and NextGenerationEU of EUR 750 billion in 2018 prices). Final adoption of MMF 2021-20207 was by the Council of the European Union on 17 December 2020, in total amount of EUR 1.8 trillion (in 2018 prices).

NextGenerationEU will be channelled through the EU's long-term budget, particularly in the years 2021-2023. NextGenerationEU investments must align with the EU priorities of green and digital transition, which have been identified as central to Europe's future prosperity and resilience by the European Green Deal and in the Shaping Europe's digital future plan (Crescenzi, et al., 2021). The resources from NextGenerationEU will be invested across several programmes, and will be distributed to EU countries and beneficiaries through grants (up to EUR 390 billion in 2018 prices) and loans (EUR 360 billion). The majority of funds from NextGenerationEU (EUR 672.5 billion in 2018 prices) will be spent through the Recovery and Resilience Facility (RRF) programme focusing on financial support to public investments and areas such as green and digital projects.

Based on November 2020 proposal, EU Cohesion Policy resources for the "Investment for jobs and growth" goal will amount to a total of EUR 322 285 million and for the "European territorial cooperation" goal (Interreg) will amount to a total of EUR 7 950 million. This total amount of EUR 330 235 million. (European Commission, 2021a)

3.2 Cohesion Policy 2021-2027 for Covid-19

The current context of the COVID-19 pandemic has forced a refocusing of the intervention priorities, at least in the short term, in the need to respond to the urgent economic, social and public health challenges (Neto, 2020). The EU legislators adopted policy measures relevant to EU Cohesion Policy which have been effective since spring 2020 (Böhme and Lüer, 2020, p. 7):

- The Coronavirus Response Investment Initiative (CRII) from March 2020, which mobilised unused prefinancing of EUR 8 billion as immediate liquidity and introduced simplifications. CRII allows transfer of up to 8 % of the allocation of a priority (less than 4 % of the total programme budget) to another priority under the same ERDF, ESF or CF programme without approval from the European Commission.
- The Coronavirus Response Investment Initiative Plus (CRII+) from April 2020, which introduced amendments such as a 100% co-financing rate and easier transfers of allocations (transfers between categories of regions for programming for 2020; exemption of allocations transferred between priorities under ERDF, ESF and Cohesion Fund programmes from thematic concentration).
- For rural policies, several exceptional measures were adopted such as emergency assistance, higher payment advances and lower administrative requirements.
- The Eurogroup adopted a EUR 540 billion emergency package with three safety nets for Member States, workers, and small and medium-sized enterprises. Support to mitigate Unemployment Risks in an Emergency (SURE): SURE provides up to EUR 100 billion for all Member States to finance short-time work schemes or other measures aiming at protecting employees and self-employed. It helps affected Member States to cope with the sudden increase in public expenditure with loans from the EU to the Member States. Pan-European Guarantee Fund (EGF) for Workers and Businesses: This EIB Group fund of up to EUR 25 billion will mobilise up to EUR 200 billion. The funding will come from EU Member States and mainly be granted to SMEs (at least 65%) but also to large companies (up to 23%), public sector companies active in the healthcare sector or related activities (up to 5%) and for venture and growth capital (up to 7%). Pandemic Crisis Support credit line: Implemented within the European Stability Mechanism (ESM) this credit line

provides up to EUR 240 billion for euro area Member States to support direct and indirect costs related to healthcare, cure and prevention as a consequence of the COVID-19 pandemic. Member States can request access to the credit line until the end of 2022. (Böhme and Lüer, 2020, p. 17).

- The European Commission adopted a temporary framework to increase the flexibility of state aid and broaden the scope of public financing.

CRII and CRII+ were launched to ensure that Cohesion Policy funding can be easily used to meet additional financial needs in the healthcare sector and to swiftly respond to the economic effects of the lockdowns (the CRII package does not offer new EU financial resources, rather it provides flexibility to use existing, unspent resources and re-direct them to where they are most needed). Thus, the intention was to quickly mobilise ESIF cash reserves to provide immediate liquidity to Member States and ensure it can be used with flexibility and without unnecessary administrative burden. (Böhme and Lüer, 2020, p. 24) By the end of September 2020, more than EUR13 billion ERDF/CF has been reallocated to interventions in health, SME support, employment and other relevant fields (Bachtler et al., p. 2).[2] The most frequently used flexibility measures were: the 100 percent EU co-financing rate; transfers of resources within priority axes of the same Fund and programme; transfers of resources between Funds (EUR 2.2 billion ERDF/CF), categories of regions (EUR 1.3 billion ERDF/CF) and priorities (EUR 1.1 billion ERDF/CF); flexibility on Financial Instruments; flexibility on thematic concentration; extension of deadlines for project implementation and for project calls; simplification with respect to audit and to Financial Instruments ex-ante assessment; and moving some projects at initial stage of implementation to the next period (Bachtler, et al., 2020, p. 24).
As of August 2021, the headline figures on the volume of resources mobilised are as follows (European Commission, 2021d):

- Thematic reprogramming - EUR 7.7 billion in EU reallocations for health actions resulting in a net increase of EUR 7.4 billion at EU level; EUR 11.3 billion in EU reallocations in business support resulting in a net increase of EUR 3.6 billion at EU level; EUR 4.1 billion of direct support for people, including workers and vulnerable groups (the allocated "direct support to people" amounts overlap partially with the ESF health and enterprise reprogramming).
- Financing rule changes - A EUR 7.6 billion immediate increase of liquidity was provided; 188 cohesion policy programmes have so far opted for 100% EU co-financing; EUR 5.7 billion has been transferred between Funds and between categories of regions.

Later on, in December 2020, as a part of NextGenerationEU the regulation financial instrument REACT-EU (Recovery Assistance for Cohesion and the Territories of Europe) was adopted with amount of EUR 47.5 billion. (Kolundzic and Tijanic, 2021) It is a new initiative that continues and extends the crisis response and crisis repair measures delivered through the Coronavirus Response Investment Initiatives. It will contribute to a green, digital and resilient recovery of the economy. The funds will be made available to ERDF, ESF and the European Fund for Aid to the Most Deprived (FEAD). REACT-EU extends the 2014-2020 funding period to 2022 with regard to commitments and to 2025 for payments (so these additional funds will be provided in 2021-2022). NextGenerationEU will also bring additional money to other European programmes or funds related

[2] The overview on the uptake of CRII/CRII+ suggests that the measures are used for following types of support: • Healthcare sector, including urgent health equipment (e.g. Bulgaria, Belgium, Croatia, France, Lithuania, Poland, Spain); renovation or modernisation of hospitals and care facilities (e.g. Bulgaria, Croatia, Latvia); additional medical staff (e.g. Latvia, Spain); reversion of SME activities towards local production of urgent health products (e.g. France); or strengthening e-health (e.g. Poland). •SMEs and employment, including support for working capital or injection of liquidity (e.g. Bulgaria, Croatia, France, Hungary, Italy, Poland); support entrepreneurship actions and employment measures (e.g. Bulgaria, Croatia, Greece, Latvia); temporary employment schemes (e.g. Bulgaria, Croatia). • Remote work and schooling, including broadband to rural areas to enable remote learning (e.g. Latvia); investments in online tools for education (e.g. Croatia, Slovenia). (Böhme and Lüer, 2020, p. 24).

with EU Cohesion Policy such as Horizon2020, InvestEU, EU4Health, Rural development or the Just Transition Fund (JTF)[3]. The JTF fund will be equipped with EUR17.5 billion (in 2018 prices). This amount corresponds to resources made available to support EU countries in their green transition, out of which EUR 7.5 billion will be financed under the EU budget, EUR10 billion will constitute external assigned revenue stemming from the NextGenerationEU (available from 2021 to 2023).

4 Discussion on opportunities and risks of Cohesion Policy measures

Ensuring effective recovery spending is a high-stakes challenge for the European Union, with the potential for derailment because of fuzzy objectives and overloaded procedures (Staníčková and Melecký, 2021, p. 95). Policy makers responsible for Cohesion Policy have faced several difficult tasks concurrently: to bring the 2014-2020 programmes to a successful conclusion (in many cases adjusted through CRII/CRII+ in response to the crisis); to complete the programming for 2021-2027 in the new circumstances of the COVID-19 crisis and instruments (especially the RRF), to need to programme the use of REACT-EU intended as a "bridge" between the two programme periods and as a "bridge" the gap between first crisis response measures and longer term recovery.[4]

The fast EU Cohesion Policy response on crisis showed that in emergency situation the EU is once again able to react flexibly and comprehensively. Cohesion Policy programmes use the measures for programme amendments that represents higher flexibility and simplifications.

Investments of EU Cohesion Policy in human capital and digital agenda have help to regional and local public administrations to improve their capacity of reaction on crises. Thanks to traditional EU Cohesion Policy funding of businesses, the sources of Cohesion Policy might be used to support investments in firms located in the most affected areas to promote a geographically balanced economic recovery (support for entrepreneurship and start-ups). The Just Transition Fund (JTF) which is the first pillar of the Just Transition Mechanism (JTM) and it is implemented under shared management, under the overall framework of Cohesion Policy is the only recovery instrument with a strong territorial dimension because support the territories most affected by the transition towards climate neutrality. Cohesion Policy seems to be also an effective tool (through the ESF+) to positively influence the social issues such as (child) poverty or social deprivation. The other positive aspect represents the reinforcement of using the instruments based on grants in Cohesion Policy as in case of REACT-EU. A shift from ESIF grants towards financial instruments poses both opportunity and challenge. (Böhme and Lüer, 2020; RSA, 2021; European Commission, 2021c)

Apart from the positives, the European agreement on the recovery funding (reallocation and distribution of common financial resources) brings the question is whether EU Cohesion Policy (and the other incorporated financial instruments) should be the key instrument to finance the urgent needs when it's primary aim is to invest into long-term objectives (the economic, social and territorial cohesion). Moreover, the short-term orientation of measures can lead to deceleration of structural changes in regions. The main goal of EU Cohesion Policy is to promote harmonized and well-balanced development at regional (and local) level. Because the impacts of COVID-19 crisis are rather better recognized at the national level at this moment, the measures strengthen the role of national authorities in Cohesion Policy, which risks weakening the regional dimension, side-lining regional players and increasing regional disparities. The regional and local impacts of the crisis is heterogeneous, with a strong territorial dimension (the sudden closure of EU internal borders due to

[3] Member States may, on a voluntary basis, transfer to the JTF additional resources from their national allocations under the ERDF and the ESF+, provided that the total amount transferred does not exceed three times the JTF allocation. Spending from the EU budget will be supplemented by national co-financing according to Cohesion policy rules. (European Commission, 2021b)

[4] Tracking the COVID-19 pandemic response poses a particular challenge in Cohesion Policy, which uses shared management across more than 390 programmes. The original monitoring systems were not designed to track the exceptional flexibility measures recently introduced. For this reason, on 12 May 2020, the Commission services had to propose new financial and output indicators – "common" COVID-19 indicators to be used by the national and regional programmes. (European Commission, 2021d; Kolundzic and Tijanic, 2021)

coronavirus restrictions was a stark economic hit especially for cross-border regions). However, spatial inequalities in healthcare sectors have been only marginally addressed. If the policy scope is extended to more explicitly address health policy objectives, then Cohesion Policy would need a substantial increase in resource and funding to avoid a substitution effect, whereby support for other fundamental investments aimed at preserving and improving quality of life across Europe is reduced. Moreover, the focus is on fast spending to ensure that European healthcare systems can cope with the crisis demands and that there is sufficient liquidity in the economy. However, fast does not always equate to effective or regular spending and might run into concerns about accountability. The new large-scale financial support for investment and reforms undertaken by Member States - The Resilience and Recovery Facility might overshadow EU Cohesion Policy and caused the overlapping of the goals in programmes leading to complicated systems and uncoordinated and non-strategic used of resources or to (harmful) competition between EU funding sources (in addition the prioritisation of the RFF could lead to a reduction of cohesion resources in the post-2027 period.) Result is that there is no clear coherence between Cohesion Policy and RRF. Moreover, the latest data for ESIF spending in 2014-2020 shows that only 56 percent has so far been spent. The RRF will be implemented at a time when Member States will be under pressure to spend remaining allocation of 2014-2020 programmes while launching the 2021-2027 programmes. The EU government and Member States should more cooperate with to identify policies and measures that will maximise the impact of EU investment while accounting for spillovers. (RSA, 2021, Böhme and Lüer, 2020; Staníčková and Melecký, 2021, Bachtler et al., 2020)

5 Conclusion

Based on the analysis of adopted measures, we can state that the EU has been active in setting up funding instruments to tackle the health crisis and support the economic recovery process. EU Cohesion Policy resources contribute to the fight against coronavirus with various projects across the EU countries/regions and with adoption of the new rules of programmes that enable to use allocations with higher flexibility. Most of EU Cohesion Policy funding has been addressed to health infrastructure, access to health services or support for businesses. Besides the opportunities related to increased volume of available funding, the potential negatives should be taken into account, for example in terms of the lack of EU funding coordination and clear strategic orientation. The COVID-19 pandemic is still ongoing and many policy responses will be still needed to adopt or adjusted. So, the real effects of the coronavirus crisis and effectiveness of adopted measures will take some time to understand and evaluate.

6 Acknowledgement

The paper is supported by the Operational Programme Education for Competitiveness – Project No. CZ.1.07/2.3.00/20.0296 at the Faculty of Economics, VŠB-TU Ostrava.

References

[1] Bachtler, J. et al., 2020. *Will Cohesion Policy recover from COVID*? An Initial Assessment, European Regional Policy Research Consortium Paper 20/3, European Policies Research Centre, Glasgow and Delft. [online]. [2021-08-25]. Available from: https://www.eprc-strath.eu/public/dam/jcr:b82e526f-4051-4e92-be0e-91ee9b228ff7/EoRPA_Report_20(3)_Cohesion_Policy%20(incl%20ISBN).pdf

[2] Böhme, K. and C. Lüer, 2020. *Research for REGI Committee – Cohesion Policy Measures in Response to the COVID-19 Pandemic*, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels [online]. [2021-08-25]. Available from:

https://www.europarl.europa.eu/RegData/etudes/STUD/2020/652216/IPOL_STU(2020)652216_EN.pdf

[3] Campo, C. et al., 2008. The European regional policy and the socio-economic diversity of European regions: A multivariate analysis. *European Journal of Operational Research*, vol. 187, issue 2, pp. 600–612.

[4] Crescenzi, R. et al., 2021. Mind the Covid-19 crisis: An evidence-based implementation of Next Generation EU. *Journal of Policy Modeling*, vol. 43, issue 2, pp. 278-297.

[5] Dańska-Borsiak, B. and I. Laskowska, 2014. Selected Intangible Factors Of Regional Development: An Analysis Of Spatial Relationships. *Comparative Economic Research*, vol. 17, no. 4, pp. 23–41.

[6] European Commission, 2018. *Proposal for a Council Regulation laying down the multiannual financial framework for the years 2021 to 2027* [online]. [2021-08-18]. Available from: https://eur-lex.europa.eu/resource.html?uri=cellar:f5965d24-4ed6-11e8-be1d-01aa75ed71a1.0002.02/DOC_1&format=PDF

[7] European Commission, 2021a. *The 2021-2027 EU budget – What's new?* [online]. [2021-08-12]. Available from: https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2021-2027/whats-new_en

[8] European Commission, 2021b. *Just Transition funding sources* [online]. [2021-08-12]. Available from: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism/just-transition-funding-sources_en

[9] European Commission, 2021c. *Annual Activity Report 2020* [online]. [2021-08-12]. Available from: https://ec.europa.eu/info/sites/default/files/annual-activity-report-2020-regional-and-urban-policy_en_0.pdf

[10] European Commission, 2021d. *European Structural & Investment Funds Data* [online]. [2021-08-31]. Available from: https://cohesiondata.ec.europa.eu/stories/s/4e2z-pw8r#2.1-a-sharp-increase-in-the-eu-allocation-to-health-actions

[11] Kolundzic, B. and L. Tijanic, 2021. Cohesion Policy and Covid-19 Crisis. In: *Economic and Social Development (Book of Proceedings), 9th International Scientific Conference on Economic and Social Development – "Sustainability and Post Covid World"*, Dubai, pp. 235-244.

[12] Neto, P., 2020. U Cohesion Policy post-2020, European Green Deal and Territorial Agenda 2030. The future of the place-based approach in the new EU policy framework in the context of COVID-19. *Europa XXI*, vol. 38, pp. 33-50.

[13] Poledníková, E., 2018. Three decades of the EU Cohesion Policy: main achievements and future challenges. In: Majerova, I. (ed.). *Proceedings of 18th International Conference Economic Policy in the European Union Member Countries*. Karviná: Silesian University, pp. 295-307.

[14] RSA, 2021. Cohesion Policy for Coronavirus, and beyond. *RSA blog* [online]. [2021-08-12]. Available from: https://www.regionalstudies.org/news/cohesion-policy-for-coronavirus-and-beyond/

[15] Smętkowski, M. and M. Dąbrowski, 2019. Economic crisis, Cohesion Policy and the eroding image of the European Union at the regional level. *Regional Science Policy & Practice*, vol. 11, issue 4, pp. 1-20.

[16] Staníčková, M. and L. Melecký, 2021. A new era of resilience: A revival of the topic „due to" the coronavirus crisis. What is the European Union´s approach? In: Klímová, V., Žítek, V. (eds.)

24th International Colloquium on Regional Sciences. Conference Proceedings. Brno: Masarykova univerzita. pp. 92–99.

[17] Suchacek, J., 2014. European Themes within National TV News Reporting in the Czech Republic. In: *Honová, I. et al. (ed.). Proceedings of the 2nd International Conference on European Integration 2014.* Ostrava: VŠB – Technical University of Ostrava, pp. 644–650.

[18] Urminsky, J., 2016. Hospodářský život regionů v médiích: kvantitativní a kvalitativní pohled. In: *XIX. mezinárodní kolokvium o regionálních vědách. Sborník příspěvků*. Brno: Masarykova Univerzita, pp. 811–817.

[19] Viturka, M. et al., 2009. Regional analysis of new EU member states in the context of cohesion policy. *Review of Economic Perspectives*, vol. 9, issue 2, pp. 71–90.

GDP GROWTH, R&D EXPENDITURE AND COVID – SUSTAINABLE MESSAGE REVEALED BY THE SYNTHESIS OF THREE INDICATORS IN THE COVID-19 ERA

Filip Rubáček[1], **Radka MacGregor Pelikánová**[2]

[1] *Metropolitan University Prague,*
Dubečská 900/10, 1100 00 Prague 10, Czech Republic
email:filip.rubacek@mup.cz

[2] *Metropolitan University Prague,*
Dubečská 900/10, 1100 00 Prague 10, Czech Republic
email:radkamacgregor@yahoo.com

Abstract: The Covid-19 pandemic is a serious challenge revealing several, so far omitted, aspects and features of already established phenomena of our global society. The Sustainable Development Goals (SDGs) set by the United Nations (UN) include SDG 8 promoting sustainable economic growth and SDG 9 promoting resilient infrastructure, industrialization and innovation. In the EU, this conventionally translates into the demand for GDP growth above 2% and for expenditures on Research & Development (R&D) above 3% of GDP, see the GERD index. However, these plans have been significantly shaken by the Covid-19 pandemic. Crises bring both challenges and opportunities and it is highly relevant to visualize the synthesis of three partially overlapping indicators – GDP % growth, the GERD Index and Covid-19 Pilot Index. Comparative synthesis graphs show interesting dynamics, the (lack of) interrelation of GDP % growth, GERD and the Covid-19 Pilot Index and also provide a highly relevant message about the sustainability strategy of particular developed countries, both winners and losers.

Keywords: Covid-19 Pilot Index, GERD, GDP growth, sustainability.

JEL classification: D83, E22, O32, O47.

1 Introduction

The post-Lisbon EU has embedded its ambition to become the most competitive and innovation-oriented economy in the world in both its constitutional documents, TEU and TFEU (MacGregor Pelikánová, 2019a), and its policies and strategies, such as Europe 2020 Strategy (MacGregor Pelikánová, 2019b). The command for sustainability, as endorsed by the United Nations (UN) translates into the EU strategy as smart, sustainable and inclusive growth (Turečková & Nevima, 2020). Both, the UN and EU, are well aware that sustainable growth in the 21st century is possible only with the positive involvement of information systems and information technologies (IS/IT) and hence investment in Research & Development (R&D) and protection of intellectual property (IP) are both indispensable (MacGregor Pelikánová, 2019b). Over the last decade, the gross domestic product (GDP) growth rate was very diversified throughout the EU member states and has not surpassed the highly desired 2% threshold, while at the same time, almost every EU member state has fallen quite short of the goal of R&D expenditure of 3% of GDP (MacGregor Pelikánová, 2019b). The EU wanted to break this circle and force EU member states to spend at least 3% of GDP on R&D and so achieve more than a 2% of growth of GDP on an ongoing basis. The Europe 2020 Strategy has not (yet) achieved that, but still promising signs and voices emerged. However, all that was challenged promptly and brutally with the emergence of the Covid-19 pandemic bringing, not only the EU, the worst economic recession since the Great Depression.

Undoubtedly, the year 2020 was a year of pandemic crisis. However, crises are times of both challenges and opportunities and the EU could use the Covid-19 pandemic as a great impulse to definitely cross the Rubicon and become a truly modern, green and sustainably growing economy based on knowledge and other IP assets. Is this realistic? What messages do the years 2018-2021 convey about the GDP growth, R&D spending and Covid-19 management? Are these three factors via their indicators interrelated? Who are the winners and losers and why? Similarly, exploring the movement of FDI can bring important characteristics of recent macro trends (Jindřichovská et al,

2020). Nevertheless, the three above mentioned questions stimulate the embracement of a holistic and empiric perspective about the effectiveness, efficiency and legitimacy of the current approach. In order to achieve that, after this introduction (1), a literature and framework review (2) should be established to provide a solid background for a search and processing of data via a proper methodology (3) and facilitate the collection of fresh relevant results and their discussion (4). The ultimate answers to the mentioned three questions are the backbone of the conclusion (5).

2 Literature and Framework Review

The desire for sustainable growth under auspices of common values (Washburn et al. 2018) is deeply embedded in human society and is an integral part of Christian civilization (MacGregor Pelikánová et al., 2021a). It reflects value judgments about justice in distributing and using resources (MacGregor Pelikánová et al., 2021b) and is founded upon the Aristotle´s idea of distribution of awards according to merits as embedded in a geometrical model of public law distributive justice and an arithmetical model of corrective, aka rectificatory private justice, and provides the general direction for the future (Balcerzak & MacGregor Pelikánová, 2020). The Old Testament and New Testament both dealt with it (MacGregor Pelikánová & Hála, 2021), while policies, reforms and endeavours of the Emperor Constantine in the Roman Empire and Emperor Justinian in the Byzantine Empire clearly included them and this led to both a political and economic success (MacGregor Pelikánová, 2017). These Biblical and Continental law origins further developed in the following two Millennia. Indeed, the next milestones were the rediscovery of the Roman law in Bologna, the European Middle Ages agricultural and political organization and the emergence of the modern concept of sustainability aka *Nachhaltigkeit* in the Hanseatic sphere (MacGregor Pelikánová et al, 2021b) and the publication of the influential book *Einfachste den höchsten Ertrag und die Nachhaltigkeit ganz sicher stellende Forstwirthschafts-Methode* by Emil André in 19th century in Prague (Balcerzak & MacGregor Pelikánová, 2020). The global and perpetual dimension of the concept of sustainability (Schüz, 2012) based on three pillars: environmental (planet), social (people) and economic (profit) was been endorsed by UN in 1948 via the Universal Declaration of Human Rights (UDHR) (MacGregor Pelikánová et al, 2019). Progressively, it has been embraced by businesses via their Corporate Social Responsibility (CSR) aka reponsibility towards the entire society and its sustainable development (Idowu et al., 2020; van Marrewijk, 2003), especially in the international and cross-border context (Pantazopoulos, 2014). -Further, it has become linked to business ethics and even beyond, meaning the general direction for the future (Zikic, 2018).

The crises in the 1970s as well those during 2007-2009 have accelerated the shifting of the preference pendulum between the Keynesian economic theory, advancing government intervention and focusing on the interaction between savings and investment, and the neoliberalist economic ideology championing privatization, deregulation, austerity and a reduction in government spending, see the Chicago school with Milton Friedman and the modern Austrian school with Friedrich Hayek (Balcerzak & MacGregor Pelikánová, 2020). This evolution took another turn in 2015, when the UN General Assembly adopted the famous Resolution Transforming our world: the 2030 Agenda for Sustainable development with its 17 Sustainable Development Goals (SDGs) and 169 associated targets (UN Agenda 2030) (MacGregor Pelikánová et al., 2021b). SDG 8, to "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" has 12 targets, including Target 8.1 to sustain an annual growth rate of GDP per capita and in particular at least 7% for the least developed countries. SDG 9, to "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" has 8 targets, including Target 9.5 with the indicator of R&D expenditure as a proportion of GDP and the indicator of researchers (in full-time equivalent) per million inhabitants. Innovation potential was also heavily explored outside Europe, specifically in China, which is known for its long-term innovation programme (Jindřichovska & Ugurlu, 2021).

The EU has fully endorsed the UN Agenda 2030 and incorporated all 17 SDGs, including SDG 8 and SDG 9, in its policies and law (MacGregor Pelikánová & MacGregor, 2021). This is obviously implied even by a cursory overview of the Europe 2020 Strategy prioritizing smart, sustainable and inclusive growth (MacGregor Pelikánová, 2019a) and Directive 2013/34/EU enacting the duty of non-financial statement reporting for certain businesses (MacGregor Pelikánová & MacGregor, 2021). Creative works from the sphere of copyright, and inventions from the sphere of industrial property are intellectual property, they are products of costly processes which can, but do not need to, culminate in the applicable innovation (MacGregor Pelikánová, 2019b) – a new idea might be incorporated into the business (Kalanie, 2018). The EU appears confident and that an increase in spending on R&D will generate a growth in creative works and inventions, leading to more innovations and to stimulating GDP growth (Billon et al, 2017) and competitiveness (Terzić, 2017; Turečková, 2016). It is correct to assume that R&D needs to be financed and that such an investment should lead to innovation activities and the transposition and implementation of new technologies in the modern e-business setting and operation (Polanski, 2015). However, it needs to be emphasized that this process includes a myriad of risks and often ends in failure (MacGregor Pelikánová, 2019b). Empirical studies point out that just a small part of financed innovation activities lead to practical results and that private sector creativity (Zollo et al., 2018) and the size of the support by private enterprises are often the pivotal factors and determinants in this complex system (Damijan et al., 2017; Jančičkova et al, 2021). Since the EU has been more dominated by technocratic than political or other institutions (Lianos, 2010), then its strategies tend rather towards supranational technocratic planning and undermine concerns about the effectiveness, efficiency and legitimacy of the proposed "equation": spending on R&D = more creative works and inventions = more innovations = GDP growth = EU as the world (economic) leader. The EU set, via the Europe 2020 Strategy, that Gross domestic expenditure on R&D as a percentage of GDP (GERD) has to be at least 3% (MacGregor Pelikánová, 2019b). If the GERD in this amount is met, then the EU will attain an even higher rate of economic growth than the US (Balcerzak, 2015), if not, then the EU would lose any chance to be among the world (economic) leaders (Walburn, 2010). Since the EU was well aware that a GERD of at least 3%, and the desired annual GDP growth massively exceeding 2%, cannot be achieved only from above, from a bureaucratic desk, the EU law and policies have attempted to induce an active involvement at large and thusly the employment of the generally advanced multi-stakeholder model (Bakker et al, 2019) and cross-sector partnership are indispensable (Van Tulder et al, 2016; Van Tulder & Keen, 2018). Well, sometimes ambitious plans are but castles in the air. In 2010, the GERD in the EU reached only 1.9%, while in the US it was 2.6% and in Japan 3.4% - this was bad.. However, even worse was that in 2019 the GERD in the EU was still a meagre 2.2% (Eurostat, 2021). And then the ugly emerged – the Covid-19 pandemic.

Doubtless, crises magnify differences and perhaps they are not only challenges, but can also be opportunities (D´Adamo & Lupi, 2021). Allegedly, Albert Einstein wrote in his letter to a magazine named Crises the following sentences: "*It is crisis that brings progress. It is in crisis that inventiveness, discovery and great strategy are born*" and arguably, he stated as well:" *Without challenges, life becomes a routine, a slow agony*." Well it is beyond the scope of this paper to verify whether this is the exact wording, instead it is fully satisfactory to merely observe and summarize the obvious - the Covid-19 aka SARS Covid 2 virus emerged in its original coronavirus form in 2002 (Rasool & Fielding, 2010), turned into the version MERS in 2012 and caused a global pandemic in 2020 (Armani et al, 2020). This pandemic has been accompanied, among other problems, the worst economic crisis since the 1930´s (MacGregor Pelikánová et al, 2021) and a massive disruption of the capital market (Pardal et al, 2020) as well as the stock market (Hasan et al, 2021). Negative impacts have been massive, global and have expanded prior inequalities and issues (Ashford et al., 2020). After several months of hesitation, the EU did break its silence with respect to the spread of Covid-19 and the related dramatic fall of the GDP through a set of strong and ambitious declarations made by the President of the European Commission, Ursula von der Leyen, such as 'We must not hold onto yesterday's economy as we rebuild' in May 2020 and the "Covid crisis to relaunch the EU" in

December 2020 (WEF, 2020). Pursuant to these declarations, it appears that Covid-19 is a great opportunity for the EU to be more green, competitive and sustainable. Consequently, Covid-19 is to be effectively and effectively overcome, the GERD should go up along with annual GDP growth, while reducing differences between the EU member states, and the EU should become the world leader. The answers to the set of three research questions should be obvious. A highly positive message should be conveyed about the 2018-2021 GDP and GERD growth and COVID-19 management. These three factors should be inter-related in a synergetic symbiosis as testified to by their indicators. The EU and EU member states should be winners, without leaving somebody behind. And what is the reality, what does the data, properly methodologically processed, tell us?

3 Methodology and data

The materials, data and methods are selected to address the principal research aim, i.e. to answer all three set questions. The correlations of the arguably interrelated three indicators can be assessed by various methods. Considering the nature of the involved indicators and the stage of the research, it is highly appropriate and relevant to take advantage of visual persuasion (Miller, 2007) and opt for their visual synthesis (Finke & Slayton, 1988). Namely, the visual simultaneous and consecutive projection of the following indicators: annual GDP growth, GERD and Covid-19 Pilot Index will be presented.

GDP is a popular standard measure of the value added that is created through the production of goods and services in a country during a certain period. Two methods are used for GDP ranking – nominal (the highest total) and the so called ppp - GDP per capita (the highest amount after dividing the nominal GDP by the total population). Although the first ten countries are very similar during the first decade, based on both the nominal and ppp method, naturally, once moving further in these two lists, significant differences emerge. Therefore, for the comparative purposes involving EU members states, with naturally dramatically different economic evolutions (Western v. Post-communist, etc.) and the size of population (Germany v. Malta), it appears as an optimal choice to use a dynamic approach instead of a static approach, i.e. to observe the changes of GPD over time, aka annual % GDP growth for each consecutive year. The sources of such data, along with predictions, are the Eurostat database and International Monetary Fund (IMF) database.

GERD was selected as one of the key indicators regarding the Europe 2020 Strategy and the ratio between Gross Domestic Expenditure on R&D and GDP expressed in percentage continues to be used by the EU. Indeed, this total intramural expenditure on R&D performed in the national territory during a specific reference period is used as a popular indicator by the OECD, see Frascati Manual 2015, and by the UN in the relation to SDGs, see above.

The last of the indicator triad used for this paper is the Covid-19 Pilot Index, aka Covid Index of Epidemic Control (CIEC) as established by a group of top experts for the UN, the OECD and the public-at-large (Sachs et al, 2020). The Covid-19 Pilot Index is a new instrument to measure each country´s performance over the three dimensions: mortality rate (M = number of deaths by/with Covid-19 per one million inhabitants) ideally as little as possible, Effective Reproduction (ERR) which should be < 1 and efficiency control (EC). The formula for ERR(t) = N(t) x P(t) x D(t)x S(t) and the efficiency means comparing the decline of ERR(t) with N(t), where N(t) is the average number of contacts per day for an individual in the community. Hence the Covid-19 Pilot Index (CIEC) is calculated by averaging across the three variables: M, ERR and ECE (Sachs et al, 2020).

The visualization is to be done by a set of graphs targeting two or even all three of these indicators in a dynamic manner. The visualization covers not only EU member states, but, for comparative purposes as well, states with which the EU compares itself with respect to GDP growth, R&D expenditure (GERD) and COVID-19 management (CIEC) – Japan, the USA, and South Korea.

Naturally, such a visualization calls for a critical, comparative and holistic approach, which can be materialized via Meta-Analysis (Glass, 1976; Schmidt & Hunter, 2014) refreshed by critical

glossing (Huang & Lin, 2014) and Socratic questioning (Areeda, 1996). This should permit an academically sufficiently robust answer to all three set questions.

4 Empirical results

The provided background, along with the three set questions, leads to the processing of the available data while taking advantage of the synthesis and visualization. The available data includes GPD% growth for 2020 and its forecast for 2021, GERD for 2018 and 2019 and the Covid-19 Pilot Index aka CIEC for 2020.

Firstly, the visualization is done while juxtaposing the most recent data, i.e. a forecast of GDP% growth for 2021, realized research spending aka GERD for 2019 and the Covid-19 Pilot Index for 2020. The time sequence is logical and acceptable, i.e. firstly R&D is done and paid (2019) and then this will help to address Covid-19 (2020) and so protect the GDP% growth (2021). Is this the correct message, are these three indicators interrelated and are EU member states winners? The most current graph in the below Figure 1 provides several interesting suggestions.

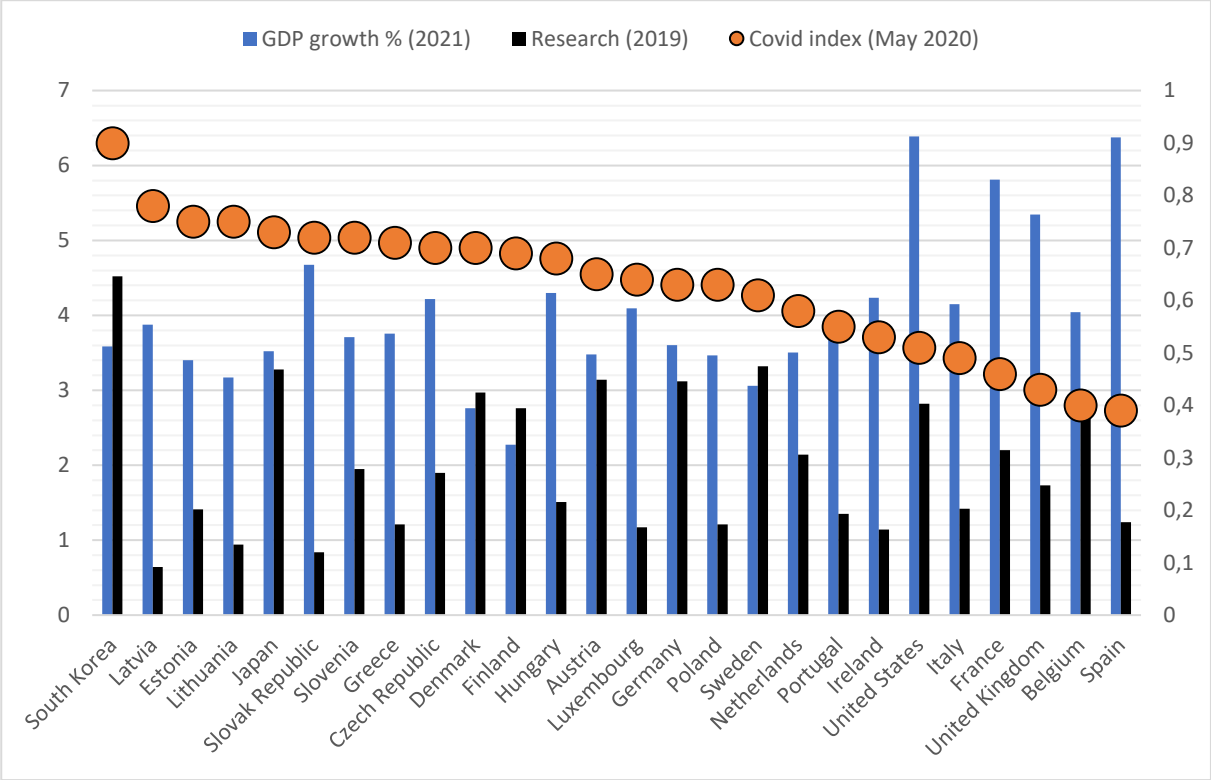


Fig. 1. GERD for 2019, Covid-19 Pilot Index for 2020 and forecast GDP% growth for 2021 (Source: Authors´own processing based on Eurostat and IMF database and Sachs et al, 2020).

The message offered by the graph visualizing the most current data is that there are differences regarding each of the selected three indices. The range regarding forecast GDP% growth for 2021 is between 2.2% (Finland) and 6.2% (Spain), the range regarding GERD for 2019 is between 0.8% (Latvia) and 3.2% (Sweden), regarding CIEC is between 0.38 (Spain) and 0.75 (Latvia). The forecast of GDP% growth, GERD and CIEC appear unrelated, excepting a negative relation between forecast GDP% growth and CIEC, see Italy, France, the UK, Belgium and Spain. Winners seem to be Central European countries keeping high GDP% growth as well as CIEC, i.e. controlling strongly Covid-19 without totally freezing their economy. Scandinavian countries have, despite the expected high GERDs, rather a low GDP% growth and a weaker Covid-19 management. This might be explained by the already well observed particularities of the Nordic entrepreneurial policy (Dvouletý, 2017) as well as a postponed effect (Kotlebova et al, 2020), i.e. GERD might contribute to the long-term

sustainable development and lead to the continuing, stable and long-term GDP growth and management of challenges such as Covid-19. If true, then the winners are EU member states satisfying the set target 3% for GERD, i.e. Baltic, Scandinavian and BENELUX countries and Germany, while the losers are South European countries. In this context, it is relevant to emphasize prior comparative studies involving selected EU member states and the top world leader states, such as about the US and Germany as important players on the market with innovations benefiting by the R&D advanced massively by the private sector and so contributing to GDP growth (Kotlebova et al, 2020).

Secondly, the visualization is done while focusing more on the longitudinal dynamics of the relationship between the achieved GDP% growth for 2020, forecast of GDP% for 2021 and CIEC for 2020. The dynamic graph regarding GDP% growth evolution in Figure 2, below, provides several interesting suggestions.

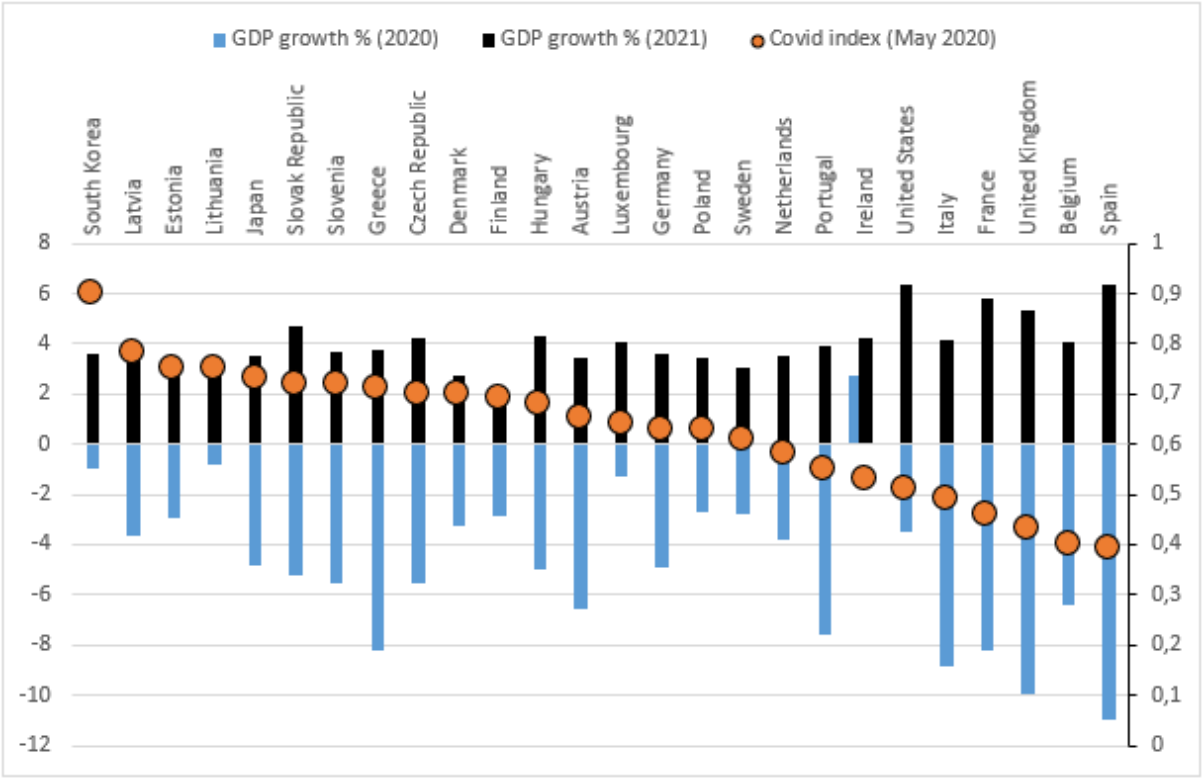


Fig. 2. Covid-19 Pilot Index for 2020 and its relation to GDP% growth for 2020 and 2021 (Source: Authors´own processing based on Eurostat and IMF database and Sachs et al, 2020).

The message offered by the graph visualizing dynamics regarding GDP% growth is that there are no differences in the GDP trends, i.e. all states were in "red numbers" in 2020 and should be in "black numbers" in 2021. The only exception is Ireland, where the GDP growth happened in both years, i.e. Irish GDP has grown by 2.3% in 2020 and by 4% in 2021. There is no correlation with respect to CIEC. The winners are obviously Ireland, Lithuania, and Luxembourg, because their GDP did not dramatically drop in 2020, it should grow nicely in 2021 and at the same time they have managed Covid-19 in a decent manner. The losers are those who are losing both on GDP and Covid-19 management, such as Italy (-9% and 4% = 5% GDP% growth for 2020-2021 along with only 0.5 CIEC) and Spain (-11% and 6% = -5% GDP% growth for 2020-2021 along with only 0.4 CIEC). It is worth remembering that the prior graph, Fig. 1, indicated an extremely low GERD for South European countries, i.e. only slightly over 1%. Speculatively, it might be proposed that this confirms the proposition about the long-term effect of R&D and about the unsustainability of the approach of "saving" on R&D.

Thirdly, the visualization is done while focusing more on the longitudinal dynamics of the relationship between the achieved GERD for 2018 and 2019 and CIEC for 2020. The dynamic graph regarding the GERD evolution in Figure 3, below, provides several interesting suggestions.

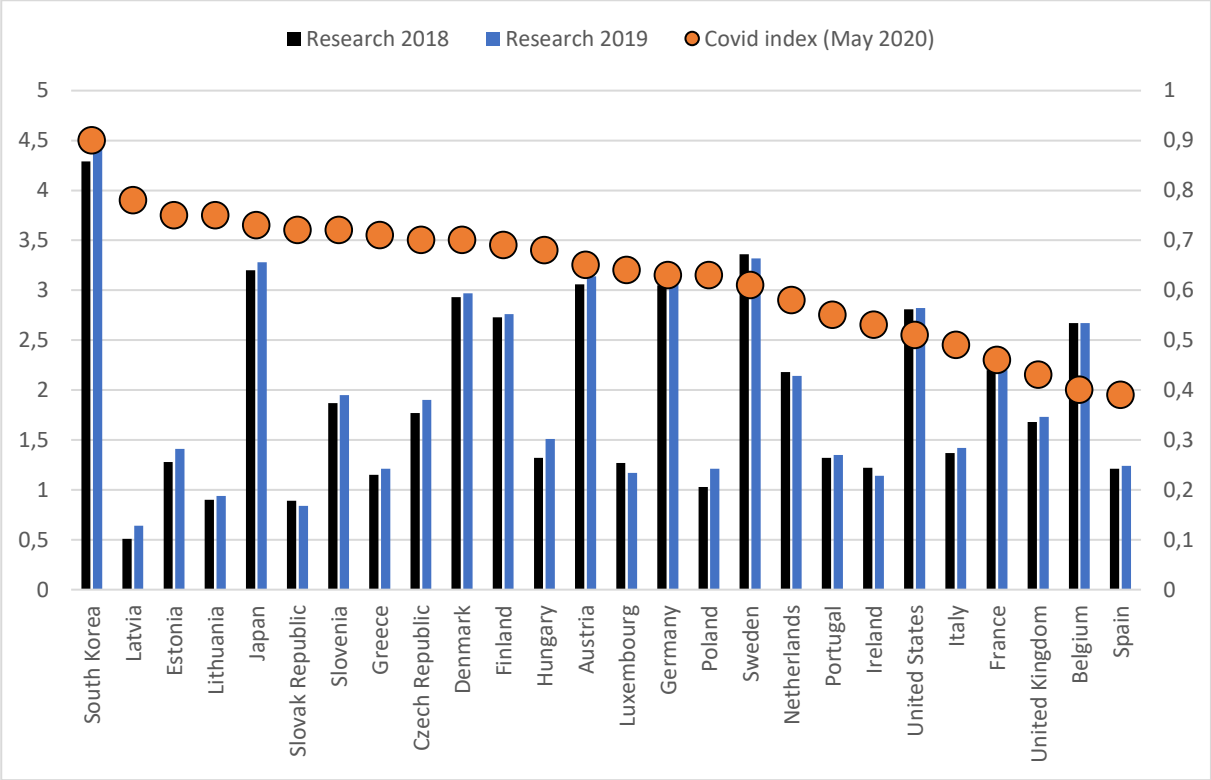


Fig. 3. Covid-19 Pilot Index for 2020 and achieved GERD for 2018 and 2019 (Source: Authors´own processing based on Eurostat and IMF database and Sachs et al, 2020).

The message offered by the graph visualizing dynamics regarding the GERD evolution is that EU member states dramatically differ in their GERD, i.e. each EU member state has a completely different willingness to spend on R&D, while the consistency is maintained, i.e. each EU member state spent basically the same on R&D in 2018 and 2019. Among EU member states, there is either no correlation or just a weak correlation between GERD 2018-2019 and CIEC 2020, i.e. basically only Spain shows how devasting it can be to save on R&D. However, a very strong positive and stable relationship between GERD and CIEC is to be observed in re South Korea and Japan. Among EU member states, a very positive outlook is shared by Austria, Germany, Sweden systematically spending over 3% of GDP on R&D and enjoying a pretty high CIEC. On the other side of the spectrum are EU member states spending very little on R&D, see South European countries with a GERD systematically under 50% of the target 3%, i.e. Portugal, Italy, Greece, Spain. This might be reminiscent to the Eurozone crises with the pejorative acronym for the worst EU member states – PIGS.

5 Conclusion

Undoubtedly, the Covid-19 pandemic has been testing the sustainability strategy in each and every country worldwide, including the addressing of the sustainable economic growth (SDG 8) and of resilient infrastructure, industrialization and innovation (SDG 9) in the EU. The idea and determination to invest in R&D in order to achieve a GDP growth and a capacity to manage crises such as the Covid-19 pandemic is worthy of a complex testing. Consequently, it is highly relevant to visualize the synthesis of three partially overlapping indicators – GDP % growth materialized in 2020 and forecast for 2021, the GERD Index materialized in 2018 and 2019 and the Covid-19 Pilot Index

achieved in 2020. The conveyed message is that the EU member states differ dramatically in their GDP% growth, GERD and CIEC and, so far, there are no signs forecasting the reduction of these inter-state differences. These three indicators and underlying factors are not related in an obvious and robust manner, but still signs of mutual influence can be observed in a longitudinal manner. Boldly, the increase in spending on R&D does not bring a fast and exponential GDP growth or Covid-19 immunity, instead it is rather one of instruments to be employed in order to develop a sustainably growing setting. Consequently, winners are those not trading constant hard-work and long-term investments for immediate gratification and abrupt growth. However, it would be shallow to jump to the "conventional" conclusion about the 'responsible North' sector of Europe and the 'self-indulgent' Southern sector of Europe, see the Eurozone crisis with bad PIGS states. Even less accurate would it be to follow the political leadership, i.e. neither Germany nor France should be considered as perfectly coping with GDP% growth, GERD and CIEC, Instead, it needs to be humbly admitted that EU member states share different traditions and cultures and each of them is inclined to find its particular way through the complex thicket of indicators in order to achieve a smart, sustainable and inclusive growth. It appears that the Europe 2020 Strategy was correct regarding the priorities (goals) but not so much regarding the pathway to them.

Naturally, this study and the Meta-analysis of a such synthesis of key indicators has inherent limitations and the statements proposed above are definitely conclusive. Definitely, the longitudinal aspect has to be developed and more numerous ongoing, both theoretical and practical, studies need to be completed over time in order to achieve academically sufficiently robust conclusions. In particular, longitudinal studies should focus on the so far "overpaying, but underperforming" Scandinavian countries and prima facia "unstable" Southern countries, perhaps these countries-extremities can bring very valuable, pioneering and creative ideas. After all, a sustainable growth is not a mechanic task.

6 Acknowledgement

This research and resulting paper are the outcome of Metropolitan University Prague research project no. 87-02 "International Business, Financial Management and Tourism" (2021) based on a grant from the Institutional Fund for the Long-term Strategic Development of Research Organizations.

References

[1] Armani, A.M., Hurt, D.E., Hwang, D., et al., 2020. Low-tech solutions for the COVID-19 supply chain crisis. *Natural Review Materials*, vol. 5, pp. 403–406. DOI: 10.1038/s41578-020-0205-1.

[2] Areeda, P.E., 1996. The Socratic method. *Harvard Law Review*, vol. 109, issue 5, pp. 911-922.

[3] Ashford, N.A., Hall, R.P. et al., 2020. Addressing Inequality: The First Step Beyond COVID-19 and Towards Sustainability. *Sustainability*, vol. 12, 5404. DOI: 10.3390/su12135404

[4] Bakker De, F.G.A., Rasche, A. & Ponte, S., 2019. Multi-Stakeholder Initiatives on Sustainability: A Cross-Disciplinary Review and Research Agenda for Business Ethics. *Business Ethics Quarterly*, vol. 29, issue 3, pp. 343-383. DOI: 10.1017/beq.2019.10.

[5] Balcerzak, A.P. 2015. Europe 2020 Strategy and Structural Diversity Between Old and New member States, Application of Zero Unitarization Method for Dynamic Analysis in the Years 2004-2013. *Economics and Sociology*, vol. 8, issue 2, pp. 190-210. DOI: 10.14254/2071-789X.2015/8-2/14.

[6] Balcerzak, A. & MacGregor Pelikánová, R. 2020. Projection of SDGs in Codes of Ethics – Case study about Lost in Translation? *Administrative Sciences*, vol. 10, issue 4, pp. 1-18. Paper 95. DOI: 10.3390/admsci10040095.

[7] Billon, M., Marco, R. & Lera-Lopez, F., 2017. Innovation and ICT use in the EU: an analysis of regional drivers. *Empirical Economics*, vol. 53, issue 3, pp. 1083-1108.

[8] D´Adamo, I. & Lupi, G., 2021. Sustainability and Resilience after COVID-19: A Circular Premium in the Fashion Industry. *Sustainability*, vol. 13, 1861. DOI: 10.1080/1097198X.2017.1280302.

[9] Damijan, J., Kostevc, Č. & Rojec, M., 2017. Exporting status and success in innovation: evidence from CIS micro data for EU countries. *The Journal of International Trade & Economic Development*, vol. 26, issue 5, pp. 585-611. DOI: 10.1080/09638199.2016.1271819.

[10] Dvouletý, O., 2017. Determinants of Nordic entrepreneurship. *Journal of Small Business and Enterprise Development*, vol. 24, issue 1, 12-33. DOI: 10.1108/JSBED-07-2016-0104.

[11] Eurostat, 2021. *Gross domestic expenditure on R&D (GERD*). [online]. [2021-6-22]. Available from: https://ec.europa.eu/eurostat/databrowser/view/t2020_20/default/table?lang=en

[12] Finke, Ronald A. & Slayton, Karen. 1988. Explorations of creative visual synthesis in mental imagery. *Memory & Cognition*, vol. 16, pp. 252–257. DOI: 10.3758/BF03197758.

[13] Glass, G.V. 1976. Primary, secondary, and meta-analysis of research. *Educational Researcher*, vol. 5, issue 10, pp. 3–8.

[14] Hasan, B., Mahi, M., Sarker, T. & Amin, R. 2021. Spillovers of the COVID-19 Pandemic: Impact on Global Economic Activity, the Stock Market, and the Energy Sector. *Journal of Risk and Financial Management*, vol. 14, issue 5, p. 200. DOI: 10.3390/jrfm14050200

[15] Huang, Lo-Li & Lin, Chih-Cheng. 2014. Three approaches to glossing and their effects on vocabulary learning. System, 44, 127-136. DOI: 10.1016/j.system.2014.03.006.

[16] Idowu, S. O., Schmidpeter, R., & Liangrong, Z. 2020. *The Future of the UN Sustainable Development Goals: Business Perspectives for Global Development in 2030*. New York, U.S.: Springer.

[17] Jančičková, L. & Pakšiová, R. 2021. Super-Deduction for Research and Development in Slovak Companies. In *3rd International Conference on Decision Making for Small and Medium-Sized Enterprises (DEMSME 2021)* : Conference Proceedings. - Karviná : Silesian University in Opava. School of Business Administration in Karviná, 2021. ISBN 978-80-7510-456-4, pp. 264-275.

[18] Jindřichovská. I., Ugurlu. E. & Thalassinos, E. I. 2020. Exploring the trend of Czech FDIs and their effect to institutiona Envorment, *International Journal of Economics & Business Administration (IJEBA),* 8(1): 94-108.

[19] Jindřichovská, I. & Uğurlu, E. 2021. EU and China trends in trade in challenging times. Journal of Risk and Financial Management, vol. 14, issue 2, p. 71. *Journal of Risk Financial Management.* DOI: 10.3390/jrfm14020071

[20] Kalanje, Ch., 2018. *Role of Intellectual Property in Innovation and New Product Development. WIPO*. [online]. [2021-6-22]. Available from: http://www.wipo.int/sme/en/documents/ip_innovation_development_fulltext.html

[21] Kotlebova, J., Arendas, P. & Chovancova, B., 2020. Government expenditures in the support of technological innovations and impact on stock market and real economy: the empirical evidence from the US and Germany. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, vol. 15, issue 4, pp. 717–734. DOI: 10.24136/eq.2020.031.

[22] MacGregor Pelikánová, R. 2017. Constantine´s Christianity for the (Dis)integrated EU – Déjà vu of Constantine's Roman governance reflecting of the mistrial of Jesus for EU? *Dialogo*, vol. 4, issue 1, pp. 81-98. DOI: 10.18638/dialogo.2017.4.1.8.

[23] MacGregor Pelikánová, R. 2019a. Corporate Social Responsibility Information in Annual Reports in the EU – Czech Case Study. *Sustainability*, vol. 11, p. 237. DOI: 10.3390/su11010237.

[24] MacGregor Pelikánová, R. 2019b. R&D expenditure and innovation in the EU and selected member states. *JEMI – Journal of Entrepreneurship, Management and Innovation*, vol. 15, issue 1, pp. 13-33. DOI: 10.7341/20191511.

[25] MacGregor Pelikánová, R. & Hála, M. 2021. CSR Unconscious Consumption by Generation Z in the COVID-19 era – Responsible Heretics not Paying CSR Bonus? *Journal of Risk and Financial Management,* vol. 14, issue 8, p. 390. DOI: https://doi.org/10.3390/jrfm14080390.

[26] MacGregor Pelikánová, R. & MacGregor, R.K. 2021. The Covid-19 As Interpretation Instrument for the Content of Corporate Social Responsibility and its Reporting in the EU. *The Lawyer Quarterly*, vol. 2, pp. 305-322.

[27] MacGregor Pelikánová, R., MacGregor R. & Černek, M. 2021a. New trends in codes of ethics: Czech business ethics preferences by the dawn of COVID-19. Oeconomia Copernicana, vol. 21, issue 4, pp. 973–1009. DOI: https://doi.org/10.24136/oc.2021.032.

[28] MacGregor Pelikánová, R., Němečková, T. & MacGregor, R.K. 2021b. CSR Statements in International and Czech Luxury Fashion Industry at the onset and during the COVID-19 pandemic – Slowing Down the Fast Fashion Business? *Sustainability,* vol. 13, issue 7, p. 3715. DOI: 10.3390/su13073715.

[29] Marrewijk, M. 2003. Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics*, vol. 44, pp. 95-105. DOI: 10.1023/A:1023331212247.

[30] Thomas. 2007.Visual persuasion: A comparison of visuals in academic texts and the popular press. *English for Specific Purposes*, vol. 17, issue 1, pp. 29-46. DOI: 10.1016/S0889-4906(97)00029-X.

[31] Pantazopoulos, S. E. 2014. Towards a coherent framework of transnational corporations' responsibility in International environmental law. *Yearbook of International Environmental Law*, vol. 24, issue 1, pp. 131–165. DOI: 10.1093/yiel/yvu059.

[32] Pardal, P., Dias, R., Šuleř, P. et al., 2020. Integration in Central European capital markets in the context of the global COVID-19 pandemic. *Equilibrium. Quarterly Journal of Economics and Economic Policy*, vol. 15, issue 4, pp. 627–650. DOI: 10.24136/eq.2020.027.

[33] Polanski, P.P., 2015. Towards the Single Digital Market for e-Identification and Trust Services. *Computer Law & Security Review*, vol. 31, issue 6, pp. 773-781. DOI: 10.1016/j.clsr.2015.09.001.

[34] Rasool, S.A. & Fielding, B.C., 2010. Understanding Human Coronavirus HCoV-NL63. *Open Virology Journal,* vol. 58, issue 7, pp. 76-84. DOI: 10.2174/1874357901004010076

[35] Sachs, Jeffrey, Schmidt-Traub, Guido, Kroll, Christian et al. 2020 The Sustainable Development Goals and Covid-19. *Sustainable Development Report 2020*. Cambridge: Cambridge University Press.

[36] Schmidt, F.L. & Hunter, J.E., 2014. *Methods of Meta-Analysis – Correcting Error and Bias in Research Findings.* London, UK : SAGE.

[37] Schüz, M., 2012. Sustainable Corporate Responsibility – The Foundation of successful Business in the New Millennium. *Central European Business Review*, vol. 1, issue 2, pp. 7-15. DOI: 10.18267/j.cebr.12.

[38] Terzić, L., 2017. The Role of Innovation in Fostering Competitiveness and Economic Growth: Evidence from Developing Economies. *Comparative Economic Research*, vol. 20, issue 4, pp. 65-81. DOI: 10.1515/cer-2017-0028.

[39] Turečková, K., 2016. Sectoral specialization as a source of competitiveness: case study on ICT sector in V4+ countries. In: *Proceedings of the 3rd International Conference on European Integration 2016*. Ostrava: VŠB-TU Ostrava, pp. 1023-1029. ISBN 978-80-248-3911-0.

[40] Turečková, K. & Nevima, J., 2020. The Cost Benefit Analysis for the Concept of a Smart City: How to Measure the Efficiency of Smart Solutions? *Sustainability*, vol. 12, issue 7. DOI: 10.3390/su12072663.

[41] Van Tulder, R., Seitanidi, M.M., Crane, A. & Brammer, S., 2016. Enhancing the Impact of Cross-Sector Partner-ships. Four Impact Loops for Channelling Partnership Studies. *Journal of Business Ethics*, vol. 135, pp. 1-17. DOI: 10.1007/s10551-015-2756-4.

[42] Van Tulder,R & Keen, N., 2018. Capturing Collaborative Challenges: Designing Complexity-Sensitive Theories of Change for Cross-Sector Partnerships. *Journal of Business Ethics*, vol. 150, pp. 315-332. DOI: 10.1007/s10551-018-3857-7.

[43] Washburn, N. T., Waldman, D. A., Sully de Luque, M. F., & Carter, M. Z. 2018. Executives’ stakeholder values in the prediction of work process change. *Journal of Management Studies*, vol. 55, pp. 1423-1451. DOI: 10.1111/joms.12394.

[44] World Economic Forum, 2020. Ursula von der Leyen: *'We must not hold onto yesterday's economy as we rebuild'* [online]. [2021-6-22]. Available from: https://www.weforum.org/platforms/covid-action-platform/articles/europe-future-ursula-von-der-leyen-covid19-coronavirus-crisis

[45] Walburn, D., 2010. Europe 2020. *Local Economy*, vol. 25, issue 8, 699-702. DOI: 10.1080/02690942.2010.533420.

[46] Zikic, S. A. 2018. Modern concept of sustainable development. *Progress in Economics Sciences*, vol. 5. DOI: 10.14595/PES/05/009.

[47] Zollo, L., Rialti, R., Ciappei, C. & Boccardi, A., 2018. Bricolage and Social Entrepreneurship to Address Emergent Social Needs: A "Deconstructionist" Perspective. *Journal of Entrepreneurship, Management and Innovation (JEMI)*, vol. 12, issue 2, pp. 19-48. 10.7341/20181422.

APPROACHES TO ASSESSING THE EMPLOYABILITY OF UNIVERSITY GRADUATES IN THE LABOUR MARKET

Milan Šimek

VSB Technical University of Ostrava, Faculty of Economics,
17. listopadu 2172/15, 708 00 Ostrava-Poruba, Czech Republic
email: milan.simek@vsb.cz

Abstract
This paper characterizes some possible approaches that a higher education institution can use to assess the labour market employability of its graduates. These include employer surveys that usually examine the level of professional, general and soft skills, the applicability to particular jobs, and the level of remuneration. Another evaluation option is an analysis of graduate unemployment, using semi-annual statistics on graduate unemployment by individual universities, faculties and study programmes. Feedback directly from the graduates is also an important source of information, using the university's Alumni Programme. The paper presents selected results of these surveys and analyses, carried out in the period 2018-2020 at the VSB Technical University of Ostrava. The results showed that graduates of the university were well employable in the labour market in the period under review.

Keywords
university graduate, unemployment rate, employability, employer

JEL classification
J24, J44, J64

1 Introduction

The transition of graduates from education to employment has been a highly relevant topic for many years. The main reason for the continuous relevancy of this issue is the existence of barriers to transition.

An important prerequisite for making the transition as easy and successful as possible for university graduates is a well-functioning economy. This factor is considered to be of the outmost importance. An unfavourable economic situation of a country is viewed as an important barrier preventing an entry to the labour market. There are other influences such as the education system, structure of the labour market and others.

Buchtová et al. (2013) points out that university graduates are at a significant disadvantage compared to other job seekers. Insufficient or no work experience is a major obstacle to entering the labour market. Individuals who have not used the knowledge they have acquired during their studies in practice usually lack basic work habits. They also lack job contacts in the post-college period that could help them find a job as well as sufficient information about the labour market, they are not able to write a proper CV and may not be sufficiently prepared for a job interview (Sirovátka, 1997).

Kotíková (2003) quotes the mismatch between the labour market supply and the demand as the main barrier to graduates' entry into the labour market. In this context, structural unemployment is discussed meaning that unemployed individuals are offered skills or experience that will not match employers´ demand (Brožová, 2018).

Another barrier considered by Kotíková (2003) is unrealistic financial demands of graduates for the work they are expected to do, many graduates perceive their degree as a guarantee to obtain a specific financial assessment. She also states that many university graduates are unwilling to accept a job that requires a lower level of education and therefore a corresponding financial compensation. Another problem is seen in their reluctance to adapt to the requirements regarding a change of profession.

The aim of the paper is to characterize the approaches that a university could use to gain knowledge about the employability of its graduates in the labour market and to present selected results of the survey, which was carried out in the period 2018-2020 by the VSB Technical Univerzity of Ostrava.

The paper is divided into several interrelated parts. After the introductory part, selected results of empirical studies are presented having focused on the barriers to employability of university graduates in the labour market in the Czech Republic and abroad. The methodological part describes the ways universities can apply to assess employability of their graduates. The following part contains selected results of these surveys and analyses carried out in the period 2018-2020 at the VSB Technical University of Ostrava.

2 Literature review

The ability of a university graduate to find and keep a suitable job has been the subject of extensive research.

In the post-2008 period, countries have begun to look much more closely at the labour market employability of university graduates. This period saw the inclusion of graduate employability in the quality assessment of universities.

A significant barrier to graduates entering the labour market is the competition that the individual faces. This is not only the competition from their peers, but also from the older, more experienced employees. These employees have extensive experience that has been gained during their time in the labour market. Thus, a major barrier for recent graduates is the lack of practical experience, usually considered important by employers. This problem can be addressed through greater cooperation between employers and universities, as well as by taking advantage of the opportunity to complete an internship while studying at university, either in the Czech Republic or abroad. (Koucký et al., 2014).

Waldorf and You (2016) quote financial issues as a significant factor affecting graduates' transition to the US labour market. College graduates often face problems regarding finances due to the increasingly expensive higher education. Some graduates are already paying off large loans after graduation. For these reasons, they may resort to jobs that do not match their education with correspondingly lower wages.

For example, a research between 1990 and 2012 found that around one in three university-educated individuals work in jobs not requiring a university degree. (Abel, Deitz et. al., 2014)

OECD (2019) discusses the significant barriers to labour market entry for university graduates in Mexico. The problem is mainly seen as a mismatch between graduates' skills and labour market needs. Again, the lack of practical experience is cited by employers as another problem linked to both technical and other vocational skills. Employers also pointed to the lack of a relationship between the knowledge and skills acquired in university study programmes and the needs of the labour market. Another significant problem in Mexico is that higher education institutions are not flexible enough to adapt to the needs of the economy and the labour market, thereby barring the facilitation of transition of graduates into employment. OECD suggests that this situation is caused by the under-representation of employers on university governing bodies and the low ability to influence the content and delivery of degree programmes.

In their studies, Salas-Valesco (2007) and Aracil and Van der Velden (2008) considered differences in the transition of university graduates to the labour market between northern and southern Europe. The authors report that graduates studying at universities in the south of Europe, especially in the countries such as Italy and Spain, have more difficulties in entering the labour market. In contrast, graduates from northern European countries such as the UK and Norway do not have significant problems finding their first job. The authors mention that there is no uniform policy across EU countries to facilitate the transition between university and first jobs.

Balcar (2008) looks in more detail at the labour market employability of university graduates in the Moravian-Silesian region.

Gottvald et al. (2008) also look in a greater detail at the graduates of the VSB Technical University Ostrava. It has been found that soft skills of university graduates are of high importance. The skills significantly preferred by employers have been problem-solving and independence. The least valued

skills have been communication in foreign languages and entrepreneurship. The graduates mentioned independence, problem-solving abilities, an active attitude and efficiency as the most important skills.

Garcia-Aracil and Van der Velden (2008) looked at the area of skills in the European Union. Skills are considered to be an important element for sustainable economic growth contributing to the globalised economy. In their article, the authors state that higher education is usually seen as a multi-year education. Usually, students acquire only general skills during their studies. However, the contemporary society demands specific skills from graduates. Graduates can acquire these skills primarily in practice, i.e. mainly through experience, training or internships during their studies at university. These experiences can result in significant knowledge differences between graduates around the world.

Soukalová and Gottlichová (2015) explored the factors facilitating the entry of university graduates into the labour market. Analysing international studies, they have concluded that skills significantly influence graduates' employability in the labour market.

Balcar and Knob (2016) focus on whether the Czech labour market prioritizes the specific or the general skills. Based on previous studies, they ascertain that employers assign approximately equal weight to both types of skills, but the preference for specific skills is slightly more accented. However, if the focus were on general skills only, then soft skills would be considered more important by employers.

Balcar (2018), based on the study by Balcar et. al. (2011), states that the soft skills are as important and beneficial as the hard skills. Thus, they are considered an important resource ensuring effective job performance and economic growth. Even though employers give more importance to soft skills, these are not necessarily more developed. Not only in the Czech Republic, but also in other countries, specifically hard skills are taught and developed in preparation for future employment. The reason for this disharmony is the different perspectives on the importance of hard and soft skills in the labour market. Balcar (2018) thus argues that ideally, both soft and hard skills should be developed and improved during students´ education.

Koucký and Bartušek (2016) mention two ways of monitoring the labour market employability of graduates. The first option is graduate employability indicators that can be obtained from a number of administrative sources. These sources are used to determine how likely graduates are to obtain immediate employment after graduating from university and how long they will stay in a specific job. The second way is to monitor certain characteristics of the labour market employment of college graduates. The characteristics of graduates are linked with specific areas of labour market employment. Information on remuneration, the extent to which the obtained knowledge and skills are used, graduates' satisfaction with their jobs, the jobs they hold in their field of study, etc. is important. This information is obtained through the indicators provided by surveys at tertiary education level or at the level of individual schools.

3 Methodology and data

Information of various kinds can be used to assess the labour market employability of university graduates.

One of them is the information on employers' satisfaction with the "quality" of university graduates. As a rule, these are the results of questionnaire surveys of employers focusing, for example, on the level of acquired professional knowledge, hard and soft skills, etc. For example, the consistency of employers' requirements with the skills level achieved after graduation or after a certain period of employment may be analysed.

In our results section, examples of the survey conducted by the VSB-TUO in 2018 are presented. The aim of this qualitative survey among employers was to obtain information on the basis of which the VSB-TUO could better adapt its education process to the requirements of employers. The selection of employers was made from the set of employers provided in the payroll sector of the employees in the territory of at least one of the three regions: Moravian-Silesian, Olomouc and Zlín.

The selection was made in accordance with the methodology used in the Average Earnings Information System (hereinafter referred to as ISPV). 872 employers were approached as part of the questionnaire survey. The survey among employers was carried out in the form of a structured electronic questionnaire. A graduate was defined as an employee who graduated in 2013, 2014, 2015, 2016, 2017 and 2018. The aim of the survey among the employers was to obtain responses from all employers (i.e. those employing graduates of the VSB-TUO and those not employing graduates of the VSB-TUO). The questionnaire assessed the professional skills of graduates as well as their level of soft skills. For professional skills, the questions focused on the level of theoretical knowledge, language skills and ICT skills. For soft skills, the level of graduates was defined by 15 specific skills. In the case of foreign languages, employers' satisfaction with the language skills of graduates of individual faculties of VSB-TUO was also surveyed as well as their needs. The response rate was 56%, i.e. more than half of the approached employers completed the questionnaire or responded using another format (e.g. email). The survey has yielded applicable responses from 459 employers.

For the university the data on the graduates´ jobs and their remuneration are of high importance. This information can be obtained in wage-earning databases (in the Czech Republic this is, for example, the Average Earnings Information System). The statistical survey must identify the specific university and faculty the students graduated from, the year of graduation, and the study programme completed. It is also a prerequisite enabling an access the database. All personal data must be strictly anonymised.

In 2020, a survey of this type had been carried out at VSB-TUO. Its aim was to obtain information on the employability of graduates with employers according to certain criteria (occupation, field of education, faculty, region). The indicator monitored was the gross monthly salary. Employees who had completed their education at the VSB-TUO in the period 2014-2019 were considered as graduates. The survey was conducted on weighted ISPV data for the wage sector for the year 2019. The survey included a total of 7540 graduates. Selected results of that survey are presented in the following section.

In order to find out the labour market applicability of its graduates, a university can reach out to specific graduates directly, e.g. by teleconference, email, or social media A condition for the successful implementation of this approach is the existence of an up-to-date database of graduates and the legal possibility to reach out to them in bulk, i.e. the consent granted by the graduate. The university can thus obtain feedback in many areas, e.g. whether there are gaps in the education provided, or on the achieved level of general and soft competences. The graduates' evaluation of the whole training process, including their suggestions for changes in the content and scope of the curricula and other information, e.g. on their entrepreneurship, the match between the job they are doing and their field of study, etc., can also be important. The use of databases of alumni programmes at universities seems to be very useful for this purpose.

In 2018 and 2020, two surveys were conducted among the graduates of the Alumni Programme. A total of 224 graduates participated in the survey in October 2018 focusing mainly on the level of professional, general and soft competences. The graduates of VSB-TUO who met two criteria could participate in the survey. The first criterion was graduation from VSB-TUO in 2013, 2014, 2015, 2016, 2017 or 2018. The second criterion was a registration in the Alumni Programme of VSB-TUO. A total of 274 graduates of VSB-TUO participated in the November 2020 survey, which focused on the process of studying, employment, and entrepreneurship. Selected results are presented in the following chapter.

An important indicator that can be used to partially assess the employability of university graduates in the labour market is the level of their unemployment.

An important source of information for the assessment of graduate unemployment is the semi-annual statistics of the Ministry of Labour and Social Affairs (hereinafter referred to as the MPSV), which include unemployed school graduates. Another source of information for the analysis of unemployment of university graduates is the Centre for Educational Policy database, which is based on the semi-annual statistics of the Ministry of Labour and Social Affairs and the number of graduates

of individual universities and their faculties, which are obtained from the Ministry of Education, Youth and Sports.

According to the Centre for Educational Policy (hereinafter referred to as SVP), the unemployment rate of university graduates is calculated "as the ratio of unemployed graduates to the difference between the total number of graduates and the number of graduates who will continue their studies at university. (SVP, 2021)

VSB-TUO has long been monitoring the unemployment rate of its graduates in total, by faculties and study programmes.

In the results section of the paper, selected results of the evaluation of the unemployment rate of the Faculty of Economics of VSB-TUO in the years 2014-2020 are presented. An unemployed graduate in this case is described as a jobseeker registered at the Labour Office according to their place of permanent residence on a certain date (30 April or 30 September of a given year), who has not exceeded the period of 2 years since the successful completion of their studies.

4 Empirical results

In the following section, examples of the results of surveys conducted on the employability of graduates of VSB-TUO on the labour market are presented.

4.1 Skills of graduates of the Faculty of Economics of the VSB Technical University of Ostrava from the perspective of employers and graduates

From the 2018 employer questionnaire survey, information was obtained on 2196 graduates of VSB-TUO who graduated in the period 2013-2018, which represented 10% of all graduates in this period. Below, only responses regarding 669 graduates of the Faculty of Economics (11% of all graduates of the Faculty of Economics) are presented.

A total of 224 respondents (graduation period 2013-2019) participated in the survey among the graduates of VSB-TUO in 2018. 48 of them were graduates of the Faculty of Economics.

Both surveys focused on their level of professional knowledge (skills), general skills and soft skills.

Both graduates and employers rated the level of skills using the following scale:

- Extremely competent graduate: the graduate's knowledge and skills are above the level normally required of an employed worker in the organisation.
- Capable graduate: the graduate's knowledge and skills are at the level normally required of an well-established employee in the organisation.
- Ordinary graduate: the knowledge and skills of the graduate are at the normal level required of a 'newcomer' in the organisation.
- Below average graduate: the knowledge and skills of the graduate are below the level normally required of a 'newcomer' to the organisation.

In the case of professional knowledge at the time of entry into employment, employers rate graduates better than they do themselves in two cases: theoretical knowledge and its application in practice. 62% of employers rate graduates above average in the first case and 52% in the second. As regards the relevance of theoretical knowledge, there is only a 1 p.p. difference between the two ratings, with 58% of graduates rating themselves above average compared to 57% of employers.

The assessment of the general skills of the Faculty of Economics graduates at the time of entry into employment is the same in two cases, namely for foreign language and ICT. The Czech language is rated better by graduates. 84% of employers rate graduates above average, with 90% of graduates rating themselves this way. The mother tongue is rated best by both groups in this case. The level of foreign language and ICT skills are rated the same by graduates and employers at 67%.

The summary evaluation of the competences of graduates of VSB- Technical University of Ostrava from the perspective of employers and graduates is presented in Table 1.

Table 1. Skills of the graduates of the Faculty of Economics of the VSB Technical University of Ostrava from the perspective of employers and graduates

Skills		Graduates of VSB-TUO				Employers				The difference between employers, graduates
		1) %	2) %	3) %	4) %	1) %	2) %	3) %	4) %	1) + 2) %
Professional skills at the time of starting work	Level of theor. knowledge	6	48	42	4	10	52	37	1	8
	Timeliness theor.knowledge	8	50	35	6	10	47	43	0	-1
	Ability to apply theor.knowledge in practice	4	44	42	10	4	48	46	2	4
General skills at the time of starting work	Czech language	48	42	8	2	32	52	16	0	-6
	Foreign language	15	35	35	15	1	49	37	12	0
	ICT skills	15	52	29	4	11	56	32	1	0
Soft Skills	Effective communication	31	33	35	0	9	48	42	1	-7
	Cooperation	35	54	10	0	26	52	31	1	-11
	Creativity	17	46	38	0	26	28	43	3	-9
	Flexibility	35	52	10	2	37	35	26	2	-15
	Customer orientation	17	56	25	2	20	46	33	0	-7
	Productivity	29	58	13	0	14	65	20	1	-8
	Independence	35	50	13	2	21	54	25	0	-10
	Problem solving	19	56	21	4	27	35	35	3	-13
	Planning and organizing	23	58	17	2	27	49	23	1	-5
	Life long learning	27	52	19	2	17	61	19	2	-1
	Proactive approach	27	65	6	2	20	60	18	2	-12
	Stress resiliency	29	48	21	2	10	55	34	1	-12
	Exploring and orientation in information	31	54	13	2	19	74	7	0	8
	Leadership	4	40	44	13	3	44	48	4	3
	Influencing others	4	40	46	10	0	55	41	3	11

Source: Trexima, 2018. VSB-TUO, 2018. Author.

1) Extremely capable graduate
2) Capable graduate
3) Ordinary graduate
4) Below average graduate

In the case of soft skills, it can be stated that they are better evaluated by the graduates themselves, except for 3 skills. The two groups of respondents most frequently used the capable graduate rating.

The first skill that is rated better by employers than graduates is Exploring and orientation in information. 93% of employers rate graduates above average and 85% of graduates agree with them.

The second skill rated better by employers is leadership. 47% of employers rate graduates above average and only 44% of graduates rate themselves as such. 48% of employers and 44% of graduates rate themselves average for this skill. 13% of graduates even rate themselves below average.

The last skill is influencing others. Similarly, graduates are rated better by employers. 55% of employers perceive graduates above average, but only 44% of graduates rated themselves as such. Again, there are average or even below average ratings from both employers and graduates.

If we take a closer look at the individual soft skills, we can see that the overall assessment varies.

4.2 Gross monthly salary of VSB Technical University of Ostrava graduates

The following section presents selected results of the 2020 survey on the employability of VSB-TUO graduates with employers and their earnings. The survey was conducted by Trexima, spol. s.r.o. Zlín using data from the Information System on Average Earnings. The results include earnings of graduates in 2019 who were employed in the wage sector of the national economy.

The representation of the surveyed graduates by the Faculty is shown in Table 2

Table 2. Number of surveyed graduates of VSB-TUO by the Faculty

Faculty	Graduates	
	Total	%
Faculty of Civil Engineering	608	8.1
Faculty of Safety Engineering	379	5.0
Faculty of Mechanical Enginneering	1080	14.4
Faculty of Electrical Engineering and Computer Science	1404	18.7
Faculty of Mining and Geology	1065	14.2
Faculty of Material Science and Technology	843	11.3
Faculty of Economics	2091	27.4
University study programs	70	0.9
Total	7540	100.0

Source: Trexima, 2020.

Table 3 shows that the highest earnings are achieved by graduates of the Faculty of Electrical Engineering and Informatics. The median monthly earnings of CZK 39 000 are exceeded by graduates of the Faculty of Safety Engineering, the Faculty of Mining and Geology and the Faculty of Metallurgy and Materials Engineering. A lower wage was recorded for graduates of the Faculty of Economics and the Faculty of Civil Engineering.

Table 3. Gross monthly salary of VŠB-TUO graduates by the Faculty

Faculty	Gross monthly salary in CZK			
	Median	1.decil	9.decil	Estimate quality
Faculty of Civil Engineering	33 185	21 752	51 347	C
Faculty of Safety Engineering	39 702	29 057	60 916	B
Faculty of Mechanical Enginneering	38 688	27 995	57 137	A
Faculty of Electrical Engineering and Computer Science	44 019	31 858	69 730	A
Faculty of Mining and Geology	39 199	24 613	62 857	B
Faculty of Material Science and Technology	39 170	27 479	58 448	A
Faculty of Economics	34 601	23 410	57 019	A
University study programs	37 071	26 542	65 711	A

Source: Trexima, 2020.

Category A characterizes the best estimates of the median gross monthly wage with an average estimation error of ± 1.5 % (max. 3.5%).

Category B characterizes the estimates of the median gross monthly wage with an average error of ± 5.0 % (maximum 7 %).

Category C characterizes the estimates of the median gross monthly wage with an average error of ± 12.0 % (maximum 21 %).

Category D characterizes median estimates of gross monthly wages with an average error of> 21 %.

Table 4. Gross monthly salary of VSB-TUO graduates by the region

Region	Gross monthly salary in CZK			
	Median	1.decil	9.decil	Estimate quality
Prague	41 146	29778	72643	B
Central Bohemian Region	46 218	20952	74883	C
South Bohemian Region	*	*	*	*
Pilsen Region	*	*	*	*
Karlovy Vary Region	*	*	*	*
Usti Region	48 772	32775	72403	C
Liberec Region	*	*	*	*
Hradec Kralove Region	37 478	29118	57149	B
Pardubice region	36 351	28559	50831	C
South Moravian Region	36 630	28178	62806	C
Vysocina region	*	*	*	*
Olomouc Region	34 870	26473	52912	B
Moravian-Silesian Region	35 427	24900	57516	A
Zlín Region	32 856	25582	56924	C

Source: Trexima, 2020.

* values that do not meet the publication criteria

Category A characterizes the best estimates of the median gross monthly wage with an average estimation error of ± 1.5 % (max. 3.5 %).

Category B characterizes the estimates of the median gross monthly wage with an average error of ± 5.0 % (maximum 7 %).

Category C characterizes the estimates of the median gross monthly wage with an average error of ± 12.0 % (maximum 21 %).

Category D characterizes median estimates of gross monthly wages with an average error of> 21 %.

Table 4 shows that the highest earnings are achieved by graduates of the VŠB-TUO in the Ústí nad Labem Region and the Central Bohemia Region. On the other hand, the lowest valued jobs are in the Zlín Region.

4.3 Unemployment of graduates of the Faculty of Economics of VSB technical University of Ostrava

The number of the unemployed VSB-TUO graduates in the analysed period 2014-2020 had decreased from 311 persons to 49 persons as of April 30, 2020, i.e. to 15.8% of the level in the first year. This development was strongly influenced by the positive development of the Czech economy in this period.

Table 5. Number of unemployed graduates of the Faculty of Economics VSB-TUO (April 30)

		2014	2015	2016	2017	2018	2019	2020
VSB-TUO	total	311	239	217	123	69	49	49
Faculty of Economics	total	116	78	85	41	22	13	19
VSB-TUO	bachelor degree	104	81	67	36	23	16	15
Faculty of Economics	bachelor degree	36	19	26	9	6	5	4
VSB-TUO	master degree	195	154	145	84	44	32	34
Faculty of Economics	master degree	78	57	58	32	15	8	15
VSB-TUO	doctoral degree	12	4	5	3	2	1	0
Faculty of Economics	doctoral degree	2	2	1	0	1	0	0

Source: SVP, 2021. Author.

In the starting year 2014, the unemployed graduates of the Faculty of Economics accounted for 37.3% of the total unemployment of VSB-TUO graduates. Although there was also a more significant decrease in the number of the unemployed graduates of the Faculty of Economics in the period under review (to 16.4% of 2014), their share in the total number of the unemployed university graduates increased slightly to 38.8% in 2020. This development can be explained by the higher demand on the labour market for graduates of technical fields, and also by the fact that the Faculty of Economics annually produces a high number of bachelor's and master's degree graduates, one of the highest volume in the entire university.

A similar development manifested itself in the case of the unemployment of the graduates of the Faculty of Economics (and also in the case of the unemployment of all university graduates) in all three types of study. For example, as of April 30, 2020, there were only 4 graduates of bachelor's study programmes, 10 graduates of master's study programmes and no graduates of doctoral study programmes in the records of the Labour Office.

Table 6. Unemployment rate of graduates of the Faculty of Economics VSB-TUO (April 30)

		2014	2015	2016	2017	2018	2019	2020
VSB-TUO	total	6.3	4.9	4.7	3.0	1.8	1.4	1.7
Faculty of Economics	total	7.0	5.0	6.0	3.4	2.2	1.4	2.5
VSB-TUO	bachelor degree	10.1	8.1	7.0	4.4	3.3	2.6	2.7
Faculty of Economics	bachelor degree	9.7	6.1	9.9	4.5	3.5	2.8	2.5
VSB-TUO	master degree	5.3	4.3	4.3	2.8	1.6	1.2	1.6
Faculty of Economics	master degree	6.2	4.6	5.1	3.3	1.8	1.1	2.5
VSB-TUO	doctoral degree	4.9	1.7	2.1	1.3	0.9	0.5	0.0
Faculty of Economics	doctoral degree	11.1	9.1	5.9	0.0	6.7	0.0	0.0

Source: SVP 2021. Author.

Table 7 shows the number of the unemployed graduates of the Faculty of Economics according to individual study programmes.

In the case of bachelor's study programmes, as of April 30, 2020, a total of 4 graduates, three women and one man were unemployed. Two of them had completed the study programme Economics and Management and the other two the programme Economic Policy and Administration. All of them had finished their study before May 1, 2019, and all of them had worked at least once before. In this case, they were not so-called "fresh graduates".

15 unemployed graduates of the Faculty of Economics had completed a follow-up master's degree programme, 11 of them the study programme Economics and Management and 4 the study programme Economic Policy and Administration. From the point of view of gender representation, women predominated (7 persons). 10 unemployed graduates had graduated from the faculty in the period from May 1, 2019 to April 30, 2020. 6 of these graduates had already worked somewhere before their registration after graduation. Among the unemployed, full-time graduates predominated. From the point of view of regional representation, records in the districts of the Moravian-Silesian Region prevailed.

Table 8 contains a comparison of the unemployment rate of the graduates of the Faculty of Economics in total with the unemployment rate of graduates of other faculties of economics at public and state universities in the period 2014-2020.

Based on the classification of other faculties of economics as of April 30, 2020, presented in the table, it can be stated that the unemployment rate of the graduates of the Faculty of Economics is around the average value of the unemployment rates at the faculties of economics of public and state universities. The unemployment of the graduates of all the faculties of the University of Economics and Business, Prague, the Faculty of Military Leadership of the University of Defense, the Faculty of Informatics and Management of the University of Hradec Králové and the Faculty of Business and Economics of the Czech University of Agriculture has been of significantly lower value.

Table 7. Number of unemployed graduates of the Faculty of Economics VSB-TUO by study programmes (April 30)

	District	Field of study	Study	1)	2)	3)	4)	5)
B	Prostějov	Business and Management	FT	1	0	0	0	0
B	Karviná	Economic Policy and Administration	FT	1	0	0	1	0
B	Olomouc	Economic Policy and Administration	PT	1	0	0	1	0
B	Opava	Business and Management	FT	1	0	0	1	0
M	Hodonín	Business and Management	FT	1	1	0	0	0
M	Uherské Hradiště	Economic Policy and Administration	FT	1	1	0	1	1
M	Bruntál	Business and Management	FT	1	0	0	0	0
M	Frýdek-Místek	Business and Management	PT	2	1	0	1	1
M	Frýdek-Místek	Business and Management	FT	1	1	0	0	1
M	Nový Jičín	Economic Policy and Administration	FT	1	0	0	1	0
M	Nový Jičín	Business and Management	FT	2	1	0	0	1
M	Opava	Business and Management	FT	1	1	0	0	0
M	Ostrava-město	Business and Management	FT	3	2	0	3	1
M	Šumperk	Economic Policy and Administration	FT	1	1	0	1	0
M	Vsetín	Business and Management	PT	1	1	0	0	1
	Total			19	10	0	10	6

Source: MPSV, 2020. Author.

B Bachelor degree
M Master degree
FT Full time study
PT Part time study

1) Number of graduates in the records of the Labour Office of the Czech Republic as of April 30, 2020, for whom the period since the successful completion of studies did not exceed 2 years

2) Number of graduates in the records of the Labour Office of the Czech Republic who finished school in the period from May 1, 2019 to April 30, 2020

3) Number of graduates in the records of the Labour Office of the Czech Republic who finished school in the period from October 1, 2019 to April 30, 2020

4) Females

5) Haven't been employed yet

Table 8. Unemployment rate of graduates of other economic faculties of public and state universities (April 30)

Faculty	2014	2015	2016	2017	2018	2019	2020
Faculty of Military Leadership (UO)	n/a	n/a	n/a	n/a	0.5	1.1	0.4
Faculty of Business Administration (VSE)	3.8	4.2	2.7	2.5	2	1.4	0.5
Faculty of Informatics & Management (UHK)	4.4	4.5	5.2	1.9	1.8	0.8	0.9
Faculty of International Relations (VSE)	2.7	1.6	2.8	1.9	1	1.8	0.9
Faculty of Informatics and Statistics (VSE)	1.7	2.2	2.2	2.2	1	0.9	1.1
Faculty of Management (VSE)	3.8	2.9	3.4	2.4	0.8	0.9	1.3
Faculty of Economics (VSE)	3.1	3.2	2.3	2.1	0.5	1	1.5
Faculty of Economics and Management (CZU)	2.3	2.5	2.4	2.2	1.2	1	1.5
Faculty of Finance and Accounting (VSE)	3.1	2.2	1.5	1.9	1	1.1	1.8
Faculty of Business and Management (VUT)	5.4	5.1	5	3.3	1.5	1.6	2
Faculty of Economics (JU)	6.5	3.5	4.6	2.5	1.9	1.9	2.5
Faculty of Economics (VSB-TUO)	**7**	**5**	**6**	**3.4**	**2.2**	**1.4**	**2.5**
Faculty of Social and Economic Studies (UJEP)	5.8	5.8	6.7	4.4	2.8	1.3	2.7
Faculty of Economics (ZČU)	5.5	3.9	4	1.4	0.5	1.1	2.7
Faculty of Management and Economics (UTB)	4.8	3.8	3.6	2.5	1.6	1.6	2.7
The College of Polytechnics Jihlava	12.4	9.1	6	4.8	3.4	2.1	2.9
Faculty of Economics and Administration (MU)	6.3	4.9	3.1	2.9	2.8	2.2	3.1
School of Business Administration in Karvina (SU)	9.3	5.3	5.7	3.1	3.9	2.1	3.1
Institute of Technology and Business in České Budějovice	8.8	6.5	8.4	5.4	2.7	2.3	3.3
Faculty of Business and Economics (MENDELU)	8.2	6	6.1	3.2	2.2	2.3	3.7
Faculty of Economics (TUL)	5.5	5.2	4.6	3.4	2.8	2	4
Faculty of Business and Administration (UPA)	3.4	3.2	3.8	1.4	1.9	2.3	4.1
Faculty of Regional Development and International Studies (MENDELU)	16.7	8.9	6.9	4.3	2.7	4.6	7.2

Source: SVP 2021. Author.

UO – University of Defence, VŠE- Prague University of Economics and Business, UHK – University of Hradec Králové, ČZU - The Czech University of Life Sciences Prague, VUT – Brno University of Technology, JU - University of South Bohemia, VSB-TUO - VSB - Technical University of Ostrava, UJEP - UJEP University, ZCU – University of West Bohemia, UTB -Tomas Bata University in Zlín, MU – Masaryk University, SU - Silesian University, MENDELU - – Mendel University in Brno, TUL - Technical University of Liberec, UPA - University of Pardubice

5 Conclusion

The results of the investigations and analyses conducted show a good level of professional knowledge, general and soft competences of the graduates of VSB-TUO.

The gross monthly salaries are different in individual faculties, the best remunerated graduates are from the Faculty of Electrical Engineering and Computer Science. The lowest wage was recorded for the graduates of the Faculty of Economics and the Faculty of Civil Engineering. The highest earnings are achieved by the graduates of VŠB-TUO in the regions of Ústí nad Labem and the central Bohemia region. On the other hand, the least valued jobs are in the Zlín region.

Based on the classification of the faculties of economics as of April 30, 2020 it can be stated that the unemployment rate of the graduates of the Faculty of Economics is around the average value of the unemployment rates for the faculties of economics of public and state universities.

The further analyses of the unemployment of VSB-TUO graduates in the next period should:

- Evaluate the level of the unemployment of VSB-TUO graduates according to the individual faculties and study programmes as of April 30, 2021, September 30, 2021.
- Identify the causes of the unemployment of the graduates of the Faculty of Economics VSB-TUO at Labour Office CR using anonymized information from the branch of the Labour Office in the Moravian-Silesian Region, and the results of the survey of the employment of the graduates of the Faculty of Economics among graduates of VSB-TU Ostrava, members of Alumni programme 2020,

VSB-TUO monitors the employability of graduates in the labour market on a long-term basis. In order to improve the quality of teaching, it tries to modernize teaching methods and implement a more effective cooperation between students and potential employers during their studies. Also, through the services of the Career Centre, it helps the students with the choice of employment after studies. It also creates a network of contacts with alumni, through the Alumni Programme

Acknowledgements

This research was created within the project Technology for the Future. Project registration number CZ.02.2.69/0.0/0.0/16_015/0002338.

References

[1] Abel, J. R., and R. Deitz et al., 2014. Are Recent College Graduates Finding Good Jobs? *Current Issues in Economics and Finance,* vol 20, issue 1, pp.1-8.

[2] Balcar, J., 2008. Absolventi vysokých škol z pohledu zaměstnavatelů. In: J. Gottvald ed. *Uplatnitelnost absolventů škol v podnicích a organizacích Moravskoslezského kraje.* Ostrava: VSB-TUO.

[3] Balcar, J., 2018. *Soft Skills and Their Importance on the Czech Labour Market.* Ostrava: VSB-TUO.

[4] Balcar, J. a S. Knob, 2016. *Rozvoj měkkých kompetencí na základních, středních a vysokých školách.* Ostrava: VŠB-TUO.

[5] Balcar, J. et.al., 2011. *Transferability of Skills Across Economic Sectors: Role and Importance for Employment at European Level.* Luxembourg: Publications Office of the European Union.

[6] Brožová, D., 2018. *Kapitoly z moderní ekonomie trhu práce.* Praha: C.H. Beck.

[7] Buchtová, B. a kol., 2013. *Nezaměstnanost.* 2.vyd. Praha: Grada Publishing.

[8] García-Aracil, A. and R. Van der Velden, 2008. Competencies for Young European Higher Education Graduates: Labor Market Mismatches and Their Payoffs. Higher Education. *The International Journal of Higher Education Research*, vol .55, pp. 219–239.

[9] Gottvald, J. a kol., 2008. *Uplatnitelnost absolventů vybraných vysokých škol: dodatek ke studii Uplatnitelnost absolventů škol v podnicích a organizacích Moravskoslezského kraje.* Ostrava: VSB-TUO.

[10] Kotíková J., 2003. Rizikové skupiny uchazečů o zaměstnání z pohledu úřadu práce. In: T. Sirovátka a P. Mareš, eds. *Trh práce, nezaměstnanost, sociální politika.* Brno: Masarykova univerzita Brno.

[11] Koucký, J. a A. Bartušek, 2016. *Bohatství v rozmanitosti: Profily veřejných vysokých škol a fakult v ČR 2016*. Praha: Univerzita Karlova.

[12] MPSV, 2020 *Pololetní statistiky absolventů a mladistvých v evidenci ÚP ČR.* [online]. [cit.2021/08/08]. Available from: https://www.mpsv.cz/web/cz/absolventi-skol-a mladistvi

[13] OECD, 2019. *Higher Education in Mexico: Labour Market Relevance and Outcomes*. Paris: OECD Publishing.

[14] Salas-Velasco, M., 2007. The Transition from Higher Education to Employment in Europe: the Analysis of the Time to Obtain the First Job. Higher Education. *The International Journal of Higher Education Research,* vol 54, pp. 333–360.

[15] Sirovátka, T. 1997. *Marginalizace na pracovním trhu: příčiny diskvalifikace a selhávání pracovní síly.* Brno: Masarykova univerzita.

[16] Soukalová, R. and M. Gottlichová, 2015. The Impact of Effective Process of Higher Education on the Quality of Human Resources in the Czech Republic. *Procedia - Social and Behavioral Sciences*, vol 174, pp. 3715-3723.

[17] SVP, 2021. *Nezaměstnaní absolventi VŠ* [online]. [cit. 2021-04-04]. Available from http://www.strediskovzdelavacipolitiky.info/default.asp?page=svp&KID=23

[18] TREXIMA, 2018. *Uplatnitelnost absolventů VŠB TUO. Výsledky kvalitativního šetření mezi zaměstnavateli.* Zlín: 2018

[19] TREXIMA, 2020. *Uplatnitelnost absolventů VŠB-TUO mezi zaměstnavateli. Šetření o uplatnitelnosti absolventů VŠB-TUO mezi zaměstnavateli. Souhrnná zpráva.* Zlín: Trexima.

[20] VŠB-TUO, 2018. *Dotazník pro absolventy VŠB-TUO. Výsledky průzkumu*. Interní materiál. Ostrava: VSB-TUO.

[21] VŠB-TUO, 2020. *Průzkum mezi absolventy VŠB – TUO.* Interní materiál. Ostrava: VSB-TUO.

[22] Waldorlf, B. and S. D. Yun, 2016. Labor Migration and Overeducation Among Young College Graduates. *Review of Regional Research*, vol.14, pp. 99–119.

THE SITUATION OF BROWNFIELDS DURING THE COVID-19 PANDEMIC: A CASE STUDY OF SELECTED MEC REGIONS IN THE CZECH REPUBLIC

Jaroslav Škrabal[1], **Petra Chmielová**[2]

[1]*Silesian University in Opava, School of Business Administration in Karvina,*
Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic
email: skrabal@opf.slu.cz

[2]*Silesian University in Opava, School of Business Administration in Karvina,*
Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic
email: chmielova@opf.slu.cz

Abstract
The situation regarding abandoned buildings and sites on the territory of the Czech Republic is currently very evident. Such buildings and sites can be described as so-called brownfields that may have some negative effects on their surroundings and on the region where they are located. The above mentioned contribution focuses on the abandoned buildings and sites in question that are situated near municipalities with extended competence. The aim of the paper is to assess the situation in the field of brownfields during the COVID-19 pandemic in selected areas of MECs in the Czech Republic. With respect to the aim of the paper, primary research was conducted, and the method of interviewing was applied. For the purpose of the questionnaire survey, four MEC administrative districts were always selected from each of the regions. The response rate to the research was 38.5% of the addressed respondents (MECs). From the point of view of the authors of the paper, the mentioned questionnaire survey is considered to be a pilot version. The results clearly showed that the existence of brownfields on the territories of MECs is more than evident. With respect to the regeneration of brownfields, MECs could be best supported with funds they could obtain, amendments to legislation and clearly defined rules for raising funds. Furthermore, according to the respondents, the COVID-19 pandemic had no effect on emergence of new brownfields on their territory.

Keywords
Brownfields, Regeneration, Municipality with Extended Powers, Pandemic COVID-19, Czech Republic.

JEL classification
H11, R 10, R 50

1 Introduction

The COVID-19 pandemic, which led to a number of changes in individual states all around the world, has left a deep imprint on the current situation. Most states were severely economically shaken during the COVID-19 pandemic. As a result of the situation, every country will deal with their respective problems differently, and so will their economies. From this point of view, it is clear that the COVID-19 pandemic imposed limitations on certain economic entities as they were forced to be closed for a long period of time or were severely affected by the restrictive policies of the respective governments. Many economic entities in individual countries failed to cope with the pressure brought along with the growing crisis caused by the COVID-19 pandemic. In most countries, economic operators were supported by government subsidy schemes and other funds, which were intended primarily to support the operators and their employees to prevent the business establishments from being closed after the restrictive measures imposed by the respective governments were lifted. However, these supportive schemes failed to save many economic operators, who had to close their affected business establishments. This leads to an opportunity to realize that the COVID-19 pandemic, which has not subside yet, can have certain negative impacts on the respective economies and their business establishments. These can eventually generate abandoned buildings or sites, so-called brownfields.

The authors of the paper focused on researching the situation as regards the COVID-19 pandemic and potential emergence of brownfields in the selected MECs on the territory of the Czech Republic. As part of the contribution, it must be stated that it is a pilot research with a potential to outline the outset of the issues covered by the research, and provide answers to whether there are any causes for

the emergence of new brownfield in the territory of the Czech Republic following the COVID-19 pandemic. The aim of the paper is to assess the situation in the field of brownfields during the COVID-19 pandemic in selected areas of MECs in the Czech Republic.

The introduction to the mentioned paper is followed by the second chapter focused on the bibliography search regarding the existence of brownfields and their efficient solutions in the process of their regeneration. The third chapter pays attention to the methodology of the paper and is followed by the fourth chapter on the results of the paper. At the end, the Conclusion is drafted, where the most important results of the paper are evaluated.

2 Literature review

Spatial planning is considered to be one of the key tools of how to increase the sustainability of cities and contribute to their development on a global scale (UN, 2015). One of the key aspects of sustainable spatial planning is sustainable land use, i.e. more deliberate approach towards which type of land is used for the development of cities. It is particularly necessary with cities with a growing population to take a decision which areas are most suitable for future development. A promising approach seems to be a re-development of formerly used sites that are now vacant, such as brownfields, for new projects of city developments, especially the ones that are situated in central localities (Bartke and Schwarze, 2015). Several definitions for a brownfield can be found in the literature (Yount, 2003). "A brownfield site is any land or premises which has previously been used or developed and is not currently fully in use, although it may be partially occupied or utilized. It may also be vacant, derelict or contaminated. Therefore, a brownfield site is not available for immediate use without intervention" (Alker et al., 2000). The reuse of brownfields is beneficial for achieving sustainable urban development and a wide range of economic, environmental and social benefits (Wedding and Crawford-Brown, 2007; Shädler et al., 2011). The type of regeneration may or may not correspond to the views of local people (De Sousa, 2006) and the sustainability process (Bleicher and Gross, 2010). When planning the reuse of abandoned buildings and real estate, they should consider the views of residents (Meer and Lyons, 2000), especially if regeneration is co-financed from public funds (Rizzo et al., 2015).

Brownfields represent significant social and environmental issues across the world (Thornton et al., 2007), and are recognized by the international association OSN and the European Union (EC, 2012). Brownfields are of various origin, are distributed across the entire country, yet they represent a significant issue in densely urbanized areas, such as cities (Burinskiene et al., 2017). Abandoned buildings and sites are an integral part of cities in Central Europe (Tureckova et al., 2017). Brownfields that are in the inner city, near the inner city or near other municipal subcentres are generally well-connected with the current technical and social infrastructures (Koch et al. 2018. Skrabal, 2020a).

It is also clear that the probability of brownfields to be regenerated is much higher in attractive locations within big cities than in some smaller cities and towns or municipalities in the countryside. One of the basic rules of economic geography concerning the importance of the location of individual sites within regions (Frantal et al., 2013 or Klapka and Halas, 2016) is confirmed in this case. On the other hand, it is stressed out that the location of brownfields is not the only factor that influences their ability to be regenerated. It is the parameters of the individual brownfield (size, spatial structure, contamination, ownership etc.) that are of crucial importance (Krzysztofik et al., 2016). Brownfields located in urban centers are potential resources for urban development projects. In developed economies, brownfield redevelopment is considered an effective strategy and an important instrument in urban planning (Ahmad et al. 2020). Brownfield development incorporates both private and public costs due to the contamination of land. Furthermore, brownfield sites generate negative externalities on real estate viability, and are perceived to be risky and costly for development (Squires and Hutchisonb, 2020).

Agricultural land often gives way to construction activities, leading to the degradation of land resources almost all over the world (Skrabal, 2020b). Although agriculture is considered a „traditional" or even „traditionalist" branch of economy, it is recently undergoing a rapid change along the development of production technologies. In East and Central Europe, these changes are significantly modified by processes of privatisation and profound changes in grant policies (Krejci et. al, 2019). According to Tureckova et al. (2018), soil degradation is one of the most important environmental challenges facing our society in recent times. The occurrence of post-agricultural brownfields, their abandonment and reuses of agricultural premises are deeply rooted in the agricultural transformation. This transformation can be traced back to the fall of the Iron Curtain in the year 1989 when the Communist regime collapsed, which in turn prompted social, political, cultural and agricultural changes (Krejci et al., 2021). Brownfields remain one of the biggest challenges of contemporary urbanists and developers (Frantal et al., 2015). Areas with the best preconditions for agriculture tend to re-use former farm premises for non-agricultural production (Navratil et al., 2020). With ongoing global economic stagnation, many industrial sectors either disappear or are moved to countries with lower labour costs – new brownfields emerge and their sustainable development is still restricted by many obstacles (Alexandrescu et al., 2014; Frantal and Martinat, 2013).

3 Methodology and data

The mentioned chapter pays attention to the methodology and data used in the given paper. The authors carried out the primary research based on the given issues, using the interview method, when a structured questionnaire was created. The questionnaire was created in Google Forms. The questionnaire consisted of nine questions in total, focusing mainly on the brownfield-related situation on the territory of municipalities with extended competences (hereinafter only MECs) following up the period of the COVID-19 pandemic in the given country (the Czech Republic).

The authors of the paper distributed the structured questionnaire survey to MECs representatives via email, including an accompanying letter, which contained the basic information about the questionnaire survey. There are 205 MECs on the territory of the Czech Republic. The below image (**Fig. 1**) shows the MEC regions located in the Czech Republic. For the purposes of the given research, four MECs were always addressed in each of the regions. In total, 52 MECs were addressed in absolute terms, which is 25.4% in percentage terms. The questionnaire survey was carried out from 1 July to 31 August 2021. It is important to note that it is a pilot research, when four MECs were selected irrespective of one another (the criteria) from each of the regions. The response rate to the research was 38.5%.

In addition, it should be noted with respect to the survey carried out that only the most relevant results of the research will be presented in the text below.

Fig. 1. MEC located in individual regions in the Czech Republic

The next figure (**Fig. 2**) focuses on the number of MECs that participated in the questionnaire survey. In absolute terms, 20 respondents participated in the questionnaire survey, which in terms of the relative frequency represents 38.5% of the total number of contacted respondents. As we can see in the picture below, the majority of the MECs that participated in the research is from the regions of Karlovy Vary, Ústí nad Labem and South Bohemia.

Fig. 2. MEC regions that participated in the research

4 Results

The next chapter (Chapter 4) will focus on the results of the questionnaire survey. As it was stated above, as regards the interpretation of the research results, only the most relevant of them will be provided. In the previous chapter, it was stated that the questionnaire survey contained a total of 9 questions. The responses to five of them will be commented on below. Responses to the given questions were voluntary, hence the respondents who did not answer a respective question ("without answer") will not be considered in the interpretation of the results. **Fig. 3** shows the first question of the questionnaire survey, which focused its attention on the existence of brownfields in the given MECs.

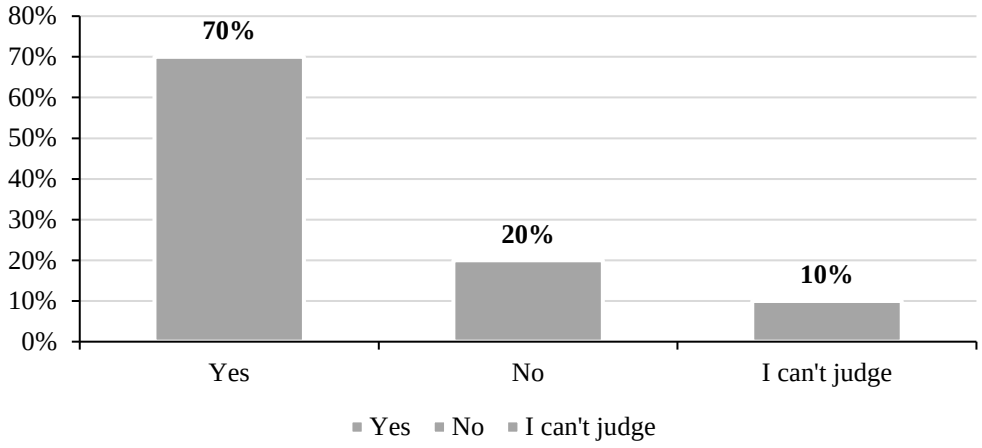


Fig. 3. Existence of brownfields in individual MEC regions (n=20)

As we can see from the picture above, the issues related to brownfields is obvious as regards the addressed respondents. Seventy percent of respondents admit the existence of abandoned buildings and sites on their territory, which is 14 research participants in absolute terms. Other options have low relative frequency, therefore they will not be commented on here. The issues related to brownfields in individual MECs on the territory of the Czech Republic are dealt with in the case study by Skrabal et al. (2021).

The next figure (**Fig. 4**) focuses on whether the respondents think that the COVID-19 pandemic contributed to the emergence of new brownfields in its territory. As regards the posed question, 76 addressed participants in the research were of the opinion that the COVID-19 pandemic did not have any effect on the emerging of new brownfields. It makes 13 respondents in absolute terms. It is important to note that as regards the posed question, the attention must be paid in particular to the private sector with respect to the studied issues as the private sector was most affected. With respect to newly abandoned buildings and sites, the public sector neither has exact information nor knows all the locations where newly abandoned buildings or sites may be found. Nevertheless, the information obtained on the basis of the question can suggest to us that the COVID-19 pandemic does not necessarily have to effect the existence of new brownfields. The question will have to be studied in a few years to find out how the pandemic-related issues have been solved. We will have more exact data on the economic impacts of the pandemic and, subsequently, the emergence of new brownfields available to us.

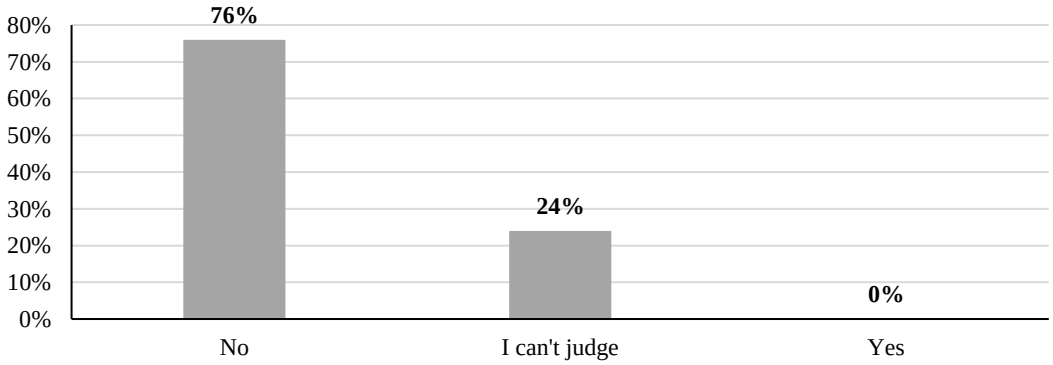


Fig. 4. Emergence of new brownfields as a result of the COVID-19 pandemic (n=17)

The next figure (**Fig. 5**) shows the results of a questionnaire survey on the question of whether respondents think that government instruments sufficiently helped during the COVID-19 pandemic

to eliminate the emergence of new brownfields in their territory. The respondents' prevailing response to the posed question was that they were not in a position to judge that. The second most frequent response was the "No" option. The "Yes" option was selected by neither respondent. It is clear that the financial/non-financial instruments introduced by the government were closely monitored during the COVID-19 pandemic and there was a great deal of discussion about their composition or the amount of funds, which were mainly directed to the private sector.

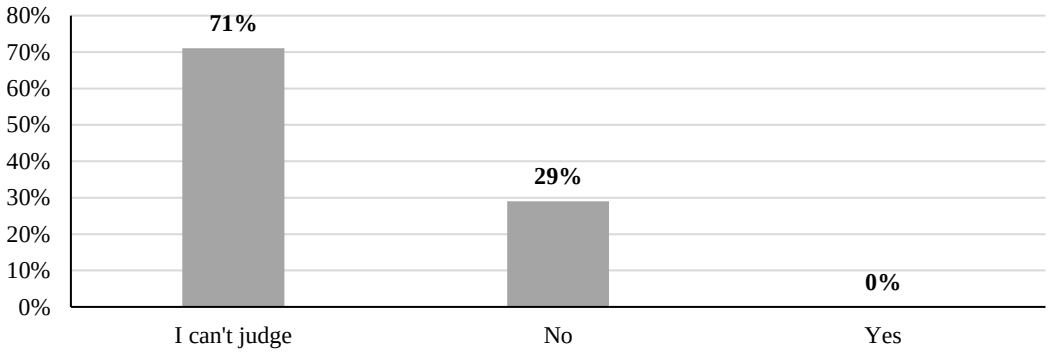


Fig. 5. The COVID-19 pandemic and the use of government instruments to eliminate the emergence of new brownfields (n=17)

Fig. 6 shows the results of the question, which was aimed at whether the addressed respondents plan the regeneration of brownfields in the future (approximately 5 years). The given results of the questionnaire survey show that 44% of research participants plan to regenerate brownfields in the future. Also the "I cannot judge" option had same relative frequency of responses. The last option that the respondents could select was the "No" answer, selected by 12% of the respondents. Municipalities exert evident efforts on the territories of MECs to contribute to regeneration of abandoned buildings and sites on their territory, however there are some factors preventing successful regeneration processes, including in particular ownership rights followed by the financial costs required for the re-use of the studied brownfields. In their answers to the question, respondents were also asked to state the buildings and sites to be included in their specific project of brownfield regeneration. Here, the participants of the research most often answered that the regeneration concerns buildings and sites characterized as civic amenities, such as schools, monasteries, clubs, or repairs of properties related to transport operations, or buildings formerly used by the army.

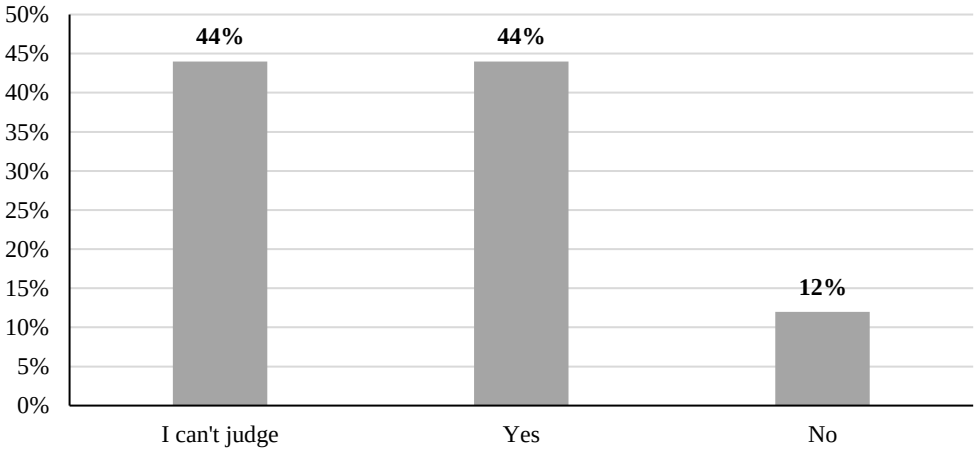


Fig. 6. Regeneration of brownfields in MEC regions in the next five years (n=16)

The issue of brownfields in the Czech Republic is a very clear one. The existence of abandoned buildings and premises is mainly due to the transformation of the economy after 1989 and the return of property to the original owners. In this paper, the authors focused on whether the MEC regions believe that the COVID-19 pandemic contributed to the emergence of new abandoned buildings and facilities. It was demonstrated through primary research based on the questioning method that the COVID-19 pandemic did not affect the emergence of new brownfields. It is important to point out the fact that the questionnaire survey, which addressed 52 respondents, is regarded as pilot research.

5 Conclusion

The issue of brownfields in the Czech Republic is a very clear one. The existence of abandoned buildings and premises is mainly due to the transformation of the economy after 1989 and the return of property to the original owners. In this paper, the authors focused on whether the MEC regions believe that the COVID-19 pandemic contributed to the emergence of new abandoned buildings and facilities. It was demonstrated through primary research based on the questioning method that the COVID-19 pandemic did not affect the emergence of new brownfields. It is important to point out the fact that the questionnaire survey, which addressed 52 respondents, is regarded as pilot research.

The aim of the paper was to assess the situation in the field of brownfields during the COVID-19 pandemic in selected areas of MECs in the Czech Republic. According to the above-mentioned questionnaire survey, which is considered to be a pilot research, the existence of abandoned buildings and sites in their territory was confirmed by 70% of respondents. Furthermore, it was found that the COVID-19 pandemic has had no influence so far on the existence of emerging abandoned buildings and sites on the territories of the studied MECs. It is important to note that MECs often do not publish any information about abandoned sites on their territory that are/were owned by private owners. Therefore, it may happen that the pandemic may have brought along new abandoned buildings and sites, but the public sector may not be aware of these facts. Therefore, the authors will further focus on studying the issues in detail with respect to the private sector. Another finding published by the authors in the paper on the basis of the research was that 44% of the respondents plan to regenerate brownfields in their territory in the coming years (within 5 years). The brownfields that municipalities in the studied MECs will regenerate include mainly the buildings that were previously used for civic purposes, in particular schools, monasteries, etc. Among other buildings intended for regeneration are properties that were used for transport purposes and, last but not least, the brownfields previously used by the military. Interesting findings were the answers specifying what would help the majority of the studied MECs to regenerate brownfields. Here, the respondents most often stated funds they might obtain, simplification of legislation, and clear rules for obtaining the funds.

It is obvious that the existence of brownfields and issues related to them are widely debated today, and the COVID-19 pandemic in particular generated additional issues regarding the effective solutions and processes of regeneration of abandoned buildings and sites, and especially regarding the streamlining of legislative processes concerning the re-use of brownfields. The possibility of using available abandoned buildings and sites that could contribute to sustainable development, rather than block up agricultural lands, seems important.

6 Acknowledgement

This paper was supported by the Student Grant Foundation of the Silesian University in Opava, Grant No. SGF/7/2020 (The measures of the public sector for the strengthening of the regeneration potential of brownfields in the area of the Czech Republic), which was realized within the EU OPSRE project entitled "Improving the quality of the internal grant scheme of the Silesian University in Opava, reg. number: CZ.02.2.69/0.0/0.0/19_073/0016951.

References

[1] Ahmad, N., Y. Zhu, L. Hongh, J. Karamat, M. Waqas, S. Muhammad Taskheer Mumtaz, 2020. Mapping the obstacles to brownfield redevelopment adoption in developing economies: Pakistani Perspective. *Land Use Policy*, vol. 91, 104374. ISSN 0264-8377.

[2] Alexandrescu, F., S. Martinat, P. Klusacek and S. Bartke, 2014. The path from passivity toward entrepreneurship public sector actors in brownfield regeneration processes in Central and Eastern Europe. *Organization & Environment*, vol. 27, issue 2, pp. 181–201. ISSN 1552-7417.

[3] Alker, S., V. Joy, P. Roberts and N. Smith, 2000. The definition of brownfield. *Journal of Environmental Planning and Management*, vol. 43, issue1, pp. 49–69. ISSN 0964-0568.

[4] Bartke, S. and R. Schwarze, 2015. No perfect tools: Trade-offs of sustainability principles and user requirements in designing support tools for land-use decisions between greenfields and brownfields. *Journal of Environmental Management*, vol. 153, pp. 11-24. ISSN 0301-4797.

[5] Bleicher, A. and M. Gross, 2010. Sustainability assessment and the revitalization of contaminated sites: Operationalizing sustainable development for local problems. *The International Journal of Sustainable Development and World Ecology*, vol. 17, issue 1, pp. 57-66. ISSN 1350-4509.

[6] Burinskiene, M., V. Bielinskas, A. Podviezko, V. Gurskiene and V. Maliene, 2017. Evaluating the significance of criteria contributing to decision-making on brownfield land redevelopment strategies in urban areas. *Sustainability*, vol. 9, issue 5, pp. 1-17. ISSN 2071-1050.

[7] De Sousa, CH., 2006. Unearthing the benefits of brownfield to green space projects: An examination of project use and quality of life impacts. *Local Environment*, vol. 11, issue 5, pp. 577-600. ISSN 1354-9839.

[8] EC, 2012. *Guidelines on best pracitce to limit, mitigate or compesate soil sealing.* [online]. Lucemburk: *European Community* [online]. [2021-08-20]. Available from: https://ec.europa.eu/environment/soil/pdf/guidelines/pub/soil_en.pdf.

[9] Frantal, B., B. Greer-Wootten, P. Klusacek, T. Krejci, J. Kunc and S. Martinat, 2015. Exploring spatial patterns of urban brownfields regeneration: The case of Brno, Czech Republic. *Cities*, vol. 44, pp. 9-18. ISSN 0264-2751.

[10] Frantal, B., J. Kunc, P. Klusacek and S. Martinat, 2013. Assessing success factors of brownfields regeneration: international and interstakeholder perspective. *Transylvanian Review of Administrative Sciences*, vol 44, pp. 91-107. ISSN 2247-8310.

[11] Frantal, B. and S. Martinat, 2013. Brownfields: A geographical perspective. *Moravian Geographical Reports*, vol. 21, issue 2, pp. 2–4. ISSN 2199-6202.

[12] Klapka, P. and M. Halas, 2016. Conceptualising patterns of spatial flows: Five decades of advances in the definition and use of functional regions. *Moravian Geographical Reports*, vol. 24, issue 2, pp. 2-11. ISSN 2199–6202.

[13] Koch, F., L. Bilke, C. Helbig and U. Schlink, 2018. Compact or cool? The impact of brownfield redevelopment on inner-city micro climate. *Sustainable Cities and Society*, vol. 38, pp. 31–41. ISSN 2210-6707.

[14] Krejci, T., J. Navratil, S. Martinat, R. J. Frazier, P. Klusacek, K. Picha, J. Skrabal and R. Osman, 2021. Spatial Unevenness of Formation, Remediation and Persistence of Post-Agricultural Brownfields. MDPI: *Land*, vol. 10, issue 3. ISSN 2073-445X.

[15] Krejci, T., J. Navratil, S. Martinat, K. Picha, P. Klusacek, R. Osman and J. Skrabal, 2019. Current use of former communist agricultural properties in South Bohemia. In: *XXII. mezinárodní kolokvium o regionálních vědách*. Brno: MU ESF Brno, s. 665-671. ISBN 978-80-210-9268-6.

[16] Krzysztofik, R., M. Tkocz, T. Sporna and I. Kantor-Pietraga, 2016. Some dilemmas of post-industrialism in a region of traditional industry: the case of Katowice conurbation, Poland. *Moravian Geographical Reports*, vol. 24, issue 1, pp. 42-54. ISSN 2199–6202.

[17] Meer, P. B. and T. S. Lyons, 2000. Lessons from Private Sector Brownfield Redevelopers. *Journal of the American Planning Association*, vol. 66, issue 1, pp. 46-57. ISSN 0194-4363.

[18] Navratil, J., T. Krejci, S. Martinat, K. Picha, P. Klusacek, J. Skrabal and R. Osman, 2020. Abandonment or Regeneration and Re-Use? Factors Affecting the Usage of Farm Premises in Different Social Spaces of the Rural. MDPI: *Sustainability*, vol. 12, issue 21. ISSN 2071-1050.

[19] Rizzo, E., M. Pesce, E. Giubilato, A. Critto, A. Marcomini and S. Bartke, 2015. Brownfield regeneration in Europe: Identifying stakeholder perceptions, concerns, attitudes and information needs. *Land Use Policy*, vol. 48, pp. 437-453. ISSN 0264-8377.

[20] Schädler, S., M. Morio, S. Bartke, R. Rohr-Zaenker and M. Finkel, 2011. Designing sustainable and economically attractive brownfield revitalization options using an integrated assessment model. *Jurnal of Environmental Management*, vol. 92, issue 3, pp. 827-837. ISSN 0301-4797.

[21] Skrabal, J., 2020a. What can we learn from brownfield databases? Exploring specifics of the location of brownfields in the Czech Republic. *Geographia Technica*, vol. 15, issue 2, 191 – 201. ISSN 2065 – 4421.

[22] Skrabal, 2020b. The Influence of Foreign Direct Investment on Selected Economies in Central Europe. *Balkans JETSS*, vol. 3, issue 2, pp. 122-130. ISSN 2620-164X.¨

[23] Skrabal, J., P. Chmielova, K. Tureckova and J. Nevima, 2021. Types and Categorizations of Brownfields: Synthesis of Individual Approaches. *Geographia Technica*, vol. 16, issue 2, pp. 29-39. ISSN 2065-4421.

[24] Squires, G. and N. Hutchson, 2021. Barriers to affordable housing on brownfield sites. *Land Use Policy*, vo. 102, 105276. ISSN 0264-8377.

[25] Thornton, G., M. Franz, D. Edwards, G. Pahlen and P. Nathanail, 2007. The challenge of sustainability: incentives for brownfield regeneration in Europe. *Environmental Science & Policy*, vol. 10, pp. 116–134. ISSN 1462-9011.

[26] Tureckova, K., J. Nevima, J. Skrabal and S. Martinat, 2018. Uncovering patterns of location of brownfields to facilitate their regeneration: Some remarks from the Czech Republic. MDPI: *Sustainability*, vol. 10, issue 6, 1984. pp. 1-14. ISSN 2071-1050.

[27] Tureckova, K., J. Skrabal, J. Nevima and S. Martinat, 2017. Brownfields in context of property, house and real estate price. In: *Nálepová, V., Šťastná, J. (eds). Proceedings of the International Scientific Conference ECONOMIC POLICY IN GLOBAL ENVIRONMENT.* Havířov: Vysoká škola sociálně správní, pp. 293-300. ISBN 978-80-87291-20-7.

[28] UN, 2015. *Sustainable development goals: 17 goals to transform our world.* [online]. [2021-08-15]. Available from: http://www.un.org/sustainabledevelopment/.

[29] Wedding, G. C. and D. Crawford-Brow, 2007. Measuring site-level success in brownfield redevelopments: a focus on sustainability and green building. *J. Environ Manage*, vol. 85, issue 2, pp. 483-495. ISSN 0301-4797.

[30] Ynout, K. R, 2003. What are brownfields? Finding a conceptual definition. *Environmental Practice*, vol. 5, issue 1, pp. 25-33. ISSN 1466-0474.

DISTRIBUTION AND INCOME

František Varadzin

[1]*Silesian University in Opava, School of Business Administration in Karvina,*
Univerzitní nám. 1934/3, 73340 Karvina, Czech Republic
email: varadzin@opf.slu.cz

Abstract
The paper deals with one of the neuralgic points of setting the Czech economic mechanism. Its topic is the establishment of a pension system. The author does not analyze the various stages of its formation, nor the discussions that are associated with it, but the focus of his attention is the connection between economic theory and models of possible solutions to pension systems. His critique is addressed at the Czech Republic's weak linkage of attempts between the processes of initial GDP distribution and pension system design. Excessive focus on specific issues of pension systems leads to disagreements without elucidating the fundamental linkages between different approaches to their resolution. It is impossible to reach a consensus on a pension system solution without first clarifying the underlying paradigm of society.

Keywords
distribution, pension, pension reform, reproduction process.

JEL classification

E2, E6, H2

1 Introduction

Over the last 30 years, there have been discussions of varying intensity with the need to change the pension system in the Czech Republic. Various examples are presented, the impossibility of financing pensions in the future, the need to introduce a basic pension for all citizens, etc. These debates almost always have two things in common: they do not require theoretical economic foundations to justify and pretend not to reflect the interests of specific socioeconomic groups. Economic theory is based on the idea that the constantly recurring process of production of goods takes place in four interconnected levels:

1. Production of goods, tangible, and intangible, in specialized production units.
2. Distribution of the results of joint production among the participants in the redistribution of the funds thus obtained by the state or another public institution.
3. Resolving the conflict between a subject as a specialized producer of goods and a subject as a universal consumer seeking to satisfy his/her needs.
4. Consumption of goods as a source for the maintenance of economic subjects and their development.

The issue of distribution can be explained both in terms of socio-economic and historical determination or as a model based on certain principles. At the same time, focusing on distribution on a single level is disputable.

The reason for this is the fact that economic principles in the process of distribution are inextricably linked with social organizations (state, churches, and other political institutions) and here they are thus integrated with economic organizations (enterprises, small productions, households). The specific form of distribution is then derived from a political or religious hierarchical structure.

Starting with the fundamental three types of distribution defined by K. Polanyi in the article Reciprocity, Redistribution and Exchange (Polanyi, K. et al., 1957), we get the following picture:

a) reciprocity,
b) redistribution,
c) exchange.

Reciprocity means a situation where social norms dominate, society is intertwined with mutual obligations, help and mutual gifts. This determines the allocation of goods. The social side of society is determined mainly by social institutions and supported by mutual rituals.

Redistribution is understood here as the principle of distribution, based on performance against the centre, where members of society perform their tasks and are allocated resources by the centre and, as well as consumer products at the discretion of the centre. A number of historical structures can be found beneath the centre (king, high priest, slaver, planning commission, etc.). The character of the economic centre is then given to the social side of the process of distribution since here political organizations play a major role in drafting decisions (council, court, parliament).

The principle of exchange is based on the idea that society-wide cooperation is measured by the market and the subject endowed with property rights enters into free exchange relations. The distribution is then realized through the market price mechanism. Socially, economic organizations play a decisive role here, as they determine the nature of the market and thus the price mechanism.

The theory of distribution itself seeks to systematically describe the distribution of income in society (flow category) and the distribution of property assets (stock categories).

By flow categories, we mean economic quantities (processes) that are measured over a certain period (day, month, year) and are variable over time. By categories of the (stock) level, we denote economic quantities, the size of which is measured on a certain date, e.g. 31 December 2020.

From the point of view of economics, we further divide the distribution of income into the distribution of personal income and the functional distribution of income. In the distribution of personal income, the emphasis is on income as funds earned by individuals or households. For the functional distribution of income, we observe the issue of macroeconomic distribution according to the type of income, i.e., wage, profit, interest and annuity, and how these categories are related to production factors. These methodological approaches are closely interconnected and often cannot be precisely distinguished in practice. For instance, distinguishing between the owner's wage for organizational and management work performed and what he receives from ownership, i.e., capital income. Especially when he determines this income himself.

2 Functional distribution of income

Functional distribution of income is traditionally monitored for reasons of importance for the operation of the economic mechanism. It affects the issues of growth rate, proportionality between consumption and investment, the position of individual social classes and strata in society, the international division of labour, etc. It should be noted, however, that due to different paradigms of different economic thinking directions, we frequently see different statements on the reasons for and necessary corrections to distribution.

From the point of view of economic thinking, these approaches can be divided into two basic ones, namely:

the principle of value,

the marginal principle.

(Kaldor, 1960; Dobb, M. 1980)

From the standpoint of the principle of surplus-value, these are the Ricardian and Neo-Ricardian conceptions (D. Ricardo, T.R. Malthus, J.S. Mill, P. Sraffa, etc.) and the Marxist conceptions (K. Marx, F. Engels, K. Kautsky, V.I. Lenin, M. Morishima etc.). The fundamental difference between the Ricardian and Marxist conceptions of value is that Marxism separates value-creating and price-forming processes. In classical thinking, value and price are created by work, in Marxist value is created as a consequence of social relations in the reproductive process, and the price fluctuates around value based on the immediate situation on the market. The point is that even though they are interconnected, their dynamics are influenced by different factors.

With a certain degree of simplification, it can be stated that in the case of D. Ricard in the area of wages and profits the decisive factor is the minimum wage, i.e., the system attempts to distribute the created product in favour of profit and the hired worker receives only basic subsistence. This is beneficial because the employee has a strong work ethic to make a living. The natural price of labour is considered to be the basis of wages. "Work, like all other things that are bought and sold and whose quantity can increase or decrease, has its natural and market price. The natural price of labor is the amount that workers must pay to survive and support their families without going up or down.” (Ricardo, 1956, 73)

Around it, the price fluctuates under the influence of supply and demand. Profit growth, and thus the sources of capital accumulation, leads to a reduction in the resources required to maintain the workforce through increased productivity. Any moment that reduces the possibility of capital accumulation is a brake on it. "Wages should be left to fair and free competition in the market and should not be controlled by legislative intervention." (Ricardo, 1956, 82) He, therefore, condemns any support, rejects state intervention and says that “every friend of the poor must fervently wish that these laws (poor F.V.) were repealed". (Ricardo, 1956, 82) He understands the annuity as a part of the surplus product, which is allocated on the basis of the lease, i.e. the realization of property rights. For a more detailed analysis of the Ricardian approach see book E. Schlicht, (Schlicht, 1976, 20-32).

From the Marxist point of view, the system of distribution is historically determined for individual socio-economic formations. In capitalism, it is based on the contradictory effect of individually (privately) spent labour and its social character, which is realized in exchange relations in the market. Here, the value of goods is created as a social relationship realized through prices. The starting point for determining the wage is the value of the labour force, which is determined by the working time necessary for the production of goods needed for the reproduction of the labour force. This includes the cost of living, family maintenance and demographic reproduction, as well as education and the acquisition of necessary work experience. This is variable with the degree of maturity of the society and the needs of the economy. (Marx, 1954, 189-194). The labor force's value varies because, as production technologies, the division of labor, and its organization change, so does the total amount of working time required to acquire the goods used for reproduction.

Interest, profit and annuity are transformed forms of surplus-value, which are transformed into these forms as a result of social relations and mutual competition of subjects. Annuity here is based on the concept of monopoly ownership of land (natural factors) and their limited amount, interest "is nothing but part of the profit (and this again is nothing but surplus-value, unpaid labour) which the industrial capitalist pays to the owner of foreign capital." (Marx, 1968, 457)

In a two-sector model of simple and extended reproduction, Marx solves the basic quantitative conditions in the distribution of the created product. Here he works with the sector of means of production (investment) and consumer goods (consumption) and depreciation. (Marx, 1955, chapts. 20 and 21). These ideas were further developed by Lenin (Lenin ,1951) and later became part of the Soviet perspective of political economy and other authors (M. Kalecki, O.R. Lange, K. Laski, et al.).

The tendency to imbalance the system is the starting point for the Marxist claim of distribution under capitalism. This is given by the assumption of technical growth of the organic composition of capital. In other words, the share of living labour (wages) in the product is constantly decreasing and the share of perpetual labour (capital) is increasing. This means that the share of capital (depreciation, K) increases with the overall growth of product (Y). The increase in production based on labour productivity results in a decrease in the relative share of wages (W) and thus leads to slower growth of total consumer demand than production capacity.

This is similar to the Keynesian concept of product distribution. It is based on the equation of a closed economy, which can be written as follows:

$$Y = C + S(I) \Rightarrow 1 = \frac{C}{Y} + \frac{C(I)}{Y} \Rightarrow 1 = c + s, \quad (1)$$

where we assume that the propensity to consume (c) grows with income (Δ> Y) slower than the propensity to save (s) since a relatively larger proportion of income is deferred at higher levels of income. This leads to an increase in the share of savings in the total product and thus to the growth of investment (I). As a result of the faster increase in capacity, they are not used, despite a relative decrease in consumption. This implies the need for state intervention.

The basis for the idea of primary distribution is the relative price of production factors, which is formed as a result of social pressures on production processes. This distribution has its technological structure (ensuring the renewal and development of production and circulation of goods and services, i.e. physical capital and scientific and technical development) social aspects (social conditions between individual production social groups).

In the marginal theory of distribution, the direct connection between distributional and social groups disappears. Methodologically, it is based on the assumption that wages are not a starting category but are derived from the marginal productivity of the labour factor. A profit-maximizing firm will employ an additional worker at an additional cost, i.e., wages. This is due to the additional increase in production expressed by the increase in sales. The increment increases in absolute terms, but decreases relatively, which leads to the fact that if it is equal to 0, the system has reached the maximum profit and does not increase further. If there is supply in the labour market, wages are reduced and vice versa. This mechanism creates an equilibrium wage.

On the same basis, in neoclassical theory, the share of profit, interest and annuity in the case of capital and land (natural factors) is formed. As these factors are considered substitutes, they are offset by the effects of fluctuations in supply and demand prices.

The theory of marginal productivity basically determines the distribution on the basis of determining the demand for individual factors. This also determines the individual prices of production factors. The uniform principle of setting these prices is the fundamental difference between economic classics. Theoretical assumptions, especially if we choose the model of perfect competition, lead to the limit value of labour corresponding to the nominal wage and the limit value of capital to nominal profit or interest. Since we derive the income from the production factor from its quantity times its price, then it is also a theory of distribution.

A macroeconomic variant of the marginal theory of distribution is the conclusions arising from the Cobb-Douglas production function. Here, it is assumed that the product formed splits between the two factors and is relatively stable. In the original article, it is formulated as follows: "Until now, we assumed that "normal" P′ production would be produced with a given amount of labour and capital under normal conditions. However, these normal conditions are not feasible. For example, it is assumed that the "productive force" of the average worker or the dollar of constant purchasing power is constant throughout the period… Now it is possible to apply mathematical analysis to normal production of P′, but it is not possible to apply it to the actual production of P unless we make (or conceal) certain other assumptions…

The factual volume of production is proportional to the volume of production only on the basis of production itself.

Any deviation of P from P′ can be represented only by a change in the value of the coefficient $L^{3/4}$ and $C^{1/4,}$ so that always

$$P = b * L^{\frac{3}{4}} * C^{\frac{1}{4}} \quad (2)$$

where the value of b does not depend on L and C.

These two assumptions are made in accordance with the applicable principle of neglecting the quantitative effects of forces for which we do not have quantitative data. Coefficient b should cover

all the effects of such factors. The acceptance of these assumptions shows, based on mathematical analysis, that:

1. Marginal labour productivity is 3/4 P / L.
2. The marginal productivity of capital is 1/4 P / C.
3. The productivity of the total labour is 3/4 P.
4. The productivity of the total capital is 1/4 P.
5. The elasticity of the product due to small changes in labour is 3/4.
6. The elasticity of the product due to small changes in the capital is 1/4.

This attributes 3/4 of the product of labour and 1/4 of capital to the period under review. This means that a small percentage change in work has a threefold effect than the same percentage change in the capital would cause." (Cobb, Douglas, Investície, rovnováha, optimálny rast, 1970, 52-56). Later, in other works (R.M. Solow, K.J. Arrow, H.B. Chenery, etc.) these ideas and coefficients were developed and revised, but the principle essentially remains the same. In the standard neoclassical concept, there is no room for factors influencing market power, social behaviour or taking into account the divisional conflicts resulting from the implementation of a policy.

The issue of the macroeconomic neoclassical concept appears to be the size of capital, regardless of the prices of various capital goods and thus different rates of profit. As the Neo-Ricardian Piero Sraffa had shown, only when wages are equal, the value ratio between net product and means of production in each sector will coincide. (Sraffa, 1970). The basic difficulty is that if Neo-classics "began to revive orthodox theory" they forgot that the issue of measuring capital and the concept of profit as an element of the cost was never solved…it is at a loss when the value of capital does not depend on the rate of profit".(Robinson, 1970).

Despite these theoretical reservations, the neo-classical theory remains the most widespread. The reason is the concept of methodological individualism by a large number of economists, and the fact that many economists prefer a positive economy to a normative one also plays a significant role in this. For a brief note, it is necessary to mention the concepts of N. Kaldor and M. Kalecki. Their models of distribution are based on Kaldor's thesis that "capitalists earn what they spend and workers spend what they earn." In other words, entrepreneurs as a whole are faced with decisions about the size of expenditures and plan revenues for that. Kaldor's reasoning is based on the difference in the propensity to save with respect to different incomes, while the rate of savings from profits is greater than the rate of savings from wages.

Kaldor (Kaldor, 1960) first divided the product created into the investment and consumption of capitalists and the wage fund, which corresponds to the demand for capital goods, the consumption of capitalists and workers. He also chose the assumption that product Y is equal to the total demand D.

$$D = C + 1, \tag{3}$$

where C is the total consumer demand. Further, he assumes that wage income $w * N$ (the wage times the number of employees) decomposes into consumption and savings, given the propensity to save SN. Profit Z also implies a propensity to save SK, which is larger than that of wages. We denote savings from wages by s_N and savings from the profit by s_K. The following applies:

$$SN = s_N * (w * N);\ SK = s_K * Z;\ 0 \leq s_N > s_K \leq 1. \tag{4}$$

Consumption is the difference between income and savings.

$$C_N = w * N - S_N = (1 - s_N) * w * N;\quad C_K = Zwith_K * Z = (1 - s)_K * Z \tag{5}$$

Demand is the sum total of C_N and C_K.

$$C = C_N + C_K = (1 - s_N) * w * N + (1 - s_K) * Z \quad (6)$$

It is also true that the profit is due to the difference between the product Y and the total sum of wages w*N.

$$Z = Y - w * N \quad (7)$$

Therefore, consumer demand can be expressed in relation to the proportion of wages (Λ) to Y and can be written:

$$C = [1 - (\Lambda s_N + (1 - \Lambda)\, with_{K]}\, Y. \quad (8)$$

In terms of assessing the investment Kaldor proceeds from the fact that investment is a fixed part of the product. From the Keynesian point of view, it is an autonomous investment corresponding to a certain amount of products.

$$I = y * Y \quad (9)$$

Therefore, this connection can be deduced from the total demand.

$$D = [1 + y - \Lambda s_N + (1 - \Lambda) s_K] * Y * \frac{\partial D}{\partial \Lambda} = (s_K - s_N) * Y > 0 \quad (10)$$

If demand is greater than the product, then the price level will rise, and real wages will fall $w = v/p$. This will also reduce the share of wages. A process of declining consumer demand will emerge, as wage income will be more consumption-oriented than income from capital gains. D is reduced until it equilibrates with Y. Similarly, prices fall if $D < Y$, i.e. the supply of the total product. Real wages grow until levelling up D =Y. The wage rate then takes on values for which D = Y in the aggregate demand equation holds, namely:

$$\Lambda = \frac{s_{Ky}}{s_{K-s_N}} \quad (11)$$

Kalecki brought the relations of imperfect competition to distribution (Kalecki,1955). If, since the time of A. Smith, the equilibrium between economic subjects was understood as a balance of power and opportunities between relatively equally influential subjects, then in imperfect competition, subjects have different opportunities in terms of achieving higher profits. For Kalecki, the wage share in production is determined by two factors.

1. the degree of monopolization in the labour market and degree of concentration in the centralization of production units
2. the ratio of raw material costs to labour costs

The wage share of the product is a consequence of these microeconomic considerations; profits here are determined in a similar way to Kaldor, i.e., the autonomous spending decisions of the capital owner are decisive. Contemporary approaches building on Kalecki's distributional model favour the

idea that distribution has a significant impact on capital accumulation and hence on long-run growth propensity. For instance, the Rowthorn-Dutt-Amadeo model considers an important link between production capacity and profit expectations. According to the authors, this moment determines the accumulation decision. According to another Bhaduri-Marglin model, unit labour costs are emphasized for the investment decisions of entrepreneurs. Decisions made based on their evaluation can lead to expansion or contraction of economic activity.

The attempt to explain the causes of inequality is connected with the need to justify its origin based on the theory of distribution. Essentially, two different principles lead to various other models that attempt to justify the meaning and logic of the product's primary division.

Classical approaches are based on the assumption that the income components of individual classes are the result of the division into the necessary product and surplus product. In the long run, variable and textbook interpretations of the neoclassical concept (usually the Cobb-Douglas production function) may be stable. In this, they also coincide with post-Keynesian ideas. The stability of the share of wages in the created product, however, has not withstood empirical scrutiny (Piketty, 2015). The significance of Kalecki's theory of distribution lies in the acceptance of the assumption that allows modelling even longer-lasting stages of an increase or decrease in the share of wages (profits).

3 Personal distribution of income

The previous section described the basic approaches of economic theory to the question of how the product made is distributed. In this case, it was the primary distribution of income produced and thus the determination of the amount of wages, profits, interest and annuities. The theory of personal income distribution is primarily concerned with capturing the secondary distribution, i.e., how primary income is transformed into secondary income. The term redistribution is often used for this process. The approach of this group of theories to explaining inequality is again determined by the paradigms of economic schools or ethical-social ideas. Therefore, there are several different statements in the literature in interpreting the same empirical basis. In some cases, the choice of criteria according to which the data are organized has a different methodology and thus different empirical statements. (Atkinson, 2016).

If we begin with a distribution based on microeconomic theory of marginal productivity, the explanation for the difference in income is due to the risk of work activity, the different attractiveness of working conditions, or attempts to clarify the issue in terms of market forces created by employers' or trade unions. This includes non-economic factors such as various types of discrimination, the personal characteristics of wage earners or employers, and other psychological factors. These can be random stochastic processes or processes dependent on the quality of the labour force (human capital theory).

Another type of justification is provided by theories based on the preference for the existence of hierarchical arrangements of society and social organizations and inherited assets. Much of contemporary economic thinking indeed ignores the relationship between inherited assets and the generation of income from those assets. As a rule, they favour only flows, but not stocks. However, it can be assumed that with population growth, this issue will become more acute in the future.

Other arguments for income inequality stem from the functioning of the economic mechanism. Among the most important are:

a) Work is not homogeneous and skilled work in the same unit of time will create more value than simple work. To secure it, the labour force must receive a higher wage.

b) Excess supply or demand for a certain type of specific work leads to a reduction/increase in wages.

c) Issues of male and female work.

d) Technical progress is changing the requirements for the amount and structure of work, which is reflected in the market.

e) The impact of international trade is causing low wage pressures to spread across economies. Low-skilled goods reduce domestic wages in developed countries while raising wages for highly skilled workers in developing countries.

In terms of the non-economic causes of income inequality, sociological theories should be consulted. The question is whether, in their opinion, we should not instead discuss the unequal distribution of power, which results in the determination of a certain amount of income. It is, for example, very difficult to determine the amount of salaries of the civil service, the judiciary, politicians, etc.

Income reporting issues are also hidden in the essence of these economic categories and their reporting. The first issue is the reporting of income of the self-employed. It is difficult to separate the size of the wage as an expense of the activity performed and the size of the profit from the business. Usually, statistics deal with this by mixed income and statistical territory, which includes both components. Another issue is related to the number of people employed in the economy. For example, when low-wage jobs begin to disappear as a result of mechanization, the number of employees decreases while the average wage level rises.

The so-called cross-distribution also enters into considerations about redistribution. A subject, a household, can sell labour force, it can also have capital income from the ownership of assets or receive an annuity from the lease of natural factors (land). The aggregate income of households then raises many questions about the correctness of the conclusions of such analyzes in the absence of clarification of the actual situation.

Other issues of interpretation of inequality arise from redistributive processes under the influence of price level movements (inflation) and their different effects on individual socio-economic groups and strata and their different manifestations in different sectors and branches of the economy. This existing multidimensionality requires a precise definition of the question to clarify how an adequate answer can be obtained. Due to methodologies, it is not always possible to keep statistical reports.

Other distortions stem from socio-economic conditions. For instance, the size of social consumption concerning individual income (paid/unpaid education, health care, private or public pension system, etc.). At the same time, there is the issue of illegal (unregistered) income and expenditure. All this affects the overall situation in society.

Primary income is thus obtained by individual economic subjects first by dividing on the basis of their share in the total product, but they have to divide this part among themselves (wages, profits, interest and annuities). This creates income for employees and employers, and these are redistributed through direct and indirect taxes related to both income and assets, and there will also be social transfers and other transfers (social insurance, solidarity benefits, etc.). Thus, we obtain the disposable income of households that have these socio-economic categories to create demand for goods and services.

The most commonly used methods for determining income distribution are the Lorenz curve and the Gini coefficient. Furthermore, the Atkinson and Theil indices are also used in practice, which, based on other approaches, try to determine the inequality of distribution (Jílek, Moravcová, 2007, 91-98).

In the previous text, the existence of the category of status - property - was mentioned several times. To grasp this issue, we must first briefly define the basic status category - national wealth.

By national wealth, we mean the state of goods (tangible and intangible) that society has at its disposal on a certain date. This category is closely related to the category of national wealth. It is a question of what part of the natural resources we should include in the national wealth. Another definitional issue is its valuation - for example, how to value works of art, historical buildings, etc.

When considering the issue of property distribution, we encounter several issues not only of a methodological and statistical nature but also moments arising from the social and legal perception

of reality and constructions based on the nature of social relations. These are such features of the property as a specific formulation of ownership categories - common, social, private, personal, public. This includes the issue of hiding property in tax havens, the nature of foundations, churches, etc. Another moment pointing to the complexity is the issue of patents, licenses and other types of income-producing assets (copyrights), which are sometimes not taken into account. These are issues arising from a different concept - for example, capital-based private pensions are treated as assets, not public pension schemes.

However, without further consideration, it can be concluded that the assets of the socially stronger are often underestimated in relation to the assets of the socially weaker. Even so, the uneven distribution of assets is evident. For example, according to a report by the renowned company Oxfam published at the World Economic Forum in Davos (January 20, 2020), 2,183 billionaires own the wealth of more than 4,600 billion people, i.e. 60% of the planet's population. (World's billionaires have more wealth than 4.6 billion people). For the real impact of wealth ownership, we still have to factor in the concentration and centralisation of financial assets, whereby, for example, 20% of a centralised block of shares is controlled by the so-called “leverage effect” and the remaining 80% by dispersed owners.

The cause of the unequal distribution of national wealth is inheritance, personal ownership and the life cycle. In the case of inheritance, the rate of taxation on capital gains is lower than the rate of taxation on wage income. This means, given the same income and consumption, the capital owner can increase his future assets in the long run, and thus can ensure higher income growth. He can also invest in relatively low-risk public securities, so future growth in taxes of public debt repayment is beneficial. Other models (Fargione, Lehman, Polasky (2011) have demonstrated that, based on the compound interest effect, it leads over time to an unlimited concentration of wealth approaching almost 100%. At the same time, they show that an increased inheritance tax could effectively halt this trend, as high wealth concentrations adversely affect economic growth.

Personal qualities are related to the ability to assert oneself within the prevailing socio-economic and political situation. It is an example of when a certain personality can identify with a technology or a certain type of utility of value (music, artwork and other creativity) and successfully market it. If this characteristic is coupled with the conscious acquisition of assets, then there is an accelerated concentration of wealth.

A significant proportion of assets go through a life cycle. Here we understand wealth creation as part of the life cycle of a significant part of the population. High incomes are not involved, and transfers of ownership are generally of a magnitude to allow for a future work-free life based on the holding of capital. It is a process in which a person's initial wealth, which is not very large, multiplies during his/her working phase based on income savings. The wealth thus increases until the end of the working period. Thereafter, it is maintained and partially reduced until it is distributed to the heirs.

The concentration and centralisation of wealth have serious consequences for the way social structures and individuals live. The possession of wealth leads to the creation of a certain social status that guarantees:

a) The relationship between wealth and exclusive employment.
b) A low propensity to consume leads to additional wealth creation.
c) Political power increases with wealth and thus favourable conditions for further growth of wealth are secured in society.

In the first case, wealth allows for the attendance of special private schools, where the foundations for future "social capital" are laid, i.e. important links are formed for future life careers. Securing good jobs means achieving higher incomes, creating the opportunity to get rich faster. In the third case, it is about influencing the legislative process in one's favour through donations or reimbursement of election campaign costs. In reality, these mechanisms are usually integrated into one process.

Society has tools to regulate these processes that are unfavourable to it. These are progressive income taxation, inheritance tax, wealth tax and also land tenure regulation. The rationale for their

use is based on both real policy issues (increase in social issues, economic imbalance, the desire to win votes, etc.) and ideological convictions about the meaning of life. Among the many attacks, it is enough to point to F. Bacon's opinion "The paths to wealth are manifold and most of them are wrong.“ (Foustka, 1933, 109). Therefore, "Above all things, good Policie is to be used, that the Treasure and Moneyes, in a State, be not gathered into few Hands. For otherwise, a State may have a great Stock, and yet starve. And Money is like Muck, not good except it be spread.“ (Foustka, 1933, 48). As can be deduced from these statements, even at the beginning of the rise of our modern civilization there was no lack of voices supporting the necessity of wealth regulation, and whether it came from religious-ethical or social-philosophical positions, it has accompanied and continues to accompany economic thinking to this day, although not always with the same intensity.

4 The issue of pensions

It is clear from the above that all schools of economic thinking regard income as a category of flow. We must therefore respect this fact and not confuse the properties of flow categories with those of stock categories. Similarly, they cannot be added and subtracted from each other, as they are different in nature. If we consider income, we arrive at the following statements.

1. The amount of income in each period depends on the quantity of production factors used and their productivity given by their quality, technical level, combination and not on their total stock. When we refer to the past, present or future size of income, we are also talking about the size of production at a given time, since the total amount of income always corresponds to the amount of production realised - see Sey's dogma of the creation of demand by supply. We do not want to discuss here the extensive discussion of the interpretation and concept of Sey's law, if it is the concept of equality or identity as it relates to equilibrium or cycle. (Holman, 2005; Sojka, 2010).
2. Regarding the argument that there is an increase in the proportion of old-age pensioners in the total population and therefore it will not be possible to pay their pensions. There is inevitably a decline in the population of pre-working age. In other words, the number of dependent children is falling by this amount. So, one cannot argue merely by comparing two indicators. At the same time, labour productivity growth must be taken into account. If, for example, it grows by a realistic 2% per year, the production created will increase by almost 50%. (Labour productivity increased 1.6 times between 1999 and 2019). The Czech Statistical Office forecasts that the population will fall from 10.6 million to 10.5 million and the share of the working-age population from 64% to 61 (Projekce obyvatelstva České republiky 2018 – 2100). There is no macroeconomic reason to worry about pension funding, it is a matter of economic and social policy how it will be distributed.
3. There is often talk of the need to reform the pension system. However, when they say "reform heralds," they mean "qualitative change." Linguistically, reform means a change in form, not in substance. To understand, when I modernize an apartment (change the windows, doors, and so on), I am changing its form. It is not a reform if I convert an office into an apartment since we are changing the substance. As a result, from an economic standpoint, political forces must clearly specify how the pension system's resources are raised and how individual pensions are distributed.
4. Pension systems cannot be derived from logical models alone because they operate in an overall social environment. Many of the so-called "non-systemic elements" have their logic derived from the overall setting and characteristics of social elements and mechanisms. Therefore, adjustments to pension mechanisms need to be conceived more broadly, either including or based on changes in social mechanisms - e.g., the breakdown of the traditional family, childcare and the related issue of old-age pensions, social benefits favouring single mothers and thus causing future issues, etc.

5. Conceptually, one can define those funded by personal, company or state pensions. Each system has its advantages and disadvantages and is influenced by several different conditions under which the reproduction process takes place. For example, corporate profits may depend on protective tariffs, tax breaks, etc., while the level of personal and state contributions depends on the current preferences of the government, the attitude of trade unions, etc. Setting this mix is the art of economic policy and is related to social perceptions of society, the views of different schools of economics and the possibilities of a particular economy arising from its state and stage of development.
   The Czech economy is below average in paying social pensions in the EU. If we compare the share of social spending in GDP in 2010 and 2018, we find that social spending in the EU reached 27.4% and 26.7% and in the Czech Republic 19.3% and 17.9% (Expenditure: main results) We obtain a similar view with pensions. In 2010, the EU average was 9.1% and in the Czech Republic 6.7%. In 2018, the average was 9.6% and the Czech Republic remained at the same level of 6.7% (Pensions) with an absolute increase of 78,547 pensioners, i.e., 2.7%. (Pensions beneficiaries at 31st December). In any case, these data show that the Czech Republic cannot be considered a country threatened by the issue of pension financing.
6. From a political point of view, the division between capital and pay-as-you-go pension schemes is emphasised. The essence of this division is to define the principle by which the total resources allocated to pensions will be distributed. In the first case, a person contributes part of his/her income to a capital fund (we will not discuss the different types here) and later draws the proceeds under predefined conditions. It is therefore based on the capital appreciation and future pensioners are seen as retail investors. This system has two advantages for fund owners or managers and the stabilisation of capitalism, as the stability of the capital markets becomes a guarantee of at least some income. From the viewpoint of pensioners, such a system increases inequality and insecurity and cannot, in principle, guarantee a long-term payout. We must remember that the profit per unit of capital fluctuates according to the GDP generated and distributed, so that as economic difficulties increase, so do the difficulties in paying pensions. However, it is true that in the Czech Republic a higher share of the product is distributed in favour of capital, but on the other hand, we have a significant outflow of dividends. If the share of compensation of employees in GDP in the EU (27) was 47.9% in 2009 and 47.4% in 2019, in the Czech Republic it was 40.7% and 44.7%. The share of gross operating surplus, i.e., profits and corporate and self-employed income, in the EU was reported at 38.5% of GDP in 2011 and 40.7% in 2019. In the Czech Republic, it exceeded 48.3% and 46.1% (Calculated on the basis of GDP and main components) in those years. If we proceed from the CNB Inflation Report (IV/2016), we obtain the following picture. Due to the lower share of FDI in GDP of the largest traditional EU Member States, the share of dividends paid out in their GDP is also consistently very low, mostly below 1% The highest share is achieved by tax havens such as Luxembourg (with an average share of dividends paid out in GDP of 128% in the period under review) or the Netherlands (17%). In the case of the EU Member States that have joined since 2004, the share of dividends paid as a share of GDP in 2012-2014 was mostly in the range of 1.1% to 4.2%. However, the share of dividends in the Czech Republic was above the upper limit of this interval (at 5.2%) (Srovnání odlivu dividend v zemích Evropské unie). Thus, external factors may significantly distort our funded pension system.
7. The pay-as-you-go financing system has the advantage of stability and non-disruptibility. By not being able to stop production, it always has a secure income corresponding to the total economic activity and how the funds are transferred to society-wide use. The main principle of distribution should be the work done. The choice of the amount of the transfer to society as a whole, and the form of collection and distribution, is a purely political question. The system can then be modified (reformed) by changing the parameters according to existing needs. The

disadvantage here is the possible burden on public finances, which have to cover the misalignment of revenue and expenditure. Nevertheless, this is the issue of the economic and political centre, which does not dare to solve the disproportions created by the development of society and postpones decisions to the future using loans.

5 Conclusion

Summarizing the ideas of the paper in the form of a conclusion, the following points can be identified:

1. Efforts to change the pension system need to be closely linked to the processes of primary distribution of the product generated. This mainly concerns the design of pricing and tax policies.
2. The target model and the basic relations in society must be established and should be clearly and long-term enforced. This is why, for example, the so-called guaranteed income is an issue, as it is not linked to obligations to society, but requires society to provide it. Without clarification of the basic model of society, then it is not possible to find a consensus on a solution for pension systems.
3. In our opinion, the issue with the failed attempts to change the pension system in the Czech Republic is that it does not pay attention to the broader context of the functioning of the economic mechanism and concentrates on promoting the interests of partial social groups.

References

[1] Atkinson, BA, 2016. *Ekonomika nerovnosti*. Brno: BizBooks.

[2] Dobb, M., 1980. *Teória hodnoty a rozdeĺovania od A. Smitha*. Bratislava: Pravda.

[3] Fargione, J. E., C. Lehman a S. Polasky. Entrepreneurs, Chance, and the Deterministic Concentration of Wealth. *PLOS ONE,* vol. 6, issue 7. [online]. [2021-05-27] Available from: https://doi.org/10.1371/journal.pone.0020728, 2011.

[4] Foustka, B., 1933. *Lord kancléř Francis Bacon z Verulamu a jeho Essay*. Praha: Nákladem České akademie věd a umění.

[5] Holman, R., 2005. *Dějiny ekonomického myšlení.* Praha: CH Beck.

[6] Investície, rovnováha, optimálny rast. *Zborník statí svetových ekonómov*. 1970. Bratislava: Vydavateľstvo Pravda.

[7] Jílek, J. a J. Moravcová, 2007. *Ekonomické a sociální indikátory. Od statistik k poznatkům*. Praha: Futura.

[8] Kaldor, N., 1960. *Alternative Theories of Distribution in Essays on Value and Distribution*. London: Gerald Duckworth and Co. Ltd.

[9] Kalecki, M., 1955. The Problem of Financing Economic Development. *Indian Economic Review,* vol. 2, issue 3, p. 1-22.

[10] Lenin, V.I., 1951. *O takzvané otázce trhů. Spisy I.* Praha: Svoboda.

[11] Marx, K., 1954/6. *Kapitál I-III.* Praha: SNPL.

[12] Marx, K., 1958/1968.*Teorie o nadhodnotě (čtvrtý díl „kapitálu")I- III*. Praha: SNPL.

[13] Polanyi, K. et al., 1957. *Trade and Market in the Early Empires*. New York: Macmillan Publishing Co. Inc.

[14] Ricardo, D. , 1956. *Základy politické ekonomie a zdanění*. Praha: SNPL.

[15] Robinsonová, J., 1970. Hodnota a cena. In Sraffa, P., *Výroba zboží pomocí zboží (Úvod ke kritice ekonomické teorie)*. Praha: Svoboda.

[16] Schlicht, E., 1976. *Einführung in die Verteilungstheorie*. Mit Beiträgen von K. Polanyi, H. Codere, R. Heilbroner, D. Ricardo, N. Kaldor, AK Sen, E. Schlicht, P. Garegnani, Ch. Kennedy, ES Phelps, LL Pasinetti, JE Meade, JE Stiglitz. Rowohlt, Reinbek bei Hamburg, Rowohlt Taschenbuch, Verlag GmbH.

[17] Sojka, M., 2010. *Dějiny ekonomických teorií*. Praha: Havlíček Brain Team.

[18] Sraffa, P., 1970. *Výroba zboží pomocí zboží (Úvod ke kritice ekonomické teorie*). Praha: Svoboda.

[19] Expenditure: main results. [online]. [2021-05-27]. Available from: https://ec.europa.eu/eurostat/databrowser/view/ SPR_EXP_SUM__ custom_1247008/default/ table?lang=en.

[20] GDP and main components (output, expenditure and income). [online]. [2021-05-27]. Available from: https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_GDP__custom_1246698/default/ table?lang=en.

[21] Labour productivity increased 1.6 times between 1999 and 2019. Calculated on the basis of Labour productivity and unit labour cost. [online]. [2021-05-27]. Available from: https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_LP_ULC__custom_1246459/ default/table?lang=en

[22] Pensions. [online]. [2021-05-27]. Available from: https://ec.europa.eu/eurostat/databrowser/view/spr_exp_pens/ default/ table?lang=en

[23] Pensions beneficiaries at 31st December. [online]. [2021-05-27]. Available from: https://ec.europa.eu/eurostat/ databrowser/view/spr_pns_ben/default/ table?lang=en

[24] Srovnání odlivu dividend v zemích Evropské unie. [online]. [2021-05-27]. Available from: https://www.cnb.cz/cs/menova-politika/zpravy-o-inflaci/tematicke-prilohy-a-boxy/Srovnani-odlivu-dividend-v-zemich-Evropske-unie

[25] Projekce obyvatelstva České republiky - 2018 – 2100. [online]. [2021-05-27]. Available from: https://www.czso.cz/csu/czso/projekce-obyvatelstva-ceske-republiky-2018-2100

[26] World's billionaires have more wealth than 4.6 billion people. [online]. [2021-05-27]. Available from: https://www.oxfam.org/en/ press-releases/worlds-billionaires-have-more-wealth-46-billion-people

OECD REVIEW OF CZECH PENSION SYSTEM: CUI BONO?

Jaroslav Vostatek[1]

[1]*University of Finance and Administration,*
Estonská 500, 101 00 Prague 10, Czechia
email: jaroslav.vostatek@vsfs.cz

Abstract
The OECD has reviewed the Czech pension system on request of the Czech government, using its specific taxonomy of "pension tiers" that is (shall be) descriptive (not prescriptive) and consistent over a range of countries; The first two OECD tiers are mandatory: a redistributive public tier and an insurance public and/or private tier. The team agrees to the simplification of the benefit formula of the Czech public old-age pension; the basic pension benefit may be adjusted to achieve (political) redistributive objectives. The team dramatically recommends reducing drastically the minimum number of years required to be eligible to both the basic pension and the earnings-related component at the statutory retirement age. The social assistance benefit level shall be indexed to nominal wage growth. A higher social assistance benefit level shall be introduced for people reaching the statutory retirement age. The third pension tier in the OECD taxonomy are all "voluntary pension arrangements" including occupational pension schemes. In Czechia, the occupational pension schemes are practically prohibited due to former ultra-liberal governments. The OECD Review recommends introducing them in a UK or US manner or upgrade the Czech third pillar to the same extent. The OECD thus ignores the specific role of the personal pension schemes worldwide and tries to push through a large neo-liberal reform of the Czech ineffective third pension pillar. We may only decide to choose between the occupational and personal coats of the same neo-liberal solutions which are classified as "soft compulsion" arrangements by disinterested experts. The OECD approach is here very "prescriptive", it demands a substantial "diversification" of funds into ineffective "voluntary pension arrangements".

Keywords
Czech pension system; pension reform; public pensions; occupational pensions; personal pension savings; neo-liberal welfare regime

JEL classification
H55; J32; G51; P51; I38.

1 Introduction

In 2018 our government made a relatively general commitment to a pension reform: the universal old-age security ought to be defined, the equivalence principle strengthened, and people should be motivated to use the subsidized individual old-age products. The intragovernmental conflict led to the request for an OECD review of the Czech pension system.

2 Literature review

OECD (2020) provides an assessment of the Czech "retirement income provision from an international perspective and focuses on the capacity of the pension system to deliver adequate retirement income in a financially sustainable way. The review highlights OECD best practices for the design of pensions by covering all components of pension systems: safety nets, public pay-as-you-go schemes and private funded plans". The OECD review of the Czech pensions is basically structured according to the OECD specific taxonomy of pension "tiers": chapter 1 deals with Czech public mandatory earnings-related pensions, chapter 2 is assessing the financial impacts of aging, chapter 3 reviews "first layer of social protection for older people" and chapter 4 deals with "voluntary funded pension arrangements". The OECD pension system typology aims for a global classification of pension plans that is descriptive and consistent over a range of countries with different retirement-income systems; this typology consists of two

mandatory "tiers": an adequacy part and an earnings-related part. Voluntary provision, be it individual or employer-provided, makes up a third tier – see Fig. 1.

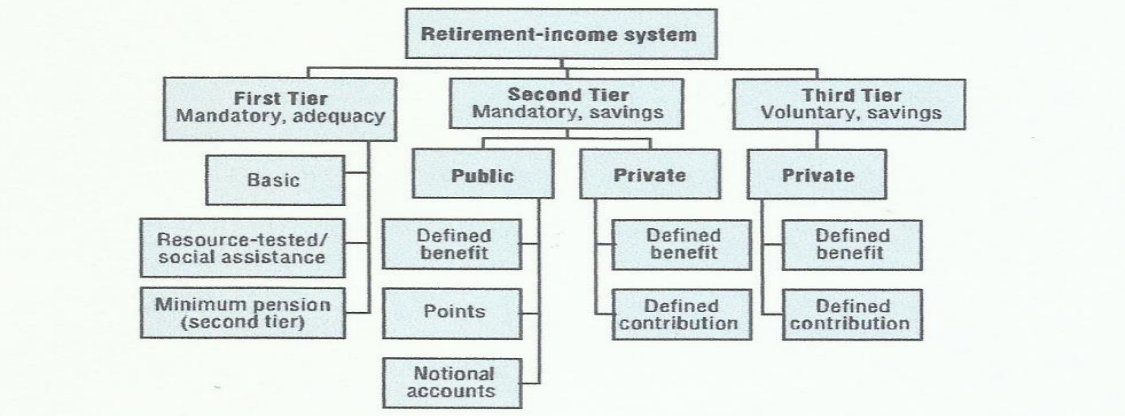


Fig. 1. OECD Taxonomy: Different types of retirement-income provision (Source: OECD, 2017)

Chapter 1 of the OECD review focuses on the main component of the Czech (old-age) pension system which is characterized by the OECD as a public mandatory earnings-related (defined benefit) pension scheme. The chapter also provides an overview of the demographic and labour market trends in Czechia, as well as pension reforms undertaken over the last three decades, including the reforms done after the Constitutional Court interference in 2011 into the thresholds used in the progressive reference-wage formula (reducing accruals for higher wages) which were in violation of the constitutionally guaranteed right to adequate income replacement. Current pension outcomes are also presented. The chapter describes the rules of the current pension system and assesses its capacity to deliver good pensions in a financially sustainable way.

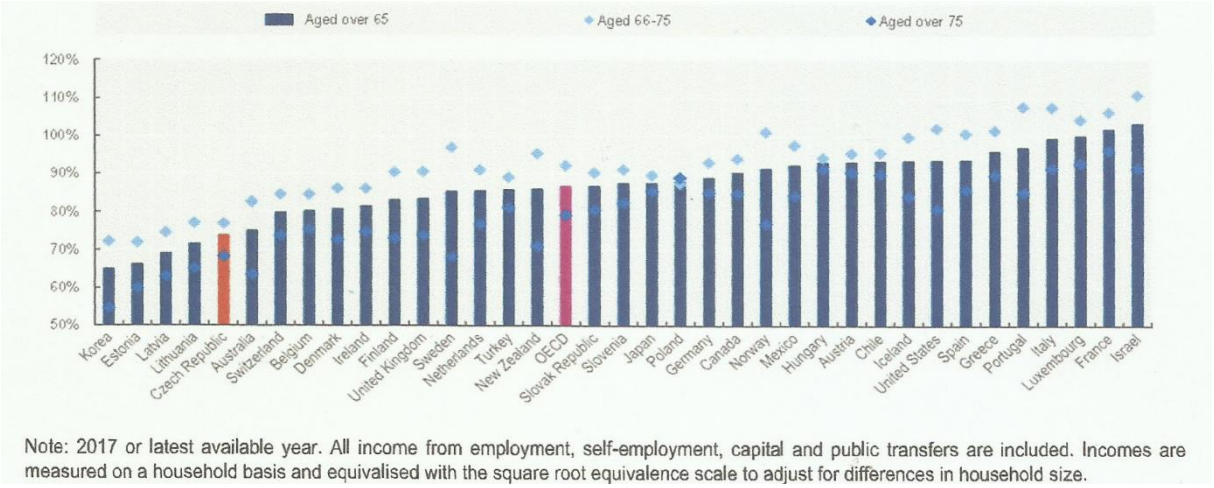


Fig. 2. Disposable incomes of people aged over 65, percentage of total population incomes (Source: OECD, 2020)

The first mentioned main weakness of the Czech pension system is, according to the OECD review, the relatively low average income of older people relative to that of the total population, despite high contribution rates. Fig. 2 documents this assessment by the comparison with other OECD countries. The Review does not explain this result and in the next paragraph it states that the "relative old-age income poverty rate, measured as the share of people over 65 with

equivalised income below half median, is relatively low in international comparison, equal to 7.4% in 2017" (OECD, 2020).

The second mentioned main weakness of the Czech pension system is the very complex build-up of pension entitlements, "making it difficult for contributors to understand their accrued rights (and anticipate their future pension level) and for the administration to manage the system" (OECD, 2020). That is a common knowledge in Czechia, at least since the above-mentioned ruling of the Czech Constitutional Court. "The way to calculate pensions should be simplified so as to identify entitlements when they accrue, enable workers to better anticipate their retirement income and make the management of the system easier and more precise" (OECD, 2020).

According to the third main weakness of the Czech pension system, ageing pressures will lead to financial imbalances driven by higher pension spending.

The fourth main weakness is, according to the OECD review, the fact that funded private pensions play a limited role, which allegedly "prevents reaping the benefits of a diversified structure. … voluntary private pensions should be better designed to boost their capacity to complement public pensions" (OECD, 2020).

The OECD Review also pays attention to pension entitlements for the time spent on childcare; the Czech law validates these periods for children up to four years of age (and excludes them from the reference wage). Fig. 3 "shows the impact of career breaks due to childcare on pension benefits under the assumptions of the OECD pension model. More precisely, it compares pension benefits for women who stop working during five years from age 30 to care for their two children born when the mother was aged 30 and 32 (at age 35 they are assumed to resume full-time work until the normal retirement age) compared with the full-career case. In the Czech Republic, due to generous childcare credits, such a career break has no impact on future pensions whatever the earnings level. By contrast, this career break generates a loss of 4% on pensions on average across OECD countries for average-wage workers. In countries with funded DC systems, with a one-to-one relationship between actual contributions and pensions, such as Mexico, Australia and Chile, the losses from childcare are much larger, resulting in more than 12% lower pensions at the average-wage level" (OECD, 2020).

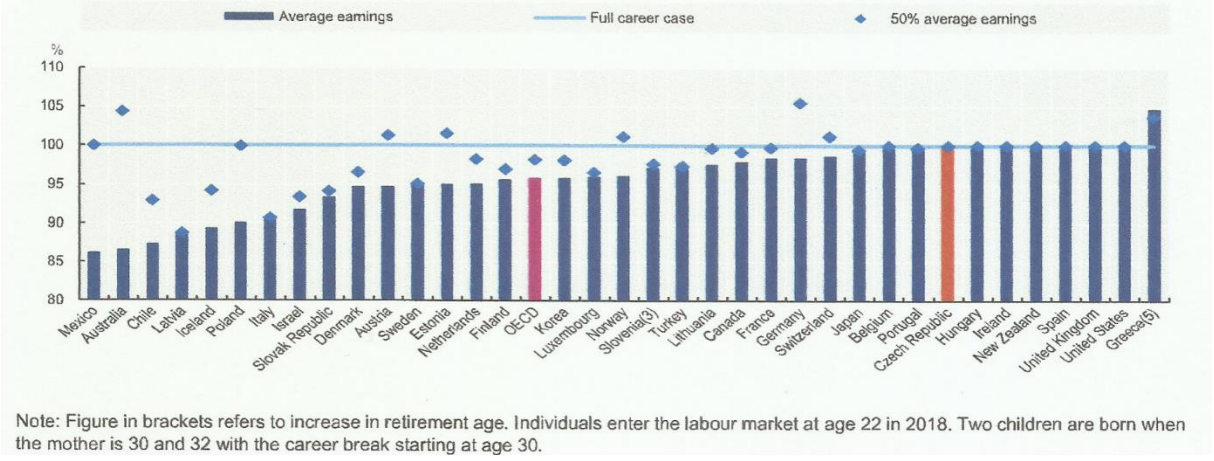


Fig. 3. The effect of a childcare career break on pension entitlements for women (Source: OECD, 2020)

According to the OECD, Czechia is "an outlier with the longest period to be eligible for earnings-related pensions … Mexico comes second with "only" 24 years required. On average among OECD countries, it is equal to nine years. In many countries, it is less than one year" (OECD, 2020). Fig. 4 demonstrates this (alleged) extremeness.

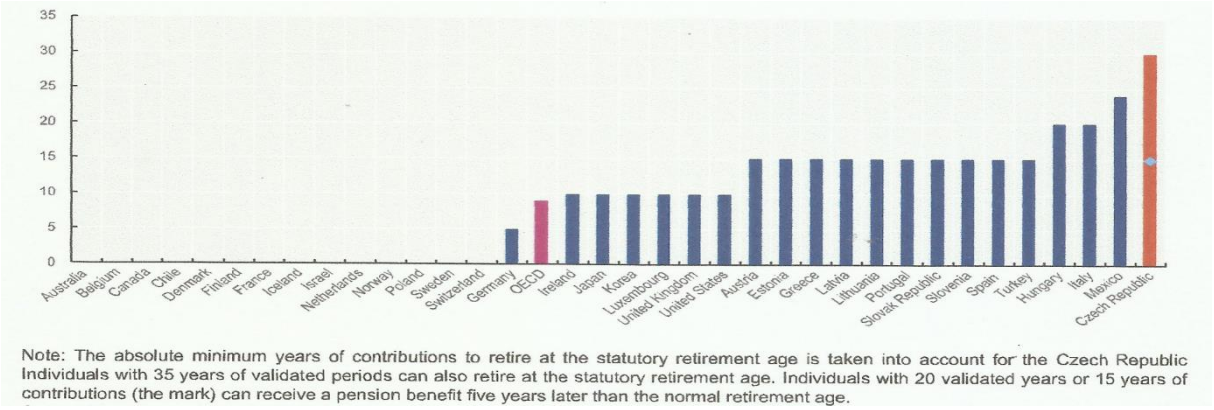


Fig. 4. The minimum years of coverage required is extremely high in Czechia (Source: OECD, 2020)

The OECD key recommendation No. 1 is "drastically reduce the minimum number of years required to be eligible to both the basic pension and the earnings-related component at the statutory retirement age, and make the basic pension benefit proportional to the validated contribution period; move towards ensuring that the first year of contribution generates entitlements" (OECD, 2020). Afterwards the Ministry of Labour and Social Affairs reduced the basic number of years required to be eligible to the old-age pension from 35 to 25 years in its pension reform proposal.

The OECD key recommendation No. 2 is to "simplify the benefit formula such that entitlements earned for each contribution period are clearly identified … and people can better anticipate their future pension level. This can be done by calculating earnings-related entitlements using a constant effective accrual rate across earnings levels (up to a ceiling) while adjusting the basic pension benefit to achieve redistributive objectives" (OECD, 2020). "Proposals by the Fair Pension Commission in January 2020 (triple the basic pension level and constant effective accrual rate of 0.39%) would greatly simplify and go a long way in mimicking the current pension formula … at retirement … The Commission proposals imply a high level of basic pension and a low level of accruals in international comparison, consistent with maintaining high progressivity… Other components of the Commission proposals add some new complexity: complex options to grant new pension credits, additional bonuses for childcare and long (more than 41-year) careers" (Boulhol and Geppert, 2020).

Next OECD key recommendations are: Implement the legislated increases in the retirement ages and their convergence between men and women and link the unified retirement age to gains in life expectancy, for example to transmit two-thirds of increases of life expectancy at older ages to the statutory retirement age. Raise the minimum early retirement age and adjust early retirement ages to life expectancy as well. Eliminate age-specific credits for unemployment periods" (OECD, 2020).

The Pension Review also recommends to "raise the contribution base of the self-employed from its current level of 50% to 75% of profits to better harmonise contributions and entitlements between employees and the self-employed with similar earnings" and to "Avoid encouraging self-employment through lower contributions, which generate lower pension entitlements. If there is a political choice to support self-employment, make any subsidy explicit by financing the contribution gaps compared with employees having similar income through general taxes" (OECD, 2020).

The final key recommendation to Czech public pensions is to "Consider shifting part of the financing (of at least some redistributive components) to taxes to boost pensions for people earning more than the average wage" (OECD, 2020).

Chapter 3 of the OECD review focuses on the "first layer of old-age social protection" in Czechia, which „consists of first-tier benefits from the contributory pension scheme and several non-contributory safety-net benefits". Currently, "about 2 million people aged 65+ receive contributory old-age or survivor pensions (or both) … In addition, 465 000 safety-net benefits support people aged 65+, some of whom receive several benefits. Among these schemes, health-related benefits are predominant while social assistance plays a minor role. … A low level of income inequality and a high coverage rate from contributory pensions are the main drivers of this pattern. … the legal living minimum is about 10% of the … average wage. This is one of the lowest levels in the OECD and equal to about half of the OECD average" (OECD, 2020), see Fig. 5. The social assistance benefit level shall be indexed to nominal wage growth. Social assistance ("living minimum") at 10% of gross average earnings … might not effectively prevent old-age poverty in Czechia. The OECD recommendation is to increase the benefit level at least for people older than the statutory retirement age (Boulhol and Geppert, 2020).

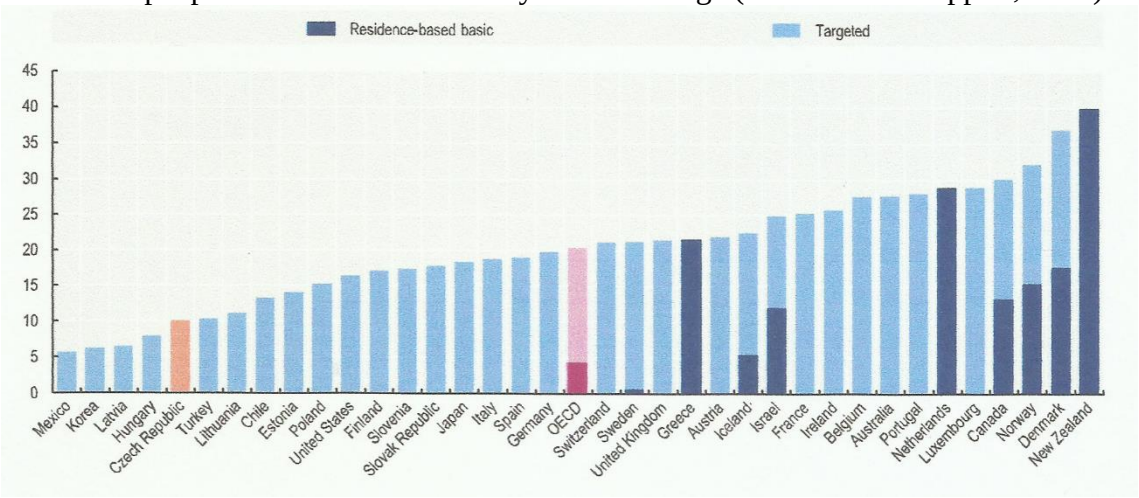


Fig. 5. Non-contributory first-tier benefit level [% of gross average earnings], 2018 (Source: OECD, 2020)

Chapter 4 of the OECD review examines the Czech voluntary funded pension system (since its creation in 1994) and evaluates it against "OECD international best practices". The Czech "third pension pillar" has large coverage of the population but small contributions, the state provides significant financial incentives. Low performance of the pension funds stems from conservative investment strategies due to the annual non-negative return guarantee – according to the OECD review. Participants mostly withdraw lump sums (instead of regular payments).

"The Czech market of pension management companies is moderately concentrated. Since 2015, eight pension management companies are active in the supplementary pension schemes. … At the end of 2019, the pension management companies were managing assets in 36 pension funds, of which 28 participating funds and eight transformed funds. In addition, the two largest companies managed 45% of the assets for 46% of the participants. The Herfindahl-Hirschman Index (HHI), which measures the market concentration of a certain industry, stood at 0.16 when calculating it based on both assets and members, indicating a moderate concentration in the market … Three of the pension management companies are subsidiaries of banks and use the banks' network for the distribution of their funds. The other pension management companies are subsidiaries of insurance companies and investment funds and rely more on intermediaries, which can charge a commission of up to 7% of the national average salary for each new contract. This commission cannot be charged to the participant and is paid by the pension management company from the total fees paid by participants. However, intermediaries have an incentive to sell other types of products, given that only pension plans have a cap on commissions. The three pension management companies that are subsidiaries of banks hold

48% of participants, suggesting that it may be easier for these companies to attract clients" (OECD, 2020).

According to the OECD Review Czech pension management companies usually charge the maximum allowed by law with few exceptions. "Pension management companies have increasing profits due to higher fee income. They generated a net after-tax profit of CZK 1.9 billion in 2019 … This represented 87% of operating expenses and 18% of total equity. The main income item for pension management companies is income from fees paid by participants. This income has grown constantly over the period 2013-19, and in particular in 2016 (+19%), due to the increase in the statutory limits on fees for the management and appreciation of assets… Fees charged by pension management companies to members of DC plans are middle-ranged in international comparison" (OECD, 2020). Czech pension companies also pay management fees to their sister companies within their financial groups.

The first key recommendation to the Czech voluntary funded pensions is to strengthen the role of these pensions in the overall pension system by "introducing a new, occupational pension scheme, or by improving the design of the existing supplementary pension schemes… The Czech Republic is the sole OECD country where the funded pension system only consists of a voluntary personal pension scheme. All the other countries have several pension schemes, sometimes combining mandatory and voluntary, occupational and personal plans. This allows pure voluntary personal schemes to have rules that are more lenient with respect to participation, contributions and withdrawals. The Czech Republic lacks this intermediate layer between public pensions and voluntary personal pensions. One option could be to introduce a voluntary occupational pension scheme, where employers could elect to establish a plan for their employees, and employees could choose whether to join that plan. This would help increasing the role of employers in retirement income provision. Alternatively, the Czech authorities could build on the strength of the current supplementary pension scheme and improve it" (OECD, 2020).

The OECD experts think that our third pension pillar might play a role similar to the occupational pension pillars in Western countries. To achieve it they formulated these (further) key recommendations:

• "Improve the performance of pension funds by encouraging or nudging participants to switch to participating funds as they have more flexibility to pursue growth investment strategies because they do not have to provide an annual non-negative return guarantee, and by promoting the access to an appropriate default investment strategy.
• Better align fees charged to participants with the costs incurred by the pension management companies by analysing the cost of investing in different asset classes and applying a regressive scale for management fees to pass on economies of scale to participants as assets under management grow.
• Encourage participants to contribute more by redesigning some elements of state financial incentives, setting up a mechanism where contributions increase automatically up to a pre-set maximum, promoting employer contributions, and providing information about expected benefits from the entire pension system.
• Lengthen contribution periods by increasing the minimum saving period to withdraw retirement benefits and keep the state financial incentives.
• Consider introducing automatic enrolment into an occupational pension plan or a participating fund, with appropriate default contribution rates and investment strategies.
• Extend the take-up of products providing lifelong retirement income by discouraging the lump sum pay-out option and increasing the attractiveness of life annuities through additional product features (e.g. guaranteed period, survivor option, or profit sharing)" (OECD, 2020).

3 Methodology and data

The comparative analysis of the whole pension systems is useful for any evaluation of a national pension system, and this holds especially for the Czech pensions which are remote to any simple model. A scientific analysis should not ignore the different welfare regimes developed by Esping-Andersen (1990); it is useful to add the neo-liberal welfare regime and we get the typology in Fig. 6.

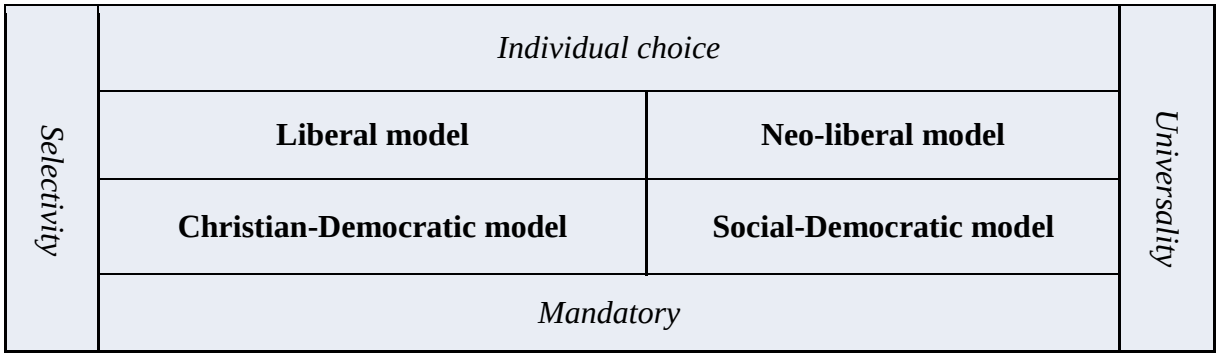


Fig. 6. Basic welfare regimes (Source: own elaboration, inspiration: Bovenberg and Ewijk, 2012)

According to European Parliamentary Research Service there are three pension pillars: public, occupational and personal – see Fig. 7. 'First pillar' (public) pensions: … administered by the state and usually financed from social insurance contributions and/or general tax revenues on a PAYG basis. In central and eastern European Member States in particular, statutory mandatory funded individual plans, (pillar 1bis pensions), have been introduced alongside pillar 1. 'Second pillar' (occupational) pensions: Private supplementary plans linked to an employment relationship. Contributions are made by employers and/or employees … These plans may be mandatory or quasi-mandatory and commonly established via employment contracts or by social partners in sector or profession based collective agreements… 'Third pillar' (personal) pensions: … private voluntary supplementary plans in which contributions are invested in an individual account managed by a pension fund or financial institution. They may be tax-incentivised" (Eatock, 2015).

We have also to mention the World Bank "multi-pillar model" which separately includes a non-contributory "zero pillar" (basic or social pension, at least social assistance (universal or means tested). Pillar 1 is a public mandatory and contributory system linked to earnings, pillar 2 are mandated occupational or personal pension plans, pillar 3 contains voluntary occupational and personal pension plans and the (new) pillar 4 includes access to informal support (family) other formal social programs (health care), and other individual financial and nonfinancial assets incl. homeownership (Holzmann and Hinz, 2005).

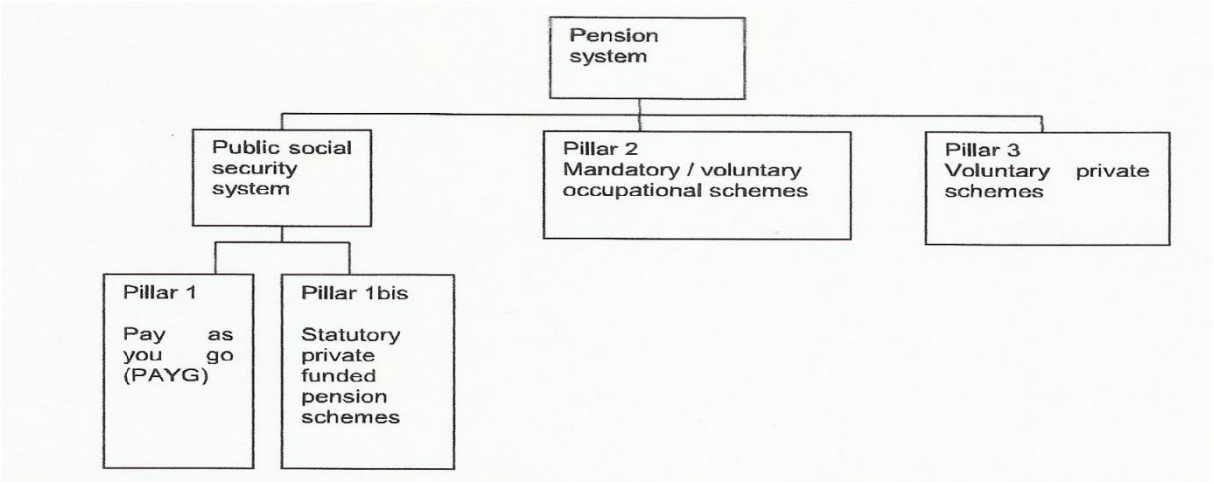


Fig. 7. EU classification of pension systems (Source: Eatock, 2015)

The OECD Review analyses many interesting data, e.g., the relative level of the Czech general assistance benefit: it is about 10% of the 2019 average wage. This is one of the lowest levels in the OECD countries and equal to about half of the OECD average. The data in our Fig. 4 generate a great misunderstanding: in standard cases the elderly have more than 35 validated years at the statutory retirement age – in this sense there is no need to realize the OECD key recommendation No. 1 ("drastically reduce the minimum number of years required to be eligible to both the basic pension and the earnings-related component at the statutory retirement age"); another question is if (and how) these "components" are to be proportionally reduced in extreme/rare cases with less than 30-35 validated years. Also, we should differentiate between the (future) basic/flat pension and the earnings-related pension. UK data in the Fig. 4 (10 years) represent a partial truth only: the elderly get full basic pension after 35 years of (paid) national insurance contributions; we might follow them. The (pure) earnings-related pension should have a quite different design e.g., according to the OECD recommendation.

The OECD Review ignores private insurance products even though life insurance companies are the most important providers of personal pension products worldwide and in Czechia these products get fiscal support. And on the contrary, there are no "pension companies" serving the standard voluntary personal pension pillar abroad. The Bauspar savings and Bauspar savings banks are another special case, with fiscal support as well.

The OECD methodology and data have influenced the recommendations of the review of the Czech pension system.

4 Empirical results

The OECD Review confirms the proposed amalgamation of the hitherto accrual pension rate 1.5% and the reduction coefficient 26% for average wages between the threshold of 44% of national average wage and the 400% ceiling: 1.5% * 26% = 0.39%.

"The new pension system would largely provide similar pension benefits for those earning more than 44% of the national average wage… The level of the basic component and the accrual rate is such that, for someone with a 41-year career, the pension benefit is the same in the current and proposed system. For those earning less than 44% of the average wage, benefits would go up since the basic component is increased. These will be largely people working part-time given that the minimum wage is 40% of the average wage, only slightly less than the current threshold" (OECD, 2020); confer Fig. 8. "The Commission proposals imply a high level of basic pension and a low level of accruals in international comparison, consistent with

maintaining high progressivity. With constant spending, progressivity can be increased (reduced) through a higher (lower) basic pension and a lower (higher) constant accrual rate. Other components of the Commission proposals add some new complexity: complex options to grant new pension credits, additional bonuses for childcare and long (more than 41-year) careers" (Boulhol and Geppert, 2020). Simple technical solution needs to respect actual higher average career (44-45, not 41 years) and leads to a flat-rate old-age pension of 32% NAE.

Disability and survivor pensions should also undergo a similar reform of the parameters. An adequate solution for the disability pension is to have 3 basic disability pensions (17.33%, 24.67%, 32% NAE) and 3 earnings-related accrual rates (0.13%, 0.26%, 0.39%), both depending on the disability level.

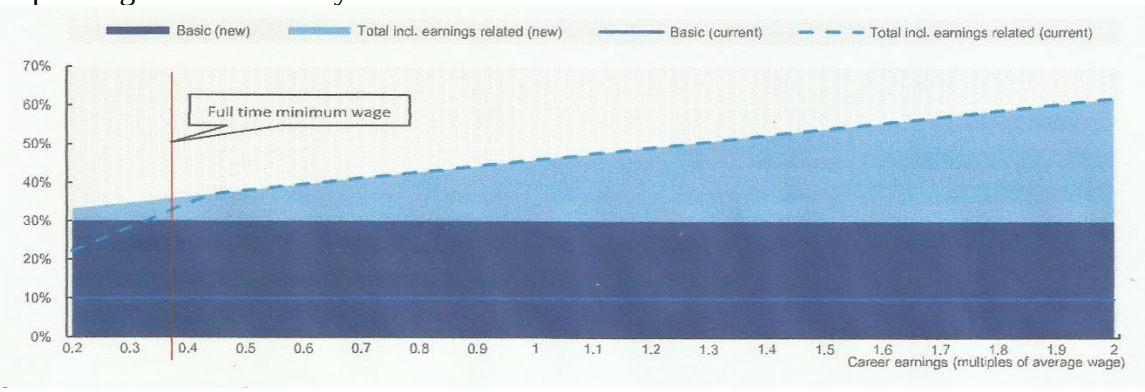


Fig. 8. Reform proposal by the Czech Commission on Fair Pensions: career of 41 years (Source: OECD, 2020)

A similar reform of the survivor pensions may lead to these simple parameters: basic pension of 20% NAE and accrual rate 20% from the real or potential old-age or disability pension of the deceased.

The ruling governments may be expected to revise the pension parameters and constructs, preferably alongside "their" welfare regimes. For these purposes the indexation of benefits may be used as well, as is the case e.g., in the United Kingdom. The basic/flat pensions may be defined in absolute terms.

The personal pensions may/should be reformed also according to the welfare regimes in question. A fair solution would not be a transition to a one-sided neo-liberal solution with a maximum use of behavioural economics to get the citizens "voluntarily" into the private pension pillar. Typical personal pension pillars do not work in this way, the OECD reviewers know it ("pure voluntary personal schemes … have rules that are more lenient with respect to participation, contributions and withdrawals" see higher). And in the next sentence they even recognize that generally there is an "intermediate layer between public pensions and voluntary personal pensions". That is true but it also contradicts the OECD pension taxonomy! In reality they submit a new, "better done" former (1993) Czech "second" pension pillar (according to the WB taxonomy). The basic conceptual OECD problem is the amalgamation of the occupational and personal pensions in common pension "tiers". It is also a practical problem; the occupational pillars and personal pillars play very different roles in the pension security. In Czechia, occupational pension insurance is de facto prohibited by the law regulating this insurance, by means of which an EU directive aimed at creating a single market for funded occupational pensions within the EU was (formally) implemented. We need to lift the ban on occupational pensions, but not necessarily to expand them more than e.g., in Austria.

The main purpose of purchasing Czech supplementary pension insurance does not involve individual security in old age. The purpose is to divest excess liquidity and the tax optimisation. The construct of supplementary pension insurance was also of fundamental significance to many participants: it was a simple bank savings product with a high degree of state support in

the form of state contributions (originally up to 50%!) with a guaranteed non-negative nominal yield. The fiscal illusion that the state support is free also played a significant role. „…the third pillar is not really a pension scheme. It is akin to a tax-advantaged savings account. The system should not be presented to the public as a source of meaningful future replacement income" (World Bank, 2017). „Personal pensions have relatively wide take-up in only a few Member States (over 60% coverage in Czechia, over 30% in … Germany) while in most Member States take-up is moderate and fragmented, and in some, nearly non-existent" (EC, 2017). „Pillar 3 (voluntary retirement savings) should not receive …subsidies, which are regressive and also have not been shown to have any significant effect on private saving" (Willmore, 2000).

The vision of the OECD experts about the need to develop state support for the 3rd pension pillar in Czechia was derived from an international comparison of state support for private pension schemes, compiled by the OECD (2018). According to this comparison, Czechia is "only" above average in its fiscal stimulation for the main private pension plans; this is given by the processing method: the OECD study ranked supplementary pension savings paid by participants as the main Czech private pension plan; the calculation presupposes savings at the amount of 5% of the gross wage throughout the entire active life. In reality, the participants' average saving is at the level of a mere 2.3% of wages which means a state contribution at the amount of 24.3% of the participants' contributions. As such, the state support for higher contributions on the part of the participants, as modelled by the OECD, is relatively low here. Moreover, a typical Czech client in 2018 had only saved for 8 years; the OECD presupposes the payment of contributions for a period of 45 years. The OECD calculation is marked as Czechia (OECD) in Fig. 9, while the real value of the fiscal stimulation is marked as Czechia (Author): 65.1% of the employer's contribution – the highest value among all the countries. Almost all other countries have occupational pensions, which are of considerably greater significance than personal pensions, as their main pension plan; in Czechia, the occupational pensions have merely been "substituted" by the employers' contributions to the personal pensions.

The OECD recommendations for the reform of the 3rd pension pillar unilaterally prefer the neo-liberal pension policy which would lead to its transformation into a so-called 2nd pension pillar according to the World Bank typology. The interest of Czech pension companies in such reform is understandable, but it is at odds with the standard task of the 3rd pension pillar in the OECD countries. The role of any occupational pension funds should be derived from the interests of the trade unions and the employers. There is a certain "pension gap" in Czechia but public policy may also focus on the social-democratic policy: to strengthen the social pension insurance. Voluntary supplementary pension insurance of this type could also be considered.

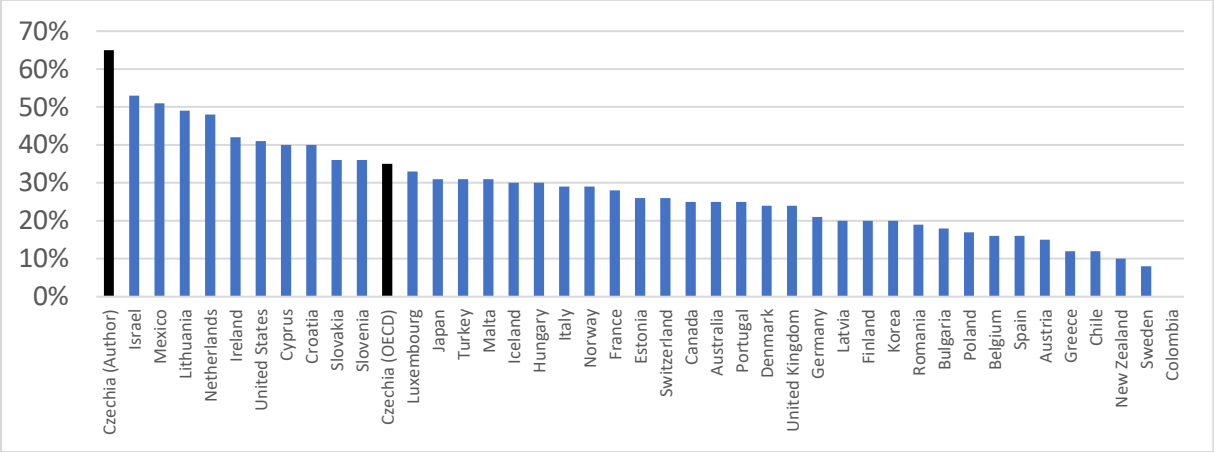


Fig. 9: Financial incentives of the main private pension plans in 2018: % of the pension contributions of an average earner (Source: OECD, 2018; author)

5 Conclusion

The OECD Review has confirmed the suitability of dividing the Czech public pension pillar into two tiers. A "technical" pension reform, not revising the high progressivity of the public pensions, would transform the hitherto basic component into the biggest pension tier at the level of 32% of national average earnings, providing some two thirds of pension income for retirees with average earnings. Czechia needs such a reform to make the public pensions understandable for the population and its retirement planning. Some additional proposals of the Fair Pension Commission add some new complexity to this technical reform, at the expense of the level of the basic pension (additional bonuses for childcare and for "long" /more than 41-year/ careers). The OECD Review assesses the Czech childcare pension credits as generous, and it concludes that a childcare career break has no impact on pension entitlements for women.

The technical pension reform reveals the supplementary role of earnings-related component of the hitherto Czech "pension insurance". The accrual pension rate 1.5% shall be multiplied by the hitherto "reduction coefficient" 26%: 1.5% * 26% = 0.39%.

The technical reform must include the disability and survivor pensions as well, the application of the same rules generates no additional problems. Next pension reforms may follow, considering the social policy of the governments. The 4 welfare regimes are at their disposal.

We strongly oppose the OECD key recommendation No. 1: to reduce drastically the minimum number of years to be required to be eligible to both public pensions. The next social insurance pension may generate the entitlement from the first year of contribution, but the basic pension may continue with carrier of 35 years needed to get the full pension.

The Czech 3rd pension pillar requires fundamental reform simply because essentially it does not perform its general basic function: securing the elderly. The third pillar has practically no significance for most people throughout the world. The real purpose of this Czech pillar is to divest excess liquidity and the tax optimisation. The Czech special "pension companies" are superfluous. The OECD recommends an expansion of neo-liberal elements. The amalgamation of the occupational and personal pensions in common OECD pension "tiers" neglects their different roles in the OECD countries and in the welfare regimes as well.

6 Acknowledgement

The paper was created in solving the student project "Perception of taxes and social security contributions in the Czech and Slovak Republics" using objective oriented support for specific university research of the University of Finance and Administration.

References

[1] Boulhol, H. and Ch. Geppert, 2020. Public pensions. *OECD Pension Review: Czech Republic, Chapters 1 & 3. Presentation at the Fair Pension Commission meeting.* Prague, 27 November 2020

[2] Bovenberg, L. and C. van Ewijk, 2011. *The Future of Multi-Pillar Pension Systems*. Netspar Discussion Paper No. 09/2011-079. [online]. [2021-05-27]. Available from https://ssrn.com/abstract=1935307.

[3] Eatock, D., 2015. *European Union pension systems. Adequate and sustainable?* European Parliamentary Research Service. PE 571.327 EN. Briefing November 2015. [online]. [2021-06-28]. Available from: http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/571327/EPRS_BRI(2015)571327_EN.pdf

[4] EC, 2017. *Commission Staff Working Document accompanying the Proposal for a Regulation of the European Parliament and of the Council on a pan-European Personal Pension Product (PEPP).* Brussels. [online]. [2021-05-27]. Available from: https://data.consilium.europa.eu/doc/document/ST-10654-2017-ADD-1/en/pdf.

[5] Esping-Andersen, G., 1990. *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press & Princeton: Princeton University Press.

[6] Holzmann, R. and R. Hinz (eds.), 2005. *Old-Age Income Support in the Twenty-first Century: An International Perspective on Pension Systems and Reform*. Washington: The World Bank.

[7] OECD, 2017. *Pensions at a Glance 2017: OECD and G20 Indicators*, Paris: OECD Publishing. [online]. [2021-06-28]. Available from: http://dx.doi.org/10.1787/pension_glance-2017-en.

[8] OECD, 2018. *OECD Pensions Outlook 2018*. Paris: OECD Publishing. [online]. [2021-06-28]. Available from: https://doi.org/10.1787/pens_outlook-2018-en.

[9] OECD, 2020. *OECD Reviews of Pension Systems: Czech Republic*. Paris: OECD Publishing. [online]. [2021-06-28]. Available from: https://doi.org/10.1787/e6387738-en.

[10] World Bank, 2017. *Capital Market Assessment / Market Development Options: Czech Republic.* Washington: The World Bank. [online]. [2021-05-27]. Available from: https://www.mfcr.cz/cs/soukromy-sektor/kapitalovy-trh/podnikani-na-kapitalovem-trhu/2017/zprava-svetove-banky-o-kapitalovem-trhu-29766.

[11] Willmore, L., 2000. *Three Pillars of Pensions? A Proposal to End Mandatory Contributions*. United Nations DESA Discussion Paper No. 13. [online]. [2021-05-27]. Available from: https://www.un.org/esa/desa/papers/2000/esa00dp13.pdf .