

Észak-magyarországi Stratégiai Füzetek Gazdaság-Régió-Társadalom

Strategic Issues of Northern Hungary Economy-Region-Society

Térgazdaságtani és az üzleti kutatások lektorált tudományos folyóirata.
A peer-reviewed academic journal of spatial economics and business research.

Megjelenik évente háromszor a Miskolci Egyetem Gazdaságtudományi Kara támogatásával.
It is published three times a year with the support of the Faculty of Economics of the University of Miskolc.

A folyóiratban megjelenő tanulmányokat két független szakértő lektorálta és ajánlotta közlésre.
The papers published in the journal have been edited and recommended for publication by two independent experts.

Magyar Tudományos Akadémia IX. Gazdaság- és Jogtudományok Osztály, Regionális Tudományok Bizottsága: C

A folyóiratot indexeli: EBSCO, REPEC, Magyar Tudományos Művek Tára (MTMT)
The journal is indexed by: EBSCO, REPEC, MTMT

Kiadó / Publisher:

Miskolci Egyetem Gazdaságtudományi Kar
University of Miskolc, Faculty of Economics

Szerkesztőség / Editorial Office:

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MAXIMA CS-A Nyomdai és Kereskedelmi Szolgáltató Kft

ISSN 1786-1594 (Nyomtatott)

ISSN 2560-2926 (Online)

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Forward

The Strategic Issues of Northern Hungary is dedicated to the analysis of the socio-economic conditions of the Northern Hungary region and its wider environment. This year's fourth issue, in English, analyses the impact of the COVID-19 pandemics, covering a wide range of topics from the macro to the micro level. Today, rapidly changing conditions such as globalisation, Industry 4.0 and the COVID-19 epidemic are posing new challenges to regions, which need to respond adaptively to maintain their resilience and adaptability.

The overview of the pandemic's impacts starts with a cross-regional comparison, analysing the labour market consequences of the pandemic in Slovakia (*Suhányi et al.*). In addition to analysing statistical data, the paper also presents measures taken to increase employment (e.g., the Kurzarbeit I and II programmes). The analysis provides the reader with a complex picture of the labour market challenges faced by our northern neighbour during the two years of the pandemic. Staying with the large-scale studies, the next paper reviews the situation of cross-border cooperation in the EU at the peak of the epidemic and the subsequent post-COVID symptoms (*Ocskay et al.*). The reader can learn about the constraints of cross-border migration and the challenges (weakening willingness to cooperate, less trust) after the end of the pandemic, which the authors argue require time and resources and a significant institutional commitment to overcome.

The next paper (*Szendi & Kocziszky*) examines a concept that, based on Hungarian and international literature, could be an alternative way to address global challenges and to help peripheral regions catch up: social innovation. The authors compare the social and technological innovation potentials of the Visegrad Four regions and form clusters between them. They point out that high technological innovation potential does not always go hand in hand with high social innovation activity, i.e., social innovation can be significant also in peripheral regions. The impact of the pandemic should not only be analysed in the context of a large region or a narrower regional context, but also at the urban level. In their study, *Szendi & Sárosi-Blága* review the impact of the pandemics in the case of European smart cities, which have been the fastest to respond to the virus situation using reactive urban planning. However, changes in the global ranking of leading European cities in the smart cities ranking show that different urban management models perform differently in times of crisis, particularly in terms of their short- and long-term effectiveness. This could also be a lesson for cities in the region in the longer term.

Bozsik & Szemán's analysis examines the economic impacts on the Northern Hungary region in terms of macroeconomic indicators in a county-by-county comparison. In addition to examining income conditions and entrepreneurial activity, their analysis also covers the performance of the most competitive and least successful sectors during the epidemic. The reader thus also gains insight into the sectoral characteristics of the COVID-19 crisis. The economic performance of small and medium-sized enterprises was severely affected by the pandemics, which the financial sector sought to address through various guarantee programmes. The study by *Jeneiné Gerő & Bakonyi* provides an insight into the background and the results of these measures at the county level, and discusses the future prospects of the sector in terms of the impact of the Russian-Ukrainian conflict.

The next study (*Sikos et al.*) examines the impact of the pandemic situation on retail, partly showing the different responses of retailers to the problem and partly describing the increasing opportunities for online sales through the example of a hypermarket. In the concluding part of the article, the authors outline the innovations that can be expected in retailing, which could provide an even faster response to external shocks in the future.

The final paper of the thematic issue (by *Kosenko*) is forward-looking, analysing the marketing communication challenges of a war conflict beyond the COVID-19 crisis. It summarises for the reader the different forms of information transfer and the role of information as a "power tool" in a war conflict.

Dóra Szendi, PhD
Guest Editor
December 2022

Ladislav Suhányi¹ – Alžbeta Suhányiová² – Eszter Siposné Nándori³ – Katalin Lipták⁴

Developments in employment during the COVID-19 pandemic in Slovakia

As in other countries, COVID-19 has fundamentally affected Slovakia in its day-to-day operations in various areas of society. Following the restrictive actions, the governments took measures to support the economy, which were primarily aimed at mitigating the negative consequences caused by the declared state of emergency. In this paper, we deal with the effects of crises on employment and unemployment, which have also affected the Slovak Republic in recent years, with the main emphasis on the effects of the current pandemic crisis. The main goal of this paper is to present and evaluate the development of employment and unemployment in Slovakia in times of crisis, which arose in the period of 2007-2021, with emphasis on the current global pandemic. To achieve the stated goal of the following complementary scientific research methods were used: abstraction/concretization, analysis/synthesis, induction/deduction, comparison and statistical methods – time series analysis of elementary characteristics. The research techniques that were used were the collection and analysis of indicators, as well as observations. Based on the research results, conclusions and recommendations in the area of aid measures intended to preserve jobs and to support self-employed persons were proposed. The recommendations also include the inclusion of increased Ukrainian job applicants caused by the war.

*Key words: Employment, Unemployment, Crisis, COVID-19, Kurzarbeit
JEL code: R23*

<https://doi.org/10.32976/stratfuz.2022.40>

Introduction and theoretical background

There is a general consensus that investing in human capital is a key source of labour productivity and economic growth (Schultz, 1961; Schultz, 1962; Becker, 1964). One of the key objectives of economic policy is to address labour market imbalances through alternative labour market policy instruments. Unemployment costs include not only the financial side but also the social and socio-political dimensions (Tiruneh, 2014).

Human capital is also important for the successful functioning of the labour market, also in the context of the Agenda 2030. There are 17 sustainable development goals set out in Agenda 2030, adopted by the United Nations organisation (UN) in 2015 and managed by all UN member states for 15 years. One of the goals is the Goal 8 – to promote full and productive employment and decent work for all. In addition to GDP per capita, indicators of the unemployment rate of age group 20-64, the youth unemployment rate of age group 15-24, the long-term unemployment rate and the economic activity rate of age group 15-64 were selected as national indicators to meet the Goal 8. According to a report from the Statistical Office of the Slovak Republic in 2016, Slovakia is among the two-thirds of UN countries where the rate of economic activity in the age group 15-64 has exceeded 70% (Statistical Office of the Slovak Republic, 2016).

According to Lisý (2011), every market economy includes a certain level of unemployment, is a natural component of it and can help maximize net economic welfare. The natural

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unemployment rate is the rate at which the labour and product markets are in balance, in other words, the number of unemployed is less than or equal to the number of job vacancies. In such circumstances, there is a match between labour supply and labour demand. The natural rate of unemployment can also be described as voluntary unemployment.

Many authors define unemployment as a consequence of labour market imbalances. "Like any other market, the labour market is characterized by supply and demand. The same economic laws apply here as in any other market. The market supply of labour can be characterized as the supply of labour of all people in the economy at a given wage rate, market demand represents the demand for labour of all companies in the economy at a given wage rate" (Uramová et al., 2010, p. 187).

Unemployment is a constantly debated and present problem in modern economies. Sujová and Šálka (2016, p. 176) understand unemployment as "a situation in the economy where able-bodied people who are willing to work cannot find work on the labour market. Only those who are actively looking for work are unemployed. Labour is one of the most important factors of production and a source of economic growth. With the existence of unemployment, the economy is below the limit of production possibilities, which means that labour is not fully utilized and the economy's production is not efficient. Unemployment causes not only economic losses, but also people's psychological and social problems." This macroeconomic phenomenon constantly raises economic, political or social issues that need to be constantly addressed at the level of the state apparatus, employees and employers.

The author Žilová (2003) summarized the causes of unemployment in several points in her works. She states them as follows: lack of jobs, inflexibility of the workforce, underdeveloped information network on the labour market, fatalism of the long-term unemployed and employers' prejudices against long-term unemployed people.

Persistent long-term unemployment is a serious phenomenon in the national economy. Slovakia has been at the top of the list of EU member states in which this phenomenon has been occurring for a relatively long time.

Different authors present different typologies of unemployment based on its duration. Short-term unemployment can generally be said if it does not last longer than 12 months. Long-term unemployment occurs after this period.

Long-term unemployment characterizes society's problems with serious social consequences. It also has a negative impact on people's psyche and family life. For the individuals concerned, it represents existential difficulties which also affect their immediate family, and it also represents a loss of education, qualification and work habits. It can also be influenced by unemployment benefits, which mean that the unemployed do not look for work, as they are not motivated enough, but rather satisfied with what the state gives them. On the one hand, this group of people loses hope of finding a new job, on the other hand, they have become accustomed to their current situation and come to terms with it, they have learned to live modestly and with state support (Gregová, 2017; Jutvik – Robinson, 2020; Islam, 2021).

Bečka (2020) states that the labour market is also significantly affected by unpredictable risks – impulses. One such impulse was the crisis in the USA real estate market, which arose as a result of the provision of subprime mortgages to a group of people with a lower standard of living. Due to this influence, the sharp fall in the economy was also due to a sharp decline in foreign demand in Slovakia, as well as the gas crisis and the associated reduction in economic production. During the first quarter of 2009, a total of 1.22 million jobs were lost in the euro area, GDP fell and poverty deepened. The number of employees decreased by 0.8% quarterly to 146.2 million (Ministry of Foreign Affairs of the Slovak Republic, 2022). Governments have been widely taking anti-crisis measures, but the consequences of the economic and financial crisis have been visible for many years.

Another unpredictable global risk, the uncertainty of which still paralyzes society as a whole, the national economies of the European Union and the rest of the world, has become the SARS-CoV-2 coronavirus (COVID-19) pandemic. More than two years have passed since the

outbreak of the pandemic. The first symptom case was officially recorded on December 1 in Wuhan, China. We are talking about the so-called global health crisis with the consequences of an economic recession (Remenyik et al., 2020; Samarah, 2021; Kravchenko et al., 2021; Hajdú, 2021; Lipták-Musinszki, 2022). The measures are taken by the Government of the Slovak Republic to prevent the further spread of the pandemic directly limit the population or limit human resources (employees) in the form of measures, as a result of which the economic activity of business entities in most sectors slowed down. The Member States of the European Union have set aside huge and unexpected amounts in their budgets to prevent the economic damage caused by the pandemic.

Data and methodology

Based on the issues of the labour market in Slovakia and the current global crisis caused by the pandemic, we have defined a goal. The main goal of this paper is to present and evaluate the development of employment and unemployment in Slovakia in times of crisis, which arose in the period of 2007-2021, with emphasis on the current global pandemic.

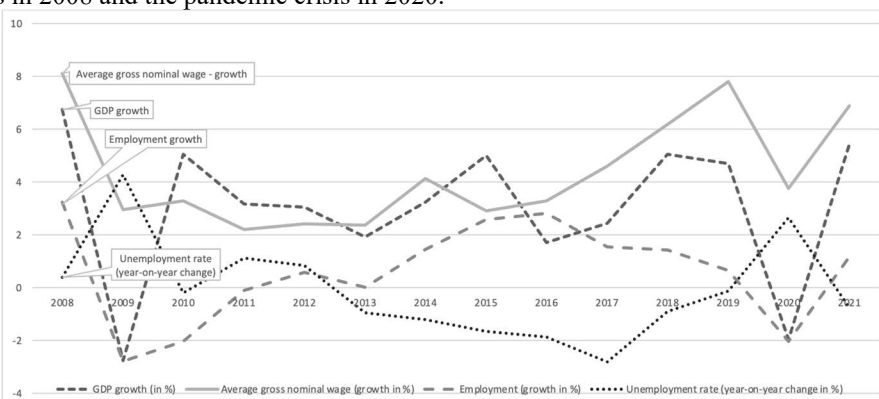
To achieve the stated goal of the research, we used mutually complementary scientific methods such as: abstraction – concretization, analysis – synthesis, induction – deduction, comparison, and statistical method – time series analysis of elementary characteristics.

We used research techniques such as the collection and analysis of indicators, as well as observations. We have determined the employment and unemployment in the economy of the Slovak Republic as the object of the research. The subject of the research is the analysis of data from the Central Office of Labour, Social Affairs and Family of the Slovak Republic and the Statistical Office of the Slovak Republic.

We drew knowledge about the object and the subject of research from the available domestic and foreign professional literature, professional domestic, foreign articles and from internet sources.

Analysis of selected indicators in Slovakia

The aim of this part is to approach the current situation caused by the pandemic and then present its impact on the development of macroeconomic indicators – GDP, average gross wages and employment in the Slovak economy. The added value of the outputs of this part is the presentation of the development of the mentioned macroeconomic indicators over a period of 15 years, which allows us to examine and evaluate the impact of the economic and financial crisis in 2008 and the pandemic crisis in 2020.



Note: previous year = 100

Figure 1: Year-on-year change in basic economic indicators

Source: processed based on data from Statistical Office of the Slovak Republic (2022)

As mentioned above, each crisis always has a negative impact on the development of the country's economy. This was also the case of Slovakia, where the economic crisis caused by the coronavirus pandemic interrupted the continuous economic growth that Slovakia had experienced since the previous economic and financial crisis in 2008 and 2009.

Figure 1 shows the trajectory of year-on-year changes in GDP, employment, and average gross wages in Slovakia of the observed period (in %). We note that the most dramatic changes in the development of these basic economic indicators of Slovakia occurred compared to the previous period during the global economic and financial crisis, as well as at the time of the outbreak of the global pandemic crisis. The decline in economic growth in the first year of the great recession 2009 (64,848.6 million euros) compared to 2008 (EUR 66,684.6 million euros) is very significant, a decrease in GDP of 9.5%. After this year, the economy gradually took a breather, but after the outbreak of the pandemic in Slovakia in 2020 (89,948.7 million euros), there was again a significant year-on-year decline compared to 2019 (91,760.0 million euros) by 6.67%. We observe a similar situation in the year-on-year change in the level of employment. In 2009 (2,365,800 people) there was a decrease in the level of employment by 6.03% compared to 2008 (2,433,750 people) and in 2020 (2,531,270 people) it was also unfavourable compared to 2019 (2,583,636 people) a decrease of 2.69%. The growth rate of the average gross wages also slowed down rapidly during the crisis in the country, in 2008 compared to 2007 it was an increase of 8.12%, but in 2009 compared to 2008 it was only 2.97%. The increase in 2019 compared to 2018 was 7.80%, and in 2020 compared to 2019 only 3.75%.

According to preliminary data from the Statistical Office of the Slovak Republic (2022), the value of Slovakia's GDP in 2021 reached the level of 2019, it means that it reached the level before the outbreak of the pandemic crisis. However, the year-on-year growth of the Slovak economy was supported only by domestic demand. In 2021, however, employment recorded only a very slight increase compared to 2020, by 1.16%. The average gross wage in 2021 was 1,211 euros, which is the highest amount in the last 14 years. The year-on-year increase in 2021 compared to 2020 was 6.88%. The unemployment rate, which is the percentage of the unemployed in the total number of economically active inhabitants, shows a slight decrease one year after the crisis.

Table 1: Development of population, economically active population, unemployed and employed persons, 2007-2020

	Population	Economically active population	Unemployed persons	Employed persons – total	Employed persons – employees	Employed persons – self-employed persons
	(1)	(2=3+4)	(3)	(4=5+6)	(5)	(6)
2007	5,396,568	2,649,125	291,850	2,357,275	2,043,575	313,700
2008	5,405,860	2,691,200	257,450	2,433,750	2,094,150	339,600
2009	5,417,758	2,689,975	324,175	2,365,800	1,994,700	371,100
2010	5,429,973	2,606,500	289,000	2,317,500	1,947,125	370,375
2011	5,398,108	2,679,941	364,628	2,315,313	1,946,805	368,508
2012	5,406,244	2,706,446	377,487	2,328,959	1,968,838	360,121
2013	5,413,003	2,715,242	385,995	2,329,247	1,967,053	362,194
2014	5,418,559	2,721,768	358,715	2,363,053	1,999,274	363,779
2015	5,422,343	2,738,234	314,236	2,423,998	2,056,589	367,409
2016	5,430,804	2,758,112	265,994	2,492,118	2,107,680	384,438
2017	5,438,389	2,754,656	223,983	2,530,673	2,145,143	385,530
2018	5,446,001	2,746,235	179,501	2,566,734	2,187,636	379,098
2019	5,453,244	2,741,380	157,744	2,583,636	2,194,927	388,709
2020	5,460,597	2,712,712	181,442	2,531,270	2,153,087	378,183

Source: processed based on the data from Statistical Office of the Slovak Republic (2022)

When examining the development of the population of Slovakia broken down into the economically active population, the number of unemployed persons and employed persons (employees and self-employed persons), not all official data from 2021 were available, therefore in this case we examine the development of these indicators since 2007 until 2020, that is to say for 14 years.

From the data in the Table 1 it is clear that in the period 2007-2020 the development of the population in the country was favourable. During the examined period, the population increased by 64,029 persons (an increase of 1.19%). The age median (which divides the population into two equal parts with the same number of people) is 41.40 in the observed period. The average age of the population is 41.26 (or the average age of the living population). As we can see, the difference between the two figures is negligible (about 50 days).

By economically active population we mean the number of people over the age of 15 who belong to either the working population or the unemployed population, or are members of the armed forces. The economically active population makes up about half of the population in Slovakia. More precisely, it ranges from 49.01% (2007) to 50.79% (2016) in the examined period.

According to the Statistical Office of the Slovak Republic (2022), the number of inhabitants in Slovakia is 5,460,597, of which the share of persons in the pre-productive age group is 15.90%, in the productive age group 67.03% and in post-productive age 17.07%.

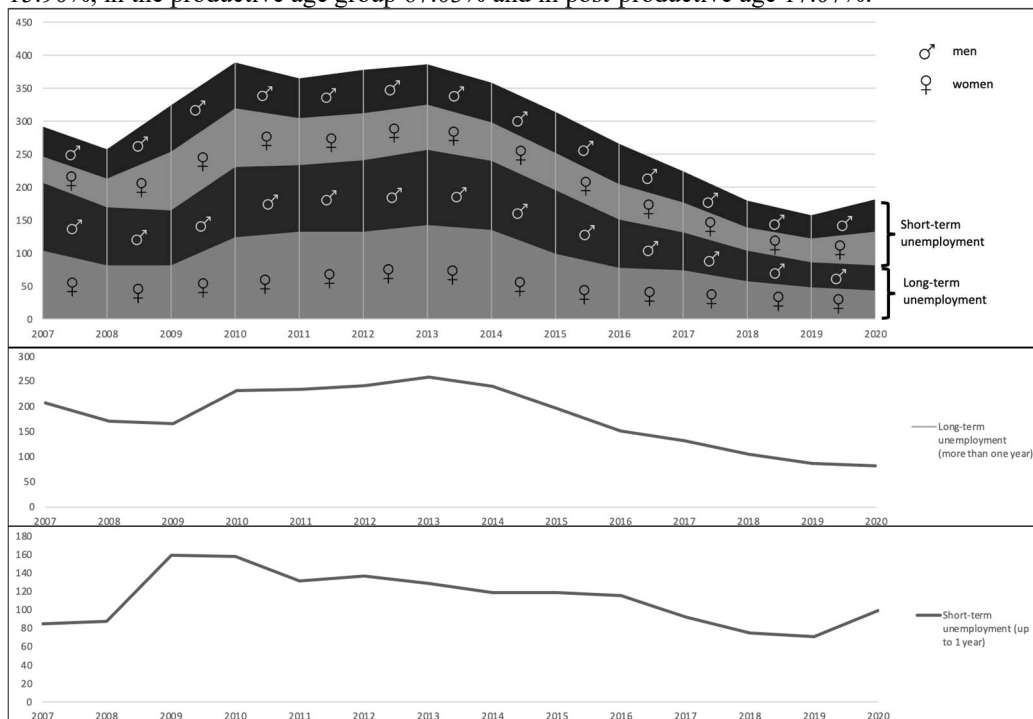


Figure 2: Unemployment (in thousands of persons)

Source: processed based on data from Statistical Office of the Slovak Republic (2022)

In the examined period, the highest number of job seekers was reached in 2013, when the consequences of the financial and economic crisis peaked. After this year, the number of job seekers began to gradually decrease until 2019 (Figure 2). We can see on the graph that the lowest number of unemployed persons was registered in 2019, i.e. before the outbreak of the global pandemic crisis, and the following year it increased by almost 24,000. The financial and economic crisis caused a sharp rise in short-term unemployment, which has, of course, grown into long-term unemployment and has affected the female population to a greater extent. After

the outbreak of the pandemic crisis, the increase in short-term unemployment is seen in approximately the same proportion of men and women.

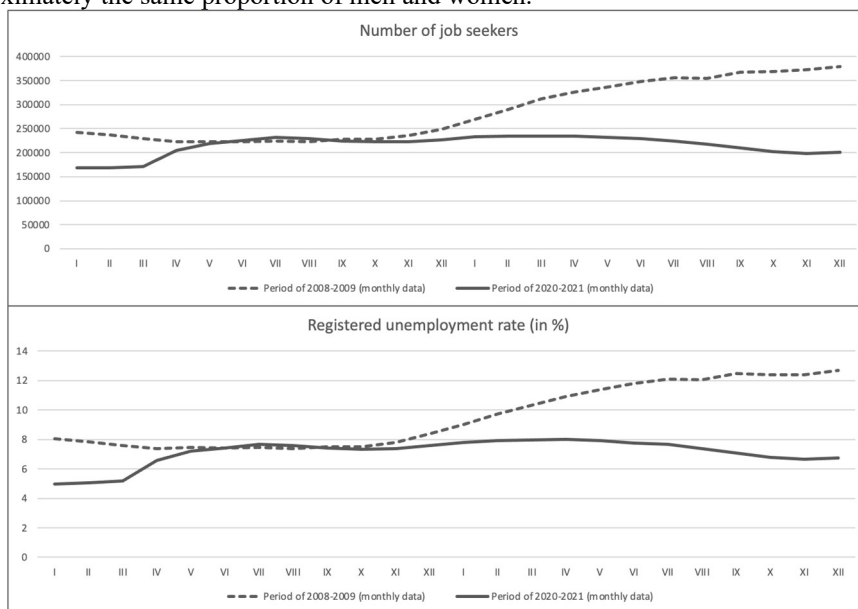


Figure 3: Development of monthly indicators on unemployment

Source: processed based on data from Central Office of Labour, Social Affairs and Family of the Slovak Republic (2022)

Comparing the development of the economically active population during the crisis in 2008-2009 and 2020-2021, we found that according to the database of the Central Office of Labour, Social Affairs and Family of the Slovak Republic (in contrast to the data of the Statistical Office of the Slovak Republic), the number of economically active population increased in the first quarter of 2009. During the 2020 and 2021 crises, the number decreased.

A jobseeker, in other words an unemployed person, is a citizen who wants to work, is looking for a job and is included in the register of jobseekers (Illés 2005). Comparing the development of the monthly number of job seekers in the crisis period 2008-2009 and 2020-2021, we can state that in both cases there was a gradual increase in the number of job seekers only from January of the year following the onset of the crisis. The development of the registered unemployment rate is completely identical with the development of the monthly number of job seekers (Figure 3), as we also assumed. These indicators are related, as the registered unemployment rate is calculated from the number of available jobseekers who can start employment immediately after the submission of a suitable job vacancy (registered unemployment rate = available number of jobseekers/economically active population).

Based on the findings, we will compare the development of the economically active population with the registered unemployment rate on a regional basis in the Slovak Republic in the current pandemic crisis. For this purpose, (in Figure 4) we presented the regional division of the Slovak Republic at the NUTS 3 level, which represents the second level of self-government within the three-level self-government division of Slovakia.

Major Cities: Bratislava (415 589), Košice (240 000), Prešov (91 489), Banská Bystrica (80 466), Žilina (84 675), Nitra (82 661)

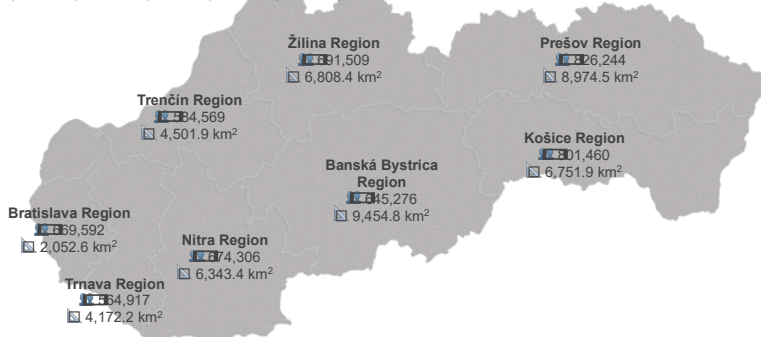


Figure 4: Self-government regions of Slovakia
Source: self-processing based on publicly available data

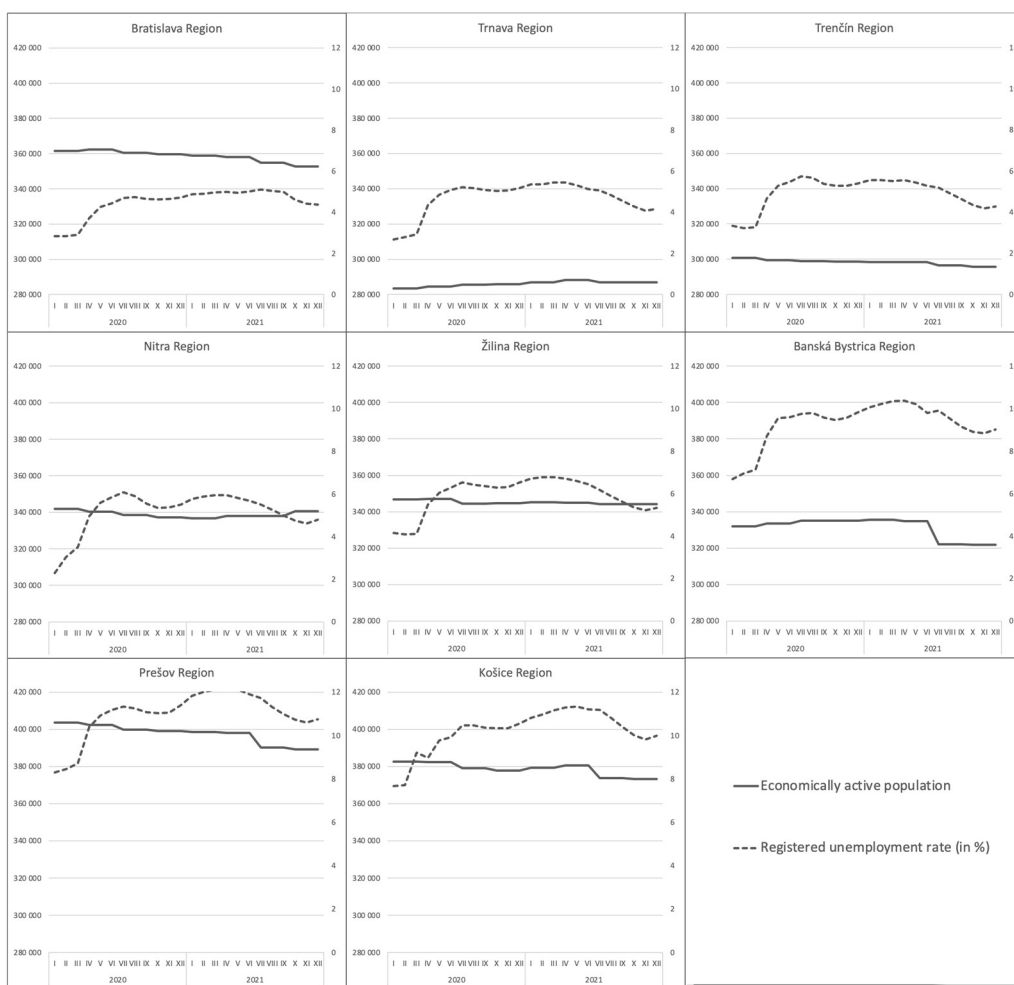


Figure 5: Development of economically active population and registered unemployment rate: monthly data by region, 2020-2021

Source: processed based on data from Central Office of Labour, Social Affairs and Family of the Slovak Republic (2022)

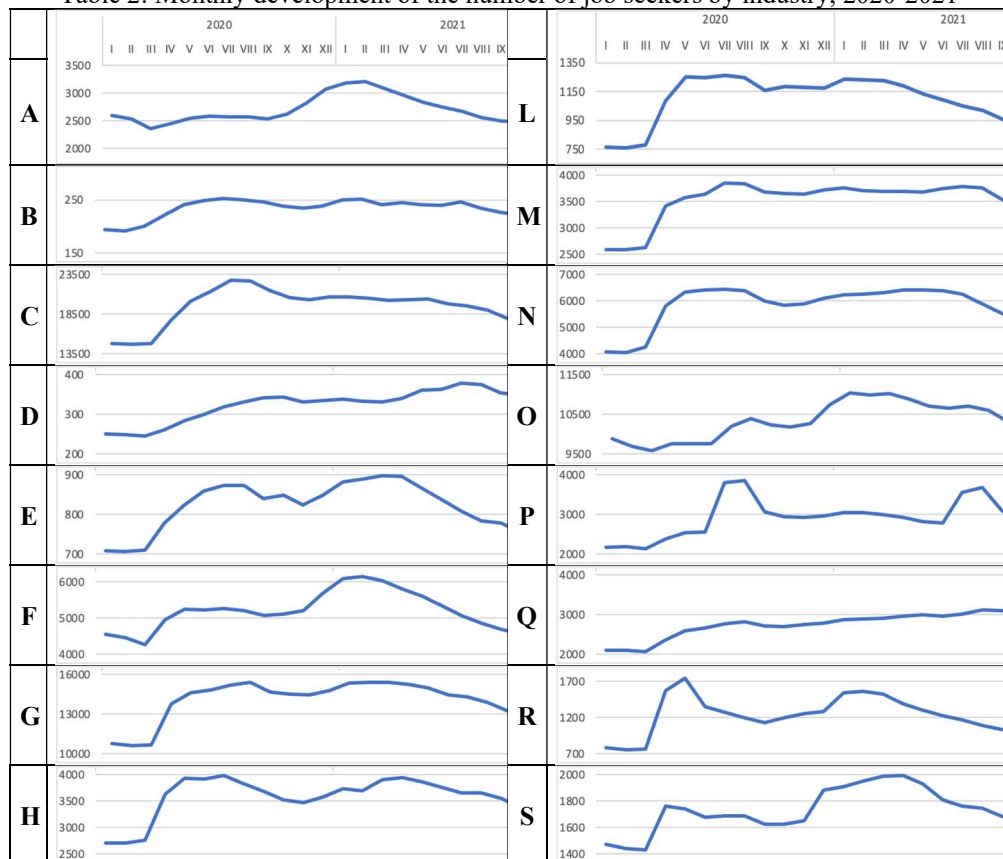
In Figure 5, we follow the graphical monthly development of the economically active population and the registered unemployment rate in individual regions of Slovakia in the years of the economic crisis caused by the coronavirus pandemic, in 2020 and 2021. The highest figure for the economically active population is in the Prešov Region: before the outbreak of the pandemic in March 2020 amounted to 403,714 people and by the end of 2021 had fallen to 389,162, it means a decrease by 14,552. The largest decrease was observed in July 2021, by 7,780 economically active people. In this region, the registered unemployment rate is also the highest in the whole of Slovakia. At the beginning of 2020, the registered unemployment rate was 8.29% and began to deepen steadily during the crisis. In the first half of 2021, unemployment rates were the worst. After June 2021, when the registered unemployment rate reached around 12%, the value began to decline slightly and in December 2021 it reached 10.75%.

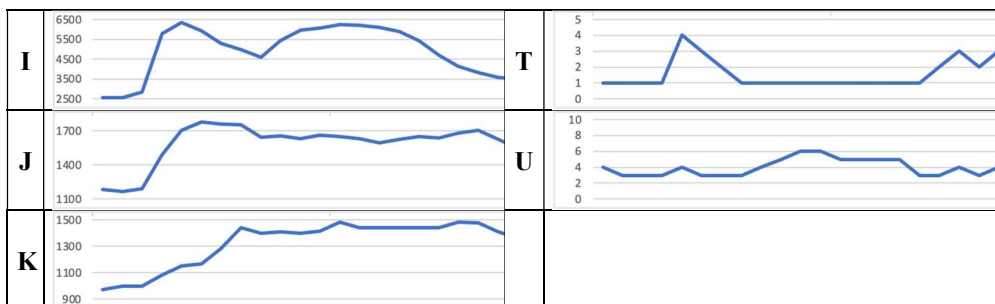
In second place in terms of economically active population is the Košice Region with 382,575 people, where the registered unemployment rate before the pandemic was 7.67% and reached the highest value in July 2021, higher than 11%, then gradually decreased and in December 2021 reached 9.98%.

The lowest registered unemployment rate before the pandemic within the regions was 2.29% in the Nitra Region and 2.68% in the Trnava Region. This rate increased to 4.28% in the Nitra Region and to 4.16% in the Trnava Region by the end of 2021. Of course, in both regions the highest values were in the first half of 2021, as in almost all regions of Slovakia.

Table 2 presents the development of the number of job seekers in Slovakia by industry (SK NACE) in 2020 and 2021.

Table 2: Monthly development of the number of job seekers by industry, 2020-2021





Legend:

- | | |
|---|--|
| <i>A – Agriculture, Forestry and Fishing</i> | <i>L – Real Estate Activities</i> |
| <i>B – Mining and Quarrying</i> | <i>M – Professional, Scientific and Technical Activities</i> |
| <i>C – Manufacturing (Industrial Production)</i> | <i>N – Administrative and Support Service Activities</i> |
| <i>D – Electricity, Gas, Steam and Air Conditioning Supply</i> | <i>O – Public Administration and Defence; Compulsory Social Security</i> |
| <i>E – Water Supply; Sewerage, Waste Management and Remediation Activities</i> | <i>P – Education</i> |
| <i>F – Construction</i> | <i>Q – Health and Social Work Activities</i> |
| <i>G – Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles</i> | <i>R – Arts, Entertainment and Recreation</i> |
| <i>H – Transportation and Storage</i> | <i>S – Other Activities</i> |
| <i>I – Accommodation and Food Service Activities</i> | <i>T – Activities of Households as Employers; Undifferentiated Goods and Services Producing Activities of Households for Own Use</i> |
| <i>J – Information and Communication</i> | <i>U – Activities of Extraterritorial Organisations and Bodies</i> |
| <i>K – Financial and Insurance Activities</i> | |

Source: processed based on data from Central Office of Labour, Social Affairs and Family of the Slovak Republic (2022)

The COVID-19 pandemic fundamentally affected the normal functioning of various societal areas in 2020 and 2021. Measures taken against the spread of the pandemic affected all the sectors in Slovakia. In each sector the number of registered unemployment increased, namely by 34.72% in 2020 and by 14.01% in 2021 (168,757 persons in January 2021 and 200,225 persons in December 2021). The unemployment rate grew relatively dramatically, especially in the second quarter of 2020. The sharpest increase by industry occurred in 2020 in *I – Accommodation and Food Service Activities* (an increase by 69.81%), in *R – Arts, entertainment and recreation* (an increase by 63.79%) and in *L – Real Estate Activities* (an increase by 53.66%). On the other hand, the slightest increase was recorded in *E – Water Supply; Sewerage, Waste Management and Remediation Activities* (an increase by 19.61%), in *A – Agriculture, Forestry and Fishing* (an increase by 18.42%) and in *O – Public Administration and Defence; Compulsory Social Security* (an increase by 8.69%).

In the second quarter of 2020, when the measures were the strictest due to the spread of the coronavirus, employers introduced a home office scheme if employees could do the work from home, and a several-week curfew was also introduced. In August-October 2020, the decline in unemployment stopped and then in November-December, the number of unemployed began to increase again.

The beginning of 2021 was affected by the second wave of the pandemic and the application of strict lockdown, which to varying extents was applied until Easter. After the second wave of the pandemic, there was a rapid recovery, which was mainly due to the revocation of

pandemic measures in May. The end of the year was affected by the third wave of the pandemic, but it was no longer as dramatic as in the first half of the year. Therefore, the situation was gradually improving. The largest decrease in job seekers was in the following sectors: *I – Accommodation and Food Service Activities* (a decrease by 38.87%), *R – Arts, Entertainment and Recreation* (decrease in job seekers by 35.90%) and *L – Real Estate Activities* (decrease in job seekers by 25.16%). Restrictive measures had a larger impact on business in some sectoral areas than in others.

Measures taken to support employment in Slovakia

In order to mitigate the effects of the pandemic on the employment of the population of the Slovak Republic, the national projects “First Aid”, “First Aid +” and “First Aid ++” were also implemented. Their aim is to support and maintain the level of employment at the time of a declared state of emergency, and to reduce the consequences of that situation. Despite these measures, employers responded to the closure or reduction of production by reducing their number of employees.

To mitigate the adverse effects on employment, financial support for job retention has been introduced, as well as rent reimbursement, especially for closed businesses of employers and for self-employed persons. The sectoral schemes focused mainly on maintaining employment in tourism, culture and kindergartens. In particular, a reimbursement of sickness benefits from the first day to workers when ordering quarantine or isolation has been introduced in the amount of 55% of previous income. A working parent with a child under the age of 11 was able to draw a nursing allowance during the entire period of closed schools and kindergartens. In 2021, the income compensation rate for both benefits increased to 75% of the previous income. Parents who ended their parental leave could continue to receive a nursing or parental allowance. Employers had deferral of maturity of social security contributions and income tax advances when incomes fell by more than 40%.

From April 2020, clients of banks and leasing companies could also request a deferral of loan repayments until the end of 2021.

In connection with the state of emergency, the Government of the Slovak Republic also adopted other types of state aid with effect from 31 March 2020, such as:

- Compensation for the decrease in business income of self-employed persons – a self-employed person whose activity or operation has been interrupted or reduced, whose sales have decreased by at least by 20%, or between 21%-30%, or between 31-40%, or by more than 40% (compensations in varying amounts depending on the decline in income).
- Home office – a special section of the Labour Code of the Slovak Republic introduced the possibility for an employer to order employees to work from home, but only if the agreed type of work allows it, or if work at the workplace is not possible or is risky due to potential spread of the disease.

Slovakia introduced a *Kurzarbeit* within the “First Aid” measure. *Kurzarbeit* is a system in which working hours and wages paid to employees are reduced, with the state covering part of the wages of the employees concerned under precisely defined conditions. The aim of the system is mainly to maintain wages. In some countries, such as Austria, Belgium, Germany, Italy, France, Denmark and Switzerland (see Table 3), *Kurzarbeit* has a long tradition. In the V4 countries, but also in the Netherlands, for example, *Kurzarbeit* schemes were introduced in the context of the economic and financial crisis in 2008/2009.

Table 3: Application of Kurzarbeit in the EU

	Before the economic crisis 2008-2009	During the economic crisis 2008-2009	After the economic crisis 2008-2009	During the pandemic 2020-2021
Belgium	✓	✓	✓	✓
Bulgaria	X	✓	X	✓
Czech Republic	X	✓	✓	✓
Denmark	✓	✓	✓	✓
Finland	✓	✓	✓	✓
France	✓	✓	✓	✓
Netherlands	X	✓	✓	✓
Hungary	X	✓	X	✓
Germany	✓	✓	✓	✓
Norway	✓	✓	✓	✓
Poland	X	✓	?	✓
Austria	✓	✓	✓	✓
Slovakia	X	✓	✓	✓
Spain	✓	✓	✓	✓
Sweden	X	X	✓	✓
Italy	✓	✓	✓	✓

Source: based on information from Brey &Hertweck (2016); ETUC (2020)

With the advent of the COVID-19 pandemic, many countries have adapted their Kurzarbeit schemes to the new challenges and circumstances, while others (in particular some Central and Eastern European countries, the United Kingdom, Ireland) have introduced completely new schemes. The schemes in individual countries differ from each other in parameters such as the amount of wage compensation, the length of provision or the method of their financing.

On March 1, 2022, the law on support during reduced work (Kurzarbeit II) entered into force in Slovakia (Act no. 2015/2021 Coll.), the essence of which is the provision of state support if the employer cannot assign work to his employees through no fault of his own. Although the law was adopted as a result of the COVID-19 pandemic, it will be generally applicable to various situations which do not allow the employer to assign work to employees in the agreed manner due to an external factor (see Table 4). The reduction in assigned work must be at least 10% of the established weekly working time (and it can be caused only by an external factor that cannot be influenced or prevented).

Table 4: Support during reduced work in Slovakia

	Before the pandemic	During the pandemic	From March 1, 2022
Kurzarbeit	✓	✓	✓
When it activates	An employer who has retained job positions even in the event of persistent serious operational reasons as defined in a written agreement with the employees' representatives, at least three months before the application for the allowance is submitted. Under an agreement with the Labour Office, it will limit its operational activities for a transitional period by not allocating to employees at least 60% and at most 40% of	Eligible applicants are: A) employers who had to close their branches or limit their activities by a decision of the Public Health Office of the Slovak Republic, B) employers who retain job positions even if their activities are interrupted or reduced during a declared state of emergency.	Eligible applicant is an employer who: - is in the situation of reduced work due to the external factor, - has no social security debts, - did not violate the prohibition of illegal employment in the period of 2 years before the application.

	the established weekly working time.		
Amount	The monthly amount of the contribution is 50% of the wage compensation provided to the employee, at most 60% of the average wage of the employees in the Slovak economy for the previous calendar year.	A) 80% of the average wage (maximum € 1,100 per employee per month) B) 80% of the average wage (maximum € 880 per employee per month) or a flat-rate allowance to cover a part of the wage costs per employee, depending on the decrease in income.	60% of the average wage (monthly at a maximum of 60% of the double of average wage of employees in the Slovak economy published by the Statistical Office of the Slovak Republic for two years before the support is provided).
Duration	12 months (of which, in total, a maximum of 120 days in which the employee received the wage compensation. If the allowance agreement was signed for a period shorter than 12 months, the total number of days for which the allowance is granted is reduced proportionately).		At the time of reduced work, in total a maximum of six months in two years. The government may approve a longer period for providing support in the case of an external factor – which is a state of emergency or exceptional circumstance.
Financing	Public resources	Public resources	Public resources

Source: Ministry of Labour, Social Affairs and Family of the Slovak Republic (2022); Act no. 215/2021 Coll. (2022)

In connection with the Kurzarbeit, it should also be mentioned that the Labour Code of the Slovak Republic (Act no. 311/2001 Coll.) stipulates that at the time of reduced work, the employer is obliged to provide the employee with wage compensation in the amount of at least 80% of average wage for the duration of this obstacle at work. It follows that the aid granted under the Kurzarbeit does not cover the employer's total costs for the wages of its employees. Since February 2022, the Ministry of Labour has also launched an information website on how to use this support to help employers and employees find their way around this issue.

Conclusions

The crises we faced in 2008-2009, as well as in 2020-2021, negatively affected the performance of the Slovak economy. The economic downturn and employment slump during the pandemic ranked Slovakia among the most affected EU countries. After March 2020, the Slovak government approved several measures aimed at mitigating the economic impact of the pandemic. New types of social benefits in the form of a pandemic sickness allowance and nursing allowance were approved first. Later, the government also approved direct aid measures to maintain jobs for employees, employers, and the self-employed persons. The primary objective of the aid was to provide a financial contribution to employers who have retained jobs, even if they have been forced to suspend or reduce their operating activities. The Kurzarbeit and home-office were used during the outbreak of the pandemic and the subsequent isolation of staff in all surrounding countries.

Also thanks to the resources of the European Union, the Slovak economy has been gaining momentum since 2022 and the uncertainty in the economy will decrease. Following the aid scheme, the European Commission approved an aid for Slovakia, which is intended to preserve jobs and to support the self-employed persons during the pandemic. For example, the so-called SURE instrument was created, which supported more than 31 million workers and 2.5 million companies across the EU. The Union has also launched the Recovery Instrument, which aims to help our economies and citizens emerge stronger and more resilient from the crisis. A total of 806.9 billion euros are available to the Member States under this European Union Recovery

Instrument (NextGenerationEU). Approximately 90% of these funds will be allocated through the Mechanism to Support the Recovery and Resilience, which aims to support reforms and investments through grants and loans provided between 2021 and 2026. Not all countries have been hit equally by the pandemic. This is also reflected in the distribution key of the grant allocation mechanism, which considers the economic situation of each country, in particular in terms of GDP per capita, the unemployment rate and the extent of the recession (European Commission, 2022; European Commission, 2021; European Parliament, 2021).

In 2021, employers published a record number of job offers. As follows from the analysis of the job portal "profesia.sk", the year 2021 brought 100,000 more job offers than the year before. The companies published a total of 292,838 job advertisements. This is the highest number in the 24-year history of the job portal in Slovakia. Most job offers were in trade, production, IT, transport with logistics and administration. During 2021, an average of 15 people responded to one offer, in 2020 it was as many as 26 candidates, so 2021 brought lower competition among job seekers (Profesia, 2022).

To improve the labour market, the Ministry of Labour, Social Affairs and Family of the Slovak Republic launched a new job portal on 1st of February 2022 (www.sluzbyzamestnanosti.gov.sk), through which employers can register vacancies available. It will just replace the previous job portal "Internet labour market guide" (<https://www.istp.sk/volne-pracovne-miesta>). At the time of writing this paper the new portal includes 82,483 vacancies from 6,610 employers. It is possible to search for offers on the website by employers as well as job seekers with a defined profession and place of work.

The migration of Ukrainian citizens to the countries of the European Union due to their escape from the war is a very current topic today. It is understandable to assume that they will soon need a job. The Ministry of Labour, Social Affairs and Family of the Slovak Republic (2022) allowed the employment of people in Slovakia who fled to our territory due to the war. They do not even need a work permit; it is enough if they request and will be assigned a temporary refuge and will have access to the same jobs as Slovak citizens. In Slovakia, a large number of vacancies have been registered for a long time, which are also available to Ukrainian applicants. This can help the labour market in Slovakia if they fill positions that companies are unable to fill for a long time (for example in the IT sector, social services) or that are weakened due to a pandemic and various anti-pandemic measures (hospitality, gastronomy, tourism).

Acknowledgements

This paper is an outcome of the research project VEGA no. 1/0340/21 (The impact of the pandemic and the subsequent economic crisis on the development of digitalization of companies and society in Slovakia), which is being implemented by the Technical University in Košice, Slovakia.

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Post-COVID symptoms in EU cross-border cooperation

The COVID-19 pandemic has changed the conditions of normal life in many aspects. However, it most impacted the life of people around national borders. What is more, while in other regions, after the successful vaccination campaigns, life begins to return normal, the borderlands still display signs of the effect of the pandemic, what we could call post-COVID symptoms. The study points out the symptoms which seem likely to stay with us for a long time and formulates recommendations for treatment.

Key words: COVID-19, cross-border cooperation, border closure, mobility, multi-level governance

JEL code: H79

"... in times of crisis, closing borders can only be considered as an ultima ratio. Since border closure is a symbolic policy, any decision to restrict free movement must be based on factual and scientific grounds and strictly limited in time." (Albers et al. 2021, 58)

<https://doi.org/10.32976/stratfuz.2022.41>

Introduction

The first news related to the emergence of a new infectious disease hit the world press at the end of 2019. With regard to the similar virus of 2003, the new one was called SARS-CoV-2 because it proved to be a coronavirus producing a severe acute respiratory syndrome (SARS) (Pierce et al., 2022, 164). The virus, detected in China, reached Europe by the end of January 2020 (ECDC 2020; Spiteri et al. 2020). By that time, the World Health Organization (WHO) had announced that the disease (later to be named COVID-19) was a "public health emergency of international concern" (WHO 2020a), and on 11 March 2020 declared it a pandemic (WHO 2020b). Symptoms were varied but often included fever, cough, headache, fatigue, breathing difficulties and loss of sense of smell and taste. In numerous cases, the illness resulted in the collapse of the respiratory system, causing sudden death.

As of August 2022, according to the database managed by the Johns Hopkins University, the number of total cases approaches 600 million, while the number of fatal cases is close to 6.5 million⁹. Despite the high vaccination rate in some areas, the world is expecting a new wave of the pandemic at the time of this study. It seems that COVID-19 will remain among us – and not only in its most salient form when new and new waves of the disease arise. Medical scientists have a widely shared consensus that COVID-19 provokes long-standing effects on human bodies. In their study in 2021, López-León and co-authors estimated that 80% of the infected persons had long-term symptoms such as headache, fatigue, attention disorder, hair loss or difficulty breathing (López-León et al., 2021). One year later, Pierce et al. (2022, 165; 170) pointed out the fact that regardless of the severity or mildness of the illness, the patient may present symptoms of *post-COVID-19* or *long COVID-19* (the naming and the formal definition are not fixed yet in scientific literature), possibly even with a lifelong prospect. This long-standing character of the SARS virus was not analysed previously. One of the main

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⁹ See: <https://coronavirus.jhu.edu/map.html>

results of the current pandemic is the acknowledgement of the need for special treatment for those suffering from post-COVID symptoms.

This study argues that cross-border cooperation is key to European integration, trust, and solidarity. Currently, 'post-COVID symptoms' make it necessary for the 'patients', here understood as EU inhabitants, to adopt new sorts of measures and new behaviours. The study focuses on two aspects of the long-lasting effects of the pandemic on cross-border regions and the EU territory in general. First, based on the lessons learnt from the pandemic, the authors analyse the challenges to the future Schengen system and open borders. In addition, the factors determining the conditions for more effective cross-border cooperation processes in the future – good examples of on-the-ground solidarity and cooperation included – are investigated. In both cases, the authors concentrate on the salient symptoms of a post-COVID disease as a malfunction of the European project.

Judging from its topic, the study is in line with the flourishing COVID literature of border studies but its emphasis is rather on the long-lasting effects of the pandemic – using a medical parallelism. The study follows the constructivist stream of border studies. Constructivists consider spatial phenomena to be socially constructed and in this process political narratives, inherited habits and behaviour patterns play an important role (van Houtum 2000; Paasi 2005). The changes of the general European discourse during the pandemic influenced the spatial behaviour and the border perception of the citizens and (de)constructed the border narratives, which will have long-lasting effects.

Border regime and cross-border mobility during the pandemic

Since it entered into force in 1995, the Schengen system, designed to "build an area of freedom, security and justice without internal borders" (EC 2021a, 23), has never experienced such an earthquake as during the COVID-19 pandemic. Certainly, temporary and geographically limited restrictions to free movement within the Schengen Area for various reasons (terrorist attacks, migration phenomena, international conferences or gatherings, etc.) were known prior to this health crisis. However, in March 2020, the principle of free movement was unprecedentedly and profoundly wounded. The most striking phenomenon was the physical and administrative sealing of borders: Member States strongly limited border crossing in order to prevent the spread of the virus, sometimes by placing physical barriers on the roads (Peyrony *et al.*, 2021). Even borders that had been permanently open since the end of World War II, like the French-Swiss one, were closed (Beylier 2020; Peyrony *et al.* 2021).

In many cases, cross-border public transport services were suspended. Due to the shortages of border police staff (a consequence of the systematic downsizing of internal border control systems), many border crossings where control could not be ensured were closed even during the periods when pandemic restrictions were loosened. Consequently, people living on the border had to make long detours to get to the other side. Medeiros *et al.* (2021, 977) called this phenomenon "covidfencing", meaning "systematic closing of national borders to the circulation of people due to the pandemic".

And what is more, EU Member States applied their covidfencing measures without coordination (Böhm 2020; Coatleven *et al.* 2020; Albers *et al.* 2021; EC 2021a): they followed their own national health and epidemiological protocols, which were considered more effective than launching long-standing negotiations at the European Union level. This means that the re-nationalising tendencies evident since 2015 with the migration crisis had resulted in similar reactions, which arose again (Coatleven *et al.* 2020).

The European Commission and the European Centre for Disease Prevention and Control (ECDC) made remarkable efforts to keep the achievements of free movement across internal EU borders alive. The Commission activated the Civil Protection Mechanism as early as 28 January 2020 to repatriate EU citizens from Wuhan, while the Council Presidency activated

the IPCR (Integrated Political Crisis Response) mechanism on 2 March 2020¹⁰. From the end of March, the Commission published several guidelines (e.g. on freight traffic¹¹; the free movement of cross-border and seasonal workers¹²; emergency assistance in cross-border healthcare¹³, etc.) and recommendations (e.g. on the restrictions of free movement¹⁴; on non-essential travel to the EU¹⁵; on the establishment of Green Lanes for freight transport¹⁶, etc.). The Commission also recommended that the Member States apply concrete practical solutions (e.g. opening of testing points at the border crossings, separate crossing lines for cross-border workers, etc.) to facilitate cross-border labour mobility, especially concerning essential or critical jobs like those related to healthcare. Similarly, as early as March 2020, the Commission started developing the Green Lane package (a Green Lane mobile app included) to maintain seamless freight transport within the EU.

Based on the proposals of the Commission, the Council allowed anti-COVID interventions to be included in Cohesion Fund operational programmes and the transfer of money between funds, to ease the application of State Aid rules, and temporarily suspended the Cohesion Policy classification of the regions. These decisions provided the necessary flexibility for using EU funds to protect the achievements of the integration.

Despite the intense efforts at the EU level, the realisation of the principles remained problematic. The ECDC was assigned the task of publishing the current epidemiological situation across the EU, displaying a map of colours (red, yellow, and green) indicating the severity of the pandemic. This provided an updated overview of travel conditions every week. Still, as the national health protocols, the way of processing medical statistics and the testing strategies were diverse, the information base could not be effective (*ECA* 2022). The same shortages could be observed in the case of the Re-open EU portal, designed to share the most updated information on national measures related to the pandemic. As the Report of the European Court of Auditors (ECA) highlights, one year after launching the system yet nine Member States had not provided the required information (*ECA* 2022, 33). Finally, the Commission has initiated the set-up of the Corona Information Group (CIG) by which the Member States and the EU institutions could, in principle, inform each other about their most recent steps taken. At the same time, the ECA Report pointed to national decisions taken regularly without even informing the direct neighbours, not to mention the CIG (*ECA* 2022, 35).

Interestingly, the national governments that unevenly applied the Commission recommendations were forced to ease their stricter border regimes by local and regional agents. As Coatleven et al. (2020, 17) writes, "After decades of almost complete disappearance of all national borders, the brutal division of everyday space appeared arbitrary and ruthless to many

¹⁰ <https://www.consilium.europa.eu/en/press/press-releases/2020/03/02/covid-19-outbreak-the-presidency-steps-up-eu-response-by-triggering-full-activation-mode-of-ipcr/> (last visited on 4 September 2022)

¹¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020XC0316%2803%29> (last visited on 4 September 2022)

¹² [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0330\(03\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XC0330(03)) (last visited on 4 September 2022)

¹³ https://ec.europa.eu/info/sites/default/files/guidelines_on_eu_emergency_assistance_in_cross-bordercooperationin_heathcare_related_to_the_covid-19_crisis.pdf (last visited on 4 September 2022)

¹⁴ https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2020%3A337%3ATOC&uri=uriserv%3AOJ.L_.2020.337.01.0003.01.ENG (last visited on 4 September 2022)

¹⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020H0912&qid=1662326468293> (last visited on 4 September 2022)

¹⁶ <https://euroseeds.eu/app/uploads/2020/03/20.0184-Commission-Communication-on-the-implementation-of-Green-Lanes.pdf> (last visited on 4 September 2022)

citizens. Individuals and organisations had to comply not only with one but two, sometimes three different sets of rules at the same time, which were subject to abrupt changesets of rules simultaneously, which were subject to an abrupt change of course." This frustration generated energetic movements urging the re-opening of borders.

During the first wave in the spring of 2020, many derogations needed to be introduced, from the free movement of truck drivers and cross-border medical staff to student mobility and the reunification of families. The reasons were multi-faceted. Luxembourg could not apply strict border measures as 70% of the doctors and nurses of the country commute from the other side of its borders (mainly from France). Similar problems were faced by health and social services (including ambulance services) in East Germany, Bavaria and Austria, where Polish, Czech, Slovak, Hungarian and Slovenian commuters ensured the sustainability of the services (Medeiros *et al.* 2021). Due to the fast spread of the virus, in some regions, the beds in clinics were very quickly filled up, and this made it necessary to transport new patients to a neighbouring country. For example, this was the case in Alsace, where 200 patients were transferred to neighbouring German, Swiss and Luxembourg hospitals during the first wave (Albers *et al.* 2021; Peyrony *et al.* 2021).

As the pandemic continued, representatives of the economic sector also expressed their demands for the free movement of workers. As a consequence (and in harmony with the Commission's recommendations), more and more Member States signed bilateral contracts on re-adapting the so-called 'small border traffic' rules by which those workers residing in a small "eligible area" (25 to 30 km from the border) and having a job on the other side (within a similar distance) were allowed to cross the border between their home and their workplace without interrupting their travel. Exemptions for *essential travels* were granted to doctors visiting for medical purposes, students travelling for academic obligations, artists invited by cultural institutions, athletes and related professional staff participating in sports events, business travellers, expatriates, seasonal and posted workers, patients travelling for treatment, etc. Slovenian and Croatian winemakers were allowed to cross the border to cultivate their vineyards in Hungary. Romanian citizens were permitted to return home during the parliamentary elections held in December 2020. Foreign yacht owners had the opportunity to repair their yachts in Croatia. But Dutch entrepreneurs living in Germany were not entitled to receive either German (the business was in the Netherlands) or Dutch aid (the country of residence was Germany). Polish and Czech workers in various sectors in Germany also felt neglected (Bohac, 2021; Novotný and Böhm, 2022). Likewise, on the Portuguese-Spanish border, the collaborative work of existing Euroregions, EGTCs and Eurocities (Medeiros 2021) was crucial to re-open the cross-border passages to cross-border workers. In the Elvas-Badajoz cross-border area, however, the degree of institutional cooperation was relatively low in the first months of covidfencing. The main reason for this is the lack of competences in Portugal at local/regional level to make formal legal agreements with the regional administrative level in Spain. In fact, on a formal level, only the national administrative level in Portugal can sign legal agreements with the Spanish regions, due to the absence of a legally and administrative elected regional level in continental Portugal. Hence, during the initial pandemic wave, the cross-border cooperation process was somewhat halted, falling to its minimum ever level in several decades. Indeed, the implemented policies did not have much to do directly with the need to solve cross-border cooperation related processes. So policy measures implemented here did not impact stakeholder cooperation, at least directly. On a positive note, the Elvas-Badajoz Eurocity decided to speed up the delivery of the Eurocity Card, which allowed discounts (5 to 10%) for Elvas and Badajoz' dwellers using public services (swimming pools, museums, etc.).

Both the above-described exemptions and the assumption that strict border management systems could not prevent the spread of the virus clearly show that the mandatory isolation coupled with every pandemic should not have been made at state borders, because border

closing could neither control the spread of the virus nor impede the overburdening of the national health care capacities. A group of researchers under COBAP (COVID Border Accountability Project) published a scientific report in *Nature* where they admit that "more research must be done to evaluate the by-product effects of closures versus lockdowns as well as the efficacy of other preventative measures introduced at international borders", but they "found no evidence in favour of international border closures, whereas (they) found a strong association between national-level lockdowns and a reduced spread of SARS-CoV-2 cases" (Shiraeef *et al.*, 2022). Furthermore, the level of EU integration today makes it inevitable to keep the gates open for free movement, even in times of crisis.

Post-COVID symptoms of border closures

It is not incidental that the impacts of the crisis of the Schengen system during the pandemic produced the most remarkable effects in border areas. Without neglecting the severity of the pandemic and the elevating examples of solidarity between nation states, if we want to draw a balance on "covidfencing" measures, "the available data support the overwhelming perception that the impacts are mostly and largely negative" (Medeiros *et al.* 2021, 978), and "the negative impacts of the crisis are disproportionately more severe in border regions than in non-border regions" (Peyrony *et al.* 2020, 147).

The documents published by the Commission addressing the challenges to the implementation of the Schengen Agreement underline the eminence of this achievement within the European project (EC 2021a) when quoting Article 3(2) of the TEU, Article 20(1) of the TFEU, the Directive 2004/38/EC and the Article 45 of the Charter of Fundamental Rights of the European Union guaranteeing the free movement and residence of the EU citizens within the EU (EC 2021c). The details of this freedom (one of the four fundamental freedoms of the EU) are stipulated in the Schengen Agreement, its implementing conventions and the Schengen Borders Code (SBC). Countries joining the system must adopt and respect these legal documents.

The Schengen system is "a symbol of Europe's interconnectedness and of the ties between the peoples of Europe", forming "part of Europe's DNA" (EC 2021a, 1) – even though its geographic scope differs from that of the EU. Its significance can also be presented through convincing figures: this is the largest free travel area in the world, allowing more than 420 million people to travel without restrictions (EC 2021a, 1), and it improves the living conditions of 150 million people (one-third of the total EU population) living in border areas; on average, 3.5 million EU citizens cross borders daily, from among whom nearly 2 million commute to work (Medeiros *et al.* 2021, 963; EC 2021a, 2). By facilitating 24 million business trips every year and ensuring the free transport of goods and services, the system effectively contributes to the Single Market's development and the European economy's growth (EC 2021a, 1). The financial losses of a non-Schengen model are estimated to be between 5 and 18 billion euro per year (EC 2021a, 3).

As a result of border closures, cross-border mobility has been drastically reduced everywhere in the EU. To illustrate the changes, it is enough to mention the example of Hungary, where the volume of cross-border vehicle traffic decreased by 42% from 2019 to 2020 and it is still far below the earlier intensity (see Figure 1).

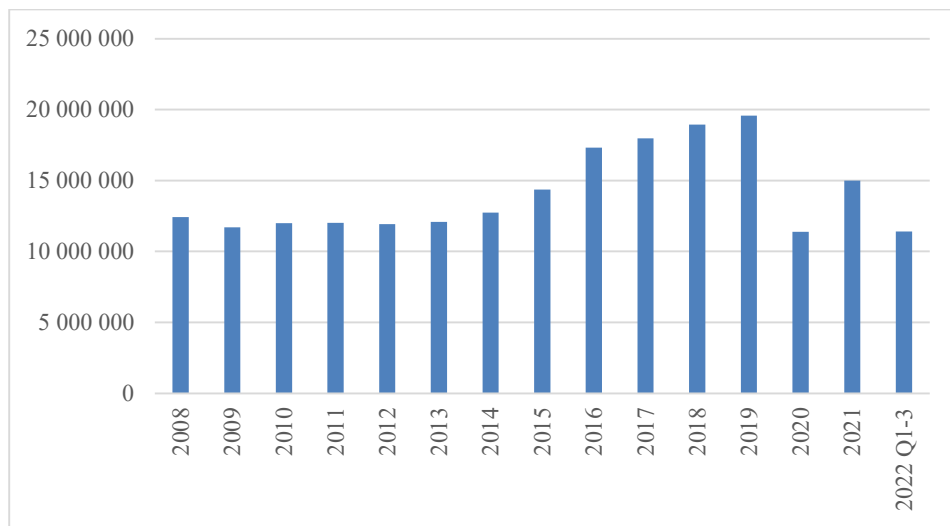


Figure 1 – Volume of cross-border traffic around Hungary since the country's joining the Schengen system (December 2007)

Source: Hungarian Central Statistical Office¹⁷

"The very essence of the Schengen project is the absence of controls at internal borders allowing all persons legally staying in the Union to fully benefit from the possibility to travel without being subject to internal border controls" (*EC 2021c*, 4). According to Articles 27 and 29 of the free movement Directive and Articles 25, 27 and 28 of the Schengen Borders Code, this right of the EU citizens cannot be restricted unless public policy or public security is endangered. In these cases, border control along the internal borders can temporarily be re-established for six months and prolonged to a maximum of 2 years if there is no better alternative. This fact has to be justified by the Member State in a notification to be sent to the Commission. The measures taken must respect the rules of proportionality, non-discrimination and human rights. Within four weeks after lifting the controls, the Member State has to deliver an ex-post report to the Commission, the Parliament and the Council.

Despite the above strict rules, the abuse of the Schengen Borders Code is hardly punishable. In the event the Commission does not consider the justification of the measures satisfactory, its only tool is launching an infringement procedure which always lasts for years without immediate effect, while the Member State can modify the measures in a short time (*ECA 2022*). The erosion of the Schengen system did not start with the pandemic, but in 2015 with mass migration phenomena (more than 1.2 million refugees arrived in the EU in one year) and terrorist attacks in France, generating the re-introduction of temporary internal border controls in Denmark, Germany, Austria, Sweden, France and Norway (also members of the Schengen zone) with the approval of the Commission. The measures were prolonged in 2016. At the end of the two-year period, the national governments modified the justification so that they managed to keep their borders permanently controlled (*EC 2021a*, 18). In 2017, the Commission issued recommendations on the release of strict measures, but it could not prevent border control operations in these six countries. They have not even submitted their mandatory reports on their measures to the Commission. What is more, even the Commission has not called the governments in question to remedy their default (*ECA 2022*; *EC 2021a*).

The COVID-19 pandemic made this exceptional legal abuse a rule. As the report of the European Court of Auditors states, the 150 notifications of the Member States on the re-

¹⁷ <https://statinfo.ksh.hu/Statinfo/haDetails.jsp?query=kshquery&lang=hu>

introduction of internal border controls could not "provide sufficient evidence [...] to demonstrate that the border controls were indeed a last resort" (*ECA* 2022, 20).

The situation was further aggravated when in 2021 the Belarussian government pushed a large group of migrants across the Polish border ("instrumentalisation of migrants", (*EC* 2021a)), which made it necessary to amend the Schengen Borders Code. The Commission made its proposal on the amendment in 2021 (*EC* 2021c) in compliance with the Schengen Strategy published in June 2021 (*EC* 2021a), together with the proposal on the revision of the Council Regulation on the Schengen Evaluation and Monitoring Mechanism (*EC* 2021b). The three documents are designed to enhance the resilience of the Schengen system against future crises (*EC* 2021a, 17).

Indeed, when tightening the conditions of control and return of migrants (including the set-up of a standing European Border and Coast Guard corps and an integrated information system), supporting the EU neighbouring countries' border guarding capacities, and carrying out stricter surveillance on people within the Schengen zone, the new proposals have a clear intention to solidify the external borders of the EU in order to guarantee the openness of the internal ones. In addition, before re-introducing border control mechanisms, the Member States must conduct an in-depth analysis on the likely impacts and the appropriateness of the planned measures, including the guarantee for opening green lanes for freight transport. If the controls are kept for more than six months, a risk assessment is to be carried out, and the Commission has to issue an opinion if the measures are kept in force for more than 18 months. In order to facilitate putting theory into practice, the Commission also published a handbook addressing the border officers. To keep the process under control, the Commission will publish a yearly report on the state of the Schengen system to be discussed at the annual Schengen Forums (*EC* 2021c; *EC* 2021a). The new system, called European Integrated Border Management, pays special attention to the "cross-border regions" which are to be defined geographically by the Member States when stipulating that the measures have to respect the recommendations issued by the Commission during the COVID-19 crisis. Besides, the Council would have the opportunity to introduce uniform measures in the case of emergency (*EC* 2021c).

At the same time, the Commission's intervention tools remained saliently weak: it can issue its opinion, launch consultations and request profound assessments, but it cannot prevent the re-establishment and prolongation of national border controls. Even worse: according to the new Code, the Member States will be authorised to prolong the controlling measures beyond two years if deemed necessary (*EC* 2021c).

Apparently, the phenomena experienced at the internal borders during the pandemic will remain with us. As the Commission is somewhat powerless toward the Member States' capacity to introduce long-term controls, the limitation of free movement seems to have become a long -COVID symptom. In its report, the European Court of Auditors urged the possibility of launching enforcement actions in the event of non-compliance with the Schengen legislation (*ECA* 2022, 39), but this has not been built into the new proposal.

Another post-COVID effect is the re-establishment of physical infrastructures at border crossings. After the establishment of the Schengen regime, most border crossing facilities were eliminated or devoted to other purposes. During the pandemic, many buildings were or re-used as checkpoints, and they will seemingly remain there, which has a psychological effect: it makes the border visible again. Before the most recent closures, two entire generations have grown up in the EU without direct experience of the existence of internal borders. For them, this is a brand-new phenomenon which may modify their worldview. In the eastern countries of the EU, the covidfencing measures brought back memories of the age of the Iron Curtain (*Böhm* 2020), resulting in an increased threat of the return of the age of separation and frequent cases of depression (*CESCI* 2021).

The planned amendment of the Schengen Borders Code and other European legal acts addressing migration, human trafficking, terrorism and the pandemic leads the generalisation

of strict and individualised surveillance (*Dodds et al. 2020; Delmas-Goeury 2020*). These will have adverse effects on free movement and the feeling of freedom.

Due to the long-lasting measures and the difficulties posed by the health checks, many cross-border commuters decided to return to their domestic labour market. For the time being, exact numbers are not known yet. However, at least in some sectors, cross-border remote labour might have partially counteracted this.

Long-COVID symptoms are also present in the economy. On the one hand, the just-in-time logistics systems proved too vulnerable when freight transport was hindered or slowed down. This means that, in the future, large assembly plants will need larger warehouse capacities (*Chung et al. 2020*), which will impact cross-border supply chains. According to a recent survey, 35% of the interviewed UK-based companies plan to contract with British suppliers instead of foreign suppliers. What is more, some 31% intend to relocate the entirety of their production to the UK (*Ashcroft 2022*). Similarly, short supply chains have become popular for the food sector. Since the retail of local products is ruled at the national level, the increase in the importance of these chains and the emergence of national self-sufficiency concepts (*Johnson 2020*) will adversely affect border areas and cross-border economic integration.

Border areas always have had a special characteristic in shopping tourism: thanks to the price differences, border citizens can optimise their family budget by purchasing goods also from the other side of the border. As statistics show, during the pandemic the quantity and the volume of one-day shopping tourism drastically dropped. For example, in Hungary the annual income from foreigners' one-day shopping reached 213 billion forints in 2019. In 2020, the same figure remained below 117 billion while in the first three quarters of 2021 it amounted to 71 billion only. In parallel with this, the good transfer via online retailing systems has remarkably increased; in the case of Hungary from 729 billion forints (2019) to 916 billion (2020) (*Trademagazin, 2021*). These figures also represent a structural change – even if the budget optimising practices of border citizens will always favour cross-border mobility.

The most severe post-COVID consequence of covidfencing is the erosion of mutual trust between the Member States and their neighbouring nations. This could mean a further rise of nationalism and might even demolish the fundamental concept of the European project.

Post-COVID symptoms of mistrust and weakened cooperation

Cross-border mobility and cooperation can be considered as the litmus test of the functioning of the European Union, as both the achievements and the shortcomings of the European integration have direct and salient impacts upon border areas. This is why cross-border cooperation and structures have a prominent role in the integration process, an unprecedented characteristic of the European project (*Popescu 2012*).

Since the 1990s, the openness of the internal borders guaranteed by the Schengen Agreement has been fuelling the development of the Single Market, the socio-economic integration of the EU, the stepping up of internal cohesion and innovation in the field of cross-border governance. The gradual opening of borders and the border areas approaching each other mirror the mission of the European project as much as they become the places of trust building and peaceful co-existence (*Wassenberg et al. 2015*) as well as socio-economic integration (*O'Dowd 2003; Faludi 2009*). By decreasing the separating effects of national state borders and the level of division, cross-border cooperation and the structures managing it have contributed remarkably to de-territorialisation tendencies within the EU (*Medeiros et al., 2021*). This means that the territorial jurisdiction power of the modern nation states has gradually been weakening while new, cross-border geographies have emerged, fuelling cohesion and integration. However, the Schengen Strategy says: "a well-functioning Schengen area depends on mutual trust among Member States" (*EC 2021a, 20*). During the pandemic, this mutual trust was profoundly injured, generating further post-COVID symptoms for CBC.

According to Coatleven et al. (2020), border closure, as a physical reality and as a spatial phenomenon, reinforced suspicion and mistrust. The border closure and the lack of coordination strengthened *re-bordering* and *re-othering* tendencies. The pandemic also has re-thematised *outside-inside, them and us* - this time using the distinction between the healthy and the sick (Buko 2020; Fellner 2020; Wille 2020), where the neighbour is identified as a threat (Alden 2020; Opilowska 2021). The closing of borders generated a domino effect: only a few governments were courageous enough to risk not joining the process, thus jeopardising their positive electoral image. Unfried (2020) emphasises this aspect when he stresses that the measures introduced were not always based on rational considerations but were rather nationalist substitutes to cover up inertia.

As a consequence, phenomena of distrust and nationalism, which had been attributed to the past, re-occurred again, resulting in strange events. French people commuting to Germany were repeatedly insulted (Coatleven et al. 2020; Albers et al. 2021), as were the Dutch in Belgium (Peyrony et al. 2021); during school holidays in Bavaria, Czechs treated their always welcomed Bavarian visitors with hostility (Coatleven et al. 2020); Swedes were seen with reluctance in all Nordic countries. The rise of nationalist resentment harmed bilateral cooperation and also weakened confidence in the European project as a whole (Coatleven et al., 2020). Besides, the pro-cooperation narrative ruling the European discourse in the 1990s and 2000s has been marginalised to a remarkable degree. The Commission proposed to allocate a percentage of the Recovery Fund to the purposes of the European Territorial Cooperation (ETC) programmes, but the Council rejected the proposal. The ECBM (European Cross-Border mechanism), a tool enabling border areas to apply the national rules of their neighbouring country for better provision of services, was proposed by the Luxembourg presidency in 2015 and included in the Cohesion Policy regulatory package for the period of 2021-2027, failed at the Council. The total amount dedicated to ETC programmes decreased – for the first time since the launch of the Interreg initiative in 1990. With the re-institutionalisation of borders, even the topic of cross-border cooperation became suspicious and neglected. All those border closings were probably for nothing, according to the already mentioned study published in *Nature* (Shiraeef et al. 2022), and their effects will probably last for a long time.

Considering the developments of CBC during the pandemic, one can conclude that online solutions have partly taken over the role of interpersonal meetings. Physical separation forced the project partners to apply a set of IT solutions for managing their joint projects, which seems likely to remain with us in the future. On the one hand, IT tools simplify and green project implementation. On the other hand, the decreasing role of personal contacts will definitely weaken the intensity of cooperation, which has always been a key for international and intercultural learning and trust building.

Treating these long COVID symptoms will be a time- and resource-consuming process. As Delmas and Goeury (2020, 19) warn: "what was suspended in a few days will take many years to restore" and, let us add: if it can be done at all...

Remedies for post-COVID symptoms

Apart from the pandemic's negative impacts on CBC, many positive developments can be mentioned and these examples may show how to handle post-COVID phenomena.

Klatt (2020) considers the focus given to the borders during the pandemic as a positive externality. A number of previously hidden processes became visible, and decision-makers at state level had to consider the specific characteristics of border regions. The report from the Commission (EC 2021d) also mentions that paradoxically, these restrictions spotlighted the importance of the cross-border movement of workers. Albers et al. (2021, 49) call this process 'border mainstreaming'. Despite the above-mentioned marginalisation of cross-border

cooperation, the transboundary flows became an issue and bordering processes have been thematised.

Even more, the epidemiological nature of the crisis put an emphasis on medical cooperation, which envisages further integration of health services across the borders (*Dodds et al.* 2020; *EURACTIVE* 2021) as a result of the solidarity actions (i.e. cross-border share of masks, sanitisers, ventilators, medical staff and patients). As a direct consequence of the COVID-19 crisis, Albers et al. (2021, 56) recommend that health care institutions located in border areas share information on their available bed capacities among themselves so that it becomes easier to coordinate the admission of injured and sick people in times of crisis. Presumably, the pandemic has also taught the national authorities about the advantages of sharing capacities.

A very relevant and positive effect in terms of multi-level governance was the active involvement of cross-border structures in crisis management at local and regional level. Of course, in an emergency situation when centralisation of resources and information is inevitable, it is not self-evident that local actors can play an active role. However, numerous good examples can be mentioned where the role of these stakeholders was undisputedly remarkable, as has been illustrated by Peyrony et al. (2020) with various examples.

Cross-border structures participated in information provision activities. The Meuse-Rhine Euroregion (BE/DE/NL) kept the population informed of the changing regulations by means of the *Grenzinfopunkt* (border information point). Similar tasks were performed by the information offices in the Franco-German-Swiss border area. The PAMINA Eurodistrict EGTC (DE/FR) produced a bilingual daily-updated information letter, and the Gate to Europe EGTC (HU/RO) shared information in Hungarian and Romanian languages on its Facebook site.

In addition, based on good interpersonal relations, the leaders of euroregions, EGTCs and other cross-border institutions managed to set up joint structures facilitating decision-making. This was the case for the presidents of the three regions involved in the Tyrol-South Tyrol-Trentino EGTC (AT/IT), who met online on a weekly basis. The Meuse-Rhine Euroregion set up a crisis team to allocate patients according to the available bed capacity in the region. (*CESCI* 2021). The health emergencies in the area of the Greater Region (BE/DE/FR/LU) were supported by a contact group including regional and health authorities. The Nouvelle-Aquitaine Euskadi Navarra (NAEN) Euroregion (ES/FR) was invited by the Committee of Social and Economic Reconstruction of the Spanish Parliament to deliver a report on the situation along the border. For this purpose, the euroregion conducted a survey of 2,500 respondents (*Medeiros et al.*, 2021). This way, the NAEN Euroregion could participate in the work of the national level decision-makers and represent the interest of border citizens directly.

Local and regional actors were also active at EU level when, during the summer of 2020, based on the initiative taken by the French *Mission Opérationnelle Transfrontalière* (MOT), the European Cross-Border Citizens' Alliance was established with the participation of the Association of European Border Regions (AEBR), the Central European Service for Cross-Border Initiatives (CESCI) and the Committee of the Regions (CoR). The Alliance published a Manifesto that nearly 200 organisations and persons joined from all over Europe. Furthermore, the four partners conducted a survey which served as the basis for the Resolution on the future of CBC adopted by the CoR on 1 July 2021 (*Vision for Europe: The future of cross-border cooperation*). The Resolution (CoR 2021, point 4) urged keeping the internal borders open, thus "ensuring the free movement of people, the delivery of cross-border public services and guarantee the full and smooth functioning of the single market and the Schengen area"; consulting local and regional authorities before introducing measures affecting the border regime (point 5); drafting joint emergency plans designed for each border section separately (point 8); and systematically gathering data on cross-border areas (point 12) with a view to better preparing these regions for future crises. As *Medeiros et al.* (2021) stipulate, systematic observation of border areas would also facilitate anticipating the potential impacts of border closures.

Furthermore, appropriate information may enable decision-makers to adopt tailor-made solutions, as the Commission's Report of 14 July 2021 (*EU Border Regions: living laboratories for European integration*) highlights (EC 2021d). This report draws together the conclusions of numerous studies and analyses (e.g. *Coatleven et al. 2020; Albers et al. 2021; Giacometti-Meijers 2021*) when encouraging national authorities to provide governance capacities for local and regional actors. The involvement of the EGTCs and Euroregions in decision-making is a minimum requirement, but it would be optimal if these organisations could coordinate crisis management activities in the border region concerned.

Conclusion

The study intends to present the long-standing covidfencing effects experienced in cross-border mobility and cooperation as a consequence of changes in border regimes caused by the COVID-19 pandemic. Crucially, as happens in healthcare, the symptoms of closing borders indicate structural phenomena. The treatment needs time, resources, and institutional commitment to increase European territorial integration.

Paradoxically, the pandemic has shown a potential way out from the current post-COVID situation by spotlighting the best examples of solidarity, cross-border health integration and active involvement of the cross-border regional actors in shaping their future. The paramount question here is whether future crises with potentially similar or worse effects will be dealt with through less controversial policy actions at all territorial levels.

It is also essential to verify whether potential pro-active policy measures can foster EU cross-border cooperation processes into a new level of cooperation to reduce covidfencing effects. These might include the materialisation of cross-border planning strategies and the implementation of new cross-border cooperation entities, such as Eurocities, to function as guardians of the Schengen project.

But the question remains of how to convince national authorities of the importance of the broad application of Schengen, looking at the presented examples demonstrating the advantages of keeping borders open, even in pandemic times, for the benefit of the economy and society – under the shadow of a war and climate change. Collecting evidence from a variety of border areas is possible. However, there are still some borders to explore with low reply rates to surveys, where further research should be promoted.

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Changes in the social and technological innovation potential of the Visegrad (V4) regions (2001–2019)

For more than a century, technical progress and innovation have been at the forefront of economics. This is one of the reasons why the importance of innovation has been recognised by economic policy makers and the concept has become part of the public narrative. However, this does not mean that research has come to an end, which would in any case contradict Schumpeter's theory of the need for change and renewal. Despite the wealth of knowledge we have, we can state that there are a number of recurring (e.g. social and ethical aspects of innovation, etc.) and new (e.g. spill-over effects of innovation, the effectiveness of public intervention in supporting the development of innovation networks, etc.) questions that can be asked about innovation. In the aftermath of the financial crisis of 2008, the cyclical COVID crisis starting in 2019 and, not least, the Russian-Ukrainian war, the peripheral regions of the post-socialist countries of Europe are falling further behind. Research, development and innovation investment, already extremely low, has further declined and the economic outlook has worsened. Social innovation may therefore be of particular importance in these regions. Our study has two main parts. First, we briefly review the place and role of innovation in economic thinking and assess the definitions of social innovation; in the second part we analyse the differences in the NUTS2 regions of the Visegrad countries in terms of the ranking of technological and social innovation potential.

Key words: social innovation, good and bad innovation, Visegrad (V4) countries.

JEL code: R12

<https://doi.org/10.32976/stratfuz.2022.42>

1. The place and importance of technical progress and innovation in economic thinking

In Schumpeter's famous work, five points were created to summarise the essence of innovation: (1) the introduction of a new good – that is one with which consumers are not yet familiar – or of a new quality of a good; (2) the introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned; (3) opening of a new market, that is a market into which the particular branch of manufacture of the country of question has not previously entered, whether or not this market existed before; (4) conquest of a new source of supply of raw materials of half manufactured goods, again irrespective of whether this source already exists or it has first to be created; (5) carrying out of the new organisation of any industry (Schumpeter 1911, 66).

However, he did not address the impact of these on society, as 'good' innovation serves the public interest compared to that that causes physical, material or moral harm to smaller or larger communities. In other words, not all new combinations contribute to the survival and well-being of a society.

This not insignificant aspect was not included in the focus of the neoclassical thinking, which was the fundamental force of the twentieth-century's economic thought, when they focused only on the effects of broader technical progress on productivity and macroeconomic output.

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There is a further element of innovation – perhaps less spectacular, less measurable in GDP terms, but at least as important– when the new solution creates opportunities for improving employment, reducing unemployment, and improving the livelihoods of the person(s) concerned and their social inclusion. These are the conditions that social innovations are creating by new/novel combinations of solutions (possibly already known), recognising that economic, social and educational innovations are at least as important as the natural, technical and technological innovations in the Schumpeterian definition.

The position of each school of economics on innovation is closely linked to the mainstream theories of growth and development. The neoclassical approach has always tried to promote the so-called "innovation theory". It is therefore worth reviewing how this approach (which is still noticeable in its effects but increasingly criticised) has developed (Table 1).

Table 1: The role of innovation and technological progress in mainstream economics

model	key factors	source
exogenous	<ul style="list-style-type: none"> The driving force of the economy is the entrepreneur, the entrepreneur's ability to innovate. Progress is the result of new combinations. 	Schumpeter, 1911
	<ul style="list-style-type: none"> The evolution of the economy has been explosively influenced by major technological discoveries. 	Kondratyev, 1928 Rostow, 1960 Aron, 1962 Gerschenkron, 1984
	<ul style="list-style-type: none"> The amount of economic output is influenced by technical progress (technical and technological level). 	Hicks, 1956
	<ul style="list-style-type: none"> Technical progress (capital and labour efficiency are the same) is growth-neutral. 	Harrod, 1939; 1973 Domar, 1946 Solow, 1956; 1957 Hicks, 1956 Uzawa, 1960
	<ul style="list-style-type: none"> Monopolistic firms are less innovative than their competitive counterparts. 	Arrow, 1962
endogenous	<ul style="list-style-type: none"> Government policy has an impact on innovation and growth. 	Kaldor, 1957 Romer, 1990 Rebelo, 1991 Lucas, 1993
	<ul style="list-style-type: none"> Technological progress is not independent of the institutional system. 	Aghion, 1998
evolutionary	<ul style="list-style-type: none"> Innovation requires the existence of knowledge bases, and progress (development) is the result of changes in knowledge bases. 	Nelson & Winter, 1977, 1982 Dosi, 1982 Stiglitz & Greenwald, 2016

Source: compiled by the authors

The classical school, which began with the work of Adam Smith, saw the economy as a circular process without development, moving along a given and unchanging path, repeating itself, where money only has a function in exchange (Smith 1776, 1959). Schumpeter (1911) made a fundamental break with this conception, not only incorporating change into this monotonically repetitive cycle, but considering it as essential for the whole model. The revolutionary element in Schumpeter's internationally respected paper is that he does not only consider economic growth by the amount of capital and the increase in the number of workers (population) (a necessary but insufficient condition for economic growth, which arguably supports development but does not necessarily ensure it), but also takes into account the

creative, new-creating activity of the entrepreneur. For our topic, it is important to stress that Schumpeter expects new ideas from entrepreneurs, who are the creators of innovation. Kondratyev's descriptive statistical studies (Kondratyev 1988), aimed at detecting so-called long-term (great) cycles, brought special colour to the study of the impact of innovation on the output of the economy. Analysing the causes, Kondratyev first of all emphasises that 'Before the beginning of the rising wave of each great cycle, and sometimes at the beginning of the waves themselves, a significant change in the basic conditions of economic life in society is observed. These changes are usually expressed in (various combinations of) profound changes in the techniques of production and exchange (preceded by major technical inventions and discoveries), changes in the conditions of monetary circulation, and the increasing role of new countries in the world economy' (Kondratyev 1988, 592). Kondratyev takes stock of the technical discoveries that triggered the first, second and third cycles, but also makes a strong reference to changes in the conditions of monetary circulation, which in themselves can be considered innovations.

In the study of economic growth (after a long pause), Solow and Swan's growth model shows technical progress as a substitute for capital and labour in the calculations (Solow 1956; Hicks 1956). In Solow's conception, technological progress not only increases output, but also eliminates earlier technologies (creative destruction). In the original Solow model, this technical progress is independent of investment, and the rate of technological progress is considered constant and exogenous. In a later paper (Solow 1957), however, he recognised that the rate of technological progress had to be influenced in order to increase economic output. Following in Solow's footsteps, a growing number of authors began to examine the impact of research and development on economic output.

Mansfield (1967) incorporated into the modified Cobb-Douglas production function the annual expenditure on research and development, as well as the annual rate of depreciation of the investment in research and development funds, and the rate of general technical progress that would have occurred even if the organisation's expenditure on research and development had been reduced to zero.

The 1970s saw another paradigm shift in research on innovation. The new, so-called evolutionary theory relates innovation to the results of corporate strategies (Nelson & Winter 1977) and fundamental technological change (Dosi 1982). It is characterised by gradual, systematic, conscious innovation, rather than explosive, revolutionary innovation (Wagner 2011).

Compared to the previous theories, the so-called endogenous growth theory represents a new approach to the analysis of the effects of technical and technological changes. The endogenous concept is based on the recognition that access to technological innovation varies among territories (which explains the different growth rates of countries and regions within countries and the lack of rapid convergence). Therefore, technical progress is not an exogenous variable that is available to all, but can be influenced by the amount of human capital and knowledge (Stiglitz & Greenwald 2016). The so-called new (endogenous) growth theory is of particular relevance for our topic because it argues that changes in the size and rate of output are a function not only of capital, labour and productivity, but also of human capital, initiatives, values and traditions (i.e. neoclassical economic factors) (Romer 1990).

From another perspective, innovation aims to increase productivity and gain a competitive advantage, which can lead to an increase in the level of economic development of countries and regions (Paas & Vaahi 2012; Iammarino et al. 2018). Analysing the relationship between innovation and economic growth, Lee and Rodríguez-Pose argue that 'innovation is a crucial driver of urban and regional economic success. Innovative cities and regions tend to grow faster and have higher average wages' (Lee & Rodríguez-Pose 2013, 1). This is due to higher levels of technology, more patent applications and more R&D (research and development) spending.

To sum up, innovation (science, technology, engineering) is treated with different forms of attention by all major schools of economics, while innovative responses to social problems are outside their horizon. This gap is to be filled by the new growth theory, which emphasises the initiatives of the local society.

2. The concept and drivers of social innovation

Studies of economic convergence and divergence at different levels now take into account (in contrast to the neoclassical school) the research, development and innovation (RDI) potential of a given region (e.g. Kocziszky 2004). However, innovations differ greatly in terms of their complexity, added value, social and historical importance. Innovation can affect the individuals (e.g. a particular workplace, the living environment, etc.) and small or large communities.

The technical and technological innovations resulting from Industry 4.0 will not substantially eliminate the disparities between social groups, and there is a real risk that some people will not benefit from the resulting advantages, or will benefit only to a limited extent. Therefore, the importance of social innovations generated by local communities (municipalities, religious communities, non-profit and for-profit organisations, etc.) will continue to grow, creating the potential for strengthening the value system based on work and knowledge, and transforming local initiatives into added value.

Social innovation as a concept first appeared in the work of Ogburn as a tool of improving the quality of life. In this context, Ogburn distinguishes between two complementary cultures: material and adaptive culture (Table 2). ‘But frequently there is a delay in the changes thus caused, so that the old adaptive culture hangs over into the new material conditions. This lag in the adaptive culture produces a period of maladjustment, which is less harmonious as an adaptation than the period which precedes or follows.’ (Ogburn 1923, 278).

Table 2: Typology of innovation

innovation		
aim	character	name
the creation of a new/novel product, technology, sales format, structure	material	technical/ technological innovation
solving a social problem	material	social innovation
improving knowledge levels, absorption capacity, new regulatory environment	immaterial	

Source: compiled by the author

The two cultures have different speeds of absorption. From this, Ogburn derived the cultural lag thesis: that is, technical and technological innovations are adopted more quickly, as opposed to immaterial culture, which needs time to catch up. The evolutionary capacity of individuals and groups with lower skills and knowledge to absorb technical and technological innovations is more modest, as evidenced by numerous examples.

Nevertheless, it was only in the late 1970s and early 1980s that the issue of social innovation came to the forefront again (and, as is usual in such cases), complementary and more precise definitions were created. The fundamental reason for this is the openness of the concept, which allows for a diversity of interpretations.

One of the most complex and brief definitions of social innovation is that of Mulgan (2007, 4), who defines social innovation as ‘new ideas that address unmet social needs’.

‘Social innovation can be defined as new ideas that both meet societal needs and create new social relationships or collaborations. So not only does the individual benefit from it, but it also helps to increase society's capacity to act’ (Wendt 2016. 10).

‘Social innovation constitutes new way to attain goals’ (Zapf 1989, 177).

‘There is a one-way dependency relationship between technical and social innovations; technical innovations lead to social change and draw social innovations after them.’ (Gillwald 2000, 38).

According to Pelka and Terstriep (2016), there are seven basic types of innovation, one of which is social innovation. The other types are product, service, organisation, governance, system and marketing.

Another formulation is that social innovation is about shaping social practices to respond to societal challenges, thereby leading to increased social welfare, and this necessarily implies a greater degree of social responsibility of civil society actors than before (Garcia et al. 2015; Lombardi et al. 2020). Jastrzebska's (2017) interpretation builds on similar keywords, but more broadly formulates the character of social innovation. According to her, the main character of social innovation is that it is mainly implemented through bottom-up initiatives, has a novelty content, covers the full range of innovations from idea to implementation, and its main objective is to meet societal needs and increase efficiency, through which it improves society's capacity to act.

According to the OECD (2016, 82), social innovation differs from technical innovation in the classical sense in that "the social innovation is not about introducing new types of production or exploiting new markets in itself but is about satisfying new needs not provided by the market or creating new, more satisfactory ways of insertion in terms of giving people a place and a role in production." In their view, five main areas of impact can be identified which fundamentally determine the process of social innovation at national level. These are: unemployment, demographic challenges, poverty, environment and education.

As can be seen from the above definitions, there are simpler and more complex interpretations of the concept. Any differences in perceptions are not only due to differences of perception but also to differences of definition. Some authors, for example, have focused their analysis of the topic only on business organisations (e.g. Zapf 1994), while others have focused on larger social groups (e.g. Benedek et al. 2018). Some definitions thus emphasise the characteristic of social innovations that they satisfy needs in a novel way that the market cannot (e.g. Mulgan 2007), others focus on increasing efficiency (Phills et al. 2008; Lombardi et al. 2020), while others emphasise that social innovation can help in solving problems caused by market and governance failures (Rehfeld et al. 2015).

For an innovation to be useful, it needs to be able to be adopted or produced by a narrow or broader group in society. This requires adequate knowledge and expertise. The lack of such knowledge and skills is an obstacle to the diffusion of technical and technological innovations.

2.1 Opportunities and dilemmas for social innovation

The application of social innovation (despite its many definitions and nearly forty years of existence) has been slow to gain traction in practice (Benedek et al. 2015). There are several reasons for this, which are worth taking into account.

a) In the past decades, the literature and economic policy have mainly focused on linear innovation processes (R&D-manufacturing-marketing). Following the financial crisis of 2008, the Europe 2020 strategy (EC 2020) has put more emphasis on these ideas than ever before. One of the EU's priorities is to strengthen social innovation activity in the Member States, with a number of projects being supported, but measuring this at regional level remains a major problem. Over the last 10 years, a number of analyses have been carried out to measure the

social innovation potential of a given region (country, regional or local level), but there is still no uniformly agreed methodology and indicator structure for the calculations.

b) Social problems are complex, usually with cumulative effects (Figure 1). The reason for this complexity is that most social problems are rooted in values problems. This has spill-over effects on social coexistence, unemployment, environmental pressures, low levels of education, poor housing conditions, segregation, etc.

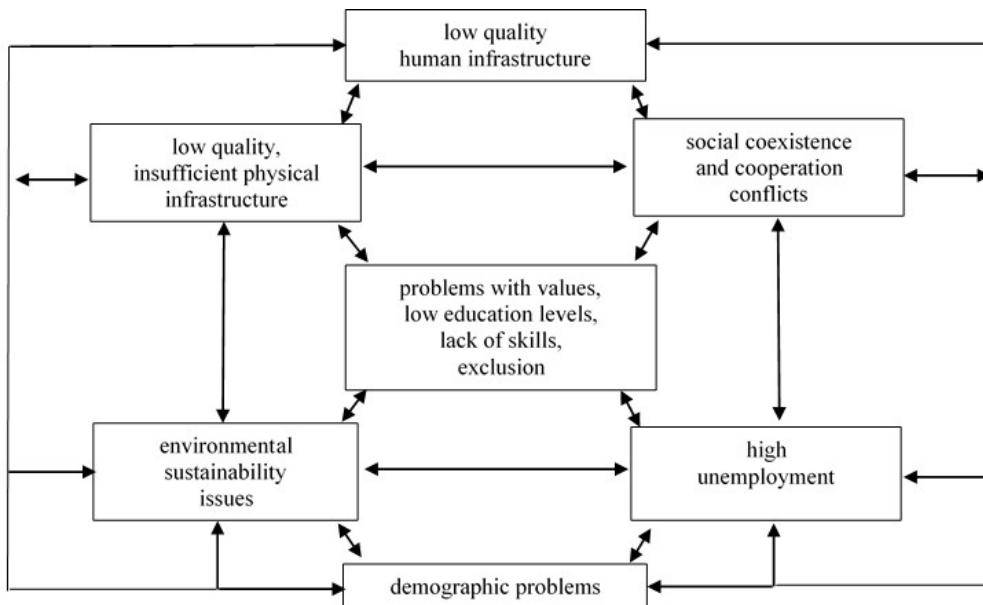


Figure 1. Typical social problems
Source: compiled by author

As social innovation generally tries to meet social needs that the market cannot, it can also be an alternative solution for catching the periphery up to the core areas (Benedek et al. 2015; Szörényiné 2015; Kocziszky et al. 2017; Kocziszky & Szendi 2018; Lombardi et al. 2020). Indeed, the problems of disadvantaged and peripheral regions (e.g. low educational attainment, low activity rates, high unemployment, low human development index, poverty, etc.) cannot be solved by technological innovation due to their low innovation potential (absorptive capacity).

c) Knowledge, the need to acquire new knowledge, individual and community values also play a prominent role in social innovation. There are significant differences in the learning, skills and knowledge levels of individual communities, municipalities and regions, which are reflected in their capacity to innovate and ultimately in their income levels and development.

d) The state has a key role not only in generating and ensuring the sustainability of innovation and R&D in science and technology, but also in social innovation processes.

3. Technological vs. social innovation potential in the NUTS2 regions of the V4

As an effect of the prolonged COVID-19 pandemic, followed by the Russian-Ukrainian war that broke out in February 2022, the socio-economic risks have increased in the Visegrad countries (Poland, the Czech Republic, Slovakia, Hungary), including inflation, increase in

budget and public deficits, increase in commodity price and, emergence of a demand rather than a supply market.

As the economy slows down, social innovation based on local initiatives will become more valuable. In the following, we examine how the technological and social innovation potential has changed in the NUTS2 regions of the four Visegrad countries between 2001 and 2019.

We analyse the similarities and differences in the distribution of the technological and social innovation indices, and the impact of the two dimensions on territorial development (whether high technological innovation performance attracts high social innovation capacity and vice versa).

In both cases, a complex analysis was carried out with the application of several indicators. In the case of technological innovation performance, R&D expenditure, the number of R&D personnel and the regional distribution of patent applications generated were considered as the main indicators of classical technological innovation.

A number of recommendations have been formulated in the literature (e.g. Krlev et al. 2014; Economist Intelligence Unit 2016; Castro Spila et al. 2016) to examine/measure social innovation performance, among which also three indicators (number of social enterprises, number of non-profit organisations, number of self-employed) have been analysed. As the primary objective of social entrepreneurship is not only to maximise profit but, like social innovation, to address social problems at the local level (e.g. labour market, equal opportunities, health, culture, etc.) (Popoli 2016; Piac & Profit 2017), social sensitivity and responsibility may be stronger in regions with more social enterprises. Self-employed people are creative actors who have innovative ideas and/or venture capital to implement new ideas and even create start-ups.

In the complex technological innovation index, the capital regions of the Visegrad countries are at the top of the list in both periods investigated. Prague is the best performing region in both 2001 and 2019 (although it has lost its top position in the number of research developers), ahead of Közép-Magyarország (Central Hungary) and the region of Bratislava. The Polish regions are found at the bottom the ranking (bottom 10) in terms of technological innovation factors.

Table 3: Ranking of top and bottom ranking NUTS2 regions in the Visegrad countries by technological innovation index and components (2001, 2019)

No	Region	2001				No	Region	2019			
		1.	2.	3.	Tot al			1.	2.	3.	Tot al
1.	Prague (CZ)	1	1	2	4	1.	Prague (CZ)	1	2	2	5
2.	Central-Hungary (HU)	3	3	1	7	2.	Central-Hungary (HU)	5	1	1	7
3.	Bratislava Region (SK)	5	2	3	10	3.	Bratislava Region (SK)	2	4	4	10
4.	Mazovian Voivodeship (PL)	4	4	10	18	4.	Mazovian Voivodeship (PL)	6	3	6	15
5.	Southeast (CZ)	6	5	7	18	5.	Lesser Poland (PL)	7	6	5	18
6.	Central Bohemia (CZ)	2	13	11	26	6.	Southeast (CZ)	4	5	9	18
7.	Southern Transdanubia (HU)	17	8	5	30	7.	Central Bohemia (CZ)	3	14	3	20
8.	Lesser Poland (PL)	9	6	16	31	8.	Central Moravia (CZ)	9	8	8	25
9.	Northeast (CZ)	7	16	9	32	9.	Pomeranian (PL)	11	9	7	27
10.	Lower Silesian (PL)	12	7	18	37	10.	Lower Silesian (PL)	12	7	11	30
...						...					
26.	Northern Hungary (HU)	33	28	15	76	26.	Central Slovakia (SK)	23	24	33	80
27.	Podlachian (PL)	22	29	27	78	27.	Podlachian (PL)	25	21	34	80
28.	Kuyavian-Pomeranian (PL)	26	24	31	81	28.	Northern Hungary (HU)	30	32	21	83
29.	Northwest (CZ)	27	35	20	82	29.	Opole (PL)	31	31	23	85

30.	West Pomeranian (PL)	30	22	35	87	30.	Eastern Slovakia (SK)	32	28	26	86
31.	Subcarpathian (PL)	28	30	30	88	31.	West Pomeranian (PL)	29	27	31	87
32.	Lubusz (PL)	34	33	24	91	32.	Warmian-Masurian (PL)	27	30	35	92
33.	Opole (PL)	31	31	32	94	33.	Lubusz (PL)	34	34	27	95
34.	Warmian-Masurian (PL)	32	32	33	97	34.	Northwest (CZ)	33	35	28	96
35.	Swietokrzyskie (PL)	35	34	34	103	35.	Swietokrzyskie (PL)	35	33	30	98

Source: compiled by author

Note: 1. R&D expenditure per capita (euro); 2. Number of R&D personnel per 100 inhabitants; 3. Number of patents per million inhabitants

The Prague region also tops the ranking in terms of the components of the social innovation index, but the dominance of the capital regions is less pronounced in this comparison. The list is dominated by Czech regions, but their position in the ranking has changed minimally over the period of 2001 to 2019. In the case of the social innovation index, the Hungarian regions are among the worst ranked, partly due to the low self-employment rate, but also because they are in the bottom third of the list for the other two indicators. The situation is similar in the Slovak regions.

Table 4: Ranking of NUTS2 regions in Visegrad countries by social innovation index and components (2001, 2019)

No.	Region	2001				No.	Region	2019			
		1.	2.	3.	Total			1.	2.	3.	Total
1.	Prague (CZ)	12	1	3	16	1.	Prague (CZ)	6	2	2	10
2.	Central Bohemia (CZ)	16	4	5	25	2.	Central Bohemia (CZ)	5	4	7	16
3.	Southwest (CZ)	22	6	2	30	3.	Southwest (CZ)	19	6	3	28
4.	Southeast (CZ)	19	5	7	31	4.	Southeast (CZ)	14	9	5	28
5.	Northeast (CZ)	21	7	4	32	5.	Northeast (CZ)	18	8	4	30
6.	Lesser Poland (PL)	4	21	12	37	6.	Northwest (CZ)	15	12	8	35
7.	Central-Hungary (HU)	17	3	17	37	7.	Lesser Poland (PL)	7	21	11	39
8.	Greater Poland (PL)	7	16	15	38	8.	Mazovian Voivodeship (PL)	4	34	1	39
9.	Mazovian Voivodeship (PL)	8	30	1	39	9.	Pomeranian (PL)	12	15	14	41
10.	Central Moravia (CZ)	23	8	8	39	10.	Greater Poland (PL)	10	17	15	42
...						...					
26.	Subcarpathian (PL)	5	35	25	65	26.	Central-Transdanubia (HU)	32	11	23	66
27.	Silesian (PL)	29	27	11	67	27.	Lubusz (PL)	18	28	24	70
28.	Central-Transdanubia (HU)	28	12	28	68	28.	Subcarpathian (PL)	11	33	27	71
29.	Warmian-Masurian (PL)	14	28	26	68	29.	Warmian-Masurian (PL)	14	29	29	72
30.	Bratislava Region (SK)	31	2	35	68	30.	Central Slovakia (SK)	20	20	33	73
31.	Northern Great Plain (HU)	27	18	31	76	31.	Eastern Slovakia (SK)	13	27	34	74
32.	Northern-Hungary (HU)	30	20	30	80	32.	Southern Great Plain (HU)	30	19	26	75
33.	Central Slovakia (SK)	33	23	32	88	33.	Western Slovakia (SK)	26	14	35	75
34.	Western Slovakia (SK)	34	22	34	90	34.	Northern Great Plain (HU)	34	22	28	84
35.	Eastern Slovakia (SK)	35	29	33	97	35.	Northern-Hungary (HU)	35	24	25	84

Source: compiled by author

Note: 1. Self-employed as % of total employment; 2. Number of social enterprises per 1000 inhabitants; 3. Number of non-profit organisations per 1000 inhabitants

When analysing the components together, it can be said that there are substantial differences and changes in the classification of both social and technological innovation potential between 2001 and 2019. Six categories were formed through the analyses:

- above average scores & position has not changed;
- above average scores & position improved between 2001-2019;
- above average scores & position declined between 2001 and 2019;

- below average scores & position has not changed;
- below average scores & but performance improved between 2001 and 2019;
- below average scores & position declined between 2001 and 2019.

Between 2001 and 2019, the main differences in the clusters of technological and social innovation factors are mainly due to the different positions of the metropolitan areas. In the case of the metropolitan areas, the Central Hungary region is part of the cluster, with above-average results in terms of technological and social innovation cluster performance, with a stable position. The technological innovation potential of the Prague region has deteriorated, while its social innovation potential has improved. For Warsaw, the trends show improving technological innovation capacity and deteriorating social innovation capacity. The case of Bratislava is the most contrasting: above average in technological innovation potential but below average in social innovation.

Looking at the patterns, it can be seen that in some regions at least one of the potentials is favourable, while in other regions (e.g. eastern Poland), both classifications are in the less favourable cluster. In other words, high technological innovation potential is not necessarily going hand-in-hand with high social innovation activity. On the other hand, the social innovation potential in peripheral regions is still significant, even in the absence of technological innovation (Figure 2).

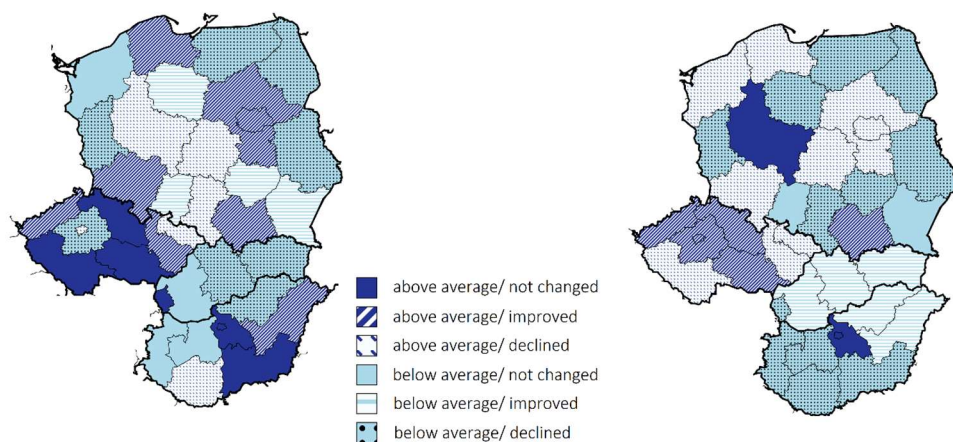


Figure 2. Technological (left) and social (right) innovation index clusters in the Visegrad regions (2001-2019)

Source: compiled by author

By examining the correlation and regression relationships within each cluster and for the region, the following conclusions can be drawn.

There is a significant, moderately strong, positive correlation between technological and social innovation potential at the 1% level in both 2001 and 2019 (2001: 0.463**, 2019: 0.578**), which has strengthened over time. In other words, high technological innovation potential is associated with higher social innovation potential for regions.

The strength of the relationship is also confirmed by regression analyses, where we have reviewed the regression indicators for the region as a whole and within each cluster (Table 5). The spatial relationships show an improvement/strengthening in both their closeness and significance over the period under study, but the analysis of the clusters shows greater disparities.

Table 5: Regression relationships between the technological and social innovation potential of NUTS2 regions in the Visegrad countries

	2001		2019	
cluster1	$y = -0.3236x + 50.742$	$R^2 = 0.1127$	$y = -0.202x + 48.254$	$R^2 = 0.0332$
cluster2	$y = 0.7063x + 17.246$	$R^2 = 0.2032$	$y = 0.7959x + 16.217$	$R^2 = 0.5852$
cluster3	$y = 0.2422x + 33.301$	$R^2 = 0.1985$	$y = 0.2507x + 34.423$	$R^2 = 0.2247$
cluster4	$y = -0.3257x + 89.036$	$R^2 = 0.1172$	$y = -0.4814x + 99.273$	$R^2 = 0.2594$
cluster5	$y = -0.4073x + 106.3$	$R^2 = 0.276$	$y = -0.0676x + 76.905$	$R^2 = 0.0074$
cluster6	$y = -0.0467x + 67.744$	$R^2 = 0.0066$	$y = -0.0877x + 71.648$	$R^2 = 0.0466$
Total V4	$y = 0.3235x + 37.75$	$R^2 = 0.2139$	$y = 0.3664x + 35.45$	$R^2 = 0.3344$

Source: compiled by author

For the first cluster (above average scores/position unchanged), there is a negative relationship between the two indices, i.e. a higher technological innovation index is not necessarily associated with a strong social innovation potential, and vice versa. In clusters 2 and 3, other regions with above average scores, the relationship between the two indices is positive, and has been strongly strengthened in cluster 2. The regions with below average initial values (cluster 4-6) show a negative trend, with a weak relationship between the two indicators.

Another result of the study is that there were shifts between 2001 and 2019 in the ranking of both technological and social innovation potential across regions, as evidenced by gamma convergence (Boyle & McCarthy 1997), which measures a change in ranking.

$$\gamma = \left(\frac{\text{var}(\text{indic}_{t_i} + \text{indic}_{t_0})}{\text{var}(\text{indic}_{t_0} * 2)} \right),$$

where $\text{var}(\text{indic})$ indicates the variance of the indicator's ranking, while t_i is the current year under study and t_0 is the base year.

The analysis of gamma convergence shows that between 2001 and 2019 there was a shift in the ranking of both indicators, with a downward trend, i.e. a gamma convergence is being achieved. For the technological innovation index, the value of the indicator has decreased from 2.197 in 2001 to 2.183, indicating a shift in the ranking of regions, while for the social innovation index, the decrease is minimal (from 2.212 to 2.211) but noticeable. The analysis of gamma convergence also shows that the changes in the ranking of the technological innovation index over almost 20 years are more pronounced than in the social innovation ranking.

A detailed review of the ranking changes reveals more significant shifts in some regions, such as those indicated in Figure 3 below. In the case of the Central Bohemia region, there has been a significant improvement along both dimensions, with the region's overall score in technological innovation potential improving by six points from 2001 to 2019 to stand at 20, while in social innovation potential there has been a nine-point improvement. In the case of the technological innovation index, the Pomeranian region has shown one of the most outstanding cases of progress, improving its score by 17 points over the period, while losing one point in the social innovation index. The Northern Great Plain region of Hungary suffered a significant drop in the technological dimension (30 points, the largest loss in the region), while it improved by two points in the social innovation dimension. The performance of the Northern Hungary region was also complex over the period, with a seven-point decline in the technological innovation potential and a five-point improvement in the social innovation potential.

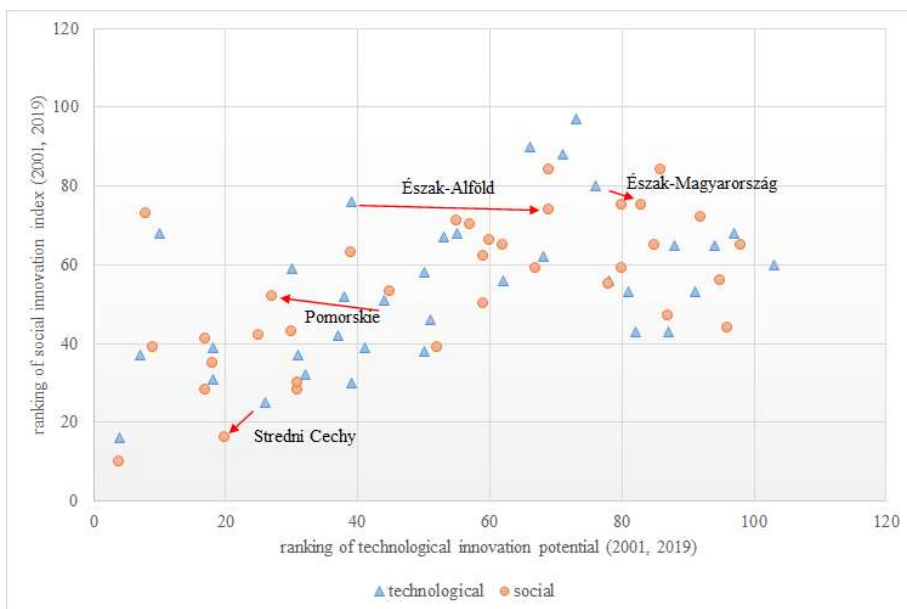


Figure 3. Changes in the technological and social innovation index in the Visegrad countries' regions (2001-2019)

Source: compiled by author

The largest positive changes in technological innovation potential were in Subcarpathian (PL), Pomeranian (PL) and Central Moravia (CZ), with improvements of 28, 17 and 16 points respectively, while the largest decreases in overall ranking scores were in the Northern Great Plain region (30 points), Western Slovakia (14 points) and Eastern Slovakia (13 points). The social innovation ranking has seen smaller shifts. Central Slovakia and Eastern Slovakia improved their position most significantly (by 13 points), while Central Bohemia (CZ) improved by 9 points. Significant declines were recorded in Swietokrzyskie (PL) and Bratislava Region (SK) (5 points), followed by five regions (including Southern Transdanubia and Southern Great Plain) which also suffered a decline of 4 points.

4. Summary

Not a single society can do without economic and social renewal and development, the driving force of which is innovation, aimed at creating new or novel products, services, capabilities, tangible and intangible assets. In addition to technological innovation in the traditional sense, theories and research on social innovation are increasingly popular in the literature. Social innovation aims at solving the problems of a given community, large or small, and at improving the communities' well-being. Social innovation is a new, non-linear process (a chain of conscious activities starting from scientific research and ending with the commercialisation of a given product or service), but a complex one, which gives all members of society the opportunity to participate in the innovation process.

The “learning by doing” approach, first formulated by Arrow (1962), also applies to social innovation. Social innovation is viable if it is endogenous; its pace is determined by the learning process through the application. This suggests that the sustainability of social innovations is not only influenced by the initial skill level, but also by the process of learning, knowledge acquisition and value formation.

Technological innovation and social innovation are not mutually exclusive. On the contrary, they should be mutually reinforcing and cumulative. There is therefore no relationship of subordination, even if the added value of one is much greater than that of the other.

Social innovation alone cannot solve the problems of the centre-periphery, but in the longer term, it can contribute to higher added value innovations. High technological innovation potential and performance does not go hand in hand with high social innovation activity, which is also a sign that there is hope for high social innovation performance in peripheral regions, even in the absence of technological innovation.

Today, social innovation research has a history of almost forty years, but it continues to expand. There are still many more topics to be developed by researchers (e.g. measuring it, generating innovations, studying its social sustainability, building its network, monitoring its impact, etc.).

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Impact of the COVID-19 pandemic on smart city performance in Europe

Today's global shocks, such as the COVID-19 pandemic or the current war conflict, raise serious challenges to cities. Smart cities, as engines of innovation, can respond to these shocks and show resilience. However, there are significant differences in the performance of smart cities around the world, which have been further widened by the COVID-19 pandemic. In our study, we use the IMD smart city index to examine how the pandemic has affected European smart cities and how their ranking has changed in a global comparison. The results suggest that there have been major shifts in their rankings, and that some of the differences in the performance of individual cities during the pandemic can be traced back to different urban governance models. The changes in the ranking of smart cities highlight the fact that different urban governance models operate differently in times of crisis, especially in terms of measurable short- and long-term effectiveness. These results highlight the importance of complex and combined urban governance models to deal effectively and flexibly with external shocks.

*Keywords: resilient city, smart city, IMD ranking, COVID-19, urban governance models.
JEL code: R12*

<https://doi.org/10.32976/stratfuz.2022.43>

Introduction

Cities play a major role in the global economy. According to World Bank data for 2018, their contribution to global GDP is approximately 80%. One of the main reasons for this is that more than 50% of the world's population lives in urban areas, and this proportion is expected to increase in the coming decades (UN, 2012; WHO, 2013). 70% of the population of the European Union lives in urban areas (European Commission, 2011).

Further concentration in cities could lead to global challenges such as waste management, resource exploitation, environmental pollution, poverty, unemployment, urban services, problems of economies of scale and so on (Iberdrola, 2021).

Rapidly evolving technologies can have a major impact on the development of cities: the application of new, innovative solutions can be key to addressing the complex problems that arise with the increasing urbanisation. In the context of urban development and its problems, experts (see for example Schuchmann, 2022; Pirisi, 2019; Zhang and Li, 2018; Wang et al. 2018, Buzási, 2017) frequently use the concept of resilience, i.e. the importance of having and developing the capacity to adapt to external conditions. According to the authors and literature on the topic, the key to resilience is the ability to adapt to external shocks – social, economic, - that ensures the well-being of the people living there and contributes to long-term sustainability (World Bank, 2016; Sebestyén Szép et al. 2020; Buzási, 2017; Szép et al. 2021).

The COVID-19 pandemic, as the occurrence of an unpredictable and external shock, demonstrates the importance and relevance of the approaches of researchers working on the

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concept of resilient cities. Furthermore, it draws attention to some possible directions of development of the smart city concept and research, in which the concept of resilience is much more emphasized than in the past, due to new challenges. It also draws greater attention to the problems and deficiencies of some cities and their vulnerability to external shocks. The OECD's July 2020 Urban Policy Responses technical paper sets out ten key lessons for urban development. All of them point to the emergence of a new urban development paradigm towards inclusive, green and smart cities (OECD, 2020).

In this paper, we present a theoretical framework for smart cities, highlight the diversity of smart concepts, draw attention to some smart city models for analysing the performance of smart cities and discuss the concept of resilient cities in the context of the COVID-19 pandemic. After describing the IMD smart city index used for the analysis, we compare the smart city rankings for 2019, 2020 and 2021 for the top 10 European cities (EU-EFTA region), examining how the COVID-19 pandemic has changed their rankings and priorities. After comparing and interpreting the smart city rankings, we draw conclusions on the relationship between cities' development (smart performance) and resilience, outlining the different impacts of the pandemic shocks across the continent.

Theoretical framework of smart cities

The smart city concept emerged in the literature in the 1980s and 1990s in the context of technological development, the explosion of urban population growth, the complex problems associated with it (e.g. waste management, resource exploitation, pollution, poverty, unemployment) and the related modernisation of urban governance (Bizjan, 2014). In this sense, this concept is the result of a paradigm shift in urban development, with a focus on innovative solutions to urban problems (European Parliament, 2014).

Digital technologies offer practical solutions to the complex problems associated with the increasing concentration of the world's population in urban areas. At present, the implementation of wireless network sensors is the latest trend (Bizjan, 2014). At the same time, the smart city concept is all about modern urban management based on modern technologies and adapted to environmental conditions and available resources (Winkowska et al. 2019). There are a number of criticisms of the smart concept. A significant number of critical approaches address the importance of the social aspects, i.e. a society that can use smart technologies (Baji, 2017), as well as the security issues of data obtained from sensors and other devices (cybersecurity). This approach also raises important issues for the topic of this paper. The literature on urban development uses several synonyms for the term smart city. Among these, the terms intelligent city, digital city are widely used. As with the synonyms, the picture is also varied as regards definitions: there is no common concept of its content and application, neither in the literature nor in practice. Some of the definitions highlight the role of ICT (Anthopoulos & Fitsilis, 2010; Washburn et al. 2010), others focus on the role of human and social capital (e.g. Caragliu, 2009; Schaffers, 2011), infrastructural aspects (Hall, 2000; Harrison et al. 2010) or the importance of organisational and design solutions (Toppeta, 2010; Washburn et al. 2010). According to Giffinger et al. (2007), the characteristic of a smart city is, in short, that it performs very well in the areas of economy, people, governance, mobility, environment, living conditions, and these areas have a number of attributes that can be measured by indicators.

As more European cities have followed the smart cities model in recent years, the smart concept is often and variously formulated in official EU documents. In 2011, the European Smart Cities Initiative defined three key elements in this area: (1) green technologies, (2) ICT technologies as management tools, (3) sustainable development (Think, 2011). The 2013 study

Smart Cities and Communities (2013) states that the main objective of smart city development is to improve the quality of life of the population, which is not only a technological but also a multidisciplinary and multi-stakeholder task.

The EU's 2018 definition is: 'A smart city is a place where traditional networks and services are made more efficient through digital solutions for the benefit of citizens and businesses. A smart city goes beyond the use of digital technologies to make better use of resources and reduce emissions. This means smarter urban transport networks, modernised water and waste management facilities, and more efficient ways of lighting and heating buildings. It also means more interactive and efficient city management, safer public spaces and meeting the needs of an ageing population' (European Commission, 2018).

International and national literature offers smart city models to analyse the performance of smart cities. At the international level, for example, Cohen's "Smart Cities Wheel" model (Cohen, 2015), Frost and Sullivan's model (2013), the Nature Based Smart City, Giffinger et al.'s model (2007), and at the national level, the IBM Smart City initiative is considered the most important study (Horváthné Barsi et al. 2011).

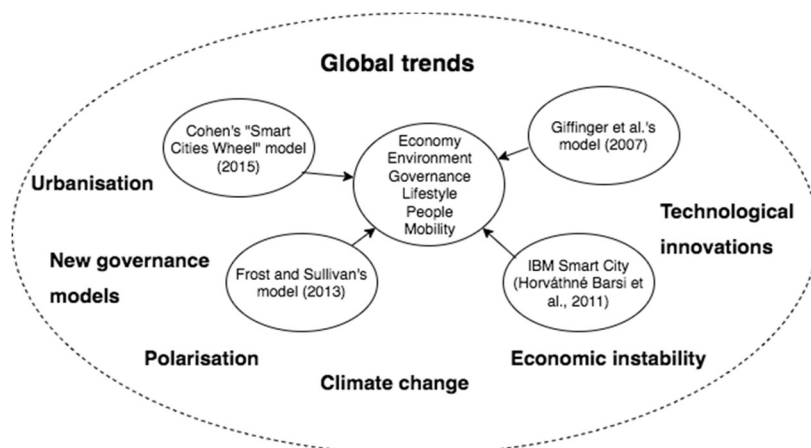


Figure 1: Common Cross Section of Smart City Models

Source: own compilation

An increasingly frequent concept in the context of analysing the performance of smart cities is resilience, i.e. the ability to respond to rapidly changing external influences and adapt to external conditions (for a summary of theoretical approaches to urban resilience, see for example Pirisi, 2019; Zhang and Li, 2018; Wang et al. 2018, Buzási, 2017). The smart city model of Fernandez-Anez et al. (2018) also includes global trends that affect cities to adapt to rapidly changing circumstances (resilience). At the core of the model are five smart city subsystems: environment, mobility and infrastructure, economy, people, living conditions and services. The subsystems are part of a macro-environment with environmental, technological and spatial impacts. The main trends affecting cities are interpreted as climate change, social polarisation, the need for new governance models, global urbanisation, economic instability, and the growing importance of new technologies.

In short, the concept of resilient cities is about the ability to adapt flexibly to often unpredictable external conditions, i.e. to maintain or rapidly restore urban functions in the case of external shocks (Buzási, 2017). Adaptability is therefore the key to resilience, which shows how resilient a city is and how rapidly it can respond to external impacts (World Bank 2016). In exploring the relationship between smart cities and resilience, Sebestyén Szép et al. (2020) argue that 'adaptability is what enables a city to ensure the well-being of its inhabitants

and contribute to long-term sustainability. In other words, these two concepts (adaptability and sustainability) go hand in hand' (Sebestyén Szép et al. 2020, 356).

At the same time, the speed and form of responses to shocks may also differ due to the different governance models of cities. Those using a top-down urban governance model and those using a bottom-up approach (taking into account the needs and preferences of the population) may not be equally successful in shock situations. Duggal (2020) argues that top-down planning should be combined with multi-level, integrated urban governance to respond effectively and flexibly to urban shocks (e.g. pandemics). Nowadays, a new form of urban governance model (in addition to the classic triple helix and its quadruple-helix version with civil society) is the penta-helix approach, which proactively integrates the participation of social entrepreneurs and activists (Calzada, 2020). This helps to better respond to problems arising from a changing environment and can increase the resilience of cities, thus proposing a kind of co-creation model.

The COVID-19 pandemic has raised awareness of the importance of the correlation between smart cities and theories that take into account externalities (such as the concept of resilient cities). Expectations for smart cities were already set out in documents published by international organisations at the beginning of the pandemic: for example, the OECD (2020) technical paper on smart cities and inclusive growth mentions that harnessing the benefits of smart cities will be particularly important to help cities and countries to cope with the crisis caused by the pandemic. At a time of physical distance and isolation, digital technologies have an important role to play in delivering real-time life-saving information, ensuring the continuity of key public services (e.g. through distance learning) and bridging social isolation (OECD, 2020). According to Borruso and Balletto (2020), the health emergency of the COVID-19 pandemic highlighted that the Smart City model refers to permanent growth scenarios. The shocks and downtime caused by the pandemic situation made clear the vulnerability of cities in terms of primary services such as health, education and mobility. In the debate on smart cities, the focus has shifted to 'soft' elements such as social networks and applications. In their paper, the authors suggest some possible directions for the development of smart city concepts and research in the light of the new challenges posed by the COVID-19 pandemic: they argue that in the future, in order to reduce the digital divide, attention should be paid to networks for online learning and working, to address the gap between centre and periphery, and to reliable and fast public or private networks. Another aspect highlighted by the authors relates to relational and social characteristics: the epidemic situation has further highlighted the gap between digital illiterates and literates in society, despite access to digital technologies. This was very much reflected in the difficulties of organising online education (Borruso and Balletto, 2020).

The aim of this study is to examine the changes in the order of smart cities in Europe in the context of the COVID-19 pandemic, from which the authors draw conclusions on the relationship between the development (smart performance) and resilience of cities, outlining the different effects of the pandemic shock on the continent.

Differences in the ranking of smart cities in Europe

In our study, we analyse the performance of European smart cities and the impact of the COVID-19 pandemics on their ranking position using the IMD (International Institute for Management Development) Smart City index, which is the best of the currently available indicators to check the impact of the epidemic among the smart city rankings, as it includes data for 2019, 2020 and 2021, unlike other similar rankings. The IMD Smart City index (sometimes SCI in the following) was created in 2017 by two institutions, IMD and the Singapore University of Technology and Design (SUTD), to create a smart city index that

focuses on the economic and technological aspects of smart cities, as well as their “human dimensions” (quality of life, environment, inclusiveness). In their definition, a “smart city” is an urban environment that applies technology to enhance the benefits and reduce the shortcomings of urbanisation (IMD, 2019, p. 4). It adopts a holistic approach, aiming to explore different urban dimensions to see how cities can be made better through smart applications. The methodology relies primarily on the perceptions of those living and working in the cities studied, while recognising that not all cities start from the same level of development, nor have the same assets and benefits.

The index creation covered two periods. In the first phase, case studies of smart cities at different stages of development were collected to improve the relevance of the model behind the SCI. After that the second phase dealt with the prototype version of the SCI, which was published in 2019, creating a global ranking of smart cities.

The latest Smart Cities Index ranks 118 cities worldwide, based on the opinions of 120 inhabitants in each city. Residents are asked for their views on two pillars: the structures pillar, which asks about the existing infrastructure of cities, and the technology pillar, which describes the technology services available to residents. Both pillars are assessed along five key areas: health and safety, mobility, activities, opportunities and governance. In addition, the index summarises the priority areas that respondents consider to be of high importance for their city. Survey respondents were asked to select the five most important priorities for their city from a list of 15 indicators (IMD, 2021a). The ratings for each city were calculated based on the city's performance within the group as determined by the country's HDI (Human Development Index) score. Cities are ranked and positioned in clusters (A-D) based on the home country's HDI value, with an increase in the number of letters (e.g. AAA) indicating a more prominent position within the cluster.

According to the introduction of the latest report (IMD, 2021), the pandemic will have serious consequences and changes for cities and their population. However, these will not completely overwrite the other fundamental urban problems (including, for example, climate-related issues) that arise from high population concentrations. As this year's report shows, quality of life, safety, mobility and waste management remain high on the list of problems around the world. However, the acceleration of digitalisation, for example, has changed some perceptions, leading to significant differences in the rankings. In this context, some smart cities have succeeded while others have partially failed to meet the challenges (IMD, 2021a).

We have checked the Top 10 European (EU-EFTA²²) cities' position in the rankings that have been included in the analysis since the creation of the index (so which are members of SCI in all three years to maintain a stable set of cities), although the number of cities included in the smart index is increasing yearly (102 in 2019, 109 in 2020 and 118 in 2021). The ranking and its change can be seen in Table 1 below.

Table 1: Position of the top 10 European cities in the IMD smart city index rankings (2019, 2020, 2021)

2019			2020			2021		
city	position	overall rating of the city	city	position	overall rating of the city	city	position	overall rating of the city
Zurich	2	AAA	Helsinki	2	AA	Zurich	2	AA
Oslo	3	AA	Zurich	3	AA	Oslo	3	AA
Geneva	4	AA	Oslo	5	AA	Helsinki	6	A

²² EU-27, UK and the EFTA members: Norway, Lichtenstein, Iceland and Switzerland.

2019			2020			2021		
city	position	overall rating of the city	city	position	overall rating of the city	city	position	overall rating of the city
Copenhagen	5	AA	Copenhagen	6	AA	Copenhagen	7	A
Helsinki	8	A	Geneva	7	AA	Geneva	8	A
Bilbao	9	A	Amsterdam	9	A	Bilbao	10	BBB
Düsseldorf	10	A	Düsseldorf	13	A	Vienna	11	BBB
Amsterdam	11	A	Bilbao	24	BBB	Zaragoza	15	BBB
Vienna	17	BBB	Vienna	25	BBB	Amsterdam	17	BBB
Zaragoza	49	BB	Zaragoza	48	BB	Düsseldorf	20	BBB

Source: own editing

The data in the table above shows that there have been major changes in the ranking positions, e.g. Zaragoza has made significant progress (moving up from 49th to 15th place with a positive change in its overall rating). Besides that, several shifts happened in the ranking, e.g. Helsinki, Amsterdam and Vienna all showed a rather volatile annual trajectory. Helsinki and Amsterdam, after improving in 2020, declined more seriously in 2021, while Vienna, after deteriorating in 2020, improved for 2021. However, the European top of the index has been stable over the three years, with Zurich, Oslo and Helsinki leading both the European and global rankings, although Geneva and Copenhagen also hold good positions (these are particularly valuable in accounting for the change in the overall number of cities, which has increased from 102 to 118 cities worldwide). In parallel, however, Amsterdam and Düsseldorf have lost their previously favourable positions.

The first wave of COVID-19 led to a deterioration in the position of Bilbao and Vienna, which stabilised and improved in both cases by the second year. The biggest losers are Amsterdam and Düsseldorf, mentioned above, while the winner is Zaragoza. The pandemic also brought changes in the overall ratings, as there are no AAA-rated European cities since COVID-19, and the number of cities in the AA and A categories has also narrowed. However, the Top 10 European cities are rated at least BBB or better by 2021. The position changes are illustrated on the map below.

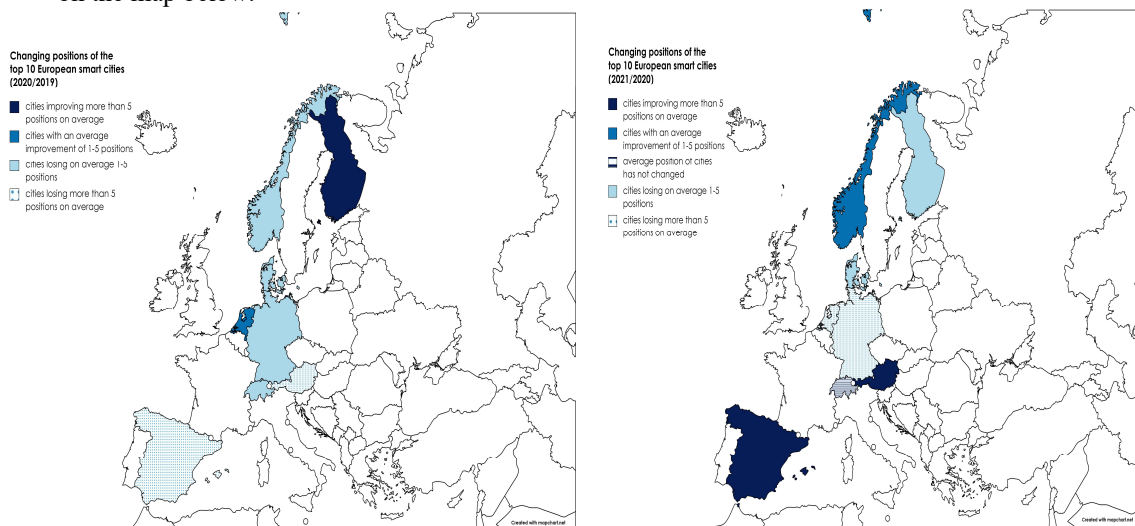


Figure 2: Changes in the city positions in the first and second year of Covid-19
Source: own compilation based on IMD (2019; 2020; 2021a)

Note: The countries' colour indicates the performance of the Top 10 city of that given country.

Based on the above shifts, the two best performing cities in the first year of the pandemics were Helsinki and Amsterdam, in terms of improving their position. Both have a strong bottom-up and co-creation approach, with the number of living lab initiatives being one of the strongest in these cities. The situation is similar in Zaragoza, where the development of the co-creation model started around 2019 and its results can be seen in the improvement of positions over the years (Glasco, 2018). In contrast, Vienna and Bilbao, with a strong top-down approach, have lost their positions a lot in the first year of the pandemic (severe restrictions, top-down management), which casts light on the functioning of different models during a crisis (Calzada, 2017).

The second year of the pandemic brought major changes in the ranking, with cities that had worked well in the short term with bottom-up management (Amsterdam, Helsinki) losing ground, while top-down strategies turned out to be a more effective way of dealing with the crisis in the longer term. This is underlined by the fact that, besides Zaragoza, Vienna and Bilbao have improved their rankings the most.

The IMD calculated the position of cities along two main dimensions (structure and technology) for each city, in each case based on a population sample of 120 inhabitants of the city concerned. The structures pillar refers to the existing infrastructure of cities, while the technology pillar describes the technologies and services available to residents (IMD, 2021b). Each pillar is assessed - as mentioned above - along five key areas: health and safety, mobility, activities, opportunities and governance. For the structures factor, respondents were asked to choose from four options: strongly agree, agree, disagree, and strongly disagree. However, for the technology factor, respondents could also select the no option (don't know/this technology is not available in my city) in addition to the previous four.

Among the technologies, we have examined the three factors considered as most problematic (below 50% satisfaction) in the cities, revealing some similarities, both in terms of its trend and in the problem areas (Table 2).

Table 2: Perceived problems of the technology pillar in Europe's leading smart cities

city	2019	2020	2021
Amsterdam	effective air pollution monitoring application	effective air pollution monitoring application	<i>effective air pollution monitoring application</i>
	car sharing apps reduces congestion	car sharing apps reduces congestion	car sharing apps reduces congestion
	online public access/monitoring to city finances	online public access/monitoring to city finances	online public access/monitoring to city finances
Vienna	car sharing apps reduces congestion	effective air pollution monitoring application	<i>effective air pollution monitoring application</i>
	app that direct you to available parking space	app that direct you to available parking space	<i>app that direct you to available parking space</i>
	online public access/monitoring to city finances	<i>online public access/monitoring to city finances</i>	<i>online public access/monitoring to city finances</i>
Bilbao	car sharing apps reduces congestion	car sharing apps reduces congestion	<i>car sharing apps reduces congestion</i>
	online public access/monitoring to city finances	<i>online public access/monitoring to city finances</i>	<i>online public access/monitoring to city finances</i>
	online voting (participation)	online voting (participation)	<i>online voting (participation)</i>
Düsseldorf	effective air pollution monitoring application	<i>effective air pollution monitoring application</i>	<i>effective air pollution monitoring application</i>
	car sharing apps reduces congestion	car sharing apps reduces congestion	car sharing apps reduces congestion

	bicycle hiring possibility	bicycle hiring possibility	online public access/monitoring to city finances
Geneva	car sharing apps reduces congestion	car sharing apps reduces congestion	<i>car sharing apps reduces congestion</i>
	app that direct you to available parking space	app that direct you to available parking space	<i>app that direct you to available parking space</i>
	online public access/monitoring to city finances	online public access/monitoring to city finances	online public access/monitoring to city finances
Helsinki	car sharing apps reduces congestion	<i>car sharing apps reduces congestion</i>	<i>car sharing apps reduces congestion</i>
	-	-	app that direct you to available parking space
	-	-	information on traffic congestion through mobile phones
Copenhagen	effective air pollution monitoring application	effective air pollution monitoring application	effective air pollution monitoring application
	car sharing apps reduces congestion	car sharing apps reduces congestion	<i>car sharing apps reduces congestion</i>
	online public access/monitoring to city finances	online public access/monitoring to city finances	<i>online public access/monitoring to city finances</i>
Oslo	car sharing apps reduces congestion	effective air pollution monitoring application	<i>effective air pollution monitoring application</i>
	app that direct you to available parking space	<i>car sharing apps reduces congestion</i>	car sharing apps reduces congestion
	-	app that direct you to available parking space	<i>app that direct you to available parking space</i>
Zaragoza	CCTV cameras has made residents feel safer	car sharing apps reduces congestion	car sharing apps reduces congestion
	car sharing apps reduces congestion	online public access/monitoring to city finances	online public access/monitoring to city finances
	online public access/monitoring to city finances	online szavazás (részvétel)	online szavazás (részvétel)
Zurich	effective air pollution monitoring application	effective air pollution monitoring application	effective air pollution monitoring application
	car sharing apps reduces congestion	car sharing apps reduces congestion	car sharing apps reduces congestion
	app that direct you to available parking space	app that direct you to available parking space	app that direct you to available parking space

Source: own editing

***Bold** markings in the 2020 and 2021 results columns indicate positive shifts (increasing satisfaction). *Italics* indicate cases where there was a significant deterioration/regression (decreasing satisfaction) in the data.

The table shows that Europe's leading smart cities face similar problems in the technology pillar, with 92% of the cases showing the same factors for all cities. However, it can also be said that in two thirds of cases, by 2020, public perceptions of these problems had improved markedly, with only 16% of cases showing a deterioration. However, as the pandemic situation intensified, by 2021 the problems had deepened, with a significant drop in half of the cases, some below the 2019 levels, and only one-quarter of problematic factors showing a positive shift. Therefore, the pandemic also had an impact on technological factors and their development. It can be the result of changes in the prioritisation/reallocation of the financial resources to deal with the pandemics in individual cities. Helsinki has particular significance, where in both 2019 and 2020 only one factor was below 50% satisfaction, but by 2021 there were five such factors.

In addition to the above, the IMD identified 15 priority axes from which respondents were asked to select the 5 most relevant (critical) factors/problems for the city. A higher score indicates a more specific issue. The 15 factors considered are affordable housing, safety, air pollution, public transport, road congestion (traffic jams), green spaces, basic services, recycling, public education, unemployment, social mobility, citizen involvement, full employment, energy efficiency (replaced by health services from 2020²³) and corruption (IMD, 2021a). A review of these also shows a change in public attitudes towards the problems. We have looked at the changes in these priorities for all the cities studied, and the results are summarised below. The analysis of the cities is represented by the example of Helsinki (Figure 3), which supports most of our findings.

Several conclusions can be drawn from the changes in priority axes, and our analysis focused on the components that are likely to change as the epidemic situation intensifies, which show the short-term response of cities to pandemics and highlight their short-term resilience. We aimed to examine the changes detailed in the theoretical overview in practice.

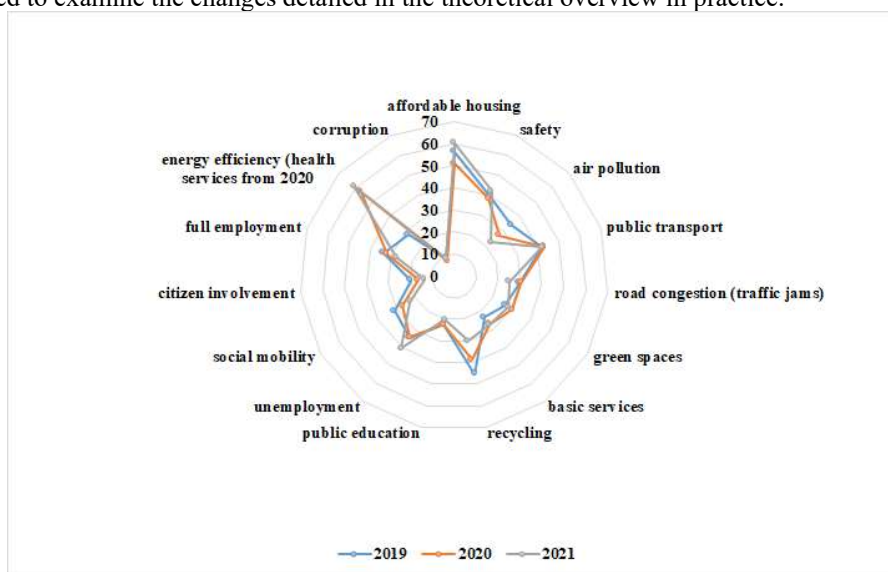


Figure 3: Change in the priority axes (order of importance of problems) in the case of Helsinki

Source: own editing based on IMD (2019; 2020; 2021a)

Affordable housing is the most important issue in most of the cities surveyed, and is the number one issue in most cities, with increasing importance between 2019 and 2021. As a result of population growth and the economic problems caused by the pandemic, cities are experiencing rising housing prices. The biggest shift has been in Copenhagen, where the inhabitants' perception of the problem has increased from 49.2% in 2019 to 71.7% in 2021. However, it is not this city that has the highest score, but Geneva, with a score above 80%. From 2020 onwards, the role of health services, which is being brought in by changing global issues, increased in almost all cities from 2020 to 2021 and gained a prominent place in the ranking. By 2021, two geographically distant cities, Helsinki (61%) and Zaragoza (45.2%) had the highest scores, while the lowest was in Zurich (11.3%).

²³ Changing priorities also points out the importance of the intensifying pandemic situation as a new shock to cities.

At the same time, the pandemic shutdown caused serious labour market problems in most cities around the world, as can be seen in the unemployment factor of the smart cities surveyed (in many cases there has been a significant increase, with changes in 11 and 6 percentage points in Bilbao and Helsinki respectively). The shutdowns have also had a positive effect on reducing air pollution problems in several cities and, in conjunction, reducing the challenges of public transport.

The transformation and value shifts caused by the pandemics have led to an increase in the share of non-cash transactions in daily payments in almost all Top 10 cities, with the traditionally well-performing Nordic smart cities leading the way (Figure 4).

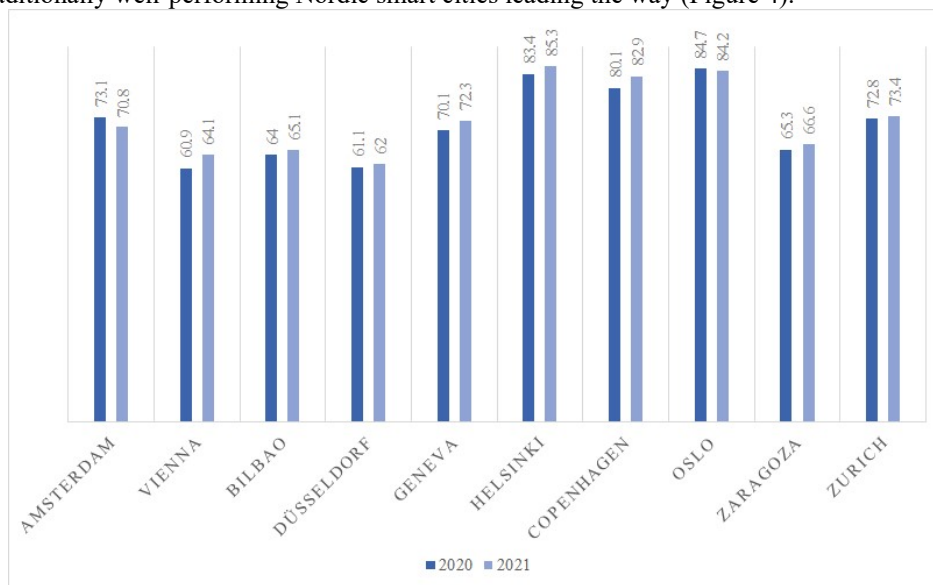


Figure 4: The importance of non-cash transactions in the daily transactions in the leading European smart cities

Source: own edits based on IMD (2019; 2020; 2021a)

It can be seen that except for Amsterdam and Oslo, where there was a slight decrease in the data, the importance of non-cash transactions in the total turnover increased in all cities, indicating the changes that occurred during the pandemic. However, the disparity among the best cities is also indicated by the fact that Düsseldorf had a value of 62% in this period. According to the results of a Finnish consumer survey, in 2020 only 6.2% of Finns used cash in their daily payments. In addition, the results also showed that only 35% of all transactions were made in cash in 2020, which is also the lowest value in a European comparison (compared to 83% in Spain and 77% in Germany, for example) (Harju and Snellmann, 2021).

Summary

The COVID-19 pandemic is a global shock, drawing attention to the close link between technology and urban development, the concept of resilient cities, and the problems, shortcomings and vulnerabilities of individual cities. According to the latest IMD report, 2021, in addition to addressing basic urban problems, the epidemic situation is leading to major changes and new challenges in cities (IMD, 2021a). These changes are particularly significant in large cities where the population is concentrated in higher density. These new challenges call for rapid and effective solutions, but not all cities have the necessary flexible planning

mechanisms in place. Traditional urban planning sets long-term growth targets and plans the political, technological and social processes to achieve them. In contrast, resilient urban planning is a new kind of flexible urban planning that takes into account both the need to accelerate change leading to recovery and the complexity and systemic interactions of urban ecosystems and their various contexts (Kakderi et al. 2021). Experts emphasising the importance of resilient urban planning (e.g. Duggal, 2020; Calzada, 2020; Kakderi et al. 2021) argue that the speed and form of responses to shocks may also differ between cities, due to different governance models. The authors cited propose complex and combined urban governance models for effective and resilient management of urban shocks, with an emphasis on technology in terms of its ability to mediate and manage complexity in a meaningful way, improve responsiveness, and provide flexible spaces for participation and creativity.

In this study, we compared the rankings of smart cities in 2019, 2020 and 2021 for the Top 10 European cities (EU-EFTA region) in the context of the COVID-19 pandemic and the need for resilient urban planning. We examined how the pandemic has led to shifts in the ranking of the indicated cities and their priorities. The results show a strong correlation between the development (smart performance) and resilience of cities, in particular in terms of the urban governance model applied. The changes in the ranking of smart cities highlight that different urban governance models perform differently in times of crisis, especially in terms of their short- and long-term measurable effectiveness. In our analysis, we found that in the first year of the pandemic, there were significant changes in the ranking positions: for example, Zaragoza made huge progress. There have also been shifts, for example in the case of Helsinki and Amsterdam, which improved their position with a bottom-up and co-creation approach, or in the case of Vienna and Bilbao, which lost their positions with a top-down approach.

In the second year of the pandemic, there were further shifts in the rankings, with cities that had worked well in the short term with bottom-up management (Amsterdam, Helsinki) losing ground, while top-down strategies appeared to be a more effective way of dealing with the crisis in the longer term (together with Zaragoza, also Vienna and Bilbao), improving their rankings the most. These results highlight the importance of complex and combined urban governance models to deal effectively and flexibly with external shocks.

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The role of guarantee organisations in crisis management

In this study, we examined the role of guarantee programmes in crisis management and we have also examined their regional effects. We are presenting the guarantee programs of various institutions and their most important parameters. By differentiating the counties of Hungary, we have examined the correlation between loan transactions and guarantee programmes established in each region, and we have also analysed the data with a regression function and as a result we were able to formulate useful statements. The role of guarantee programmes is not negligible, they have a huge impact on the financing situation of micro, small and medium-sized enterprises (SMEs) because without these programmes SMEs would not be able to improve their investments and they would not be able to develop. The development of these enterprises is an essential macroeconomic task because 99.8 per cent of Hungary's enterprises belong to the group of SMEs. At the end of the study we are dealing with the current and near future role of the guarantee institutions and guarantee programmes and their prospects from the point of view of the SMEs.

Key Word: crisis, guarantee programmes, SME, finance, regional effect
JEL-classification: H12

<https://doi.org/10.32976/stratfuz.2022.44>

The role and importance of guarantee programmes, the essence of the guarantee in brief

The guarantee is an essential instrument to facilitate access to finance SMEs (Nagy, 2012). The institutional system of cash guarantees²⁶ makes it possible for viable SMEs to be financed – for those which do not have sufficient collateral to offer for accessing funds; otherwise, financing them would be considered excessively risky. The losses incurred by credit institutions in the event of default in the portfolio covered by the guarantee²⁷ shall be reduced according to the extent of the guarantee. For this reason, state guarantees allow the risk premium part of the rate of the loan to be reduced (Bihari, 2013).

The public financial instruments that are available to stimulate corporate financing may have an impact on both the demand and the supply side. The willingness for taking low risk by credit institutions²⁸ may be increased by a public institution taking over the risk in some measure from the lending bank. Two forms of risk-taking are possible (Fábián et al., 2011):

- Direct lending: a public institution takes over all or some parts of the lending function of banks. In this case, the state institution itself is also responsible for the losses deriving from the loaning process and for finding solutions for arising financing problems, such as MFB Hungarian Development Bank Private Limited

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²⁶ In the course of a guarantee, the guarantor (whether an institution or an individual) undertakes that if the borrower fails to meet his financial obligations, the guarantor will perform instead of the borrower. Guarantees, in particular if provided or supported by the State, may enable the borrower to have access to a source of financing which he or she would not have been able to initially use (Kende, 2016).

²⁷ During the time of a guarantee, the guarantor assumes a separate, independent obligation towards the creditor. The essence of the guarantee assumed by the state is that it assumes this independent obligation through the central budget. (Halász et al., 2016)

²⁸ In addition to credit institutions, financial companies are also willing to take low risk.

Company (hereinafter: MFB Zrt.) and Hungarian Export-Import Bank Zrt. (hereinafter: EXIM). However, we do not deal with this form of credit incentive in the context of the present study.

– Guarantee: in this case, the lending is still carried out by commercial banks, but a state (or in majority state-owned) institution guarantees some parts of the loans granted, thereby reducing the risk of the lending institution. In Hungary, several financial institutions perform such tasks under state counter-guarantees²⁹, the most prominent ones are the following: Garantiqa Hitelgarancia Private Limited Company (hereinafter: Garantiqa Zrt.), Agricultural Business Loan Guarantee Foundation (hereinafter: AVHGA). The basic tasks of the guarantee organisations are to help the SME sector to access financing by providing guarantees to financial institutions. The scheme of guarantee enables to ensure that SMEs be ranked into a lower risk category at the lending institution³⁰, thereby allowing for economic growth, even in a recessionary macroeconomic environment.

However, in both cases, and also in the case of instruments based on state counter-guarantees, fiscal costs arise; losses are partially shared with commercial banks immediately in the case of absorption of financing costs and with delays in the case of assumption of risks (Bihari, 2013). Although justifications of loan guarantee programmes typically begin with reference to one or more financial market imperfections or distortions, there is rarely any further analysis along these lines. Loan guarantee associations have been used in most countries in Europe and elsewhere, to stimulate lending for a variety of purposes, but most often to help SMEs (Levitsky and Prasad, 1987). The primary assumption behind these programmes is that some disadvantageous groups, like SMEs, are unable to access formal loans because of credit market imperfections (Camino et al., 1998). The 47 members of the European Association of Guarantee Institutions (hereinafter: AECM) operate in 30 European countries. Three guarantee organisations from Hungary are also members of AECM: Garantiqa Zrt. and the Hungarian Enterprise Development Foundation since 1996, and AVHGA since 1997. The mission of the members is to support SMEs in accessing finance. Guarantees are provided to SMEs that have an economically grounded project but do not have sufficient collateral for creditors. This is the so-called SME financing GAP, a market failure. By guaranteeing these companies, which do not have sufficient collateral for creditors, these guarantee institutions thus help to successfully address market failures and facilitate SMEs' access to finance through:

- Reduction of lending rates - based on the MNB's estimate in 2012, the average lending rate of SMEs in the guaranteed portfolio decreased by about 200 basis points as a result of state guarantees (MNB, 2012). But there is an even more important effect, which is not price-like.
- Softer coverage requirements - if a guarantee is valid, the financial institution may be more 'lenient' in relation to the coverage requirements, especially if it is an institutional guarantee and is supported by the state. In such cases, financial institutions may calculate the value of the collateral by its total market value and not by the collateral value of the movable or immovable property collateral.

Both banks and firms have reported that the borrowing conditions remained favourable largely due to the public guarantee schemes (Matyunina and Ongena, 2022). However, the social and

²⁹ The obligation to reimburse assumed on behalf of the State in the current Budget Act (currently in Act XC. of 2021 on Hungary's State Budget of 2022), within the framework of which the State provides a guarantee to the guarantor institution in the event that it was necessary for the latter institution to enforce the guarantee (Szamkó and Sándorné Új, 2019)

³⁰ According to Paragraph 7 of Hungarian Act CCXXXVII of 2013 on Credit Institutions and Financial Institutions, a Financial institution is a financial institution: a credit institution and a financial institution, and a form of organisation of credit institutions within the meaning of Paragraph 9 of this Article is a financial institution.

economic impact of the guarantee is much broader. Guaranteeing has much wider social and economic effects such as (EIF, 2019):

- Creating jobs and preserving jobs by guaranteed firms;
- Innovation and competition;
- Structural and risk diversification of the European economy;
- Efficiency in promoting credit growth (Matyunina and Ongena, 2022);
- **Regional development;**
- SMEs are more likely to survive following the granting of the guaranteed loan (EIF, 2019): *Countercyclical engagement in times of crisis (AECM, 2022).*

International (publicly supported) credit guarantee programmes

SMEs are considered the backbone of the economy not only in Hungary, but also in the rest of the world, and they are represented among the majority of companies in many other countries. Their main characteristics are that they employ more than half of the employed workforce in the countries, they are able to make fewer investments than their large company counterparts and the fluctuation of the workforce is also lower. Internationally, the most common form of supporting SMEs is the loan guarantee system, which typically provides a partial guarantee for the bank loan, which can be redeemed by the financing institutions when the debtor is not able to repay its loan. Globally supported loan guarantee programmes, many of which are publicly supported, indicate that a market deficiency was detected in the area of SME lending, and this was deemed sufficient for the state to intervene (OECD, 2017).

According to a meta-analysis made by EIF (the European Investment Fund), unfortunately, loan guarantee programmes are not equally popular among SMEs operating in the member states of the European Union.

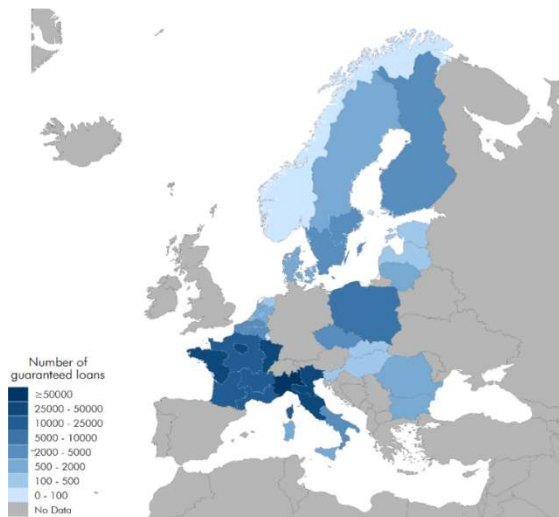


Figure 1. Geographical allocation of guaranteed loans analysed in EIF's meta-analysis
Source: European Investment Fund (2019)³¹

Figure 1 shows the proportion of loans having been guaranteed compared to the loan amount of the country. We can state that France and Italy have the highest number of guaranteed loans and Central European and Scandinavian countries have a slightly smaller amount (EIF, 2019).

³¹ The figure is the processing of the study authors based on Asdrubali and Signore (2015), Bertoni et al. (2018) and Bertoni et al. (2019).

According to recent studies the share of outstanding guarantee volume in GDP is the highest in Portugal (4.7%), in France (4.5%) and also in Hungary (4.3%). In conclusion we can state that guarantee programmes are becoming essential factors in the gross domestic product year by year (AECM, 2021).

We have studied guarantee programmes not only in Europe but in South Korea, too (we carried out an interview with members of Korean Development Institute) and the Korean guarantee programmes are much extended. South Korea has three hundred different types of guarantee programmes for SMEs whose main goals are also to support SMEs. They do not have only credit guarantees, they have bank guarantees and also tender guarantees, etc. Hungary and Europe also issue these types of guarantees but they are not as popular as credit guarantees.

The involvement of guarantee institutions in the crisis (Money and capital markets crisis and the COVID-19 pandemic)

In times of crisis, the aforementioned supply is also present in the decline in the growth rate of credit and lending, both due to demand and stricter lending policies. During the money and capital market crisis, in an analysis made in 2010, Fábíán et al. (Fábíán, 2010) attempted to determine which countries had stronger credit supply constraints in a regional comparison when there was declining demand. Based on their lending surveys, they found that in countries where the stock of corporate loans decreased by a bigger extent, like in Hungary, bank credit supply constraints played a greater role. They found that banks' supply behaviour was related to the country's reliance on foreign funds and vulnerabilities, which had a negative impact on both the willingness to take risks and lending capacity. The attitude towards lending by the banks is an important aspect during each crisis; during the 2008 crisis, the measures applied in Hungary were collected by Jeneiné (2022), and the fact that the crisis management measures of individual countries depend to a large extent on their fiscal and monetary policies has also been confirmed.

The cyclical slowdown in the euro area, which began in 2007, turned into a recession in the first half of 2008 and a sharp contraction in the winter of 2008-2009. During money and capital market crisis in 2008, the deterioration of the outlook for international activity was mainly due to three major shocks:

- The conditions for obtaining credit have tightened.
- As financing opportunities narrowed, households and firms themselves adjusted their consumption and investment decisions to reduce the performance of the economy. The decline in asset and home prices mostly dampened household consumption and aggregate demand through the wealth effect.
- Extremely high commodity prices also cause significant cost shocks, which also had an impact on the slowdown in the economy (MNB, 2008).

The banking system faced deteriorating loan portfolio quality and increasing credit losses, the bankruptcy rate of companies significantly rose by about 3%, and the share of non-performing corporate loans increased throughout 2008-2010 to around 15 per cent. The domestic banking system responded to the situation by reducing lending (encouraging deposition).

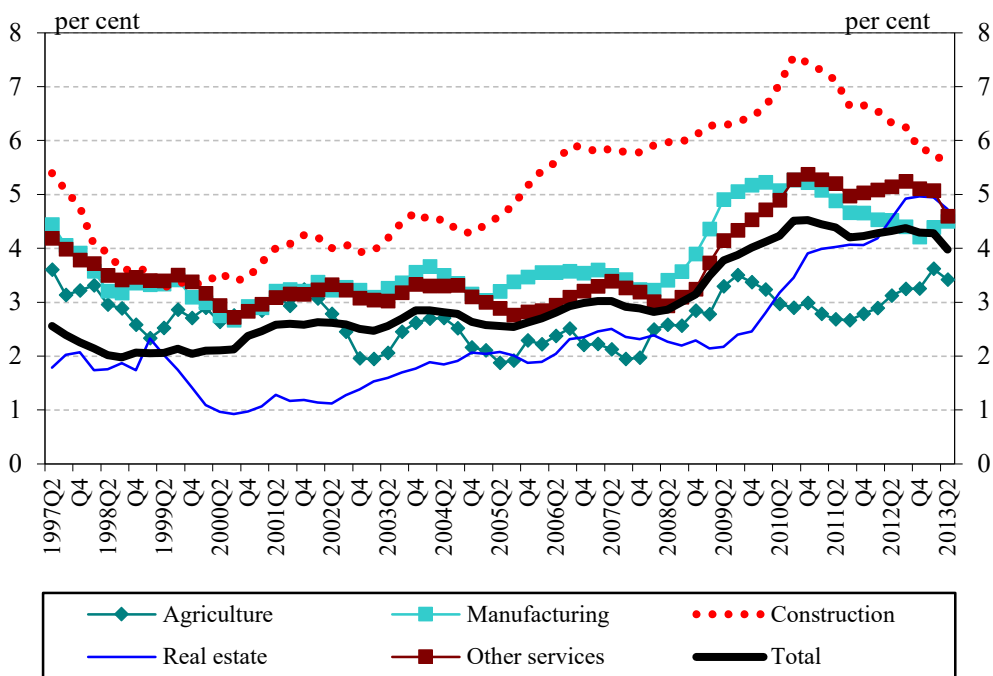


Figure 2. Sectoral bankruptcy rates. 2007-2009

Source: Own editing based on MNB data.

As the functioning of the financial system had severely been disrupted, the European Central Bank took measures to support lending to ensure that monetary policy impulses were properly spread. The aim was to improve financing conditions, thereby supporting the supply of credit to the economy in other ways than by reducing reference interest rates. The measures were adapted to the specific financial structure of the euro area economy (banks have a leading role in financing households and companies), to help to maintain the flow of credit into the economy (ECB, 2009). Most countries had had crisis prevention packages having been adopted both in 2008 and before COVID, the combination of which in different proportions, both in 2008 and in the present, has proven to be suitable for mitigating the effects of both the 2008 and the ‘health’ crisis. During the money and capital market crisis in 2008, rescue measures by euro area governments could be divided into three main categories: guarantees on bank liabilities, capital injections, and asset insurance schemes. State aid during the crisis was mainly focused on the liabilities side of bank balance sheets, such as the provision of state guarantees for interbank loans and newly issued bank debt securities; recapitalisation of distressed financial institutions through capital injections and loans; and increasing the coverage of retail deposit guarantee schemes. The combined impact of operations stabilising the financial sector on public debt and contingent liabilities reached 20.1% of GDP by the end of 2009, measured on the basis of resources spent on guarantee schemes (excluding public guarantees on retail deposits), while their explicit contingent liabilities, measured by the guarantees actually used by banks, amounted to 9.4% of GDP. Effective bank deposit issuance backed by a government guarantee was much lower than the government-backed guarantee. In 2009, the OECD issued recommendations based on the conclusion that timely and appropriate responses (Jenein , 2022) are of the utmost importance, including with regard to guarantee programmes. During the pandemic-related crisis that started in 2019, crisis

prevention, crisis management measures and programmes had already been introduced in the knowledge and consideration of these facts.

In order to avoid the impact of the pandemic shock on the economy and inflation in 2019, and the faced risks of financial stability, individual governments responded promptly and with great commitment through monetary and fiscal policy instruments, resulting in effective resistance to the tightening of financial conditions caused by the pandemic shock. In addition to providing fiscal support to businesses, euro area countries also provided significant loan guarantees to support the liquidity status of firms, in particular domestic SMEs. In total, guarantees accounted for around 17% of GDP in the euro area as a whole. Hungarian economic policy has avoided limiting job losses and a surge in the number of company closures with the aforementioned crisis management measures, including loan guarantee programmes. The bankruptcy rate of companies remained below 2%.

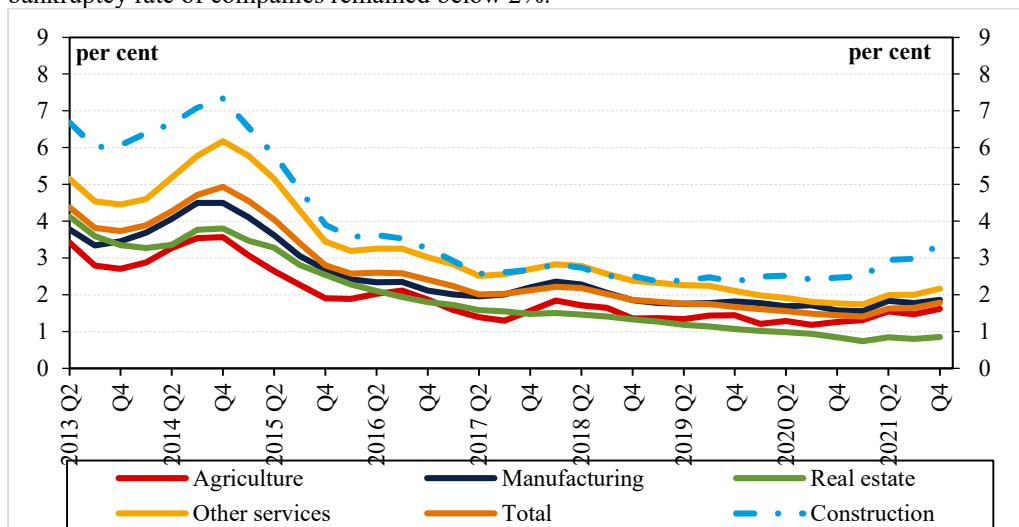


Figure 3. Sectoral bankruptcy rates, 2013-2021

Source: Own editing based on MNB data.

In December 2019, the global macroeconomic environment was characterised, among other features, by rising recession fears in some regions, a decline in inflation, and a slowdown in growth. Although the expansion of the global economy since 2010 continued in 2019, the performance of the global economy was 2.9% higher than in 2018, but the pace of growth slowed down compared to previous years (MNB, 2019; KSH 2020). The stability report published by the MNB in May 2020 already discussed the effects of the COVID-19 epidemic in December 2019 in the Chinese province of Wuhan on the world economy and on our country. In 2020, global developments were determined by the coronavirus pandemic, the performance of the global economy was 3.3% lower than in the previous year, and the decline in 2020 was greater than in 2009 during the financial and economic crisis (KSH, 2021). The expansion of the Hungarian economy continued in the first quarter of 2020, but the pace of growth slowed significantly in the economic environment, which radically changed from March due to the coronavirus pandemic. Overall, due to the pandemic, the volume of GDP in 2020 was 5.0% lower than in the previous year. In 2020, the performance of the economy was essentially the same as in 2018 (KSH 2020; KSH 2021). As is a well-known fact, more than 99% of the enterprises operating in Hungary are qualified as SMEs, and their share has hardly changed for years. The economic weight of SMEs in the performance of all enterprises decreased both in 2019 and 2020. In 2020, 0.9% fewer enterprises were registered compared to a year earlier, the number of enterprises started to grow in the second half of 2020, and by

the first half of 2021, with the expansion of the Hungarian economy by 7.6%, 1.8 million enterprises were registered until the end of July 2021, 2.3% more than a year earlier and before the outbreak of the epidemic in February 2020 (KSH, 2021). The impact of the economic crisis caused by COVID-19 has slowed down the previously outstanding corporate loan dynamics by roughly half, to 8.5% (MNB, 2020, 2022). The growth rate of SME loans was milder, decreasing by roughly 4 percentage points and slowing down to 9.3 per cent by the first quarter of 2020, but after that, owing to the programmes launched under the Economic Protection Action Plan (Ministry of Finance, 2021), including certain Hungarian Central Bank and state loan and guarantee programmes, it started to grow again from the second half of 2022. By experiencing the global financial crisis of 2008, the shock of 2020 hit banks that were in a significantly more stable state and better prepared (also partly due to the Basel III regulation, which aims to provide sufficient capital to cover risks). During the crisis in 2008, banks immediately tightened their lending conditions, deepening the economic crisis, and in the first half of 2022 lending conditions eased only in countries announcing large-volume guarantee schemes, including Hungary. The guarantee programmes introduced during the crisis are summarised below.

Guarantee programmes during COVID

The results of The European Guarantee Programmes are outstanding in the financing of domestic SMEs

The volume of newly granted guarantees was EUR 90.9 billion in 2021, lower than the crisis level of EUR 279.8 billion in 2020, but still well above the pre-pandemic level of 38.8 billion in 2019. The new guarantee volume was almost evenly distributed in the first and second half of 2021, with Garantiqa Zrt. (+EUR 891.7 million) accounting for its largest increase compared to 2020, according to AECM records, followed by Strategic Banking Corporation of Ireland (+EUR 401.0 million). The portfolio of Garantiqa Zrt. has steadily been growing as a result of the COVID-19 crisis programmes. Demand was fully determined by the Garantiqa Crisis Guarantee Programme. Since the launch of the programme in 2020, the demand for other guarantee products of Garantiqa Zrt. has also shifted towards this product range. COVID-19 measures have increased the need for funding and thus the activities of the AVHGA (AECM, 2022). The existing PGS framework allowed for prompt response to the companies' increased liquidity needs through expanding the guarantee programmes.

Garantiqa Zrt. is the most popular Hungarian guarantee institution. Its guarantee offer is extremely wide, as in addition to traditional loans, it also guarantees leasing and factoring transactions. The guarantor institution does not come into direct contact with the enterprises, who can access the offered products through the financial institutions. Within the framework of the Economic Protection Action Plan, the guarantee programmes of Garantiqa Zrt. — introduced during the crisis and operated until the expiry of the Temporary Framework³² on June 30, 2022 - were available to Hungarian SMEs as following:

1. Garantiqa Crisis Guarantee Programme: With the outbreak of the pandemic, not only the SME sector, but also large companies could enlist in this product of Garantiqa Zrt. within the framework of the Garantiqa Crisis Guarantee Programme. The guarantee for up to 90% of the loan amount taken is considered to be extremely high, also the state counter-guarantee rate is 90%. The state also provided support for the guarantee fee to be paid monthly by enterprises: 1% of the total loan amount per year (Government Decision 1778/2018 (XII.21)).
2. Garantiqa Crisis Guarantee – Investment Loan Guarantee: The Investment Loan Guarantee was a sub-product of the Garantiqa Crisis Guarantee Scheme, which guarantees investment

³² Communication of the European Commission COM(2020) 112 final published on March 13, 2020 on the coordinated economic response to the COVID-19 epidemic.

loans taken by SME sector up to a maximum of 80% of the loan amount borrowed, with a 90% state counter-guarantee. The guarantee fee support provided by the state was annually 1% of the total loan amount up to a loan amount of HUF 100 million, while over HUF 100 million it was annually 2% of the total loan amount (Government Decision No 1778/2018 of 21 December 2018).

The below-mentioned programmes were not introduced within the framework of the Economic Protection Action Plan, but these guarantee products were continuously available to businesses during and after the crisis:

3. Cash-paying guarantee provided with a budgetary counter-guarantee (provided under De minimis State aid³³): Garantiqa Zrt. guarantees up to 80% of the loan amount with an 85% state counter-guarantee within the framework of the form of support available to SMEs. The subsidy on the guarantee fee is 0.4% (Government Decision No. 1778/2018 of 21 December 2018)

4. COSME Programme: COSME is a counter-guarantee programme designed to support the competitiveness of enterprises and SMEs, provided by the European Fund for Strategic Investments. The programme provides both guarantees to business organisations and counter-guarantees to financial institutions. Garantiqa Zrt. undertakes an EU-backed guarantee for 90% of the principal amount of the loan under its COSME programme. Given that this is an EU counter-guarantee programme, it does not contain state aid from the Hungarian State.

From 2020 to 2021, the number of new guarantee contracts increased by 16%, or by almost a fifth, which means that as a result of the pandemic, more enterprises used the products of Garantiqa Zrt. The increase is due to the popularity of the Garantiqa Crisis Guarantee Programme and its sub-programme Garantiqa Crisis Investment Guarantee Programme. At the same time, it is an interesting fact that in most cases the guarantee was requested for short-term sources of financing, in particular for overdrafts (Garantiqa Zrt., 2021). Another interesting fact is that during the pandemic, the guarantee portfolio used for financing sources more than doubled (to 222%). Consequently, with the increased size of the guaranteed loan portfolio, the number of guarantees redeemed (after non-fulfilment of the financial obligations set out in the loan agreement) has also increased. In the guarantee stock redeemed in 2021, business organisations engaged in transportation, services and trade have a significant weight; these companies were the most vulnerable to the recession caused by the pandemic (Garantiqa Zrt., 2021).

The Agricultural Business Loan Guarantee Foundation is a financial enterprise that has been operating in the form of a foundation since its establishment in 1991. Since 1998, the state has provided an 85% counter-guarantee for guarantees provided by the AVHGA. The AVHGA's main objective is to help SMEs to be active in agriculture to achieve their goals. The inclusion of the guarantee provided by the AVHGA has a positive effect on the capital adequacy of financial institutions through the counter-guarantee and results in an onerous commitment.³⁴ The guarantee provided by AVHGA is available not only for classic loans, but also – like at Garantiqa Zrt., for factoring and leasing transactions. Guarantees undertaken by AVHGA are also supported by the state (Nagy, 2012). During the crisis, the largest guarantor institution, Garantiqa Zrt., has more than doubled its guarantee holdings, while AVHGA's³⁵ guarantee holdings have increased by a quarter of the previous value in 2020 by the end of

³³ No. 1407/2013/EU regulation on small amounts of state aid.

³⁴ In the case of a refundable commitment, part of the risk related to the financial institution's claim against the enterprise is borne by the guarantor institution.

³⁵ This can be attributed to the fact that while Garantiqa Zrt. can reach a wider range of businesses with its products, since its portfolio is more general, AVHGA's activities concentrate only on a specific sector.

2021. During the crisis period, AVHGA offered the following products to help Greyhound SMEs:

1. AVHGA Crisis Agricultural Guarantee Programme: In the offer of AVHGA, the Crisis Agricultural Guarantee Programme was available for agricultural SMEs to mitigate the economic damage caused by the coronavirus. Within the framework of the Crisis Agricultural Guarantee Programme, AVHGA takes over up to 90% of the risk of lending from financial institutions, with a 90% counter-guarantee provided by the Hungarian State. The guarantee fee payable by the undertakings may not exceed 0.4% of the amount of the loan taken out, which is a fee subsidy.

2. AVHGA's guarantee under De minimis aid. The De minimis guarantee is capped at 80% of the loan transaction guaranteed, up to a maximum of EUR 2.5 million per undertaking. The guarantee used in this way will encourage agricultural SMEs to access funding.

3. AVHGA COSME: Like Garantiqa Zrt., AVHGA also provides a guarantee under the AVHGA COSME guarantee programme with an EU counter-guarantee. The guarantor institution guarantees up to 80% of the principal amount, all this is provided by an EU counter-guarantee of 50%, the programme – like the product of Garantiqa Zrt. – does not include state aid.

Other guarantee programs

The Hungarian Export-Import Bank Zrt. specifically favours the investments and expansion of business organisations in the foreign market. In connection with this, not only classic sources of financing can be found in its product range, but also credit collateral and commercial guarantees in relation to guarantees. Generally speaking, EXIM's guarantee should not exceed 80% of the value of loan agreements.

1. Credit collateral guarantees: By providing credit collateral guarantees, EXIM provides a partial guarantee for the financial performance of the financing source used by economic organisations in order to improve their international competitiveness. The guarantee provided in this way typically covers 50% of the loan amount but may not exceed 80%. (<https://exim.hu>)

2. Commercial guarantees: Commercial guarantees are bank guarantees provided by EXIM that aim to improve international competitiveness. Types are the followings:

- Tender guarantee: a payment guarantee for the contracting authority based on the amount of the tender guarantee. Typically, EXIM guarantees 2-5% of the offer price.
- Advance repayment guarantee: in case of non-contractual performance, the bank guarantee for the repayment of the advance already paid, typically 15-30% of the export contract.
- Performance guarantee: a commercial guarantee created to ensure conformity with the contract.
- Guarantee of good performance: on the basis of warranty and guarantee obligations, it guarantees the fulfilment of the supplier's payment obligations up to 5-10% of the export contract.

START Garancia Zrt. was established in 2006 in order to contribute to the access of the domestic SME sector to financing sources for development purposes and European Union grants. The portfolio of START Garancia Zrt. was taken over by Garantiqa Zrt. and START Guarantee has been given a new role, from the autumn of 2021 it provides a guarantee for larger individual transactions. The budget of the counter-guarantee in the state budget can be found in the Act XC. of 2020 on Hungary's State Budget of 2021. The amount of the available budget has risen since the fall of 2021 (in practice from December). In addition to the state counter-guarantee, Start Garancia Zrt. does not provide a cash guarantee, but a guarantee in accordance with Section 6:419 of the Civil Code. (Nagy, 2012.)

Results of guarantee programmes

Based on what has already been presented in previous chapters, the role and importance of guarantee programme can be seen, among other features, in regional development. In the chart below, we present the contracted loan of the Széchenyi Card Programme, which accounts for approximately 60% of Garantiqa Zrt.'s portfolio, and the contracted guarantee holdings of Garantiqa Zrt. by county in June 2022, at the end of the Commission's Temporary Framework.

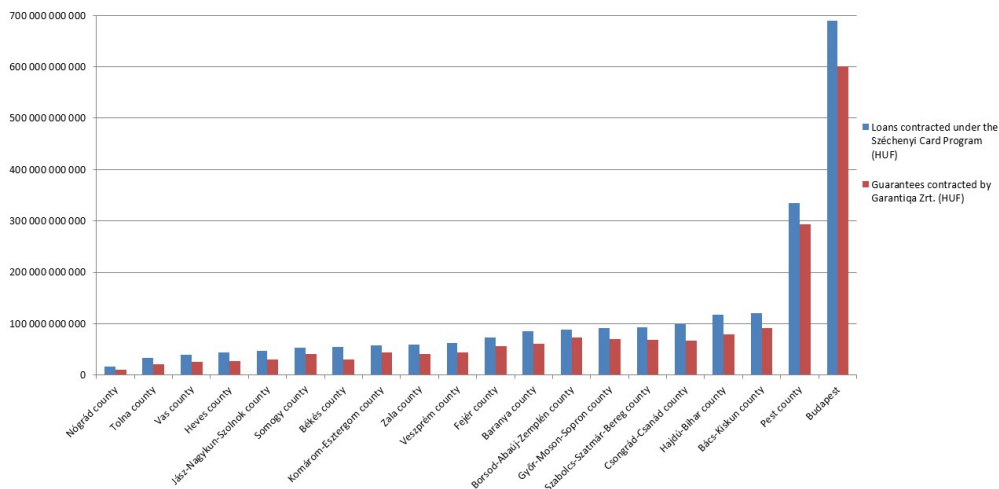


Figure 4. Volume of loans contracted under the Széchenyi Card Programme and volume of guarantees contracted by Garantiqa Zrt. by county in June 2022 (data in HUF)

Source: Garantiqa Zrt. and KAVOSZ Zrt. based on data, own editing

We have also confirmed our assumption with correlation calculations, according to which there is an extremely strong, positive correlational relationship between contracted loans and contracted guarantees as two quantitative criteria. In the event of a HUF 1 increase in the contracted loans of the Széchenyi Card programme, the contracted guarantee volume of Garantiqa Zrt. will increase by an average of HUF 0.89 per county. This result reflects the 90% guarantee of the Garantiqa Crisis Guarantee Programme. We have examined the same for the loans contracted under the Széchenyi Card Programme and the guarantees contracted by the AVHGA. Among the Széchenyi Card Programme credit facility, AVHGA's guarantee contracts are understandably the most behind the Agricultural Széchenyi Investment Loans, and as a result, the relationship between the two criteria will also be weaker.

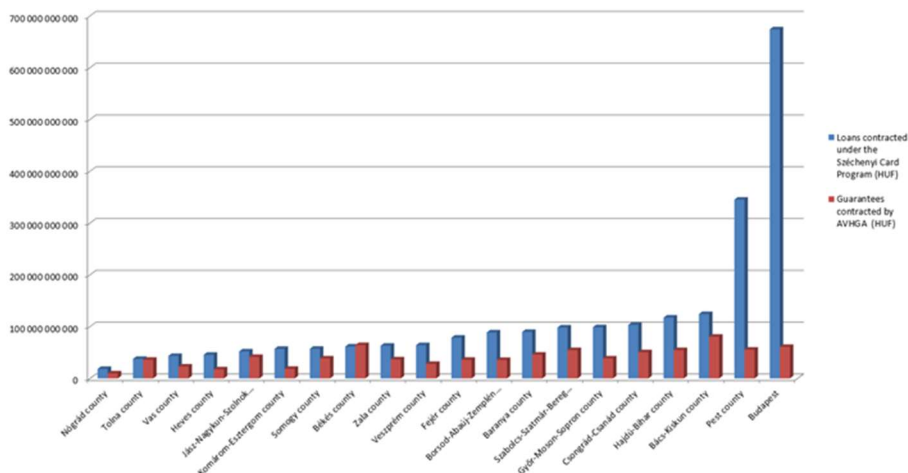


Figure 5. Volume of loans contracted under the Széchenyi Card Programme and volume of contractual guarantees of AVHGA by county in June 2022 (data in HUF)
Source: AVHGA and KAVOSZ Zrt. based on data services own editing

In the examined counties, in the event of a HUF 1 increase in the contracted loans of Széchenyi Card Programme, the contracted guarantee volume of AVHGA will increase by an average of HUF 0.05 per county.

The current and future role of guarantee schemes

In August 2022, my co-author and I conducted a semi-structured in-depth interview with the CEO of Garantiqa Zrt. and the Deputy Managing Director of AVHGA. The interviews focused on, among other things:

- the role and importance of guarantee programmes in times of crisis,
- the regional impact of guarantee schemes,
- recommendations for domestic SMEs.

Both Garantiqa Zrt. and AVHGA, organisations with a 30-year history, have maintained their market share and their role and importance in SMEs' access to finance since their foundation. Corporate lending, the size of the guaranteed portfolio in the period from 2010 to 2020, was characterized by a relative calm, steady growth of the guaranteed loan portfolio, the "7 plentiful years" were characterized by a spin in bank lending, so "it was not difficult to grow". In 2019, the pandemic hit Hungary to a more favourable, already much more prepared situation compared to the money and capital market crisis of 2008, for which even guarantee organisations were already prepared by being aware of their role in the economic downturn, and their product range was also developed with this in mind. In times of crisis, the role of guarantee institutions are being amplified. In these situations the credit risks also increase, at which point the need for atomizing and mitigating risks also increases, and thus the role of guarantee institutions also increases. They drew attention to the fact that the examination of the guaranteed loan portfolio is not the same as the entire Hungarian credit market, since the guarantee mostly helps the weaker firms, where the added value of the guarantee itself is present, because without the guarantor institutions, the companies (mostly SMEs) would not receive a loan, or they receive a loan on more favourable terms with the use of the guarantor institution (for example, they receive a loan for a longer term or receive more loans). During the money and capital market crisis in 2008, the willingness of banks to lend was low, and guarantor institutions 'appeared on the scene' with their role in increasing the supply of

credit. During the COVID, the decrease in lending activity was also compensated by subsidized loan programmes, there was a large volume of preferential financing available in the credit market, so there was a supply, (unlike during the 2008 crisis), so the guarantee portfolio also increased according to textbook form. State-backed loan and guarantee programmes have therefore played a major role in maintaining and even increasing the level of guarantee and lending.

Key features of each guarantee programme:

- countercyclical, moving against the general economic cycle,
- it is supportive, because there are companies in sectors that would not get a loan without a guarantee, even though we know that the sureties are redeemed for these companies (for example, currently in the food sector), but this is already economic policy. Behind the guarantee there is its state counter-guarantee (the 85 % counter-guarantee – 90% during COVID – is rather the biggest curiosity in Europe),
- it is additional, it is related to credit,
- it is one of the vanguards of rural development and regional development, guarantee programmes are an integral part of development policy and economic policy, they are part of the agricultural support institutional system,
- they have a price, the guarantee costs money, there are state-supported guarantee programmes and there is also a market-priced guarantee programme on the Hungarian market.

With regard to the guarantee programmes, it can be said that there is no or, if there is, there is only moderate competition between the individual guarantor institutions, there is rather a kind of specialization on the market, Garantiqa Zrt. specializes in SMEs for the most part, provides guarantees for their general transactions, AVHGA provides guarantees for agriculture, EXIM also meets the needs of a special target group (companies aspiring to the foreign market), START Guarantee and MFB Zrt. are interested in larger individual guarantee transactions. Regarding the development of individual guarantee programmes, starting from the emergence of political needs and the needs of enterprises, also taking the needs of IT and bank development into account, their duration is a good half-year, although their introduction in 2020 was carried out with extraordinary speed in order to prevent the deepening of the financial market crisis, but basically the ramp-up of a guarantee programme takes 2-3 years in peacetime. The crisis guarantee programmes were in response to an extraordinary crisis situation and their ramp-up was rapid, culminating in the expiry of the Temporary Framework on 30 June 2022. Since there were no similar crisis programmes on the market before, *the programmes can provide useful experience for another crisis, their monitoring and the use of experience is key for decision-makers and businesses.*

Prospects for the future

On 24 February 2022, Russia launched a military aggression against Ukraine. The European Union ('EU') and international partners have responded with restrictive measures to the serious violations of Ukraine's territorial integrity, sovereignty and independence. EU and domestic businesses are thus affected in several ways, including falling demand, loss of revenue resulting from it, disruptions to supply chains for raw materials and livestock, high energy prices: rising prices for electricity and natural gas, and drastic increases in production costs. In this context, the Commission has decided to adopt a Communication³⁶ to identify state aid measures that Member States may take to remedy the economic impact of Russia's aggression against Ukraine and the sanctions adopted in this context by the EU and international partners,

³⁶ Communication from the Commission (2022/c 131 i/01) Temporary crisis management framework for State aid measures to support the economy following Russia's aggression against Ukraine

as well as countermeasures taken, for example by Russia. Hungary is a state directly adjacent to Ukraine. Due to this geographical proximity, the European effects of the Russian-Ukrainian conflict are more decisive in Hungary, and economic uncertainty is increasing. The negative impact on the economy can be estimated by GDP volatility and inflation projections. In its quarterly Inflation Report, the Hungarian National Bank publishes macroeconomic indicators and assesses the macroeconomic processes that determine inflation. After the outbreak of war, inflation and the deterioration of GDP expectations can be clearly quantified in the report: the inflation rate forecast increased by almost 5% in March 2022 compared to December 2021, while the expected GDP growth rate over the same period is almost 4% compared to December 2021 (MNB, 2022). This decrease means a nominal loss of at least HUF 1448 billion (EUR 3900 million) for the Hungarian economy in 2022. *In order to reduce the losses of economic operators, it is essential to introduce guarantee products in the future that will provide security for the SME sector even in the face of a protracted economic recession.*

There is uncertainty surrounding the future; businesses, especially the smallest ones, often can not even plan for the next month, there are also difficulties in compiling business plans for the coming years, financing risks are increasing. More and more businesses are postponing their investments. On the one hand, the disruptions in the supply chains already mentioned in connection with the crises lead to price increases, which businesses can no longer undertake compared to their initial budgetary plans, and on the other hand, they are trying to prepare for the future, which will reduce investment needs. *In the future, stimulating investment is an important economic policy aspect in order to maintain economic development.* The liquidity needs of enterprises increase during the crisis, the need for financing liquidity increases with the need to survive, for example, the cycle time in agriculture is relatively long, but most major branches of the national economy, such as construction and manufacturing, also face a persistent need for working capital, so it is necessary for them to prepare in the coming months. *Behind both investment and liquidity loans, the institution of guarantees appears, and the guarantor institutions are prepared for the crisis, are aware of their role in dealing with the crisis, but sufficient amount of available sources of financing on the financing market is required, too*

Conclusion

The national frameworks of credit guarantee systems show great heterogeneity in each country, however, in most of the examined countries the credit guarantee systems are state-owned and function properly only in their own country, as they have adapted to the given country's macroeconomic environment. (EIF, 2017.)

In our study, we have examined the role and regional impact of domestic guarantee programmes and analysed their evolution in relation to the Széchenyi Card Programme. Overall, we can state that state subsidies, such as guarantee programmes, do not dissipate the risks, they only share them among the SMEs, the financial institutions, and the state, so the financial institution's risk (which provide the funding source) starts to decrease. Our analysis shows the popularity of these guarantee programmes. In our research, we were able to prove that, as a result of state-supported financing programmes, the risk of institutions is lower and it really encourages lending to SMEs, even in a recessionary macroeconomic environment, so they can actually reach a wider range of enterprises. It can also be determined based on the interviews that guarantee programmes are revenue-positive for the government, as the savings on unemployment benefits outweigh the losses from the defaults of guaranteed loans. We have also found that these programmes are more effective in sustaining aggregate employment in periods or areas characterized by high unemployment rates, and are particularly relevant when policy cost is an important constraint.

With our study we would like to emphasize the importance of guarantee programmes especially in regional development and crisis management and to raise financial awareness among domestic SMEs.

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The impact of COVID-19 pandemic on the retail sector – Policy-strategy-innovation

In our study, we examine the impact of pandemic COVID-19 on retail trade through three perspectives. Firstly, we assess the policy changes affecting retail caused by the pandemic, then we analyse the renewal of retail strategies, and finally we present some new retail innovations that have emerged and spread rapidly as a result of the COVID-19 pandemic. The aim of our analysis is to provide an overview of the irreversible developments in the retail sector during the COVID-19 period, with a particular focus on the regulatory environment, corporate strategies and retail innovation.

Keywords: COVID-19 pandemic, retail sector, retail strategies, retail innovation
JEL code: H12, L81

<https://doi.org/10.32976/stratfuz.2022.45>

1. The pandemic and the changing regulatory environment

In the emergency situation generated by the COVID-19 pandemic, there was a critical need for government support for vulnerable individuals and businesses, so all states had to find an urgent and effective response to keep the economy going and ensure that employees could keep their jobs and incomes. Fiscal measures announced by most states include a wide range of tax cuts, wage subsidies, unemployment benefits, deferral of utility bills and rent, mortgage relief, lump-sum payments to households (i.e. so-called “helicopter money”), and preferential loans and loan guarantees for businesses (OECD 2020).

At the time of the outbreak of the epidemic (and to some extent still today), all states were wondering what the economic impact would be and how their economies would return to growth. There are four possible ways to achieve this (Little 2020):

- the first and best-case scenario is a V-shape recovery, where the economy recovers in the short term and grows at the same expansionary pace after the period of recession;
- the second scenario is the U-shape recovery, where the economy also returns to its pre-pandemic level, but at a slower pace;
- the third scenario is the W-shape recovery, where the economy, after an initial small recovery, rebounds and then falls back into recession and finally starts to grow; this leads to several waves of recovery before the period of stable growth;
- the fourth and worst scenario is the L-shaped recovery, where there is no growth and the economy stagnates over a very long period.

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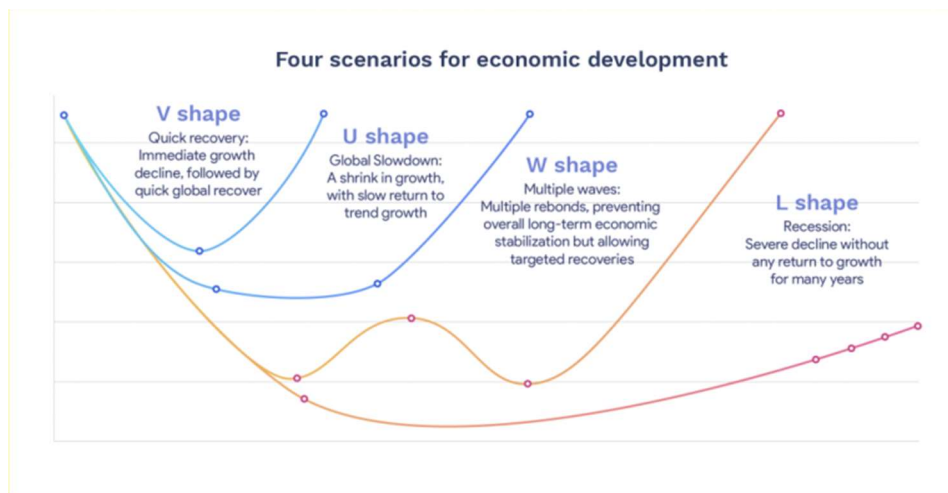


Figure 1: Four possible scenarios for economic recovery

Source: Little 2020

Over the five years preceding the epidemic, the Hungarian economy grew at an average annual rate of 4.1 per cent, outpacing not only the Slovak and Czech economies but also the average growth rate in the euro zone. This growth was stunted by the pandemic in the second quarter of 2020, with the economy shrinking by 14.5 per cent, more than the other Visegrad countries (Eurostat 2021; Kincses & Tóth 2020). However, the - unexpected - 9.8 per cent growth in the third quarter is encouraging, and it is more likely that Hungary could return to an annual economic expansion of around 4 per cent as the crisis passes (Hegedűs 2021). Figures for Q2 2022 show growth of 6.5%, but a slowdown is expected in the second half of the year. Further positive change will require further increasing investment, developing the workforce, stimulating innovation and improving the supportive institutional framework (McKinsey@Company 2020). However, the conditions for this are less favourable in the context of the energy crisis. One of the critical sectors of the economy is retail, which for structural reasons (higher share of traditional shops in the sector) and due to slower expansion of online shopping lags significantly behind the countries of the region (and the euro area). And despite a 5 per cent recession in 2020, the Hungarian economy is expected to grow by the same rate in 2022, which means that the economy is expected to follow the V-shaped curve, the most favourable scenario (European Commission 2021).

In Hungary, the first case of COVID-19 was identified on 4 March 2020, and exactly one week later the government declared a state of emergency. Unprecedented restrictions were put in place, resulting in the first wave of the epidemic claiming as few lives as possible (Benczi & Ocskay 2021). By the end of August, however, the second wave had already begun to roll in, peaking in November, and then in February 2021 the third wave also reached Hungary. It is a very sad statistic that during this period, our country suffered the highest number of fatalities per million population from COVID-19.

The government's emergency economic policy included the introduction of both fiscal and monetary measures (IMF n.a.). *Fiscal measures* affected both the revenue and expenditure side of the budget. As regards the former, decisions were taken to abolish employers' social contributions in the most affected sectors, to reduce the health contribution, to exempt around 80,000 small and medium-sized enterprises (SMEs) from paying small business tax (mainly in the services sector), to grant media service providers a tax concession for loss of advertising revenue and to suspend procedures for the collection of tax debts. On the expenditure side, the most significant measure was the transfer of HUF 245 billion, equivalent to 0.6% of GDP, to

the health sector, but decisions were also taken on a special tax package for families and businesses. On 8 April 2020, during the first wave of the epidemic, two new funds were set up: the Epidemic Protection Fund and the Economic Protection Fund. The main objectives of their establishment were to protect jobs, create jobs by supporting investments worth HUF 450 billion, support priority sectors (such as tourism, health, food and agriculture) and provide interest subsidies and guaranteed credit facilities for Hungarian companies. On 16 April 2020, the government introduced three new export support measures through the state-owned Eximbank: EUR 800,000 in support for investments by export companies, preferential working capital loans and a new guarantee and insurance scheme. On 23 April, the Hungarian Development Bank launched a HUF 1,490 billion package of financial support instruments for enterprises, consisting of three loan products, two guarantee instruments and four equity programmes. On 7 May, the government announced that it would buy up to HUF 150 billion (0.3 per cent of GDP) of bonds from banks to support lending during the crisis and ensure financial stability. On 20 May, the government announced a new wage subsidy scheme for new employees, provided a company retains a worker for at least nine months. The interest-free loans for SMEs were available from 12 June. Half of this is available for investment (up to HUF 150 million), while the other 50 per cent is for liquidity and operational financing (up to HUF 300 million). The government submitted revised 2021 and 2022 budgets to the Parliament, both with higher deficit targets than originally planned (7.5 and 5.9 per cent of GDP respectively), with the aim of continuing to support the economy in the recovery phase. In the context of *monetary and macro-financial measures*, the central bank increased access to liquidity through a number of measures, not detailed here. In addition, a new SME loan programme was announced on 7 April 2020, with increased amounts and interest rate subsidies, and the corporate bond purchase programme remained in effect. On 22 September, the Hungarian National Bank increased the amount available under the programme to HUF 750 billion from the previous HUF 450 billion. On 18 November, it raised the ceiling to HUF 2 trillion (4.3 per cent of GDP), having already purchased HUF 793 billion (1.7 per cent of GDP) of bonds under the programme. The turning point came in June 2021, when the central bank decided to raise the policy rate after many years.

2. Changes in retail strategies during the epidemic

In this part of our study, we review how retailers have implemented each measure, over what timeframe and for what purpose (Sikos T. et al. 2019). Three time horizons are distinguished, with the immediate/very short time horizon being a few weeks, the short term being 2-6 months and the medium term typically covering actions that can be implemented over a longer time horizon. The other dimension of our analysis is the nature of the measure, i.e. whether the measure or improvement introduced is implemented primarily with the aim of saving costs or increasing revenue. The aim of our classification is to group the various (in practice very diverse) measures into a single category to facilitate clarity.

Table 1: Grouping of company measures introduced during COVID-19

Timeframe	Nature of the measure	
	Cost-cutting objective	Profit enhancing objective
immediate, very short-term measures	communication budget reduction	flexible pricing policy in line with demand (price increases/reductions) ensuring service security and availability
short-term measures	workforce rationalisation, redundancies	repositioning of marketing communications, PR and CSR focus

	cost analysis, new cost centres, appearance of cost bearers	introduction of online sales customer service improvement product portfolio optimisation - monitoring changes in demand
medium-term measures	process design and optimisation (according to the new market situation) organisation development, digitalisation stock management, supply management	sales channel development - omnichanneling supply-side product portfolio optimisation (adapting to changing demand) conscious, long-term branding providing a complex customer experience

Source: Authors' own work

From Table 1 it can be concluded that the focus of the short-term measures at the beginning of the pandemic period is on immediate cost reduction or revenue increase. Of course, as we saw in March 2020, decision-makers were not able to accurately predict the time horizon of the measures, as the spread of the virus was unknown, but the immediate reaction of retailers was important due to closures and curfews. Mandatory store closures, the demand-reducing and cost-increasing effects of shopping periods, falling household incomes, and panic buying all called for prompt action on both the cost and revenue sides (Tyagi *et al.* 2020). In addition to stopping marketing communication expenditure (online communication can be stopped immediately), a flexible pricing policy that reacts quickly to demand conditions, combined with sales security (ensuring adequate human capacity, reorganising e.g. for online sales) were able to stabilise the position of a retailer in the very short term.

Following the immediate measures, retailers – with the temporary (summer) improvement of the COVID-19 situation – had to be (should have been) prepared for the next challenge, to fight the challenges of new waves of outbreaks. As the first wave of infection in Hungary was almost undetectable, retailers may not have developed a serious strategy for the COVID-19 and post-COVID period. Entrepreneurs who had nevertheless put more emphasis on a COVID-compatible business strategy were already able to achieve significant cost savings by rationalising their workforce and optimising the costs of newly introduced business processes (e.g. online sales). In addition to this, it was possible to optimise the product portfolio (not only by price manipulation and skimming measures), to introduce new products and related services, to strengthen the image of the responsible company in marketing communication, to introduce new sales channels (e.g. online or mobile-based sales), to launch home delivery or other alternative (contactless) delivery methods instead of/besides shop sales.

The focus of medium-term improvements is mainly on integrating the previously mentioned/implemented individual improvements into the enterprise system. Let us not forget that in many cases retailers switched from being traditional (brick and mortar) retailers to online retailers in just a few weeks, communicating with digital content instead of the usual leaflets and posters, not meeting their customers face to face, using online questionnaires instead of paper questionnaires to measure customer satisfaction, communicating with their business partners on online platforms (Teams, Zoom, Meet) instead of face-to-face meetings, etc. This fundamental change requires (required) considerable, long-term, integrated improvements, which typically became more important for retailers as the COVID-19 crisis became more protracted.

On the cost-saving side, the reorganisation of the new company operating model (process reengineering) enabling digitalisation of the entire company system (introduction of an ERP system), stock and sales management became possible for traders open to these improvements, which can contribute to more efficient business operations in the long term. On the revenue side, long-term improvements such as retailer branding, omnichannel (customer-centric marketing strategy covering all sales and communication channels), and conscious CX (customer experience) maximisation through product and service offerings and customer support need to be (should have been) initiated to reach higher customer satisfaction (*Wänke 2009*).

We have attempted to outline a systematic, well-structured model of the multiple impacts of COVID-19 on the retail sector. In the following, we take a look at the COVID-19 (re)actions of international retail chains operating in Hungary and domestic independent SME retailers, without claiming completeness.

If we want to name the “most spectacular” retail development in the COVID-19 period, it is clearly e-commerce developments at different scales. Retailers of different sizes have entered the e-commerce market, and the “old” ones have made significant improvements both in quantity and quality.

Domestic FMCG retailers prioritised the development of their e-businesses due to the challenges posed by COVID-19 (curfew restrictions, limited opening hours, hygiene regulations). Spar, CBA, Tesco and Auchan all made considerable efforts – especially during the peak phases of the pandemic – to meet the increased online demand. In parallel, significant improvements were made in the quality of service (e.g. the way in which safe pick-up is provided) and the coverage of the service. The scope of this chapter is far from being sufficient to cover the various e-commerce developments, so we will highlight a few of the more distinctive features. The most challenging problem in online food sales is delivering the goods. Since FMCG products can be divided into two main groups (perishable and nonperishable), several retailers (Auchan, Tesco) “split” their online delivery model along these lines. The delivery of perishable fresh food remains closely linked to the geographical area of a serving hypermarket (Tesco Home to Home service), while for non-perishable food, nationwide delivery (Tesco Box Webshop) was introduced for a single fee. Certainly, in each case there is a significant difference not only in the range of products, but also in the delivery time and price.

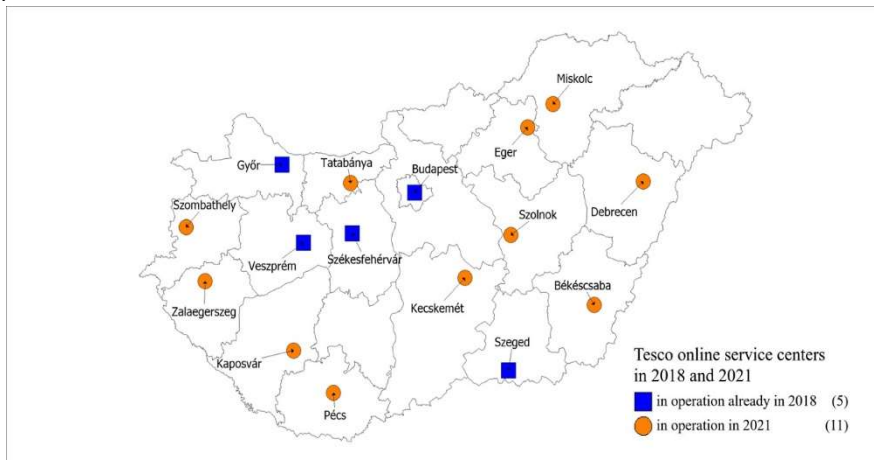


Figure 2: Spatial availability of Tesco online (Tesco From Home) service in 2018 and 2021
Source: Authors’ own edit based on Tesco online data

Figure 2, using Tesco as an example, clearly identifies the quantitative improvement in the geographical reach of online sales. In 2018, Tesco online was only available in 4 county capitals and their gravity zones outside Budapest and its catchment area (and at that time, no nationwide delivery was available for non-perishable products), by 2021 the service was already available in 16 county capitals and their surrounding areas, as well as in the capital (the exceptions are Nógrád, Tolna and Szabolcs-Szatmár-Bereg counties, presumably due to their population size and their low income levels), and Tesco provided nationwide home delivery of non-perishable food and other products. Similar developments were made by Auchan, and Spar and CBA also made significant progress in e-commerce, although their service is not available nationwide. Aldi was the first discount supermarket to make its products available online to customers in the capital, in cooperation with Roksh, an online intermediary.

The coronavirus pandemic, in particular the severe closures associated with the first wave of the pandemic, posed new challenges not only for FMCG retailers, but also for all retailers. Business success/survival (also) depended on how quickly individual companies were able to adapt to significantly changed circumstances. In our second example, we briefly describe the changes in the online communication of a medium-sized Hungarian retailer called jateksziget.hu. *Játéksziget* is a typical multichannel retailer, selling its products both offline and online. During the first wave of the epidemic, they had to find their way back to their customers during the period of mandatory closure of their shops, with online and social media communication optimised for the pandemic being a key priority. The pandemic brought about a significant change in strong social media communication, as it became crucial – especially during the lockdown period – for retailers to strengthen the bond with their customers and post content that helped families with children to get through this period. Therefore, the share of promotional content in social media communication decreased from 33% to 19%, the share of funny content halved from 42% to 21%, but two previously unused content marketing tools gained a significant role: educational content (instructional) appeared in 18% of the communication, and activity generation (encouraging people to play at home) also in 18%. Based on the web analytics, the changes were successful, contributing significantly to the business success of *Játéksziget* during the COVID-19 period.

So far, we used the examples of a retailer of international importance and a medium-sized Hungarian retailer to illustrate how (and by what measures) some retailers responded to the challenges posed by COVID-19. However, what can a small shopkeeper, micro or small entrepreneur do? These businesses are typically of low capitalisation, have little digitalisation, and their customers may not have significant digital literacy, so their online opportunities are limited. Using the example of a small grocery store in Tatabánya, Green ABC, we present the tools that contributed to the successful operation of the store even in the more difficult times of COVID-19. In this case, the key words are fast response time, low budget and customer knowledge. At the start of the pandemic, the business owners set up a Facebook profile for the business to reach customers with minimal digital literacy. The social media profile proved useful during the closure period to inform customers and introduce new services. When, in the third wave of spring 2021, the shop had to be closed from 19:00 to 05:00 and later from 22:00 to 05:00, the owners decided to introduce a home delivery service for the period of time lost not only in Tatabánya, but also in the nearby towns of Tata and Oroszlány. Obviously, there was no online store or mobile app available as an online sales channel, so in this case digital sales were provided by telephone ordering. The good customer knowledge of the owners is proven by the fact that the temporary solution was successful commercially, generating on some days a revenue of around HUF 100,000, which is a significant revenue for a micro-enterprise (especially in a medium-sized town and its surroundings). When the restrictions were lifted, the service was discontinued, but it can be reintroduced at any time in the event of a new emergency.

To sum up, it can be concluded that all consumer oriented domestic retailers (*Kardes et al. 2011;* *Jansson & Boyd 2010*), regardless of size and activity area, had to make serious, fast-paced improvements to maintain successful business operations. In the following, we summarise our key findings and outline the areas for further development that will determine the continued success of domestic retailers.

Our key findings on retailers' performance during COVID-19 are the following:

- 1) The pandemic situation forced a rapid, multifaceted and robust response from the players of the sector. Businesses that did not respond risked their business success. It is important to emphasise that the decline in the number of stores is not an effect purely of COVID-19, as the increase in concentration is a decade-long trend in domestic retailing.
- 2) Retailers were affected by the crisis and closures very diversely, depending on the type of business. This is not only because of the different types of restrictions imposed by the state, but also because of customer demand and product preference (the distribution of textiles versus that of foodstuffs, for example). Large square footage did not necessarily mean safety and crisis-resistance, as one of the major losers of the COVID-19 crisis were the shopping malls and the shops operating in them.
- 3) The most powerful changes affecting retailers are not linked to COVID-19, as they were already emerging and affecting retailers long before the pandemic: online sales, digitalisation, omnichannel marketing, the rise of online communication, the transformation of pricing (easy comparability), the increasing importance of brand loyalty and brand building, etc. It is important to underline, however, that in the COVID-19 period, these factors both intensified and changed very rapidly.
- 4) With a conscious, strategic approach, the use of modern marketing tools and the introduction/development of digital solutions, the 2020-2021 period was not only “survivable”, but could even set the business on a new development path for all types of retail outlets in any sector.

3. Trends in retail innovation

The most prominent retail innovation trends of today are discussed below.

According to a Nilsen research study, innovation activity in the retail sector is organised around four main themes: convenience, practicality, environmental protection and health protection are the key drivers of consumer innovation. This became particularly important in the context of the COVID-19 epidemic. In the long run, sustainability, personalisation and online penetration play a key role among respondents. These trends are highlighted in more detail below.

Online retailers offer the convenience and practicality of placing your order at your doorstep and waiting a safe distance away to collect it, taking care of the health of customers and their couriers. From a business perspective, food home delivery has been disadvantageous for retail chains for years, but with the exception of discounters (Aldi, Lidl, Penny Market), almost no one can afford not to be present in this market, so Tesco, Auchan, Spar and Prima also have such services. However, new companies have also emerged in the Covid-19 epidemic and have started to gain ground at the expense of larger competitors, such as Kifli.hu, a company in the food retail sector that was launched in the Czech Republic.

Among measures related to the environment and sustainability, both offline and online companies focus on reducing food waste, offering products approaching their expiry date at significantly reduced prices and making efforts to collect packaging. A pioneering example is Kifli.hu, which collects and recycles carrier paper bags at the next purchase.

The key to the future of online commerce is to reach ever-larger customer baskets and, at the same time, to develop personalised commerce. Large firms primarily seek to expand their product range, while small firms will only survive in the market if they try to specialise. On the production side, the large range of products in the shops also poses a number of risks, increasing the stock, which will be much more difficult to manage, with more IT and logistical work needed and higher level systems, as well as a more effective marketing policy to inform customers. Managing large databases (BigData) and data clouds requires new types and skills of management and, of course, new communication interfaces with logistics and customers. In the case of small stores, understanding the needs of the customers is essential. Traders need to be aware of the structure of a customer's shopping basket pattern and its frequency pattern. This will be one of the most important conditions for success in face-to-face sales. During the pandemic, retailers launched a significant number of small or large online schemes. The secret to the success of established online units lies in their speed, accuracy and maximum adaptability to customers' needs. It can be stated as a fact that today it has become increasingly difficult to navigate a wide range of products and therefore consumers have been redefining their preferences and expectations of products and services. 'Traditional factors such as price, choice and convenience will remain important, but given how many good choices consumers have, personalised experience may now be the differentiating factor. This is especially true for the digital natives of Generation Z, who now make up a fifth of the European and US population, according to the Nielsen survey. Personalisation will become easier for digitally enabled businesses, with e-commerce being able to track purchase history, ad views, demographics and preferences. This helps the trader to optimise and thereby maximise his revenue' (Nielsen 2020).

The retail of the future will be a mix of offline and online in line with the novel expectations of the consumers (Eger 2021; Zwanka & Buff 2021). This means that the purchase is always made through the channel that is the most ideal for the customer. So purchases will take place at the boundary between traditional geographic space and cyberspace. Surveys conducted by market research company Nielsen in sixty countries, including Hungary, show that consumers welcome new digital technologies and expect these new technology solutions to be an important part of the retail of the future.

Modern technologies help "retailers and manufacturers to take advantage of flexible sales opportunities. In doing so, they can provide a better shopping experience and increase footfall across channels' (Dechant 2016). All of this will have a positive impact on tomorrow's trading. The mix of online and offline also means that customers often choose the most convenient pick-up points for them. These may be the office, apartment, holiday home, but of course also certain points in the offline space, such as pickup points or delivery points designated by shops. Another major advantage of the latter is that in this case the shop serves as a warehouse, as the customer's shopping basket is assembled here. The composition of the goods ordered online in the virtual shopping baskets does not necessarily reflect the contents of the real baskets in the traditional shop. The two are rather different; in the US, for example, 60 per cent of goods bought online are non-food products while 40 per cent are food products. In comparison, the average basket in a traditional shop is the opposite, with 60 per cent food and 40 per cent non-food products in the basket, according to Nilsen research (Nielsen 2016). Another fact is that it varies from market to market what customers like to see in their shopping basket, and if an offline or online retailer adapts well and dynamically, it can gain a big advantage in the market and increase its profits significantly. Research also indicated that people prefer to buy fresh and frozen food offline, while they prefer to buy perfumes and household products online. In the retail sector, online companies are better suited to distributing specialities, since they have greater opportunities to offer a wider range of products. Some products are missing from the offline system or are only available in limited quantities, namely vegan foods, which are very popular among Generation Z.

The digital world can create a multitude of new tools in a short period of time, making it easier and faster to order, which in turn can significantly accelerate the development of online commerce, where the recent pandemic has already led to accelerated development. An innovative distribution system has been emerging, using modern retail technologies, in which market players constantly innovate and learn to apply and use newer and newer technologies. This new system is now fully embraced by the world of robotics. In this new framework, firms are able to react very quickly to market challenges and to work with “smart partners” to remain competitive in the market. All this allows customers to be part of a comfortable and experiential world.

4. Summary

In our study we highlighted the nature of the retail transformation triggered by the COVID-19 pandemic. We reviewed the policy changes, described the adaptation of retail strategy to the transforming market and environmental conditions, and finally assessed some new, prominent retail innovations and trends in consumer behaviour.

The most important result of our study is to demonstrate that the COVID-19 pandemic has significantly transformed retailing in two respects. On the one hand, it has accelerated pre-existing innovation processes (e.g. online sales), and on the other hand, changes that were intended to be temporary and transitory (e.g. retail measures caused by restrictions) have become part of normal practice, further accelerating changes in retail and consumer behaviour (e.g. sustainable consumption, changing product preferences, changing store preferences, etc.).

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Oleksandra Kosenko⁴⁰

Marketing means of information dissemination as a tool of information warfare

<https://doi.org/10.32976/stratfuz.2022.46>

Abstract

This article considers the essence and features of marketing propaganda and forms of information warfare, its social, informational, organisational aspects, the role and nature of psychological operations, perception management. Particular attention is paid to the social and cultural consequences of marketing propaganda, information operations and wars. The purpose of the article is to analyse the common and distinctive features of propaganda, PR and information warfare.

Key words: marketing, propaganda, dissemination

JEL code: D40

Introduction

At the present stage of the development of civilization, information plays a key role in the functioning of public and state institutions and the life of each individual person. The most important difference in the development of civilization in the 21st century, of course, will be the process of increasing globalization of society. This is caused, first of all, by the globalization of the infosphere — the global information space, which in recent years has been rapidly transforming as a result of the development and spread of new information technologies (Nagy & Hajdu, 2021).

Informatisation is increasingly penetrating almost all spheres of society and radically changing the habitual way of life and activities of millions of people around the world. The modern world has entered a new stage of its development, which is manifested in the growth of technology and the renewal of the entire production process due to the globalization of the information environment. As a result, the modern world turns out to be a complexly organised system, a space of global information technologies and communications. Almost unlimited access to various kinds of information creates fundamentally new opportunities, unprecedented in the history of mankind, as well as new, previously unknown problems that change traditional stereotypes of behaviour and lifestyle.

Total informatisation has a huge potential for increasing labour productivity, the production of improved goods and services, a real improvement in the quality of life, but also creates new dangers and threats for social actors.

Information danger is manifested in many forms: the creation of virtual worlds that replace reality; manipulation of consciousness and behaviour of people; substitution of goals, values, one's way of life from the outside with imposed standards; distortion of information, etc. These processes are conditioned by the social aspects of the process of information interaction: people's attitude to information, the need for it and at the same time the inability to clearly distinguish between true and false, useful and useless.

The main methods of information dissemination in marketing are the means of communication: advertising and public relations. The main methods of influencing public opinion include propaganda, manipulation and information wars (Table 1).

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Table 1: Ways of disseminating information in marketing

TOOLS	USED BY
Propaganda	A totalitarian state
Communications	A democratic state
Public relations, advertising	Business
Information operations, psychological operations	Military

Propaganda (Latin *propago* - “I distribute”, literally - “to be distributed (faith)”, from is a form of communication aimed at disseminating facts, arguments, rumours and other information to influence public opinion in favor of a certain common cause or public position. Propaganda is usually repeated and disseminated through various media in order to shape the chosen outcome of public opinion [2]. It is a system of means that act on the subconscious of a person in order to subsequently manipulate his behaviour, impose certain stereotypes and encourage him to fulfil the wishes and orders of the manipulator; this is an effective game on the human psyche, the characteristics of his emotional state, knowledge or ignorance of phenomena and events, which is based on suggestion and suggestion of certain behavioural responses, often through appeals to a collective conscious person.

Propaganda is a systematic activity that involves the formation of the desired perception by the audience of the message provided to it, the manipulation of the process of thinking of the audience, nudging the direction of the behaviour of the audience in a direction that is beneficial to the propagandist.

It is worth noting that the term “propaganda” acquired a highly negative emotional connotation only due to the unprofessional activities of some journalists. Propaganda in its original emotional sense was neutral and also referred to marketing tools (Fig. 1).

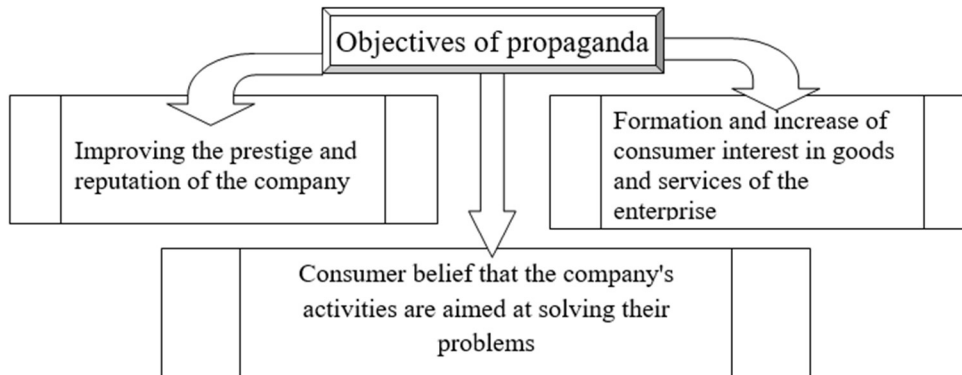


Figure 1 - Marketing goals of propaganda

Propaganda is divided into “black”, “grey” and “white”.

Black propaganda, which allows absolutely any distortion of reality to achieve goals, is fabricated false information (or just outright lies), the purpose of which is to provoke political, social, interethnic or interstate conflict. Black propaganda is most often used in the political sphere. War propaganda, that is, incitement to use armed force against another state or ethnic group, or inciting chauvinistic sentiments in support of aggression, is one of the areas of such activity.

In the marketing of goods and services, black propaganda is used by enterprises in dishonest and unethical competition. Thus, some companies are working to lower the rating of competitors and their products, disseminating deliberately false information about the quality of competing products or about the activities of enterprises and their owners.

Grey propaganda, which uses specially created sources or promotes material in certain independent media, is a message whose source and credibility are questionable. Simply put, in this case we are dealing with a half-truth or with its biased interpretation.

Finally, there is white propaganda, which does not allow distortion of facts for political purposes. Here the source of information is fully identified, and the information is accurate and accurate. The one reporting this information is trying in every possible way to look like "his boyfriend", but he does not publish information that is not beneficial to him.

Therefore, we can say that propaganda includes a wide range of messages - from truthful information to outright false disinformation. The propaganda goals are predetermined in favour of the communicator. At the same time, it is based on certain values and ideology. Black propaganda is a manipulative type of propaganda that masquerades as objective information through the manipulation of facts, using various psychological machinations that have a strong influence on the subconscious of people who do not feel that they are becoming objects of manipulation.

Propaganda uses the same methods (techniques) as advertising and public relations, each of which can be considered propaganda that promotes a commercial product or influences the perception of organisations, individuals or brands. In post-war usage, the word "propaganda" typically refers to the political or nationalist use of these methods or the promotion of a body of ideas, as the term has taken on a negative connotation. The phenomenon of rejection has been observed in politics due to the change of political marketing and other designations to "political propaganda".

Table 2 - Differences between propaganda and other ways of disseminating information

	Normal message (dissemination of information)	Propaganda	Manipulation	Advertising
Goal	Highlight the message to the podium	Call for action	Encourage, provoke action without pointing to it	Call or motivate (cause desire) to act (make a purchase)
Sphere	Wide	Socio-political	Mostly socio-political and interpersonal	Commercial
The structure of the message	1. Information 2. Evaluation of information	1. Information 2. Evaluation of information 3. Call. Contains an indication of what event is expected	1. Information 2. Evaluation of information 3. Motivation to action, without specifying what action is expected	1. Information 2. Evaluation of information 3. Call. Contains an indication of what event is expected or motivation (cause desire) to act (make a purchase)
The object to which the impact is directed	-	General	Specific; general	Specific
Audience	Specific Wide	Wide	Specific; wide	Specific
Means of influence	Sign systems; Verbal signs; Image	Media, tents, etc.	Media, gossip, rumours, adaptive tools (to influence the subthreshold level), special tools (religious texts, sermons, etc.)	Mass media; billboards, posters, direct mail, etc.

There is also a point of view according to which manipulation is gray or black propaganda. The concepts of gray and black are associated with the use of illegal or non-ethical technologies (this also applies to PR and technologies in politics). Poltorak writes that 'the

process of organising propaganda under different conditions can be carried out in the form of cooperation, so to speak, “white propaganda”, when they cooperate with public opinion, and individuals, under the influence of propaganda messages, voluntarily choose a course of action. Or in the form of manipulative propaganda influence (“black propaganda”), which differs from the previous ones in that the manipulator, influencing the consciousness of the individual, does not leave the last choice in determining the line of behaviour. In both cases, we are dealing with propaganda as an objective phenomenon’ (Poltorak 2010, 2, 203). The propaganda process involves the implementation of the following stages (Fig. 2):

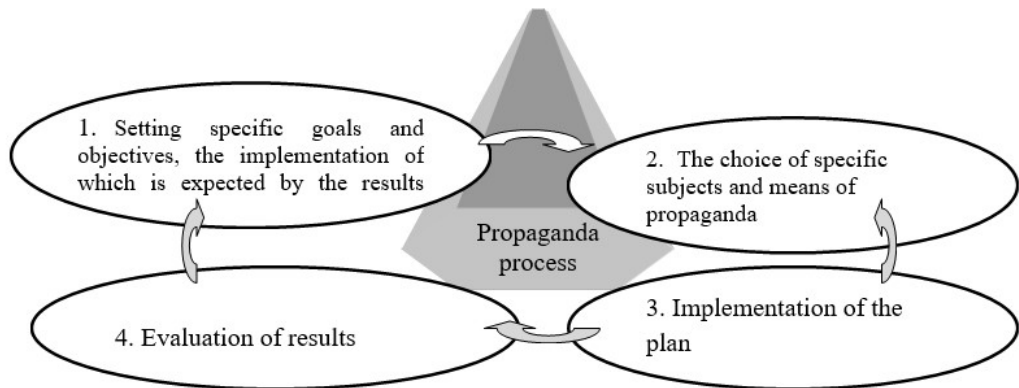


Figure 2 - Propaganda process

Information influences on the mass consciousness have always existed. Shamans and priests have also used them as technology when trying to “construct the future” in one direction or another.

The term psychological warfare was first used in 1920 by the British historian J.F.C. Fuller, who analysed the First World War. This term was adopted by the Americans, who date the actual use of this term to 1940. The corresponding English version of this term is political war. Interestingly, the modern term used by NATO, namely information operations, can be used in general in the absence of a hint of hostilities. This is the case, for example, with peacekeeping operations. However, according to analysts, in a peaceful situation it is even more difficult to apply psychological operations, because it is characterised by a rather dynamic change in the environment, while in the case of hostilities, it is relatively stable (Galician Economic Bulletin, 2014).

Definitions

There are many definitions of “information warfare”. In this regard, it is advisable to consider the most frequently used and highlight the features inherent in all interpretations of this phenomenon (Table 3).

Table 3. Definitions of “information warfare”

G. Pocheptsov	influence on the civilian population and (or) servicemen of another state by disseminating certain information. The term "information-psychological warfare" was borrowed from the dictionary of US military circles. The translation of this term ("information and psychological warfare") into English can sound both like "information conflict" and as "information, psychological warfare", depending on the context of a particular official document or scientific publication
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I. Zavadsky	purposeful actions initiated to achieve information superiority by damaging information, information processes and information systems of the enemy while protecting their own information, information processes and information systems
M. Gorkin, A. Mamontov	comprehensive, holistic strategy, due to the growing importance and value of information in matters of command, control, politics, economics and public life
V. Lisichkin	collecting compromising information on competitors and its systematic use
A. Chumikov	explicit and covert purposeful information actions of systems on each other in order to obtain a certain gain in the material sphere
S. Black	a new form of struggle between the parties, which uses special methods and means that affect the information environment of the enemy and protect their own in the interests of achieving the strategic goals of war

The main task of information wars is to manipulate the masses. This involves measures for propaganda influence on human consciousness. The purpose of such manipulation most often consists in introducing hostile, harmful ideas and views into the public and individual consciousness for disorientation and disinformation of the population.

Marketing technology enterprises in today's scientific and technological environment are weakening certain beliefs; intimidation of people by the image of the enemy; intimidating the enemy with their power; providing a sales market for their economy using the information war as a component of the competitive struggle.

An analysis of the definitions allows us to highlight those features that are always present in the conduct of an information war (Figure 3):

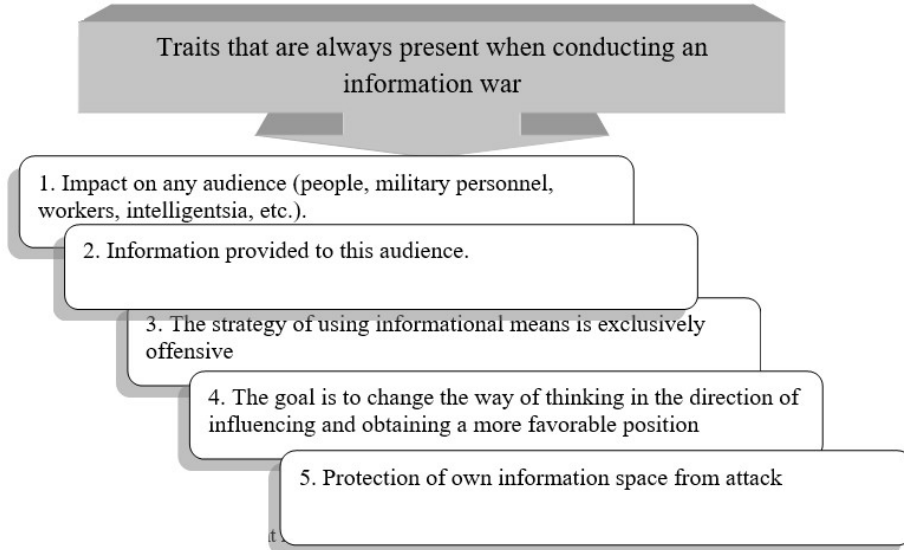


Figure 3 - Features inherent in the conduct of information warfare

Discussion

Information weapons are fundamentally different from all other means of warfare in that they can be used (and are already being waged) in undeclared and often invisible world wars, and

that the objects of influence of these weapons are, first of all, civil institutions of society and the state – economic, political, social, etc.

Information influence on the enemy has a number of features that distinguish it both from other forms of struggle and from communications in the field of information exchange. In contrast to the usual information impact, in the course of the information war, the object of influence is imposed with alien goals, aspirations, the achievement of which ultimately harms it. Facts are distorted or presented in such a way that it causes the behaviour of the enemy to be inadequate to the real state of affairs, as well as the imposition of an emotional perception of facts that are beneficial to the party that produces the water.

The concept of information wars is very close to the concept of manipulation of public opinion/manipulation of mass consciousness, that is, the suppression of the will of people and the programming of their behaviour. Manipulation is always carried out in secret, "manipulation" is not aware of its objectivity. Signs of hidden manipulation, among others, are emotionality, sensationalism and urgency, repetition, fragmentation of the whole factual picture, extraction from the context, "totalitarianism" ("reliable source") of the source of messages, confusion of information and opinion, cover by authority, activation of stereotypes, etc. An information war is precisely a war, that is, the violence of one subject of human history over another in order to achieve certain goals.

We may come across the definition of public relations as something that manipulates and deceives consumers. For example, '...from here PR, advertising, information wars arose as a means of resolving disputes between dominant groups ...', etc.

Public relations (PR) is a two-way flow of information: an organisation seeks to know the mood of the public and its expectations and grievances. They are assigned to a voluntary change in public sentiment by providing it with arguments that go in favour of the organisation. Unlike propaganda, public relations is not afraid of discussion, but encourages it. If a propagandist tries to control the flow of information by deliberately limiting information, or even providing false information and putting pressure on the media, then a public relations specialist is a kind of public advocate for his organisation, in whose arsenal there are arguments and counterarguments in defence and who honestly tries to prove, the actions of the organisation.

If the deep essence of PR is informing the public, its education and upbringing, then the specifics of marketing are the priority importance of research and market segmentation, the dominance of offensive methods of influencing market segments, including an anti-marketing strategy. PR has been carried out for years and decades. Marketing must prove its effectiveness in a limited time period: its actions are compressed in time, very energetic, even (within the law) aggressive. Publications prepared by a PR specialist, films and television films are not expected to have an immediate commercial return, because the goal here is different – to give the public positive information about a leader, company, institution. The communication "product" of a marketer on the political market should also bring quick profits - votes, support for the authorities in a referendum, etc. Marketing dangerously borders on propaganda and counter-propaganda. PR is produced in a more modest, more intelligent, civilised way.

The French researcher Ellul said most succinctly about the role of psychology in propaganda: psychology is designed to "catch a person in the network of propaganda." Propaganda allows distortion of figures and facts when it is in its interests, while PR is based on truthful information (Table 2). The identification of PR technologies with "dirty" mechanisms of influencing public opinion is caused, first of all, by the fact that the means of achieving their goals are very similar. In addition, some companies use public relations opportunities in bad faith. However, it is important to remember that the ultimate goals of these two activities are different. The activities of a public relations specialist are of an informational nature, and an information warfare specialist is offensive and manipulative (Table 4).

Table 4: Comparative characteristics of the information war and public relations

Comparable indicator	Information war	Public Relations
Interaction with the target audience	Offensive influence	Maintaining mutually beneficial communication
Goal	Changing the existing pattern of behaviour to gain an advantage over the other party and control its information space; based on rigid attitudes and aims to force people to accept (change) some point of view. At the same time, I am not at all interested in whether they want to change it	Establishing two-way communication between the company and its public based on truth, knowledge and full awareness. More lenient in nature and intended to invite people to use some information and then voluntarily accept (or reject) certain views, opinions and ideas
Technologies used	Manipulation of consciousness, concealment of information, oversaturation of information, substitution of facts	Informing the public, building a reputation, identifying the interests of audiences
The main components	Offensive information; target audience; protection against information attack; side of the aggressor (usually unknown)	Educational or motivational information; target audience; openness to information cooperation; company that disseminates information (almost always known)
Used tools and instruments	Mass media, rumours, Internet, speeches, books, brochures, events, rallies, mail, personal meetings, physical influence (any means aimed at changing the existing way of thinking)	Mass media, Internet, special events, speeches by speakers, personal meetings with clients, participation in professional meetings, sponsorship, Internet and others
Reliability of information	Assumes distortion of numbers and facts in their interests	Based on truthful information
Feedback	Aimed at unilaterally influencing an individual (rarely) or a group (often)	Mandatory component is the establishment of two-way communication, reception and accounting of the counter signal from the target audience

Information warfare and public relations are similar only at the stage of achieving goals, but the goals themselves are fundamentally different.

The media are not always and not necessarily the initiators or subjects of changes in the minds of individuals or social groups. By themselves, they can be neither an instrument of destruction, nor an instrument of creation and progress. Their positive or negative role is determined by what social forces and for what purpose they are used.

Conclusions

Information and technical confrontation are the most important aspects of the current information policy. In modern conditions, when there is a rapid growth in the pace of development of not only the mass media and communications, but also computer technology, automated control systems, electronic means of information exchange, and in particular, the international global information network of the Internet, fundamentally new techniques and methods for presenting information have appeared.

If we correctly understand the specifics of the information community in the context of the aggravation of global problems, then today we should move in a direction that leads to the

neutralisation of the formidable potential of information wars and civilisational catastrophes that arise and accumulate in the process of spontaneous development.

In my opinion, in modern conditions, a protracted information war is not beneficial to anyone except PR managers, journalists and media owners. The attacked enterprise spends a lot of money to restore its reputation in the eyes of consumers. In turn, the enterprise that makes the attack runs the risk of becoming overly carried away by the struggle.

However, a competent specialist may well take advantage of an information attack on a PR campaign and, as a result, instead of worsening the state of the enterprise, strengthen its image in the eyes of the public.

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Orosz Dániel⁴¹

Bakk, Miklós – Süli-Zakar, István – Szilágyi, Ferenc (2019): Partium – Borders, Ethnic Groups and Territorial Development

Published by: Károli Gáspár University of the Reformed Church in Hungary, Faculty of Law

<https://doi.org/10.32976/stratfuz.2022.47>

The volume presents the development of the Partium region through different historical periods up to the present day. The central theme of the volume's four main, partly separate chapters is thus Partium as a region. The authors approached the topic from different perspectives and investigated the area using different research methods. The processing of the topic is certainly unique and thought-provoking. Actually, four separate studies form the main chapters. These studies do not form a complete unit, rather they complement each other, which makes the book transparent and comprehensible to the reader. The studies are made up of many subsections, and there is a separate bibliography at the end of each one.

The author of the first chapter, István Süli-Zakar, presents possible ways of cross-border cooperation and the possibilities of territorial development realised with the help of this in the Central and Eastern European region. Süli-Zakar begins with a historical introduction of the origin of Euro-regions. For example, the economic cooperation between Germany and France, which forms the basis of the EU. At the same time, several subsections deal with the possibilities of possible cooperation and transformation between Hungarian and Romanian settlements, counties and regions along the border. I consider it important to emphasise that although the focus of the study is on the Partium region, the author also discusses international collaborations (for example: the Interregio Euro-region, established in 2000, or in the Danube-Kris-Mures-Tisa (DKMT) Euro-region).

The second chapter presents Miklós Bakk's study on the ethno-regional models of Europe. Bakk begins his study with a detailed historical overview, which examines the formation of the state from the initial processes of nation-building to the formation of the modern state. The author presents many relevant definitions related to the topic. During the presentation of ethno-regional models, the author presents several models that are also significant in the literature. For easier understanding and transparency, he uses tables that systematise the various models. One section illustrates the state and administrative structures that exist and operate today by presenting several European states, regions and autonomous regions (the Åland Islands, Catalonia, the Basque Country, North Tyrol, the decentralisation of the United Kingdom), and a significant historical event affecting the population. As an example, he examines the cases of France and Romania in detail.

The third chapter presents the concept and development of the Partium region in detail from the Battle of Mohács to the present day. The author of the chapter, Ferenc Szilágyi, presents the most important historical events of the region in detail. The author's most important focus in terms of historical events was how the examined region was shaped. Based on this, the subsections follow one after the other in chronological order. Szilágyi highlights the Battle of Mohács, as a result of which Partium became an independent region for the first time, then the time of the Austro-Hungarian Monarchy, when the region also belonged here, thanks to the Compromise of 1867. The next very important historical event is the Treaty of Trianon, as a result of which the historical territory of the Partium region is divided in two by the new Romanian-Hungarian border. I think it is important to point out that the author does not only give the reader a historical presentation, but also presents ideas that were never realised in real

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life. In my opinion, this gives us a much more comprehensive picture of the situation in the region. The focus of the study is primarily on administrative and territorial reorganisations, but Szilágyi also highlights the various and relevant social, ethnic, economic and infrastructural features of the region.

The fourth chapter of the book was also written by Szilágyi. The chapter focuses on the possible autonomy of the region. The author introduces the possibility of the Partium region's self-determination, more precisely the potential directions and obstacles related to it. He emphasises the following arguments in favour of autonomy: multiculturalism, the cohesive force of the region, geographical location. The author mentions the lack of regional identity as the most significant obstacle on the road to autonomy, both on the Hungarian and Romanian sides. The mentioned aspects can be read through a comparison with Szeklerland.

The book aims to provide a comprehensive insight into Partium as a historical region, and covers regional reforms, Euro-regions and ethno-regional models, possible ways of cross-border cooperation. The theoretical and practical usefulness of the volume is unquestionable. The volume contains important scholarly findings for specialists dealing with territorial analysis and regionalisation. The style of the volume is basically objective in tone, transparent and well organised, so in my opinion, it is an easy-to-consume and enjoyable read for everyone.

I wholeheartedly recommend the volume to your attention!

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Köszönjük!

Szerkesztőség

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