

ANALYSIS OF THE IMPACT OF THE SARS COV-2 VIRUS PANDEMIC ON SELECTED INDICATORS IN THE REPUBLIC OF CROATIA

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Original scientific work

Abstract: *The SARS CoV-2 pandemic during 2020 left repercussions on a large number of countries and their economic, health and social systems. National pandemic headquarters tried to limit the spread of the virus which resulted in a reduction of economic activity. The consequence of such measures is an increase in unemployment and the creation of a new paradigm of work. One of the countries affected by the pandemic is the Republic of Croatia. This paper aims to identify the impact of the pandemic on the Republic of Croatia using selected indicators such as economic indicators, population indicators, traffic and mobility indicators and Internet use indicators. The paper is based on secondary research of statistical data and their comparison with other countries. The research identified tourism as most affected sector. The results of the research are the basis for research of a similar type in other countries affected by the pandemic.*

Key words: *pandemic, Republic of Croatia, unemployment, tourism, economic system.*

1. INTRODUCTION

Shereen, Khan, Kazmi, Bashir and Siddique (2020) state that the SARS CoV-2 virus appeared in late 2019 in China in Wuhan Province. It is a virus that attacks the respiratory organs and can cause significant damage to the respiratory system, and in some cases result in death. The virus is spread by droplets and direct contact with an infected person who may be infected but shows no signs of infection. Given the nature of the virus and its properties, as well as the high rate of spread due to human turnover through countries, countries have begun to define measures to combat the pandemic, or reduce the possibility of virus fluctuation among the population. However, Maria et al. (2020) state that the consequences of the adoption of measures are often related to the ban on movement outside the place of residence as well as the interruption of the flow of goods, ie the ban on performing certain activities such as catering, resulted in a slowdown. According to Shibata (2020), the slowdown in the economy has resulted in a decline in the GDP of some countries, which has resulted in a recession in those countries, ie an economic crisis. In other words, the impact of the SARS CoV-2 virus pandemic has resulted in a decline in economic activity, which is caused by a reduced volume of international trade as well as a reduced volume of business operations within individual economies. Likewise, research conducted during 2020 by He, Liu, Wang, and Yu (2020) also identified a correlation between the SARS CoV-2 pandemic and stock values. In other words, an increase in the number of infected and the number of fatal outcomes results in a decrease in stock prices, ie a decline in stock market movements. However, in addition to the impact on economic trends, there is also a significant impact on society, ie the population, and especially on the mortality of the population. Research conducted by Donthu and Gustafsson (2020) also speaks of a significant impact on the mental and physical condition of individuals who may develop symptoms of depression.

Pojavom pandemije, države stvaraju nacionalna tijela tj. organe koji su usredotočeni na borbu sa SARS CoV-2 pandemijom koji donose mjere usmjerene prema smanjenju fluktuacije virusa u populaciji. To je rezultiralo potpunim zatvaranjem koje kao posljedicu ima smanjenje broja prevoženih putnika, odnosno tereta u pojedinim zemljama. Samim time dolazi i do porasta online trgovine kao i rasta logističkog sektora, a posebice gradske distribucije. Osim toga, Loske (2020) navodi kako u nekim slučajevima dolazi i do povećanja potražnje za pojedinim dobrima kao što su to konzervirani prehrambeni proizvodi.

Qian and Fan (2020) in a study conducted in China in the Hubei region identified that the pandemic resulted in a significantly higher risk of revenue loss. This is particularly true for the part of the population living in the rural areas of the Hubei region that has been particularly affected by the virus as well as for the part of the population whose family members have been infected with the virus. However, in addition to a significant impact on income, there is also an impact on the decline in employment, which can be related to the measures that resulted in the closure of restaurants, or less tourist activity. Chakraborty and Maity (2020) emphasize that due to the transition of the health system to crisis functioning, larger waiting lists can occur, which in the long run can result in more illnesses from various diseases that could not be treated due to a different way of functioning of the health system. Developed economies such as Germany, Great Britain, the United States, China, France and others are recording a significant decline in gross domestic product. Haryanto (2020) says that the reason for this is the decline in certain activities such as international trade, passenger and freight transport, in some cases there is a decline in personal consumption, or a decline in revenue from tourist services. However, as the number of people infected with the SARS CoV-2 virus continues to rise in early 2021, or as a significant problem has been identified in vaccine distribution and population

vaccination itself, the consequences of the pandemic have not yet been finally recorded as sectors such as tourism, ie services in general are still subject to the risk of further revenue decline. However, in order to be able to define measures that will be aimed at recovery from the consequences of the pandemic, it is necessary to analyze the impact on individual sectors of the economy and, based on the analysis, define measures for recovery.

2. METHODOLOGY

The paper is based on a conducted secondary survey of data available in the database of the Central Bureau of Statistics, ie data available in the European body in charge of statistics, Eurostat. The data collected were divided into four categories: economic indicators, population indicators, traffic and mobility, and the use of the Internet was defined as the last indicator. The collected data were processed in MS Excell 365 where the program was used to format the tables as well as the analysis of the collected data by analyzing the percentage change. Data related to the Republic of Croatia were collected from the database of the Central Bureau of Statistics for the period from the first three quarters of 2019, ie the first three quarters in 2020. For the collected data, the analysis of the percentage change was used, which is shown in the table. The data for other European Union countries were presented and compared using the compilation method, ie the comparison method. Data for other European Union countries were taken from the Eurostat database in such a way that the highest and lowest percentage values were compared for each indicator in order to be able to define the context, ie. the position of the Republic of Croatia in relation to the Member State of the European Union that recorded the largest change, ie the smallest change. Furthermore, the compilation method provides an overview of the relevant conclusions reached by the authors who analyzed the impact of the SARS CoV-2 pandemic on indicators such as population, economy, transport, tourism, health and transport, ie. mobility.

2.1. Aim of the research

The aim of the research is to identify the impact that the SARS CoV-2 pandemic has on the Republic of Croatia with the help of economic indicators, population movement indicators, traffic and mobility indicators, ie internet use described in the chapter on methodologies. The results of the research can be used to review the movement of individual analyzed areas during the SARS CoV-2 pandemic during 2020, as well as to determine the correlation between individual indicators.

3. RESULTS OF THE RESEARCH

The results of the research are divided according to the indicators explained in the chapter

2. The results of the research describe the percentage change per indicator for each indicator, as well as the individual indicator compared with the percentage changes in the countries of the European Union.

3.1 Economic indicators

Table 1 shows the results of the conducted research. Table 1 shows that the SARS CoV-2 virus pandemic had the greatest impact on tourism, especially on arriving tourists, as it decreased in the first quarter of 2020 compared to 2019 by a total of 52.90%, while in second quarter recorded a decline of 549.30%. The largest decline was recorded during the tourist season in the third quarter and amounted to 1266%. On the other hand, compared to 2019, the number of overnight stays of domestic tourists increased by 76%. If we draw a parallel with other research, Škare, Soriano and Porada-Rochon (2020) state that it is clear that tourism is one of the most affected branches, as forecasts say that the loss of GDP worldwide due to the pandemic will be between 411 to 12.8 trillion US dollars. Sigala (2020) states that one of the most affected countries in the European Union by the SARS CoV-2 pandemic is Spain, which recorded a 75% drop in the tourism sector in 2020 compared to 2019, which indicates that the tourism sector is

affected by the pandemic in other European countries. Union, without Spain being one of the most affected. On the other hand, in parallel with the decline in tourism activities, there is a decline in employment. A particularly significant increase in unemployment is visible for men, since in the second quarter of 2020, compared to 2019, unemployment among men increased by 13.56%, while in the third quarter of 2020, unemployment increased by 24.5% compared to 2019. , 32%. On the other hand, unemployment for women increased by 24.59% in the third quarter of 2020 compared to 2019. Basically, when it comes to total unemployment in the third quarter of 2020 in Croatia, it is 8.4%. When it comes to unemployment at the European Union level, a significant increase in unemployment is visible as in the fourth quarter of 2019 at the EU-28 level unemployment was 6.5% while in the second quarter of 2020 during the largest wave of SARS CoV-2 virus unemployment rose to 7.5%. Looking at the Member States of the European Union, the countries with the highest unemployment rate due to the SARS CoV-2 pandemic are Spain and France, and Italy, respectively, and these are also the countries most severely affected by the pandemic. A particularly important parameter of the comparison are prices, ie price indices.

The results of the research indicated that there is no significant difference in price indices in 2020 compared to 2019. The largest increase in the price index was recorded in food and non-alcoholic beverages in the first quarter of 2020, where there is a visible increase of 3.09% compared to 2019. On the other hand, tobacco and tobacco products also recorded a significant growth compared to 2019 by 8.59%. Furthermore, there is a decline in exports in the second and third quarters of 2020 compared to the second and third quarters of 2019 in the second quarter of 2020, exports fell by 8.10% while in the third quarter fell by 7.7% compared to 2019 in the same period. If we are talking about the countries of the European Union, according to Eurostat (2020) data, a significant decline in exports in the period from mid-January 2020 to mid-April 2020 in the amount of 29% is visible.

The member of the European Union most affected by the decline in exports is France, whose exports fell by 17% in the period from January to October compared to the same period in 2019. The least affected EU member state is Latvia, whose exports have not changed by a single percentage point.

Table 1: Analysis of selected indicators for the Republic of Croatia

		Observed period (in thousands)						Razlika		
		2019. year			2020. year					
		I-III	III-VI	VI-IX	I-III	III-VI	VI-IX	I-III	III-VI	VI-IX
Zemljopis	Total	907	921	911	895	914	914	-1,34%	0,77%	0,33%
	Active	967	972	967	956	973	988	1,15%	0,10%	2,13%
	Employed	770	779	769	766	772	759	0,52%	0,91%	1,32%
	Unemployed	60	51	56	62	59	74	3,23%	13,56%	24,32%
	Unactive	716	710	714	723	706	690	0,97%	0,57%	3,48%
Uvoz	Total	754	757	793	754	755	764	0,00%	0,26%	3,80%
	Active	830	814	840	816	810	825	1,72%	0,49%	1,82%
		688	679	717	693	685	699	0,72%	0,88%	2,58%
	Employed	75	57	46	62	55	61	-20,	3,64%	24,59%

										97 %		
	Unem ployed	1.0 10	1.0 24	99 7	1.0 18	1.0 23	1.0 07	0,7 9%	0,10 9%	0,99 %		
	Total	92 2	5.5 97	63. 660	60 3	86 2	5.2 02	52, 90 %	- 549, 30%	- 112 3,76 %		
	Dome stic	31 3	636 60	3.8 20	24 7	18 8	82 3	72 %	238, 30%	364, 16%		
	Foreig n	60 9	4.9 61	59. 839	35 6	67 4	4.3 79	71, 07 %	- 636, 05%	- 126 6,50 %		
	Total	1.9 98	20. 909	11. 208	1.4 45	3.7 90	34. 489	38, 27 %	- 451, 69%	67,5 0%		
	Dome stic	67 2	1.6 90	81 5	54 4	53 1	3.9 05	53 %	218, 27%	79,1 3%		
	Foreig n	1.3 26	19. 219	10. 394	90 1	3.2 59	30. 584	17 %	489, 72%	66,0 1%		
	Consumer index price - total	30 3,3	308 3,1	30 6,8	30 7,4	30 7,2	30 6,5	1,3 3%	0,29 %	0,10 %		
	Food and non- alcoholic beverages	30 8,1	310 1,0	31 1,3	31 7,9	31 8,6	31 5,2	3,0 8%	2,70 %	1,24 %		
	Alcoholic beverages and tobacco	30 3,3	330 3,9	33 1,2	33 1,8	34 5,4	34 6,9	8,5 9%	4,20 %	4,53 %		
	Clothing and footwear	27 8,3	308 3,4	27 6,1	27 6,9	30 5,8	27 6,7	- 0,5 1%	- 0,85 %	0,22 %		

	Housing, water electric energy ,gas and other fuels	29 7,5	302 5,5	30 2,8	30 0,7	28 9,4	29 7,6	1,0 6%	4,53 %	- 1,75 %		
	Furniture											
	House equipmen t and regular	30 3,2	304 1,1	30 4,3	30 5,8	30 5,6	30 5,5	0,8 5%	0,49 %	0,39 %		
	household maintena nce											
	Health	30 9,2	309 5,5	31 0,4	31 2,7	31 3,5	31 3,6	1,1 2%	1,28 %	1,02 %		
	Transport ation	29 9,7	310 2,2	30 7,0	30 2,3	28 3,5	29 2,1	0,8 6%	9,42 %	5,10 %		
	Comunica tion	28 7,1	286 0,0	28 7,7	28 9,6	29 0,4	29 1,8	0,8 6%	1,52 %	1,41 %		
	Culture and recreation	30 4,9	306 4,4	30 9,0	30 3,2	30 4,2	31 0,0	- 0,5 6%	- 0,72 %	0,32 %		
	Education	30 5,4	30 5,6	30 5,5	30 5,8	30 3,3	30 3,7	0,1 3%	0,7 6%	0,59 %		
	Hotels and restourant s	33 2,0	33 7,4	34 4,4	34 1,2	34 2,5	34 7,1	2,7 0%	1,4 9%	0,78 %		
	Various goods and services	30 3,9	30 4,3	30 5,2	30 8,2	31 1,4	31 2,4	1,4 0%	2,2 8%	2,30 %		

	30	30	30	30	30	30	-	-
Goods	2,5	8,5	5,6	30,3	30,5	30,3	1,24%	1,08%
	30	30	31	31	31	31	1,74%	1,69%
Services	5,6	7,5	0,7	1,10	2,8	5,4	1,74%	1,69%

Source: Adapted by the author according to the Central Bureau of Statistics. <https://www.dzs.hr/> (27.02.2021)

When it comes to gross domestic product (GDP), in parallel with the decline in activity, there is a decline in GDP. In the Republic of Croatia, GDP fell by 9.6%. Compared to other European Union countries according to Eurostat (2020), the largest decline in GDP was recorded in Spain at 18%, followed by Portugal, which recorded a decline in GDP of 14%. The Member States of the European Union that recorded the smallest decline in GDP are Lithuania, whose GDP fell by 5.9% in the third quarter of 2020, while growth was recorded in other quarters.

3.2. Population

In addition to economic indicators of the impact of SARS CoV-2 virus on the Republic of Croatia, it is necessary to analyze social indicators, and one of the indicators that is taken into account is the natural movement of the population. In the context of the Republic of Croatia, there was an increase in mortality in the third quarter of 2020 by 2.54% compared to the third quarter of 2019. On the other hand, there is a slight decline in mortality in the second quarter of 2020 compared to 2019 and amounts to -0.19%, while in the first quarter of 2020 compared to 2019, mortality increased by 2.38%. When it comes to the total number of deaths after the declaration of a pandemic in the Republic of Croatia in March 2020, by December 2020 there is a visible increase for the same period in 2019 in the amount of 13.2%. In other words, the number of deaths per million inhabitants is 1242 as of February 2, 2021. years. Compared to other countries, according to Eurostat (2020), Serbia recorded a total of 581 deaths per million inhabitants in the same period, while

Belgium is one of the most affected countries in terms of deaths per million inhabitants with a total of 1839 deaths, and Slovenia with a total of 1686 deaths. million inhabitants.

3.3. Traffic and mobility

When talking about the impact of the pandemic on traffic and mobility, given the measures adopted by the National Headquarters to Combat SARS CoV-2, there is a significant decline in the number of transported passengers, ie freight. Table 2 shows the difference between the period of the first three quarters of 2019 and the realized passenger transport in the first three quarters of 2020. The table shows that the largest decline in passengers was in international maritime transport, since in 2020 compared to the same period in 2019, a decline of 778% is visible. The second most affected branch of transport is international bus transport, which recorded a decline of 177% in 2020 for the same period in 2019. A significant decline in transported passengers in all European Union countries was also identified. The country with the largest decline in passenger traffic according to Eurostat (2020) is Ireland, which recorded a decline of 94% for the observed period, while the country with the lowest decline in rail passenger transport was the Netherlands, which recorded a decline of 0.2%. On the other hand, there was a decrease in the number of passengers transported by air. The country that recorded the largest decline in the number of passengers carried was Spain, which recorded a decline of 99%, while the least affected country was Norway, which recorded a decline of 90% for the observed period.

Table 2: Analysis of passenger transport by branches in the Republic of Croatia for the period from January to October 2019 and for the period from January to October 2020

		Period	
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Branch	Type	2019 (in thousands)	2020 in thousands)	Difference
		I-IX	I-IX	I-IX
Rail traffic	Internal	14151	9471	-49,41%
	International	240	135	-77,78%
Road transport	Internal	33947	18202	-86,50%
	By busses International	1084	390	- 177,95 %
Road transport in city	Bus	1278	1269	-0,71%
	Trams	346	345	-0,29%
Maritime and coastal transport	Internal	12898	7465	-72,78%
	International	202	23	- 778,26 %
Air traffic	Internal	408	148	- 175,68 %
	International	1368	431	- 217,40 %

Source: Adapted by the author according to the Central Bureau of Statistics. <https://www.dzs.hr/> (27.02.2021)

Table 3 shows the analysis of freight transport by branches in the Republic of Croatia in the period from the first three quarters of 2019 to the first three quarters of 2020. There is an evident decline in domestic air transport, which for the same period in 2020 compared to 2019 fell by 330%.

However, a significant increase in tons of oil transported by pipelines is also visible. For the same period in 2020 compared to 2019, an increase of 15.25% is visible.

Table 3: Analysis of freight transport by branches in the Republic of Croatia for the period from January to October 2019 and for the period from January to October 2020

Branch	Type	Period		Razlika
		2019 (in tons)	2020 (in tons)	
		I-IX	I-IX	
Railway traffic	Domestic transport	2065	2002	-3,15%
	International transport - loading	4870	4357	11,77%
	International transport - unloaded	939	1108	15,25%
	Domestic transport	5020	4904	-2,35%
Road traffic	Went to foreign countries	4203	3509	19,78%
	Came from a foreign country	3613	3429	-5,37%
	Pipeline transport	4054	5080	20,20%
	Gass Transportation	1688	1735	2,71%

Maritime and coastal transportation	Internal transport	13501	12366	-9,18%
	International transport	12918	11742	-10,02%
Air traffic	Internal transport	301	70	-330,00%
	International transport	1201	1029	-16,72%

Izvor: Prilagodio autor prema Državni zavod za statistiku. <https://www.dzs.hr/> (27.02.2021)

Basically, a significant decline in international transport has been identified, whether it is international passenger transport or international freight transport, except for international unloading rail transport, which shows an increase of 15.25% for the same period in 2020 compared to 2019. year.

3.4. Use of the internet

When it comes to other indicators, one of the important indicators is the use of the Internet, ie online shopping. It was identified that in the Republic of Croatia during 2019, 80% of individuals aged 16 to 74 used the Internet, and 45% of individuals used the Internet for online shopping. On the other hand, during 2020, the number of individuals aged 16 to 74 who used the Internet is 80% while the number of individuals who used the Internet to shop online is 55%. In other words, there is a visible increase in the use of the Internet for online shopping in 2020 by 27%. Compared to other EU Member States, Eurostat (2020) identified that in Belgium in the same period in 2019, the Internet was used by 91% of individuals aged 16 to 74, and in 2020 there is a visible increase of 1%. In terms of online commerce, Belgium recorded a growth of 9.5% during 2020 compared to 2019.

4. DISCUSSION

The SARS CoV-2 virus pandemic resulted in significant losses in selected indicators in the study. The Republic of Croatia recorded the largest loss in the tourism sector, ie there was an increase in the number of unemployed in the observed period. This can be related to the adopted measures, which resulted in the closure of catering facilities, ie service organizations. A similar trend has been identified in other European Union countries, especially countries that have a significant share of service activities such as Spain within their GDP structure. However, Sazmaz, Ozkok, Simsek and Gulseven (2021) state that despite the increase in the number of unemployed in some EU countries, such as Spain, it was identified that countries such as Estonia and Ireland recorded a decline in unemployment in the fourth quarter of 2020 compared to the same period in 2019. The same authors identified how countries whose governments defined job preservation measures in a timely manner as well as made a good allocation of resources preserved jobs and encouraged new employment. The reason for this, according to Mangan (2020), is a measure that covered 70% of the salaries of employees who worked from home during the pandemic, which resulted in significant relief for the employer, but on the other hand reduced human turnover and the risk of further spread of the virus.

Furthermore, one of the branches particularly affected by the SARS CoV-2 pandemic is tourism, which in the GDP of the Republic of Croatia accounts for a total of 11.4%, and which was significantly reduced due to the pandemic, ie fell by 1123% in 2020 compared to for the same period in 2019. Looking at the GDP of countries where tourism has a significant share in GDP, it was identified that the GDP of such countries, such as Spain, where tourism has a 14% share of GDP, and Portugal, where tourism has a 10% share of GDP, and which do not have a well-developed manufacturing industry, dropped significantly. In other words, the GDP of Germany, which has a 4.5% share of

tourism in GDP, fell by 5% during the pandemic, while the GDP of Spain, which has a 14% share of tourism in GDP, fell by 11%. For comparison, the GDP of the Republic of Croatia also fell significantly due to the high share of tourism in it. However, countries with a significant share of production or manufacturing are not exclusive given the impact of a pandemic but due to the seasonality of tourism may have significantly less negative implications of a pandemic. Given the decline in economic activity, there is a decline in imports and exports. In addition to the decline in economic activity, the reason for the decline in imports, according to Vidya and Prabheesh (2020), and exports are measures, ie quarantine due to which motor vehicle drivers, as well as all crews directly involved in the transport process had to be quarantined. a significant slowdown in imports and exports. In parallel with the decline in imports and exports, there is also a decline in the quantity of goods transported, which is especially evident in air transport. Also, the travel ban resulted in a reduction in the number of flights, which had a negative impact on passenger air transport. Suau-Sanchez, Voltes-Dorta and Cuguero-Escofet (2020) state that due to the decline in the number of transported passengers, there is an increase in the risk of bankruptcy of organizations engaged in air transport of passengers, which is also the case in Croatia. As such organizations were particularly exposed to the negative impact of the SARS CoV-2 pandemic, the governments of the countries adopted measures to help airlines, ie passenger carriers in general, in the form of co-financing of salaries as well as co-financing of leasing for vehicles. When it comes to mortality, it is evident that different countries have recorded different numbers of fatal outcomes due to SARS CoV-2 infection. One of the variables that could affect fatal outcomes is the quality and availability of health care and nursing. A study conducted by Ji, Ma, Peppelenbosch, and Pan (2020) identified how the number of deaths caused by SARS CoV-2 infection may be related to the availability of resources in hospital organizations. In other words, the

high mortality rate from infection may be the result of an insufficiently well-organized health system, ie a lack of medical and medical capacities. Measures taken by the national authorities to combat the SARS CoV-2 virus pandemic have resulted in the closure of shops and other organizations, which has led to an increase in the use of the Internet, which is particularly evident through increased purchases through online stores. Furthermore, since the closure of educational institutions, changes in the education system as well as the development of models of work from home are evident. All of the above resulted in higher Internet traffic. Basically, it can be seen that the countries of the European Union are affected by the SARS CoV-2 pandemic, and the consequences that the pandemic has on economies are determined by the type of dominant activity in the share of GDP. However, to mitigate the effects of a pandemic, it is necessary to analyze for each country the negative impact that the pandemic has left in order to be able to define the measures by which the economy will recover.

5. CONCLUSION

The research analyzed the impact of the SARS CoV-2 pandemic on individual activities, ie segments of society, using selected indicators. In the context of the Republic of Croatia, it was identified that the greatest negative impact was recorded in tourism, which can be associated with the closure of borders, ie measures aimed at reducing human turnover. Since tourism as such has a significant share in the GDP of the Republic of Croatia, there has been a significant decline in GDP. Among other indicators, it is necessary to point out turnover and unemployment, since they also recorded a significant decline, ie an increase when it comes to unemployment. Based on the conducted research and analyzed selected indicators, it can be concluded that the

Republic of Croatia is significantly affected by the SARS CoV-2 pandemic and that it is necessary to develop measures to help businesses as extending closure measures may result in new losses for businesses. and the occurrence of the risk of their bankruptcy. Also, since the Republic of Croatia is a tourist country, without adequate preparation of measures for the tourist season in 2021 there is a risk of further decline in GDP as the fluctuation of SARS CoV-2 virus and the emergence of new strains may accelerate resulting in the need for by additional closure.

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