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## THE IMPACT OF THE ECONOMIC AND COVID-19 CRISES ON THE VISEGRAD GROUP COUNTRIES

**Purpose.** To analyze the development of individual economic indicators, that are key aspects in evaluating the economy of countries in the context of international comparison and competitiveness. Through year-on-year changes, to monitor the development of indicators such as gross value added, total employment and hours worked in the last two crisis periods. To compare the impact of the economic and COVID-19 crises on the mentioned economic indicators and labor productivity in the Visegrad Group countries.

**Methodology.** Several scientific methods suitable for the detection of the impact of crises were used in the article. In particular, elementary time series analysis and index numbers were calculated to detect the most important development trends of selected indicators. Chain indexes and fixed base indexes were figured for the gross value added, employment, number of hours worked, labor productivity per person employed and labor productivity per hour worked. Within the indicators it was searched for the impact of economic and COVID-19 crises.

**Findings.** Analysis of labor productivity and its development in crisis periods, as well as analysis of development of individual indicators from which the productivity was calculated was the key issue of the study. Despite the assumptions of some authors that the pandemic crisis will have a more significant impact on the change of countries' economies than the global economic crisis, the study did not support this assumption. The year-on-year changes of the indicator in time of both crises were approximately the same, in some cases we recorded a higher year-on-year decrease in indicators due to the economic crisis and not due to the COVID crisis.

**Originality.** The development of selected indicators including two types of labor productivity within the global economic crisis and the pandemic crisis COVID-19 was subjected to analysis among Visegrad Group countries.

**Practical value.** The analysis of economic indicators carried out on a country-by-country basis can later be used as a support in a deeper analysis of individual indicators and productivity, either within regions of countries or individual sections of national economies, in examining the impact of economic and COVID-19 crises.

**Keywords:** *economic crisis, COVID-19, labor productivity, gross value added, employment*

**Introduction.** Sustainable economic growth and economic development is in interest of countries, of individual economy sectors and, of course, of the companies and human beings themselves. Two crises have hit the world in the last 15 years [1]. The first, in 2008, was the global economic crisis, often described as one of the biggest crises in terms of the impact on the world economy, with a decline in the world GDP from \$ 63.6 trillion in 2008 to \$ 60.3 trillion. At the same time, this economic crisis led to a decline in GDP growth from 4.3 % in 2007 to -1.7 % in 2009 [2, 3]. The second crisis, we are currently in, is a pandemic crisis – COVID-19, which has caused again an economic crisis and decline of the economic output all over the world. Among other things, the COVID-19 pandemic has a negative impact on the economic situation of countries by reducing their economic activities, and economic growth, reducing employment, and negatively affecting their welfare levels. Countries are constantly taking new measures to prevent this negative impact of the pandemic on economies of the countries as much as possible, to halt the decline in economic growth and to reach pre-pandemic levels [1]. In current scientific studies, the authors compare the global economic crisis with the COVID-19 crisis. In one aspect, however, the two crises are incomparable, and the fact is that in the current pandemic crisis, people are much more limited and restricted in their personal movement, in traveling; in some cases, per-

sons are not allowed to leave their homes. On the other hand, not everyone can work from home using computers, which ultimately prevents people from work and possibly prevents generating income during the Covid pandemic, resulting in a reduction in production in all sectors [4] and also resulting in reduction in quality of life.

**Literature review.** At the beginning of the 21<sup>st</sup> century, many countries saw economic growth along with reduced employment levels, so-called “jobless economic growth”. This led to the conclusion that the increase in economic output came mainly from the higher productivity of the workers already employed and not from the increase in employment [5]. The simplest and at the same time most general definition of productivity is that productivity is defined by the ratio of the volume of output to the volume of input, i. e., how an efficient economy allocates its resources. Many authors agree that the financial system has been disrupted since the economic crisis, which means that it does not work well in capital allocation, which limits productivity growth [6, 7].

Productivity is an important aspect of countries' competitiveness. Its important and inseparable part is the labor productivity. The development of labor productivity is analyzed by many authors according to many criteria, such as the difference between labor productivity in the northern and southern countries of the world, which affects its development and the like. However, technological progress is a very important aspect. Neoclassical theory assumes that technological progress is ex-

ogenous and has the same impact on economic growth in all countries. Technological innovation is expected to spread freely from developed countries to poorer countries that are achieving faster growth [8]. The spread of the principles of complex economic analysis and internal control is gradually becoming a global trend. The defining feature of the current stage of development of the world's leading countries is a high degree of dynamism and variability, which is based on rapid scientific and technical progress and prompt introduction of innovations into the production process [9]. Technological knowledge is available and identical for all countries, and thus the difference in economic growth and labor productivity development explains the nature of the knowledge used [10, 11]. The specifics of a modern business environment are turbulence, instability, and uncertainty. The current economic and business environment is influenced by various ordering and subjective factors occurring as a result of an unstable market [12].

As mentioned above, at the beginning of the 21<sup>st</sup> century we witnessed the so-called "Job-free growth", which resulted in a high level of unemployment over a long period of time, despite economic growth in the countries [5]. Gradually, however, with the development of national economies, this situation is changing. The study, which looked at the impact of technological developments on certain types of sectors, did not show a significant change in the number of people employed or in labor productivity, which is characteristic of economic and social stability [13].

We consider technological progress, development and advancement of science and research to be a natural development throughout the world, as evidenced by the adjustment of economies and governance of individual countries. However, there are also situations for which countries and their economies are not prepared, such as crises. If the global economic crisis occurs, solutions need to be found for all countries and not just one. The economic crisis in 2008, which affected the whole world, was completely different from the pandemic crisis we are currently in. The COVID-19 pandemic is a challenge for all countries in the world. In essence, from one day to the next, countries have faced public health problems with the economic crisis at the same time [14].

The pandemic caused huge social unrest and economic losses, production interruptions, redundancies, closures, some employees started to work from their homes and also schools closed in some countries and moved to online teaching [15]. Despite the general severity of the pandemic, national measures varied [16]. Many countries have implemented harsh measures, such as closing borders, closing cities and blockades, which have severely affected countries' economies and financial markets. Although this is a health crisis, several economists have begun to study the impact of the pandemic on different sections of the economy [17]. Most research is currently focused on specific countries, individual companies, analysis of the effects of the pandemic on joint stock companies, on the correlation between the stock markets of countries before and after the COVID-19 crisis [18]. Thus, most research is country or business-specific, but only a small number of studies address the global implications of a pandemic. Some studies analyzing and prospecting the countries of Central and Eastern Europe suggest that very few regions are able to restore the employment cuts caused by the crisis to pre-pandemic levels until two years after the start of the economic recovery [19].

**Unsolved aspects of the problem.** Some authors assume and are inclined to believe that the COVID-19 crisis will have a greater negative impact than the global economic crisis. Therefore, there are already a number of studies that suggest the development of economies after the pandemic crisis, based on research conducted after the economic crisis. However, we must not forget the fact that the global economic crisis has not had fatal consequences for people's lives like the current pandemic crisis. Among the differences between both crises is also the fact that the pandemic crisis has forced countries to close borders and businesses,

for protection human health. There are aspects in which we can compare these two crises, and at the same time there are aspects in which these crises are incomparable. For example, if we compared labor productivity per person employed and labor productivity per hour worked, the differences were significant, and it is therefore important to analyze indicators among and within countries from several perspectives and aspects.

**The purpose of the article.** The research focuses on the labor productivity of Visegrad four countries calculated as the share of gross value added in constant prices and total employment, as well as the share of gross value added in constant prices and hours worked. The purpose of the study was to analyze the development of economic indicators such as gross value added, total employment, hours worked and labor productivity. The next focus was the comparison of the impact of the economic crisis and the pandemic crisis within the year-on-year development of the mentioned indicators followed by finding out which of these crises had a greater impact on the year-on-year change in both labor productivities as well as on the individual economic indicators.

**Methods.** Theoretical and empirical methods of research was implied in the paper, the steps based on which the study was developed are as follows. The first step focused on the study of domestic and foreign literature, which provided a very useful and necessary overview of the subject matter. Based on this, the objectives of the article were set, which was to compare and analyze the data within a specified time interval, consisting of two global crises. It was a time series analysis, comparison of development of indicators, namely indicators of real gross value added, total employment and hours worked. The used methods included the chain index and fixed base year indexes. When using these indicators, calculations and analysis of labor productivity and its development in times of crises was essential to meet the results of the research. The analysis of the impact of the global economic crisis and the COVID-19 crisis on labor productivity and on other sub-indicators is and will be in interest of economists all over the world and the presented study can also show some of the results in case of the Visegrad Group countries.

**Results.** Four Central European countries, which are members of both the European Union and NATO, have formed an informal grouping called the Visegrad Group (V4). These countries are Slovakia, the Czech Republic, Hungary, and Poland, which carry out regional cooperation in various sectoral policies, cross-border cooperation, and the promotion of common interests within the EU. For this reason, we focused on the development of individual economic indicators during the crisis periods in these four countries. The time span of the analysis was therefore from 2008 to 2020 inclusive.

Using the base year index, which means the index comparing selected indicators in year 2020 with 2008, we discovered a positive rate of change of the real gross value added (GVA) indicator in all four V4 countries. The highest real increase was observed in Poland, where the increase from 2008 till 2020 was higher than 43 %. It was followed by Slovakia, with a positive change of 20.3 %, Hungary (18.1 %) and the lowest increase in the Czech Republic, namely 15 %. The development of the overall employment rate, using the base year index, was also positive in all countries. Within the analyzed period, the highest change in total employment occurred in Hungary, where the country's total employment increased by 15.2 %. At the same time, it is the only country in the V4 countries where the increase in this period was higher than 10 %. In Slovakia there was an increase in total employment by 6.8 %, in Poland by 4.1 % and the lowest increase was in the Czech Republic at only 2.6 %. The second employment indicator was the total number of hours worked in the V4 economies. In Hungary alone, we see an increase in the number of hours worked by 3.6 %. Other countries were faced by a decrease in this indicator. The highest negative decline was achieved in Slovakia, namely 6.4 %, followed by the Czech Republic with a decrease of 2.3 % and

Poland, where there was a drop of the total number of hours worked by 0.4 %. The decline of the hours worked can be rated also positively as it means that the population in employment worked at the end of the analyzed period less compared to the year 2008 and so the population in employment had more time for leisure and relaxation, which is needed for the recovery of the working and active population. It is visible also from this short analysis that the labor productivity development be different in case the labor productivity is calculated from the number of total employment or from the total hours worked.

In the countries of the European Union, the global economic crisis began to manifest itself in 2008, when the global economy began to slow down, and the year when the crisis mostly hit the EU economies was 2009. Among the V4 countries the highest year-on-year real decline in the GVA indicator due to the economic crisis, i. e., in 2009 compared to 2008, was achieved in Hungary, at 6.6 % (Table 1), which represents a decrease from 90,000 to 84,018 mln €. In the Czech Republic, the GVA decreased by 5.3 % and in Slovakia by 5.1 %. The only country that recorded a year-on-year increase in 2009 was Poland, where the real GVA achieved an increase of 3.1 %, from 308,748 to 318,376 mln €. In the following years, the countries tried to revive their national economies and they were successful, which resulted in a positive development of the gross value added and also other socio-economic indicators. At the end of 2019, another crisis hit the world, this time it was the COVID-19 crisis, which manifested itself in the indicators in 2020. The real gross value added in 2020 compared to 2019 recorded a negative rate of change in each of the V4 countries. The lowest was the decline of the real GVA in Poland (2.6 %). In Slovakia, the real GVA decreased by 4.3 % from 79,576 to the value of 76,119 mln €. In Hungary, the shrank was as high as 5 %. The highest decrease was recorded in the Czech Republic, where the real GVA fell by 9,810 mln €, which represented a decrease of 5.6 %. Comparing the impact of both crises on the real GVA indicator, it is clear that in Slovakia and Hungary the decrease in GVA due to the pandemic crisis was lower compared to the economic crisis (Table 1) [20]. In Poland the comparison resulted differently. While during the economic crises Poland faced a real increase in the GVA, due to the COVID-19 pandemic crisis the real GVA dropped in Poland similarly like in other V4 countries. In the Czech Republic, the values of the decline in both crises are approximately the same.

The employment in the V4 countries decreased during both crises, with the exception of Poland, where employment growth of 0.4 % was recorded during the economic crisis. In Slovakia, the Czech Republic and Hungary, employment fell by about 2 % in 2009 compared to 2008. In Slovakia and the Czech Republic, the drop of the employment was about the same during both crises. A more significant difference was recorded in Hungary, where the economic crisis caused a 0.9 percentage points higher decline in employment than the COVID-19 pandemic crisis. In Poland, this difference is lower, but there exists a con-

trast in employment development during the economic crisis when the employment increased by 0.4 % and during the pandemic crises during which the employment decreased by 0.1 %.

Both crises had the lowest impact on the number of hours worked in Poland, where the year-on-year decline was less than 1 %. In this case, however, the pandemic crisis caused a greater decrease in hours worked by 0.5 percentage points compared to the economic crisis. A negative development during both crises in terms of hours worked was achieved in other three countries, too. In these countries, the COVID-19 crisis has caused a significantly higher year-on-year decline compared to the economic crisis. The highest difference was in Slovakia, where the year-on-year decrease of 2.7 % was reached in 2009, while in 2020 this decrease was as high as 8.8 %. In Hungary, the pandemic crisis caused a decrease in hours worked by 7.4 %, while during the economic crisis the drop was at 3.7 %.

All three indicators, gross value added, total employment and hours worked, had roughly the same development in Slovakia, the Czech Republic and Hungary using the year-on-year changes in times of crisis, but Poland differed more significantly since the economic crisis did not cause a decrease in the real GVA and in the total employment indicators.

During the analyzed period, labor productivity (LP) developed positively in all V4 countries (Fig. 1) [20] except for the crisis's periods.

Within the real annual labor productivity calculated from total employment, the highest increase was recorded in Poland, where from 2008 to 2020 the real LP increased by 37.7 % from 19,625 to € 27,015 which represents an increase of € 7,389 per person employed. In Slovakia the increase reached 12.7 % and in the Czech Republic 12.1 %, while in both countries there was an increase of approximately € 3,500. The lowest change was discovered in Hungary, where the real LP increased from the original € 22,210 in 2008 to € 22,757 in 2020, which represents an increase of 2.5 %. Overall, the highest values of labor productivity among the V4 countries were observed in Slovakia and the Czech Republic, the lowest in Hungary.

The real labor productivity per hour worked increased from 2008 till 2020 much more rapidly in each of the V4 country compared to the LP calculated using the total employment. In Poland, the increase in the real hourly LP was as high as 43.8 % between 2008 and 2020, which represents an increase in hourly LP from 9.5 to € 13.6 (Fig. 2) [20]. In Slovakia, the LP per hour worked jumped by 28.5 %, which resulted in an increased from € 15.7 in 2008 to € 20.2 in 2020. In the Czech Republic, there was a positive change in the hourly LP by 17.8 %, which represents an increase of € 2.7 over the period under review. The lowest increase by only 14 % in the hourly LP was achieved in Hungary, where the LP increased from of 12.4 to € 14.1, which represents an increase of € 1.7 per hour worked.

The impact of both crises was negatively reflected in the LP indicator calculated from the total employment. In 2009, the decline in real LP in Slovakia, the Czech Republic and

Table 1

Relative changes of indicators during the economic and COVID-19 crises

V4 countries	Change in %					
	GVA		Employment		Hours worked	
	2009	2020	2009	2020	2009	2020
SR	-5.1	-4.3	-2.0	-1.9	-2.7	-8.8
CR	-5.3	-5.6	-1.8	-1.7	-2.4	-6.2
HU	-6.6	-5.0	-1.9	-1.0	-3.7	-7.4
PL	3.1	-2.6	0.4	-0.1	-0.4	-0.9

Notes: SR – Slovak Republic, CR – Czech Republic, HU – Hungary, PL – Poland

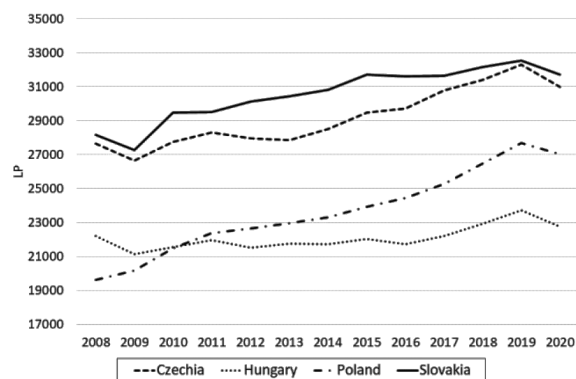


Fig. 1. Annual labor productivity in Euro (GVA at constant prices divided by the total Employment)

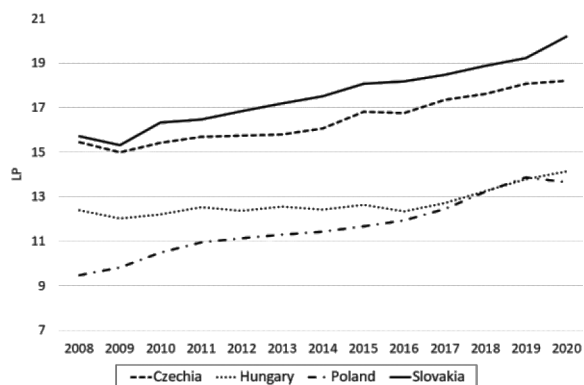


Fig. 2. Hourly labor productivity in Euro (GVA at constant prices divided by Hours worked)

Hungary was a reality. In Slovakia the real LP decreased in 2009 compared to 2008 by 3.2 %, in Hungary it was 4.8 % and in Czechia the decrease reached 3.5 % (Table 2) [20].

In the period of the economic crisis, however, one exception was discovered, namely in Poland, where the real LP grew by 2.7 %. However, Poland did not maintain this positive development in the pandemic crisis. The real LP shrunk in 2020 compared to 2019 because of the pandemic crises in each of the V4 countries. In Poland the real LP dropped by 2.4 %, in Slovakia by 2.5 % while in the Czech Republic and Hungary, the decline of LP was about 4 %.

However, with the LP indicator calculated from hours worked, a different development of the year-on-year changes during the time of crises was discovered. In 2009 the impact of the economic crisis led to a decrease in real LP in Slovakia, the Czech Republic and Hungary and an increase in Poland. The impact of the COVID-19 crisis had the exact opposite impact on the V4 countries. In Poland, the real hourly LP decreased by 1.7 %, which represents a decrease in hourly LP by € 0.3. On the contrary, in Slovakia the LP per hour worked increased by 4.9 % in 2020 compared with 2019, which resulted in an increase from 19.2 to € 20.2). At the same time, it is the highest value of the hourly LP among the V4 countries in 2020 (Fig. 2). The second country with the highest value of hourly LP is the Czech Republic, where there was a minimum year-on-year growth during the pandemic crisis by € 0.1 or by 0.6 %. In Hungary, the real LP per hour worked also increased, namely from the € 13.8 in 2019 to € 14.1 in 2020 which meant an increase by 2.7 %.

The economic crisis had approximately the same impact on both LP indicators and recorded approximately the same development. However, when comparing developments during the COVID-19 pandemic crisis, more significant differences occurred. While the real labor productivity per person employed resulted in a year-on-year decrease in all four countries, the real LP per hour worked in 2020 compared with 2019 increased in three countries and decreased only in Poland. This provides us with an illustrative example of how the labor productivity in-

dicator developed in opposite way, depending on what input factors we use, whether we decide to calculate the labor productivity indicator per person employed or per hour worked.

**Conclusions.** In the last 14–15 years, the economies all over the world have faced two major and severe crises. The global economic crisis has hit the global economy, with a decline in global GDP. However, countries have begun to take various measures to emerge from the crisis. Most of them succeeded. Economies began to wake up and grow. A similar process was discovered in the countries of the Visegrad Group, too. Apart from the year-on-year changes, a positive development was a reality for the real gross value added, total employment and also for the real labor productivity per person employed and for the real LP per hour worked since from 2008 to 2020 the mentioned indicators increased in each of the V4 countries. The indicator of hours worked had a declining trend in the V4 countries, except for Hungary, where there was an increase of 3.6 % over the entire period. The highest increase in real gross value added was achieved in Poland, where the increase was as high as 43.3 %. In terms of total employment, the highest increase was achieved in Hungary, where the employment grew by 15.2 % from 2008 till 2020. The highest decrease in the number of hours worked was measured in Slovakia and the drop reached 6.4 %. Based on these results, it can be said that the V4 economies achieved a positive economic development of the selected indicators from 2008 till 2020. But what was the development of the indicators in time of both crises like, meaning in time of the global economic and COVID-19 pandemic crises? The real gross value added had approximately the same negative development during both crises, there was about the same decrease within the V4 countries. Only in one country, namely in Poland, the change in the real GVA was different. While the real GVA grew by 3.1 % year-on-year in time of the economic crisis in 2009, the impact of the pandemic crisis caused a year-on-year decline of 2.6 % in 2020. The development was similar for the total employment in Poland, where in 2009 the indicator resulted in an increase of 0.4 %, but in 2020 there was reached a slight decline by 0.1 %. The remaining three countries achieved a decline in the real GVA and decline in the total employment during both crises; the decrease was higher due to the economic crises compared to the pandemic crisis. On the contrary, the pandemic crisis has caused a more pronounced decline in the number of hours worked in all V4 countries, which can be explained by the fact that countries introduced lock-down, businesses closed and not everyone could work from their home. The countries decided to take measures to keep the employment as high as possible, they tried to find support mechanisms to maintain employment but also the employed persons often stayed at home. All this support mechanisms adopted during the COVID-19 pandemic crisis were not typical in such dimensions during the economic crises. This fact resulted in a low decline in the total employment and a significant decrease in the hours worked during the pandemic crises. In the year of the economic crisis the difference between the decline in employment and the decline in hours worked was not significant at all. Since such difference in growth rates was discovered among two indicators, namely between the total employment and between the hours worked, it was expected that also the labor productivity calculated from the total employment and from the hours worked will develop oppositely. The real labor productivity indicator per hour worked reached a year-on-year growth during the pandemic crisis in Slovakia, Hungary, and the Czech Republic. In Slovakia the real LP per hour worked dropped by 2.5 % in 2009 while in 2020 it grew by 4.9 %. In Hungary the situation was very similar, since the real hourly LP in 2009 shrunk by 3.1 %, but in 2020 it grew by 2.7 %. Also, in Czechia the change in the real hourly LP was similar, since it decreased by 3 % in 2009 and increased by 0.6 % in 2020. The analysis of the development of real labor productivity per person employed discovered the differences compared to the development of the hourly LP. In contrast to the labor productivity per hour worked, the LP per

Table 2

Relative changes in labor productivity indicators during the economic and COVID-19 crises

V4 countries	Change in %			
	LP Employment		LP hours worked	
	2009	2020	2009	2020
SR	-3.2	-2.5	-2.5	4.9
CR	-3.5	-4.0	-3.0	0.6
HU	-4.8	-4.1	-3.1	2.7
PL	2.7	-2.4	3.5	-1.7

person employed did not face a real growth in time of the pandemic crises and the decline was similar to the changes in time of the economic crisis.

Despite the efforts of all states to be prepared for the crisis, they have failed. But how could one prepare for something not one expected? Perhaps, if it were a crisis similar to the global economic crisis of 2008–2009, economies would be able to draw on the knowledge that emerged from it. However, the pandemic crisis is in some aspects absolutely incomparable with the world economic and financial crises, especially from the health point of view and from the point of accepted measures and lock-downs views.

## References.

1. Galindo-Martin, M. A., Castano-Martinez, M. S., & Mendez-Picazo, M. T. (2021). Effects of the pandemic crisis on entrepreneurship and sustainable development. *Journal of Business Research*, 137, 345–353. <https://doi.org/10.1016/j.jbusres.2021.08.053>.
2. Wahidin, D., Akimov, A., & Roca, E. (2021). The impact of bond market development on economic growth before and after the global financial crisis: Evidence from developed and developing countries. *International Review of Financial Analysis*, 77, 101865. <https://doi.org/10.1016/j.irfa.2021.101865>.
3. World Bank (2022). *World development indicators*. Retrieved from <https://databank.worldbank.org/source/world-development-indicators>.
4. Islam, M. R., Suraiya, S., Zayed, N. M., Hasan, K. B. M. R., Bipasha, M. S., & Nitsenko, V. (2021). Assessing the effect of the COVID-19 pandemic on the government revenues: a study on individual taxpayers of Bangladesh. *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*, (5), 154–159. <https://doi.org/10.33271/nvngu/2021-5/154>.
5. Sungmoon, J., Jeong-Dong, L., Won-Sik, H., & Yeongjun, Y. (2017). Growth versus equity: A CGE analysis for effects of factor-biased technical progress on economic growth and employment. *Economic Modelling*, 60, 424–438. <https://doi.org/10.1016/j.econmod.2016.10.014>.
6. Corrado, C., Haskel, J., & Jona-Lasinio, C. (2019). Productivity growth, capital reallocation and the financial crisis: Evidence from Europe and the US. *Journal of Macroeconomics*, 61, 103120. <https://doi.org/10.1016/j.jmacro.2019.04.006>.
7. Borio, C., Drehmann, M., & Xia, F. D. (2018). The financial cycle and recession risk. *EconPapers, BIS Quarterly Review*. Retrieved from <https://econpapers.repec.org/article/bisbisqtr/1812g.htm>.
8. Hamrouni, D. (2022). International diffusion of knowledge labor productivity and catching up between North and South. *International Review of Economics & Finance*, 77, 170–178. <https://doi.org/10.1016/j.iref.2021.09.011>.
9. Havlovska, N., Rudnichenko, Y., & Lisovskyi, I. (2019). Transformation processes in the system of providing economic security of investment activities of industrial enterprises. *Baltic Journal of Economic Studies*, 5(2), 18–23. <https://doi.org/10.30525/2256-0742/2019-5-2-18-23>.
10. Han, E. J., & Sohn, S. Y. (2016). Technological convergence in standards for information and communication technologies. *Technological Forecasting and Social Change*, 106, 1–10. <https://doi.org/10.1016/j.techfore.2016.02.003>.
11. Kim, J., & Lee, S. (2017). Forecasting and identifying multi-technology convergence based on patent data: The case of IT and BT industries in 2020. *Scientometrics*, 111(1), 47–65. <https://doi.org/10.1007/s11192-017-2275-4>.
12. Perevozova, I., Shmygol, N., Tereshchenko, D., Kandahura, K., & Katerna, O. (2019). Introduction of creative economy in international relations: Aspects of development security. *Journal of Security and Sustainability Issues*, 9(1), 139–154. [https://doi.org/10.9770/jssi.2019.9.1\(11\)](https://doi.org/10.9770/jssi.2019.9.1(11)).
13. Abramova, N., & Grishchenko, N. (2020). ICTs, Labour Productivity and Employment: Sustainability in Industries in Russia. *Procedia Manufacturing*, 43, 299–305. <https://doi.org/10.1016/j.promfg.2020.02.161>.
14. Green, D., & Loualiche, E. (2021). State and local government employment in the COVID-19 crisis. *Journal of Public Economics*, 193, 104321. <https://doi.org/10.1016/j.jpubeco.2020.104321>.
15. Li, J., An, Y., Wang, L., & Zhang, Y. (2022). Combating the COVID-19 pandemic: The role of disaster experience. *Research in International Business and Finance*, 60, 101581. <https://doi.org/10.1016/j.ribaf.2021.101581>.
16. Ru, H., Yang, E., & Zou, K. (2021). Combating the COVID-19 pandemic: the role of the SARS Imprint. *Management Science*, 67(9), 5606–5615. <https://doi.org/10.1287/mnsc.2021.4015>.

17. Erdem, O. (2020). Freedom and stock market performance during Covid-19 outbreak. *Finance Research Letters*, 36, 101671. <https://doi.org/10.1016/j.frl.2020.101671>.

18. Zhang, D., Hu, M., & Ji, Q. (2020). Financial markets under the global pandemic of COVID-19. *Finance Research Letters*, 36, 101528. <https://doi.org/10.1016/j.frl.2020.101528>.

19. Brada, J. C., Gajewski, P., & Kutun, A. M. (2021). Economic resiliency and recovery, lessons from the financial crisis for the COVID-19 pandemic: A regional perspective from Central and Eastern Europe. *International Review of Financial Analysis*, 74, 101658. <https://doi.org/10.1016/j.irfa.2021.101658>.

20. *European statistics. Database* (n.d.). Retrieved from <https://ec.europa.eu/eurostat/data/database>.

## Вплив економічної кризи та COVID-19 на країни Вишеградської групи

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**Мета.** Проаналізувати зміну окремих економічних показників, що є ключовими аспектами оцінювання економіки країн у контексті міжнародних зіставлень і конкурентоспроможності. На основі щорічних змін контролювати розвиток таких показників, як валова додана вартість, загальна зайнятість і кількість відпрацьованих годин в останні два кризові періоди. Порівняти вплив економічної кризи та кризи, викликані COVID-19, на зазначені економічні показники та продуктивність праці у країнах Вишеградської групи.

**Методика.** У роботі використано низку наукових методів, придатних для виявлення впливу криз. Зокрема, були розраховані елементарний аналіз часових рядів та індексні числа задля визначення найбільш важливих тенденцій розвитку обраних показників. Ланцюгові індекси та індекси з фіксованою базою розраховувалися для валової доданої вартості, зайнятості, кількості відпрацьованих годин, продуктивності праці на одного зайнятого та продуктивності праці за годину роботи. У рамках показників передбачалося визначити вплив економічної кризи та кризи, викликані COVID-19.

**Результати.** Аналіз продуктивності праці та її динаміки у кризові періоди, а також аналіз розвитку окремих показників, за якими розраховувалася продуктивність, був ключовим питанням дослідження. Незважаючи на припущення деяких авторів щодо того, що пандемічна криза більш суттєво вплине на зміну економіки країн, ніж глобальна економічна криза, дослідження не підтвердило дане припущення. Щорічні зміни показника під час обох криз були приблизно однаковими, у деяких випадках ми зафіксували більш високе річне зниження показників порівняно з попереднім роком через економічну кризу, а не через кризу, викликану COVID.

**Наукова новизна.** Розвиток окремих показників, включаючи два типи продуктивності праці в умовах глобальної економічної кризи й пандемічної кризи, викликані COVID-19, став предметом аналізу серед країн Вишеградської групи.

**Практична значимість.** Аналіз економічних показників, проведений у кожній окремо взятій країні, надалі може бути використаний як підтримка при глибшому аналізі окремих показників і продуктивності як усередині регіонів країн, так і окремих секторів національних економік, при вивченні впливу економічної кризи та COVID-19.

**Ключові слова:** економічна криза, COVID-19, продуктивність праці, валова додана вартість, зайнятість

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