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Research Paper

Analysis of the management of the municipal undertakings of the Visegrad Group in the period 2017–2021

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Abstract: In our research we look at the efficiency of public service delivery. The Covid19 pandemic in 2020 and the Russian-Ukrainian conflict in 2022 challenge not only profit-oriented corporations but also budget-based organizations. The sustainable operation of municipal undertaking is of paramount importance, as municipalities manage public funds, and their activities have an impact on society as a whole. The aim of the study is to examine the liquidity and profitability situation and capital structure of municipal companies in the Visegrad countries. The method of analysis consists in categorising the indicators based on the literature and presenting the distribution of these data. The study is based on panel data from 2017 to 2021. An important finding of the study is that Czech companies have the best governance indicators of all the countries studied.

Keywords: municipal undertakings; public money; liquidity; efficiency

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1. Introduction

The current economic environment is affecting the Hungarian society. The consequences of the Covid19 epidemic in 2020, the Russian-Ukrainian war in 2022, rising inflation and the energy crisis are being felt by both individuals and the corporate sector. The pandemic had a major impact on everyone's lives, as well as on the business sector: People lost their jobs, companies closed due to loss of revenue, and unsustainable management. When we believed that we could recover from the shock of the pandemic, prices started to rise, and the energy crisis appeared. Together, these are affecting the whole society and the way businesses run.

In our study we examine the sustainability of the management of Visegrad countries (Hungarian, Czech, Slovakian and Polish) municipal undertakings. Municipalities can set up municipal companies to perform their public tasks. Municipal undertakings include, among others, companies dealing with wastewater treatment, water supply, district heating, waste management, urban development, cultural and social services, transport and real estate. Municipal undertakings play a key role in the more efficient delivery of municipal public services and in serving the local community. These companies aim to manage public funds and municipal assets in a sustainable way. This study will show which companies in the sector have been most affected by the deteriorating economic environment and whether Hungarian municipal undertakings are sustainable in the future. The aim of the study is to assess the management of municipal undertakings in the Visegrad countries. In this study the importance of the Visegrad group of countries is presented. Subsequently, the fiscal indicators of municipal systems are compared. In the research section, three variables are assessed based on the categories used in the literature. Following the comparison, we draw the main lessons and compare the results with the findings in the literature.

2. Literature background

2.1. Brief history and relations of the V4 group of countries

The Visegrad Group, also known as the V4, is a political and cultural alliance between four Central European countries: the Czech Republic, Hungary, Poland and Slovakia. The group was founded in 1991 with the aim of promoting cooperation and mutual support between member states (Gál, 2018). Economically, the Visegrad countries have undergone significant changes since the fall of communism in the 1980s and 1990s. They have shifted from centrally planned economies to market-oriented systems, which has resulted in varying degrees of economic growth and development (Gál, 2018).

The political transformation and collapse of the Soviet Union in 1989 led to a reorganisation of the spatial structure of the region, including the Visegrad countries. The changes of regime of 1989 led to a radical reorganisation of Europe's spatial imagination. The Visegrad Group also faced challenges due to the inclusion of the wider region, which created a counterweight to the Group's position within the EU. The Visegrad Group (V4), consisting of Hungary, Poland, Slovakia and the Czech Republic, has been a major regional cooperation initiative in Central and Eastern Europe in the past 32 years (Schmidt, 2016).

In addition, the Visegrad Group has played a role in European integration, with its member states cooperating with each other and with other EU countries. The group has also helped to bring together the political elites and societies of the countries with historical links to the Visegrad countries. The Visegrad Group has been active in different formats, such as the "V4+" format, which involves cooperation with other EU countries such as the Baltic States, Romania, Bulgaria, Slovenia and Croatia (Krajewski et al., 2020).

The Visegrad Group also engaged in foreign policy and regional cooperation. The group has played a role in Ukraine's development and has functioned as a communication platform to intensify dialogue between Ukraine and the EU (Gauger & Sledziewska, 2018). The Visegrad countries have shown interest in cooperation with the Mashriq region, including Jordan, Israel and Egypt (Döring, 2019). The group has also faced challenges within the European Union, with some countries expressing scepticism and the need for increased cooperation (Dudášová, 2021).

2.2. Economic characteristics of the Visegrad Group

The accession of the Visegrad countries, i.e. the Czech Republic, Hungary, Poland and Slovakia, to the European Union in 2004 raised high hopes for catching up and convergence (Lengyel & Kotosz, 2018). Convergence was also a key goal of EU regional policy (Lengyel & Kotosz, 2018). However, the phenomenon of the middle-income trap was also seen: some countries did not make it to the high-income group (Acheampong & Udvari, 2022). The economic characteristics of the Visegrad countries also include numerous difficulties, such as the lack of proper tertiary education and the greater economic weight of the mining and extractive sectors (Gál, 2018). The regional and macroeconomic convergence of the Visegrad countries, including Hungary, the Czech Republic and Slovakia, before and after EU accession has also been studied (Kollárik, 2020). The characteristics of agricultural production have also been compared in the Visegrad countries, which has helped the region to set up its leading role (Lakatos & Makai, 2022). One important economic indicator to consider is the share of the labour force, i.e. the share of national income that the labour force receives. In the Visegrad countries, the share of labour was generally lower than in the EU13 countries (which include the Visegrad countries plus Bulgaria and Romania) (Kónya et al., 2021). This means that workers receive a smaller share of national income than in other EU countries. However, it is important to note that the difference in the share of labour between the Visegrad countries and the EU13 has decreased only slightly over time (Kónya et al., 2021).

Innovation activities as well as research and development (R&D) were also examined in the Visegrad group. It was found that the presence of R&D staff in companies, the research system and government institutions contribute to the innovation activities of companies in the Visegrad countries (Zygmunt, 2022). Cooperation between government institutions and companies and between the research institutes and companies was found to be important for strengthening innovation processes (Zygmunt, 2022). The impact of R&D staff on innovation activities is influenced by factors such as gross domestic product and economic development (Zygmunt, 2022).

The Visegrad Group has faced challenges and opportunities in various sectors, including energy consumption, manufacturing and investment. An assessment of energy consumption in the Visegrad countries revealed changes in energy consumption, productivity and sectoral structure (Gostkowski et al., 2021). The manufacturing sector was identified as critical for economic growth and was described as a driver of growth (Meyer & Hassan, 2020).

In terms of investment, the Visegrad countries have experienced imbalances and external dependence (Chetverikova, 2022). The territorial diversification of investment relations shows a positive trend, but dependence on several economies in the European market continues to exist (Chetverikova, 2022). The Visegrad countries have also faced challenges in their international investment position, and strategies need to be developed to improve their position (Zadoia et al., 2022).

Government expenditure and its relationship with economic growth in the Visegrad countries was also examined. The Visegrad Group countries have not consistently used government expenditure as a stabilizer, with cyclical expenditure in Slovakia and pro-cyclical expenditure in other countries (Szarowska, 2022). The relationship between government expenditure and economic growth has also been analysed, with mixed conclusions on causality (Szarowská, 2022). It has been suggested that government spending plays a significant role in fiscal policy and in the provision of public goods and services (Szarowská, 2022). However, the relationship between government spending and economic growth is complex and is influenced by several factors (Szarowská, 2022). Lentner (2019 and 2020) provides a comprehensive picture of the evolution of Hungarian public finances through interpreting the relationships and interrelationships that have developed in the past. These works are particularly important for researchers and policymakers interested in the historical aspects of public finances and the specific case of Hungary (Lentner, 2020).

2.3. Public finance indicators in the Visegrad Group

The macro-economic snapshot shows the revenue of local authorities as a share of GDP, compared to the EU27 and the 20 eurozone countries in the period 2013–2021.

As the Table 1. shows, the role of the Hungarian local government system is also lower than in the EU27 and the Eurozone20, with revenue and expenditure lagging in terms of revenue and expenditure expressed as a share of GDP for each year. If we look at the trend, we can see that the revenue generated by the Hungarian local government system has declined significantly since 2013, only turning positive in 2018 and 2019, i.e. in the years with the best economic performance. Surprisingly, the EU27 and EZ20 show opposite trends, as both revenue and expenditure decreased as a share of GDP between 2017 and 2019, but a significant increase was observed due to the impact of the Covid19 pandemic, especially in 2020, when revenue and expenditure reached its highest value in the two groups of countries. The Hungarian data is based on a major reform of local government, which centralised a significant part of public functions (education, health) and, at the same time, significantly reduced the level of state aid.

The Czech data show that there was no negative fiscal balance in any of the years under review, and the positive balance improved further due to the pandemic. In terms of revenue, this country has the second highest ratio of total expenditure to revenue to GDP. It is noteworthy that even in the face of the pandemic, there has been a steady increase in local government revenues. Poland’s municipal revenue and expenditure exceeds that of the rest of the Visegrad countries. Revenues were at their highest in 2020, but there is a negative balance in four years. In the case of Slovakia, local government budget balances as a share of GDP were positive in all years except 2014. Slovakia also shows a dynamic increase in revenues, with the highest in the time series in 2020. When we compare the role of local governments in the Visegrad countries, we find that the role of Hungarian local governments is the most limited based on fiscal data.

Table 1. Local government subsystem revenue, expenditure as % of GDP. *Source: Eurostat (2024a)*

Balance in GDP%									
TIME	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU27	0	0	0.1	0.2	0.2	0.2	0	0	0.1
Eurozone	-0.1	-0.1	0.1	0.3	0.2	0.2	0	0	0.1
Hungary	2.5	1.3	0.1	0.2	0	0.1	-0.1	0.1	0.2
Czechia	0.3	0.2	0.6	1	0.8	0.4	0.6	0.5	0.9
Poland	-0.2	-0.3	-0.1	0.3	0.1	-0.3	-0.2	0.2	0.6
Slovakia	0.3	-0.1	0.1	0.5	0	0.1	0.2	0.2	0
Expenditure in GDP%									
TIME	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU27	11.4	11.3	11.1	10.9	10.8	10.8	10.9	11.6	11.3
Eurozone	10.2	10.1	9.9	9.7	9.6	9.6	9.7	10.4	10.1
Hungary	7.5	7.8	7.8	6	6.2	6.4	6.8	6.4	6
Czechia	11.4	11.6	11.4	10.3	10.7	11.7	11.7	13	12.9
Poland	13.5	13.6	12.9	13	13.4	14.2	14.3	14.8	14.2
Slovakia	6.5	6.7	7.4	6.6	7	7.1	7.5	7.7	7.6
Revenue GDP%									
TIME	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU27	11.4	11.3	11.2	11.1	11	11	10.9	11.6	11.4
Eurozone	10.1	10	10	10	9.8	9.8	9.7	10.4	10.2
Hungary	10	9.1	7.9	6.2	6.2	6.5	6.7	6.5	6.2
Czechia	11.7	11.8	11.9	11.3	11.5	12.2	12.4	13.5	13.8
Poland	13.2	13.4	12.9	13.2	13.5	13.9	14.1	15.0	14.7
Slovakia	6.8	6.6	7.5	7.1	6.9	7.2	7.7	7.9	7.6

We can compare the liabilities of enterprises owned by municipalities with the debts of their owners, as these data are available in the Eurostat database. The debt stock of Hungarian municipalities is gradually decreasing, due to the introduction of a debt regulation in 2011, which makes the debt of municipalities and, as of 2015, municipal undertakings subject to authorisation. This regulation has been somewhat relaxed as of 2018, which shows adaptation to the favourable interest rate environment at that time. In addition, the Hungarian state fully assumed the debt of municipalities between 2011 and 2014, which was close to 5% of GDP. As a result of these factors, the debt and liabilities of both municipalities and municipal undertakings can be considered low by EU standards. Based on available data, Poland has the highest level of local government debt, close to the EU27 and EA20 averages. Those of Slovakia and the Czech Republic are lower, but comparative data are only available for a period of 3 years under review. For municipal undertakings, the data show that the Czech Republic has the highest liabilities among the Visegrad countries, while Slovakia has the lowest.

Table 2. Debt of local government subsystem as a share of GDP and liabilities of local government-owned companies as a share of GDP. *Source: Eurostat (2024b)*

Local government debt in GDP%					
TIME	2017	2018	2019	2020	2021
Hungary	0.3	0.5	0.6	0.6	0.6
Czechia	n/d	n/d	1.5	1.5	1.4
Poland	3.9	3.9	3.9	4.2	3.8
Slovakia	n/d	n/d	2.1	2.3	2.2
EU27	3.8	3.9	3.8	4.1	3.9
Eurozone	3.8	3.8	3.8	4.1	3.9
Liabilities of municipal undertakings in GDP%					
TIME	2017	2018	2019	2020	2021
Hungary	0.6	0.7	0.5	0.5	0.4
Czechia	0.92	0.91	0.81	0.9	0.86
Poland	0.95	0.85	0.72	0.75	0.6
Slovakia	0.29	0.25	0.16	0.37	0.15
EU27	6.0	5.9	6.1	6.6	6.3
Eurozone	6.0	6.0	6.2	6.7	6.2

3. Data and methods

The research goal of our study is to assess the three areas of management (liquidity, profitability, capital strength) of municipal undertakings in the Visegrad Group. To achieve the research goal, the indicators examined were grouped into categories based on the literature (Zéman et al., 2018). The distributions of the indicators are presented in the results of the research. The indicators studied can provide an objective picture of the three main financial areas that show the functioning of companies (Lentner, 2019; Lentner et al., 2021).

Table 3. Methodological approach of study. *Source: Authors' editing based on Orbis database*

Financial management area	Formula	Value of the indicator	Category
Profitability	Profit after tax /	PAT>0	Positive result
		PAT<0	Negative result
Liquidity	Liquidity ratio = Current assets / Current liabilities	Liquidity ratio under 1	Very weak liquidity
		Liquidity ratio under 1-1.3	Weak liquidity
		Liquidity ratio 1.3-1.8	Acceptable liquidity
		Liquidity ratio above 1.8	Good liquidity
Capital structure	Shareholder funds / Total assets	Equity ratio<0	Negative equity
		Equity ratio 0.0-0.29	Very weak capital strength
		Equity ratio 0.3-0.49	Weak capital strength
		Equity ratio 0.5-0.74	Acceptable capital position
		Equity ratio 0.75-1	Stable capital position

In our study, we looked at the management of municipal undertakings in the V4 countries (Czech Republic, Poland, Hungary and Slovakia). For the sample, we considered it important that this group of companies should be 100% publicly owned and have only one owner. We also conducted a sectoral screening based on the Hungarian context. The sectors examined are district heating, water utilities, transport, waste management, and cultural and arts companies negatively affected by the Covid19 epidemic.

The source of the data is Moody's Orbis database. 241 Czech companies, 601 Polish companies, 111 Hungarian companies and 108 Slovak public utility companies (waste management, transport, district heating and water) were included in the study. Among the companies involved in cultural activities, 427 companies (88 Czech, 83 Polish, 211 Hungarian and 45 Slovak) were surveyed. We examined the liquidity, profitability and capital structure of the companies surveyed in the period 2017–2021.

4. Results

Figure 1 shows the evolution of the after-tax results of the surveyed companies by country. The global Covid19 pandemic in 2020 had a negative impact on the lives and economic indicators of many countries. Leaders of all nations had to deal with the effects of this unpredictable crisis. Looking at the results of the companies surveyed, the Hungarian economic measures were effective during the pandemic. While the proportion of companies with negative results increased in 2020, the proportion of companies with negative results decreased in 2021 to a level below those of the previous years (pre-2020). The results of Polish and Slovakian companies improved in 2020 but fell again in 2021. The negative effects of the pandemic hit Czech companies in 2021.

Changes in capital structure (Figure 2) and liquidity (Figure 3) were analysed with respect to 2017–2021. A company is very thinly capitalised if its equity ratio is below 30 percent, and thinly capitalised if the equity ratio is between 30 and 50 percent. A company is in a stable capital position if its equity capital stands at more than 75 percent of its capital structure.

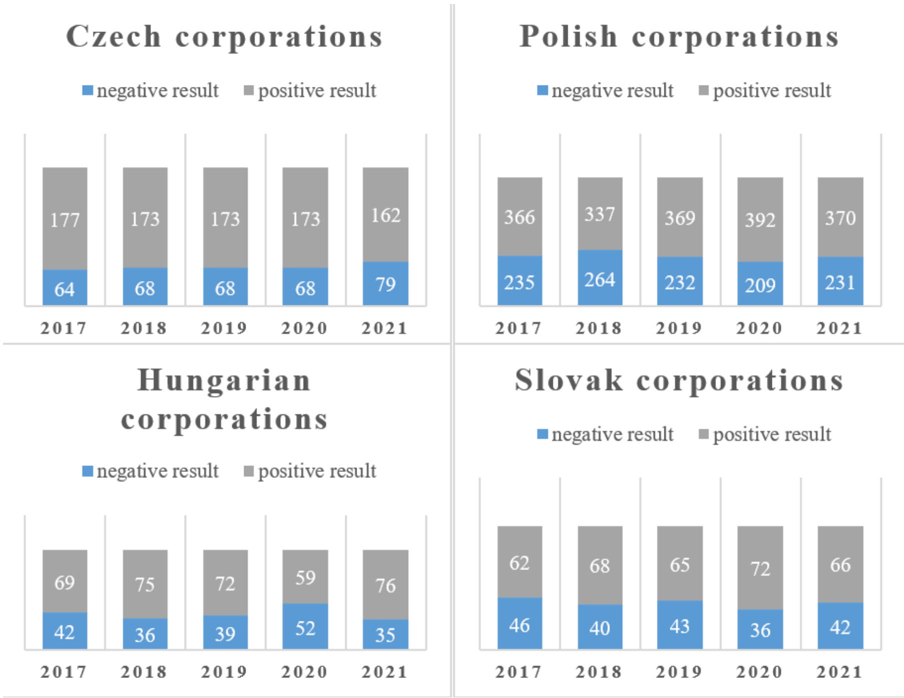

Figure 1. Trends in profitability of surveyed companies 2017–2021 (data: number of companies). *Source: Authors' editing based on Orbis database*

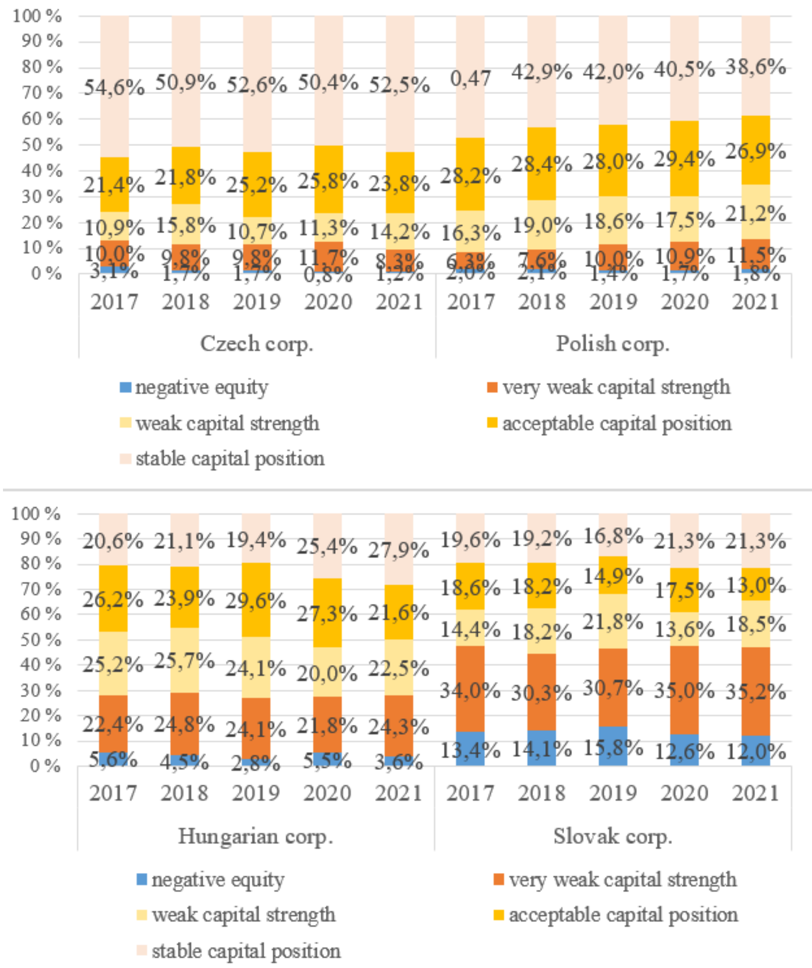

Figure 2. Evolution of capital structure of surveyed companies 2017–2021 (data: % distribution of companies by capital strength). *Source: Authors' editing based on Orbis database*

By 2021, the share of Czech firms with negative equity and very weak equity decreased, with more than half of Czech firms having an equity ratio above 70 percent. Polish firms' capital strength is expected to decrease in 2021 compared to 2017. By 2021, the share of firms with an equity ratio below 50 percent of all surveyed Polish firms increased from 24.5 percent to 34.6 percent. Fewer than half of the Hungarian companies have an equity ratio, but there has been no notable change in the values at the overall company level. A decline in the equity of Slovak companies is foreseen for 2021. This is due to a decrease in the values of transport, district heating and water utilities. Covid19 has had no impact on the capital structure of municipal undertakings in the countries studied.

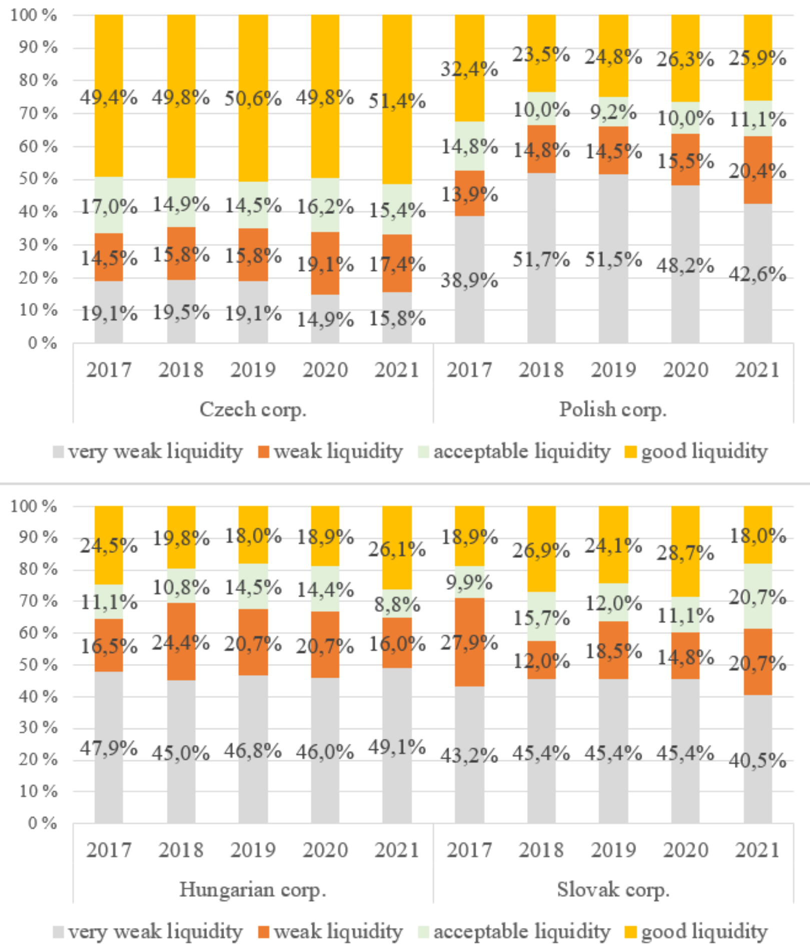

Figure 3. Evolution of liquidity of the surveyed corporations between 2017 and 2021 (data: % distribution of corporations by capital strength). *Source: Authors' editing based on Orbis database*

In terms of liquidity, Czech companies have performed particularly well. The epidemic has had a negative impact on the financial situation of Polish and Hungarian companies, while Slovakian companies have seen an increase in the share of companies with acceptable liquidity. If we compare companies' after-tax results, capital strength and liquidity ratios, we may conclude that Czech corporate governance is a good example to follow. In our previous research (Molnár & Hegedűs, 2023), we highlighted that those suffering the gravest impacts by the Covid19 pandemic were municipal undertakings performing cultural activities, as in many cases they were forced to close for extended periods.

We therefore considered it important to examine the impact of the Covid19 pandemic on the management of companies engaged in the same activities in the other countries under scrutiny (Capital structure: Table 4; Liquidity: Table 5).

Even though this group of companies has been affected by several negative regulations, this is reflected in the values of the indicators to a lesser extent. For Czech companies, we see an improvement in liquidity during the Covid19 period. The liquidity of Slovak municipal companies improved after the pandemic. In the case of Hungarian firms, management should focus more on liquidity, as only 18% of firms were solvent in 2017 and a mere 15% in 2021.

Table 4. Breakdown of companies engaged in cultural activities by capital structure, 2017–2021. *Source: Authors' editing based on Orbis database*

Country	Years	Negative equity	Very weak capital strength	Weak capital strength	Acceptable capital position	Stable capital position
Czech corp.	2017	7.5%	26.2%	10.0%	16.3%	40.0%
	2018	6.0%	24.1%	14.5%	18.1%	37.3%
	2019	10.4%	23.0%	14.9%	12.6%	39.1%
	2020	11.4%	18.2%	17.0%	15.9%	37.5%
	2021	11.4%	21.6%	12.5%	19.3%	35.2%
Polish corp.	2017	6.7%	17.6%	20.3%	17.6%	37.8%
	2018	10.5%	17.1%	19.7%	22.4%	30.3%
	2019	11.2%	17.5%	13.8%	25.0%	32.5%
	2020	12.4%	21.0%	16.0%	21.0%	29.6%
	2021	13.4%	20.7%	15.9%	23.2%	26.8%
Hungarian corp.	2017	6.6%	33.5%	21.3%	18.3%	20.3%
	2018	5.9%	37.9%	22.7%	14.3%	19.2%
	2019	7.9%	37.9%	21.7%	13.3%	19.2%
	2020	10.8%	35.0%	16.3%	19.2%	18.7%
	2021	8.6%	33.8%	21.4%	19.5%	16.7%
Slovak corp.	2017	19.4%	35.5%	3.2%	16.1%	25.8%
	2018	20.6%	26.5%	5.9%	14.7%	32.3%
	2019	27.0%	29.8%	8.1%	10.8%	24.3%
	2020	14.3%	28.6%	11.9%	16.6%	28.6%
	2021	16.3%	25.6%	11.6%	20.9%	25.6%

Table 5. Breakdown of companies engaged in cultural activities by liquidity, 2017–2021. *Source: Authors' editing based on Orbis database*

Country	Years	Very weak liquidity	Weak liquidity	Acceptable liquidity	Good liquidity
Czech corp.	2017	29.5%	31.8%	11.4%	27.3%
	2018	26.1%	34.1%	19.3%	20.5%
	2019	21.6%	33.0%	22.7%	22.7%
	2020	23.9%	33.0%	13.6%	29.5%
	2021	21.6%	27.3%	21.6%	29.5%
Polish corp.	2017	61.4%	13.3%	7.2%	18.1%
	2018	61.5%	12.0%	6.0%	20.5%
	2019	56.6%	16.9%	3.6%	22.9%
	2020	61.5%	7.2%	7.2%	24.1%
	2021	56.6%	13.3%	6.0%	24.1%
Hungarian corp.	2017	71.1%	10.9%	7.1%	10.9%
	2018	73.0%	14.2%	3.8%	9.0%
	2019	75.3%	10.0%	6.2%	8.5%
	2020	74.4%	8.5%	4.3%	12.8%
	2021	71.6%	13.7%	5.2%	9.5%
Slovak corp.	2017	82.2%	4.5%	0.0%	13.3%
	2018	73.3%	4.5%	4.4%	17.8%
	2019	71.1%	13.3%	0.0%	15.6%
	2020	53.3%	20.0%	6.7%	20.0%
	2021	51.1%	17.8%	6.7%	24.4%

5. Discussion

Similar research was conducted by Molnár (2021) using Hungarian, Romanian and Slovakian municipal undertakings as examples. Molnár found that between 2014 and 2017, Romanian companies had the best parameters, while Slovak companies had the worst.

Our research shows that utilities with a stable capital position are mainly present in the Czech Republic and Poland, although their share declined in both countries by 2021, especially in Poland. The share of stable capitalisation is low in Hungary and Slovakia. Negative equity, a measure of distress, was also the highest in these two countries, although the share of these firms has improved slightly. An indistinguishable situation can be seen in terms of liquidity: with Czech and Polish utilities having the most favourable liquidity, and the lowest in Hungary and Slovakia. Extremely poor liquidity is also the highest in these two countries, with Hungarian companies experiencing the highest amount of liquidity difficulties.

As for cultural public services, Slovak and Hungarian firms show unfavourable data, while similar trends are seen for liquidity. In order of country ranking, the Czech Republic and Poland have utilities with favourable management characteristics, while Hungary and Slovakia have the most unfavourable features. The research shows that liquidity and capital position in the countries studied are moving in the same direction.

Our research found that the negative trends of 2014-2017 persist among Hungarian and Slovakian municipal undertakings.

6. Conclusions

Our research focused on the management efficiency of municipal undertakings. This group of companies is also expected to pursue efficient, sustainable management. In recent years, plenty of factors have influenced the way companies' function, but as they manage public funds, the need to follow the principle of going concern is of paramount importance. The management of enterprises owned by municipalities can be affected by both foreseen and unforeseen circumstances. Unforeseen events include the global Covid19 pandemic in 2019, the subsequent energy crisis and inflation.

Our results show that the epidemic had a minimal impact on the management indicators of the companies studied. In addition to the indicators and results, we note that the Covid19 epidemic has presented managers and employees with plenty of challenges. Many enterprises have been forced to close temporarily, some have been challenged by digitisation due to the introduction of the home office, and these have resulted in either lost revenue or additional costs.

Based on the indicators, we found that of the four countries studied, the example of companies in the Czech Republic could serve as a guide: we can see an improvement in the country despite the economic downturn. In the case of Hungarian companies, the focus should be on the financial situation, as firms have performed very poorly in terms of liquidity indicators. The research found that Czech municipalities have the most favourable fiscal indicators. Also, Czech municipalities are considered to be the most efficient in terms of management.

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