

THE IMPACT OF THE PANDEMIC ON THE CENTRAL AND REGIONAL AREAS OF HUNGARY: DURING THE ECONOMIC RECOVERY FOLLOWING THE GLOBAL VIRUS EPIDEMIC

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Abstract: The objective of the article is to evaluate the impact of the COVID-19 crisis on the competitiveness of the labour market in Hungary on the economically most developed central as well as the rural areas to illustrate discrepancy. Indicators related to the effectiveness of recovery regarding both human resource management and corporate management are also analysed. A questionnaire survey on recovery from the pandemic was filled in 2021 by 1184 company managers: 61% were received from the central region while 39% from rural areas. The crosstab analysis was applied while processing data. According to our findings, the backlog has decreased in six Hungarian regions except Western Transdanubia, which has been hit harder by the closures and restrictions. The more moderate development of the central region can be due to the presence of its companies on the global market while the catching up of the rural areas was aided by the wage subsidy of businesses operating there. It is worth examining the impact of economic crises on how the differences between the central and rural regions change and also which regions can benefit from the downturn. In conclusion, a crisis might also serve as an opportunity to achieve a balanced economy and regain competitiveness.

Keywords: COVID-19 pandemic, competitiveness, labour market, level of education, sectors of the economy, territorial units.

1 Introduction

In December 2019, a new disease spread from China, which became a global pandemic within a few days (Agarwal et al. 2020). The coronavirus pandemic arrived in Europe at the beginning of spring 2020 and created an unprecedented emergency situation with important consequences on health, economic and social policies (Wolff & Ladi, 2020). As a result of the pandemic and the adopted anti-pandemic measures, unemployment has been rising sharply in the EU since March 2020.

Given the uncertainty in the market, companies trying to recover by relying on traditional directions may discover that the world they were familiar with no longer exists. The way in which executives managed their plans and actions in the past may no longer be relevant, especially if these plans and actions are focused on a functional or internal view. Organisations that wish to succeed in the recovery and exit phase need to make clear decisions about where, how and when they want to apply the next four steps in order to be competitive.

1. Identifying the destination: visualise what success will look like at the end of the recovery and determine what immediate steps can be taken to move quickly and competitively.
2. Waiting for results: making sure that the path to success is defined by stakeholder-focused results, not by internally-focused functional processes.
3. Running sprints: using agile principles to navigate the uncertainties - beyond the epidemiological factors - that the

organisation must navigate on the way from the current state to the destination.

4. Applying appropriate timing: determining in careful steps when it is appropriate to start moving towards recovery (Renjen, 2020).

The objective of our article is to examine the labour market responses to the crisis and assess its competitiveness after the recovery by highlighting the discrepancies between the central and the rural regions of Hungary.

2 Theoretical Background

The issue of unemployment is an eternal problem. A high unemployment rate has several negative consequences for the economy and society. Pauhofova and Stehlikova (2018) analyzed the behavior of unemployment in Slovakia, Czech Republic and Hungary and found out that in regions with higher unemployment the increase in wages was lower. Unemployment has gained popularity in recent years in connection with the COVID-19 pandemic. For this reason, examining the impact of the COVID-19 crisis on the labour market is a highly relevant issue. Several researchers have studied the effects of the coronavirus pandemic on unemployment. Lambovska et al. (2021) analysed the impact of the COVID-19 pandemic on the unemployment rate under the age of twenty-five in the EU. Aidukaite et al. (2021) documented and compared the social policies (extensive protection for jobs and enterprises) that the governments of Hungary, Lithuania, Poland and Slovakia implemented to combat the first wave of COVID-19 pandemic. Acheampong (2021) investigated whether the coronavirus epidemic impacted differently situation of men and women in the Hungarian labour market. Svabova et al. (2021) examined the impact of anti-pandemic measures on the development of the registered unemployment rate in Slovakia. Orfánusová, Veszprémi Sirotková (2021) examine some another factors in Slovak conditions. However, a detailed comparison of unemployment during the corona crisis in Hungary and Slovakia has not been achieved. The aim of the article is to evaluate the impact of COVID-19 crisis on the labour market of Hungary. The research questions include the following.

RQ1: What is the difference between the economy and the crisis involvement rate of the central region and rural areas in Hungary?

RQ2: Do we believe in the statement "crisis is also a hidden opportunity" and take advantage of opportunities?

In order to illustrate the effects of the coronavirus pandemic on the labour market in the above mentioned EU member states, the progress of the unemployment rate by gender, age, level of education and economic sectors was analysed together with the territorial and temporary distribution of unemployment between 2019 and 2021. Information from the databases of the Hungarian Central Statistical Office from 2019 to 2021 were gathered as these years were directly affected by the pandemic. Both quantitative and qualitative research methods were used in the research. After processing the relevant national and international literature sources, a comparative research method was employed to process data. The results of the study can perfectly be implemented into practice to better understand the effects of the pandemic and the measures against it on the unemployment rate.

Turning to the labour market, we can see that COVID-19 has accelerated trends such as the increase in the number of teleworkers, which could lead to a rapid growth in different types of occupations. Globally, the growing demand for automation, artificial intelligence and digitalisation will drive demand for a wide range of workers, such as robotic repair technicians and 3-D printing engineers (McKinsey, 2021). Also, the crisis changed the preferences of workers on the labor market (Ahmed et al., 2023, Hitka et al., 2023, Grmanová, Bartek, 2022;

Harman et al., 2022; Vojtovič et al., 2021, Ližbetinová et al. 2020, Sirotkova, Kroslovakova, 2016, Ližbetinová, Hitka, 2016).

The idea of core-periphery interactions is largely based on an explanation for the uneven capitalist development that leads to divergence in the development of territories in terms of their economic position and the degree of resource and capital concentration (Williamson, 1965).

The objectives of the core-periphery models have been established by research on the evolution of civilizations and production paradigms, as well as by the impacts of these changes on specific regions at various geographical scales (Ramírez, 2009). In addition to scalar datasets, networks and vector data are increasingly being used to analyse the core-periphery linkages (Borgatti & Everett, 1999; Erlebach et al., 2019). A fractal-like pattern can be seen in the interlinkages between peripheral locations in global, national, regional, and local structural relations (Kühn, 2014; Erlebach et al., 2019; Halás, 2014).

The core-periphery dichotomy is a fundamental paradigm in the social sciences. Immanuel Wallerstein defined its dual meaning by extending this bipolar idea and defining "semi-periphery" (Wallerstein, 1976). According to Kühn (2014), the phrases and ideas of core and periphery are related and derived from one another.

Hence, classifications can be used to detect the varied meaning and substance of peripherality. Certain regions can be categorized as marginal zones because they are isolated (isolate) and blind-spot (angle mort) places (Leimgruber, 2007). Four categories of regions—geometrical, ecological, economic, and social—were presented as part of the conversation about geographical marginality (Leimgruber, 1994). Nemes Nagy (1996) distinguished between locational (geographical), economic (level of development-related), and social (political power-related) approaches when examining the core-periphery relationship.

In relation to peripherality, Hungarian scientific discourse and regional policy frequently emphasize two factors: outlying places with poor access to transportation (e.g., Tóth, 2006; Lócsei & Szalkai, 2008; Kiss, 2012); and underdeveloped social and economic areas (Nagy et al., 2012). In the case of Hungary, these factors interact, leading to socioeconomic issues that are exacerbated by the possibility of exclusion due to transportation (Tagai et al., 2019)

The Central European nations' backwardness may also have been influenced by unfavourable social-demographic traditions. The marginalization of the periphery was made worse by the inability of some territories to benefit from the general economic development in the final decades of the 19th century (Pénzes & Demeter, 2021). Before the Trianon Peace Treaty (which, at the time, divided Hungary's geographic makeup and economic structure), undeveloped areas began to appear with notably unfavourable socioeconomic indicators, while the latter also had negative effects on the borders (Demeter, 2018; 2020; Szilágyi, 2019; Péntzes, 2020).

3 Research objective, methodology and data

These backward areas were not only observable in the interwar period (Szilágyi, 2019), but some have persisted even up to the present. Beside these, the territorial changes after Trianon determined the enormous strengthening of Budapest within the spatial pattern, one that can be regarded as monocentric notwithstanding the attempts of the regional policy in the 20th century (Pénzes & Demeter, 2021). In the mid-1970s, the scientific study of peripheral (i.e., "unfavourable") communities began (Beluszky, 1976). It examined the regional variations in living conditions with a focus on the availability and accessibility of institutions of infrastructure.

It is worth examining how the pandemic caused by COVID-19 affected the territorial backlog (Kovács et al., 2020; Petó et al.,

2022). The backlog in percentage has decreased in six Hungarian regions, except for Western Transdanubia, which has intensive relations with Austria and Slovakia (Table 1). This region has been hit harder by the closures and restrictions. Residents do not perceive the reduction of the percentage backlog since the total backlog has increased.

Tab. 1 The reduction of the backlog of countryside regions in Hungary

Analysis of GDP per capita in Hungary, thousand HUF							
	2019	2020	2021	2019 percentage backlog	2021 percentage backlog	2019 total backlog	2021 total backlog
Central Hungary	7 501	7 592	8 689	100,00%	100,00%	0	0
Central Transdanubia	4 498	4 478	5 303	40,03%	38,97%	-3 003	-3 386
Western Transdanubia	4 731	4 685	5 158	36,93%	40,64%	-2 770	-3 531
South Transdanubia	3 312	3 372	3 876	55,85%	55,39%	-4 189	-4 813
Northern Hungary	3 233	3 357	3 936	56,90%	54,70%	-4 268	-4 753
North-Great Plain	3 130	3 281	3 701	58,27%	57,41%	-4 371	-4 988
South-Great Plain	3 523	3 675	4 113	53,03%	52,66%	-3 978	-4 576
Country total	4 878	4 965	5 677	34,97%	34,66%	-2 623	-3 012

With the cooperation of several universities in Hungary, as well as in Austria, Bosnia-Herzegovina, Bulgaria, Romania, and Slovakia, a large-scale international survey was carried out that examines the changes in corporate and human resource management activities throughout the three phases of the pandemic and the recovery. Figure 1 shows the duration of research phases in Hungary and the number of actively participating public and private companies (Poór et al., 2021/a; Poór et al., 2021/b).

Fig. 1 Characteristics of the empirical phases of the international research in Hungary



The objective of our recent research is to show that the central region and rural Hungary were affected differently by the harmful effects of the pandemic and that differences can also be discovered between the speed and path of recovery. In connection with our hypotheses, we point out disparities between the characteristics and measures of organisations linked to the capital and also to rural areas, which may be the reasons for the various development. The empirical results allowed us to develop the following research hypotheses.

H1: The more moderate development of the central region can be justified by the fact that companies operating on the global market are located here, and these organisations faced difficulties during the pandemic.

H2: The catching up of rural areas was aided by the fact that the wage subsidy was used in a larger proportion by the businesses operating there.

H3: Although the crisis was seen as an opportunity in the central region, it proved to be less successful in taking advantage of the opportunity.

H4: Among the management measures, we find one that was more typically applied in countryside regions, and this measure may also be the reason for the favourable development of the GDP for the countryside.

Due to constraints of length, this publication includes only part of our research. We limit ourselves only to the elements related to the hypotheses.

The questionnaire survey on recovery from the pandemic was filled in between July 1 and November 30, 2021 by 1184 company managers. It can be divided into two parts: 714 responses (61%) were received from the central region, while 456 responses (39%) from the rural areas. Thus, in total, our sample covers 1,170 enterprises. Although both parts of the sample contain many elements, it is not representative. During the analysis crosstab analysis was employed. In certain cases, the ordinal scale was supplemented by the corresponding correlation coefficient calculation. Due to the lack of representativeness, significance is not proof; it only indicates the probability of correlations. SPSS outputs were supplemented by illustrative figures in Excel. On the basis of our hypotheses, we are looking for differences that might explain why the capital and its region were unable to increase their superiority after the pandemic.

4 Results and discussion

We investigated the primary markets of organisations and came to the following result. In the central region, the proportion of companies that produce and provide services for the national market is exceptionally high. The proportion of firms targeting the global market is slightly higher than that of economic organisations in the non-central regions. The primacy of the local and regional target market and those that prefer European customers is more common in rural areas. This may be contributed to the large car factories located in the countryside, as their products reach the European continent (Figure 2). Regarding Spearman's correlation coefficient and the related significance level ($p=0.002$), it was concluded that the target markets are different, which may also be the reason for the different economic results in 2021.

Wage subsidies were also examined, where the calculated correlation coefficient and significance showed no difference, so discrepancy could even be due to opportunities. Despite this, Figure 3 presents that the proportion of organisations examined in the non-central region where wage subsidies were applied to a greater extent is higher. Before the pandemic, such subsidies were received by organisations that employed people with altered working abilities and workers with reduced working hours. People who were already in a difficult situation could lose their jobs.

Fig. 2 Geographical location and the main markets

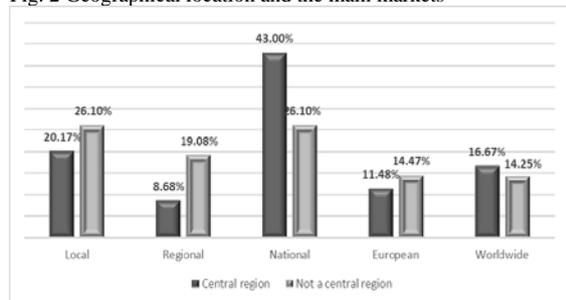
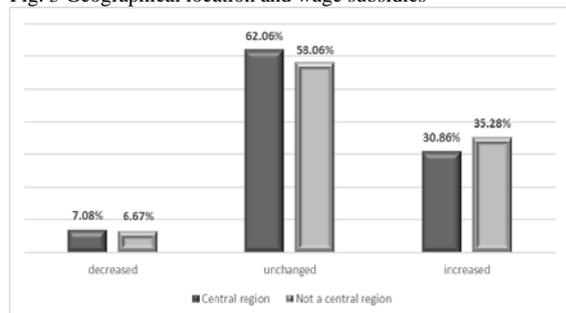


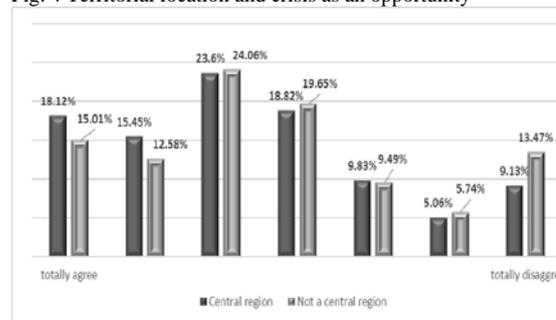
Fig. 3 Geographical location and wage subsidies



One of the most important findings of Jared Diamond (2020b) is that we can successfully prepare for future challenges if we intelligently understand every possible consequence from the

past. Every crisis situation contains the potential for development, a positive change, and taking advantage of the opportunities arising from the crisis. We examined to what extent the organisations functioning in the central region and those in rural areas meet the statement above. The calculated values indicate a weak, negative correlation and significance ($p=0.014$). This means that in the central region it is more typical for managers to think of the crisis caused by the pandemic as an opportunity for change and renewal. The country's central region is more innovative, and a significant part of the R & D expenditure flows here. Despite this, the centre was not possible to fully exploit the potential of the crisis (Figure 4).

Fig. 4 Territorial location and crisis as an opportunity



Managers of responding organizations have indicated which measures they take to speed up the recovery. All the measures we have selected are typical, whether it is for the central region or the peripheral areas outside. Table 2 shows different figures, but only in one case was it possible to show a significant difference with the method we used.

Tab 2 Correlation between recovery measures and geographical location

		Typical	Not typical	Total
No need to do anything	Central region	95.9%	4.09%	100%
	Not a central region	94.45%	5.54%	100%
Increase staff	Central region	96.8%	3.2%	100%
	Not a central region	96.2%	3.8%	100%
Increase investments	Central region	82.5%	17.5%	100%
	Not a central region	84.3%	15.7%	100%
Cost reduction	Central region	73.8%	26.2%	100%
	Not a central region	78.9%	21.1%	100%
Removal of wage freeze	Central region	59.8%	40.2%	100%
	Not a central region	63.2%	36.8%	100%
Increase marketing expenses	Central region	96.8%	3.2%	100%
	Not a central region	97.6%	2.4%	100%

This measure is cost reduction, which is more typical of the non-central region. Increasing marketing expenses and increasing staff are the most popular measures for businesses operating in both in the countryside and central regions.

In the central region, traditional cost reductions were excessively ignored even though this measure also has benefits. If the company restrains itself in the less important value chain elements, it can invest more in creative and innovative products and services. The following part summarises our hypotheses test. Our results are illustrated in Table 3 below.

When examining our hypotheses, we first checked whether our assumption was significantly true followed by categorization. Some of our findings may cause the reduction in the difference between central and peripheral areas. In the case of rejected hypotheses, we cannot claim that the examined factor is the cause of the decrease in the difference between the central and peripheral areas. If the hypothesis was accepted, but the positive result was not achieved, it is a case of underutilization.

Tab. 3 Hypotheses test

	Factors	Fulfilment	Causative	Not causative	Under-utilization
H1	Different markets	Yes	×		

H2	Wage support	No		×	
H3	Crisis as an opportunity	Yes			×
H4	Cost reduction	Yes	×		

Restrictions imposed due to the coronavirus can be interpreted as a negative feature, amplified by supply-side weaknesses (Idris et al., 2022). The sudden cessation of manufacturing activities has triggered the collapse of the global supply chain, which has spread to areas less affected by the virus. Production processes in countries with higher economic exposure have also collapsed. As a result of the mandatory distancing measures, the catering industry and tourism practically ceased to operate, which distributed an immediate blow to businesses and workers in the tourism sector. While examining the labour market data in Slovakia, the reduction in employment rate was most noticeable in the industrial sector followed by retail and wholesale trade, and finally, in the tourism and catering industry.

Similar results can be observed between Slovakia and Hungary in terms of age groups and educational level. The highest unemployment rate was detected in the young adult age group. In terms of education, both countries have the lowest unemployment rates in tertiary education. Based on the data, we observed the problem of the compatibility of the company's short- and long-term interests with the humanitarian aspects for the experts in charge of labour relations. The most interesting result of the study is that the most difficult group to employ is the one with secondary education, as their unemployment rate is even higher than those with primary education. Employers appreciate qualifications only if innovation, computer skills and professional language skills are concerned. It would be worthwhile to examine whether there is a link between job loss and qualification/ language skills. The analysis confirms that in the long term resources invested in education contribute to the stability of the country and reduce the vulnerability of workers in recession.

Working capital investment is extremely beneficial for the host country but there is a serious disadvantage compared to nationally owned companies. During the recession, the capital received may be concentrated on the mainland. Similar to previous financial crises, the pandemic highlights the vulnerability of the industry and export-driven economies during the recession and stresses the importance of diversification.

Before analysing the data, we believed that the central region increased its advantage over countryside Hungary during the pandemic by using its more extensive resources. However, our summary showed a different result. The data draw attention to the fact that some business organisations connected to the capital failed to reduce unnecessary costs, and thus lost the chance to finance innovations and take advantage of the opportunities inherent in the crisis. In our analysis, we investigated the reasons for the different results and found some possible reasons. One of the limitations of our research is that we cannot demonstrate the existence of certain factors from the sample even though they could also have caused the reduction of economic differences. Our sample is not representative, so in addition to the factors found, the possible reasons are the following.

In our sample, enterprises with a larger number of employees and sales revenue are typical in the capital. If this is true for the entire population, then the inflexibility associated with large size hinders development. A possible explanation can be found in the literature as to why the capital's recovery from the crisis took place relatively slowly. The regions have a network of connections depending on the economic activities that take place in them. If these networks are considered robust, they will continue functioning properly if some connections are lost. The lack of robustness leads to disruptions in the operation of organisations (Elekes & Tóth, 2023). Our further research proposal is aimed at examining economic relations, which could decide whether it is legitimate that the central regions suffer more from crises.

5 Conclusions

There have also been opinions that everything depends on the level of regional resistance. The concept is linked to the number of non-agricultural employees. This indicator depends on long-term emigration or immigration, demographic changes, and economic transformation processes. Based on calculations, a map can be created depicting regional recovery. According to the study, recovery from the crisis in Central and Eastern European countries (CEE countries) depends on structural changes and flexibility (Brada et al., 2021). In our sample, trade is more typical of the central region, but tourism and hospitality are not. If the latter is just a sampling error, then the sectoral distribution and the greater involvement of some sectors may be an obstacle to a successful recovery.

Comparing the research conducted in other countries during the pandemic and focusing on organizational behaviour with the regional GDP per capita studies is also feasible. In this way, it can be determined whether peripheral areas are catching up as a common consequence of the health crisis. We can also conclude whether organisations that regard the crisis as an opportunity can take advantage of the opportunities offered. It can be clearly stated overall that the extent of the effects largely depends on the characteristics of the economic and social structure there, and how much weight the most affected areas or groups represent in the region (KSH, 2022; Jaros et al., 2014).

The frequently quoted US historian Diamond (2020a and b) believes that "the real threat to our civilisation is not COVID, but the nuclear bomb, climate change and resource depletion". A similar view is expressed by Honigsbaum (2019:15), who argues that "we should not narrow our interest to some predatory micro-organism", it is important to see the "bigger picture". We would like to support our statement above with the following two phenomena:

- US IT innovator and philanthropist Gates (2020) draws attention to the seriousness of the environmental problems. He observes that, in the longer term, the problems and difficulties caused by the coronavirus epidemic are far less serious than the dangers of neglecting the environment.
- The Russian-Ukrainian War, which is taking place while writing this article, highlighted once again that certain repressed cultural and civilizational trends can sometimes 'go out of control' (Huntington, 2019: 47) as something (e.g., a cold war or a pandemic abatement) passes or subsides. This war also confirmed Roberts' (2021) claim that our world has not become safer over the past decades.

The best antidote to the various threats and challenges indicated above may be 'greater cooperation than ever before [...] otherwise we could have a global disaster on a global scale greater than ever before' (Recna, 2021:32-33).

To conclude, let us finish with a reflection by Gazdag (2022: 20) in our published academic book on Recovery - 'Now the convergence of these global crisis processes has reintroduced a global component of uncertainty into the world economy and even into international politics. All societies, all communities, all countries must now strive to get through these difficult times in the best possible condition, with as little loss as possible. And to do so, we must unite today, putting aside political-ideological differences'.

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