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Capital Structure and Changes in Companies' Risk during the COVID-19 Pandemic in CEE Countries

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Abstract

The article examines the financial management of companies in the context of the COVID-19 pandemic, in particular, the relationship between their capital structure and risk changes during the pandemic. The study aims to determine how companies' total, systematic and idiosyncratic risks changed during the COVID-19 pandemic depending on their capital structure. It is based on a sample of companies listed on stock exchanges in Poland, Hungary, Romania and Bulgaria. The study uses a panel data regression model. In all countries analyzed, as well as the group of companies taken collectively, the COVID-19 pandemic positively influenced both total risk, as measured by the volatility of returns, and specific risk measured with the standard deviation of the residuals in Sharpe's single-index model. The extent to which both kinds of risk increased during the pandemic period appears to have been related to the level of excess leverage: more heavily indebted companies increased their risk more significantly. However, the impact of the pandemic on systematic risk measured with beta coefficients is more ambiguous. A plausible explanation for this result is given.

Keywords: capital structure, COVID-19, company risk, capital market

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Introduction

The COVID-19 pandemic had a significant impact on a number of areas of economic life, including financial markets. Numerous studies have explored the relationship between the pandemic and these markets, highlighting several key areas of interest. Research has focused on how stock markets reacted to pandemic-related phenomena (e.g., Arteaga-Garavito et al. 2020; Ashraf 2020; Chodnicka-Jaworska and Jaworski 2020; Gajdka and Szymański 2020; Liu, Wang, and Lee 2020; Abuzayed et al. 2021; Setiawan et al. 2021; Saif-Alyousfi 2022; Tai et al. 2022; Coskun et al. 2023; Mngonbiseni, Mabotho, and Matenda 2023), industry-level stock market reactions to such phenomena (e.g. Iyke 2020; Reilly 2020; Saadat, Rawtani, and Hussain 2020), and how the stock returns of companies with selected characteristics, such as size, ownership concentration reacted to the pandemic (e.g. Yan 2020).

Most of those studies on the relationship between COVID-19 and the financial markets concerned rates of return and stock price volatility, but their findings are ambiguous. This is because the situation in this area has changed in ways that can be either painful or beneficial for investors, with noticeable geographical, sectoral, and temporal differences. As a result, according to Dr. Marek Dietl, President of the Warsaw Stock Exchange (WSE), capital markets not only proved to be resistant to the COVID-19-induced crisis but even benefited from it. In his view, COVID-19 was, however surprising it may sound, beneficial for these markets (Werner-Woś 2020).

An issue that has received relatively little attention is the relationship between the pandemic and the financial management of companies, which unexpectedly found themselves in completely new situations characterized by increased uncertainty and operational risk. According to one frequently encountered approach, decisions related to the financial management of listed companies concern three basic issues: which assets should be funded with available capital, how ongoing projects should be financed, and what should be done with any generated financial surplus. This article focuses on the second of these issues, namely the method of financing, in particular, the capital structure.

The main problem to be analyzed is the relationship between companies' capital structures and changes in the risk associated with their stock during the pandemic. Similar issues have already been researched in relation to American (see Huang and Ye 2021) and Polish (see Gajdka and Szymański 2021) companies, but it has not yet been analyzed from a broader, international perspective. In our article, we analyze the relationship between the capital structure of companies and three types of stock risk – total risk, systematic risk, and specific risk – in four Central and Eastern European (CEE) countries: Poland, Hungary, Bulgaria and Romania, during the COVID-19 pandemic.

The study is important for both financial theory, as it addresses new aspects of capital structure theory and economic practice, as it explores how financing policies can be used to manage corporate risk in times of crisis.

Capital structure and enterprise risk

In modern capital structure theory, which is one of the most important issues in corporate finance, there are several basic trends. The oldest of these is the Modigliani and Miller (1958) (MM) approach, which suggests that, in a perfect market, a company's capital structure does not affect its value. However, when accounting for taxes in the economy, the benefits resulting from the tax shield imply that a company's value increases with the amount of debt it incurs (Modigliani and Miller 1963).

The second approach, known as the trade-off approach, suggests that as debt levels increase, there are both benefits (e.g., the tax shield) that increase the company's market value and costs (e.g., bankruptcy costs or agency costs) that diminish it. In this context, a company's market value is maximized when the optimal capital structure is achieved – specifically when the marginal benefits of debt equalize the marginal costs of debt (see, for example, Kraus and Litzenberger 1973).

The third key concept is the pecking order theory. According to this reasoning, it is difficult to define an optimal capital structure for companies; instead, we can determine the order in which they will seek funds as new investment projects arise (Myers and Majluf 1984). In such a situation, companies will first use internal sources (e.g., profit and depreciation), followed by debt, then debt that is convertible into shares, and finally, equity obtained from external sources, such as issuing new shares.

Finally, the last approach, called market timing (see Baker and Wurgler 2002), suggests that the structure of financing largely depends on the economic situation in the financial markets. Thus, during periods when shares are relatively expensive, companies are likely to raise funds by issuing these financial instruments. Conversely, when debt instruments are relatively expensive, companies will raise funds by issuing debt. In the latter case, changes in the economic situation in the financial markets, which causes a change in the prices of financial instruments, have a decisive role in determining the capital structure. All of these approaches are related to the risk analysis of a company's operations.

In the MM approach, an increase in debt under perfect market conditions keeps the total risk of the company's operations unchanged, i.e., the weighted average cost of capital does not change, although the cost of equity increases. In an economy with taxes, however, an increase in debt leads to a decrease in the weighted average cost of capital, despite an increase in the cost of equity. According to the pecking order theory, the order in which funds are obtained is determined by the uncertainty in the valuation of financial instruments. Therefore, internal funds, which are the easiest to value, are used first, followed by bonds, and finally, equities.

According to the trade-off approach, as already mentioned, a company's market value is maximized when it achieves an optimal capital structure. Financing with debt beyond this optimal level increases the bankruptcy risk of the company in such a way that the market value of the company decreases while increasing asset risk and the weighted average cost of capital. On the other hand, if a company operates with a lower-than-optimal debt level, incurring debt can increase its value, as the benefits from the growing tax shield are higher than the increase in costs associated with a higher probability

of bankruptcy. In this scenario, the company's market value increases while asset risk and the weighted average cost of capital decrease. In other words, companies with sub-optimal debt levels have greater opportunities to undertake debt-financed investment projects (Marchica and Mura 2010). This situation also provides listed companies with better financial liquidity and security in the event of a cash flow shortage, which can be more easily supplemented with borrowed capital.

However, as Jensen (1986) noted, low debt may lead to an increase in agency costs resulting from the conflict between shareholders and the management board. This is because managers who are not forced to make high interest repayments and capital installments may have access to larger financial resources that are not always used for the benefit of the owners. However, as Kesten (2010) points out, this issue tends to diminish during an economic crisis. Managers are then, in their own interest, less inclined to waste resources, focusing on ensuring operational stability in difficult conditions. In this situation, it can be argued that the significance of agency costs decreases during crises.

During a crisis, such as the one caused by COVID-19, the need for external financing increases as cash flow from business activities decreases, often significantly during this period. Suddenly forced to slow down their activities, companies must acquire funds to ensure financial liquidity. According to Halling, Jin, and Zechner (2020), the bond market has become significantly more active since the outbreak of the COVID-19 epidemic, and according to Li, Strahan, and Zhang (2020) and Acharya and Steffen (2020), as the pandemic grew, bank lending increased.

However, this does not mean that all companies have equal access to these financing options. The ability of companies to borrow from capital markets or banks varies. For example, companies with relatively lower indebtedness have a greater capacity to incur debt, which provides them with higher financial flexibility. Thus, they are able to finance new investments with more borrowed funds (Marchica and Mura 2010). Therefore, maintaining a low debt ratio ensures a greater ability to service debt and raise new funds, which is sometimes referred to as increasing financial flexibility. This advantage is particularly beneficial during market downturns. According to Fahlenbrach, Rageth, and Stulz (2020), companies with high financial flexibility lost less market value than those with low financial flexibility as a result of the COVID-19 pandemic. In other words, companies with relatively more debt are exposed to higher risk than those with less debt because leverage is typically significantly positively correlated with stock return volatility (see Black 1976; Christie 1982; Schwert 1989).

This relationship shows that, regardless of changes in the weighted average cost of capital, equity risk should increase with increasing debt during the pandemic. It can be expected that the scope of these changes will be affected by the capital structure of companies. In this context, an important yet relatively poorly described issue in the literature is whether the share risk changed in a way depending on the capital structure during the COVID-19 pandemic and whether it concerned all basic types of equity risk, i.e systematic and unsystematic stock risk. In light of the above considerations, the following hypothesis is tested in the article:

"The COVID-19 pandemic caused a relatively greater increase in the risk of more leveraged firms".

To be more precise, this hypothesis is restricted to total risk and idiosyncratic (specific, unsystematic) risk. Based on theoretical arguments, one cannot predict changes in systematic risk, as measured by beta coefficients, during the pandemic and how changes in systematic risk relate to debt ratios. A plausible explanation is that the pandemic increased risk across the entire economy. In this scenario, although companies' risk – measured by the volatility of their stock returns – can be higher, the increase relative to market risk might be insignificant or even result in a decline in their beta coefficients. Such observations were noted in the US market by Huang and Ye (2021). By definition, the beta coefficient for the whole market is 1; therefore, while some companies experience a rise in their betas, others might experience a decrease.

In the research described below, this hypothesis will be tested on a sample of public companies from four CEE countries: Poland, Hungary, Bulgaria and Romania.

Methodology

Sample

The sample consisted of 753 companies listed on the Warsaw Stock Exchange (Poland, 539 firms), the Budapest Stock Exchange (Hungary, 26 firms), the Bucharest Stock Exchange (Romania, 130 firms) and the Bulgarian Stock Exchange (58 firms), sourced from the Refinitiv database. We have not included companies from Czechia or Slovakia because there were too few listed companies over the entire analyzed period. When screening for companies, organizations from the financial sector and those for which complete information was not available were omitted.

The sample spanned from the beginning of 2018 to the end of 2021, which corresponds to two years before and during the COVID-19 pandemic. However, the values of some variables come from 2015–2017.

Risk measures

The total, systematic, and idiosyncratic risks of companies were assessed using their stock returns. In keeping with Favara (2016) and Huang and Ye (2021), total risk was measured by the standard deviation of 36 rolling monthly share returns, while systematic risk was assessed using the beta coefficient (β_i) estimated from the Sharpe single index model, written as:

$$r_{it} = \alpha_i + \beta_i \times r_{mt} + \varepsilon_{it}, \tag{1}$$

where r_{it} – the return on the i-th stock in period t, r_{mt} – the market return (the rate of return of an index), ε_{it} – a random term (residual). The beta estimation is performed using 36 monthly rates of return. Lastly, idiosyncratic risk is represented by the standard deviation of the residuals ε_{it}.

Optimal capital structure and excess leverage

To show the relationship between the capital structure and changes in equity risk during the pandemic, the study included the "Excess leverage" variable, which considers the concept

of the optimal capital structure. The concept is defined as the proportion of debt and equity capital that maximizes a company's market value (Gordon 1962; Solomon 1963; Brennan and Schwartz 1978). The literature offers several methods for determining the optimal capital structure. One method, described by Shyam-Sunder and Myers (1999), recommends using the historical average debt-to-equity (D/E) ratio (see, e.g., Rudnicki 2017), which is frequently used for testing capital structure theory. While more sophisticated methods are available, this approach was selected for this study. The optimal capital structure of the companies was determined using a debt ratio calculated from data from 2015, 2016 and 2017. Excess leverage was defined as the difference between the actual debt ratio and the optimal debt ratio.

Model

In line with other research on companies' capital structure during the pandemic (e.g., Albuquerque et al. 2020; Ding et al. 2020; Huang and Ye 2021), this study used control variables such as company size (Size), the market-to-book value ratio (MTB), and return on assets (ROA). The COVID-19 pandemic was represented by a dummy variable that had a value of 1 for the years 2020 and 2021 (the years of the pandemic) and 0 for 2018 and 2019.

The following model (2) was estimated:

$$Risk_{it} = \beta_0 + \beta_1 \times COVID + \beta_2 \times Excess_{it-1} + \beta_3 \times Excess_{it-1} \times COVID +$$

$$+\beta_4 \times Optimal_i + \beta_5 \times Size_{it-1} + \beta_6 \times ROA_{it-1} + \beta_7 \times MTB_{it-1}. \quad (2)$$

This model was estimated separately with three different dependent variables: total risk, systematic risk and idiosyncratic risk.

The key variable in this model is $Excess_{it-1} * COVID$, which reflects the joint impact of the COVID-19 pandemic and excess leverage on risk. If β_3 is statistically significant and positive then more leveraged firms were characterized by a higher level of risk during the pandemic.

Model parameters were estimated using data spanning from the beginning of 2018 to the end of 2021, which corresponds to two full years before the pandemic and two years during the pandemic. To estimate the companies' optimal capital structure, data from 2015 to 2017 were used. The model variables are described in Table 1.

Table 1. Model variables

Variable	Description
Panel A: dependent variables	
Total risk (Risk)	The standard deviation of 36 rolling monthly rates of return
Systematic risk (Risk)	A beta coefficient calculated using the Sharpe model and the 36 rolling monthly rates of return.
Idiosyncratic risk (Risk)	The standard deviation of Sharpe model residuals (calculated with 36 rolling monthly rates of return).
Panel B: independent variables	
COVID	A dummy variable taking a value of 1 for the pandemic year and 0 for the previous years
Excess	The difference between the actual and optimal debt ratios
Excess * COVID	Joint impact of COVID-19 and excess debt ratio on company risk
Optimal	Optimal debt ratio calculated as an average for 2015–2017
Size	The natural logarithm of total assets
ROA	Return on assets represented by the net profit to asset ratio
MTB	The market value to book value ratio

Source: authors' elaboration.

The VIF (Variance Inflation Factor) test was used to check for collinearity between dependent variables. The debt ratio was not included as an independent variable due to its strong collinearity with the excess debt ratio. White's test was used to check for heteroskedasticity. Heteroskedasticity and autocorrelation consistent (HAC) estimators were used to deal with this problem.

The Breusch-Pagan and Hausman tests were used to determine if fixed effects or random effects should be included in the model. In the fixed effects model, the variable "Optimal" was excluded as it remained stable over time for the particular companies to which fixed effects were applied.

Results

The tables below present the parameters of two kinds of models: the pooled-OLS (Ordinary Least Squares) model (which does not account for individual effects of companies) and either the fixed effects or random effects model, based on the results of the Breusch-Pagan and Hausman tests. In all tables, statistical significance at 0.001, 0.01, and 0.05 is denoted by ***, **, and *, respectively.

Table 2 presents the results for all companies pooled in one sample and Tables 3 to 6 – separately for individual countries.

Table 2. Total risk, systematic risk, and idiosyncratic risk, all companies

	Total risk		Systematic risk		Idiosyncratic risk	
	OLS	Fixed effects	OLS	Fixed effects	OLS	Fixed effects
Const	0.4542***	0.0540*	−0.8313***	−2.956***	0.4760***	0.0719**
COVID	0.0275***	0.0267***	0.1621***	0.1484***	0.0221***	0.0214***
Excess	−2.070	−9.12e-06	−8.73e-05	−4.73e-05	−2.33e-05	−1.11e-05
Excess*COVID	0.0001***	7.54e-05**	−0.0007*	6.22e-05	0.0002***	7.61e-05**
Optimal	0.0005***	–	−0.0009	–	0.0005***	–
Size	−0.016***	0.0042***	0.0662***	0.1735***	−0.0171***	0.0033**
ROA	0.0003	0.0002	−0.0011	−0.0001	0.0003	0.0002
MTB	−2.46e-05**	−5.42e-05***	−0.0003***	−0.0002***	−5.6e-05**	−5.6e-05***

Source: authors' elaboration.

The coefficients for the "COVID" variables are positive and statistically significant for all three types of risk: total risk, systematic risk, and idiosyncratic risk, indicating that the COVID-19 pandemic increased companies' risk levels. Notably, the scale of this increase in total risk and idiosyncratic risk appears to be driven by the level of overleverage, as evidenced by the positive and statistically significant coefficients for the "Excess*COVID" variables.

Additionally, higher-valued companies with higher market-to-book ratios tend to experience lower risk of all types, while bigger companies appear to be associated with higher risk throughout the analysis period (according to the models with fixed effects).

Table 3. Total risk, systematic risk, and idiosyncratic risk, Poland

	Total risk		Systematic risk		Idiosyncratic risk	
	OLS	Fixed effects	OLS	Fixed effects	OLS	Fixed effects
Const	0.6845***	0.0490	−0.9762***	−2.0732***	0.7216***	0.0656**
COVID	0.0422***	0.0393***	0.2267***	0.2206***	0.0355***	0.0326***
Excess	−4.91e-05***	– 7.78e-06	−7.95e-05	−0.0001	−5.38e-05***	−9.69e-06
Excess*COVID	3.44e-05	8.18e-05**	0.0007**	7.09e-05	2.93e-05	8.26e-05**
Optimal	0.0001***	–	0.0009*	–	0.0001**	–
Size	−0.0284***	−0.0051***	0.0757***	0.1335***	−0.0303***	0.0043
ROA	0.0006*	0.0001	−0.0005	0.0004	0.0007**	0.0001
MTB	−2.97e-05	−6. 02e-05***	−0.0003	−0.0003***	−3.15e-05	−6.12e-05**

Source: authors' elaboration.

In Poland, which comprises the largest group of companies (over 70% of those studied), the results are quite similar to those obtained for the full sample of companies. The COVID-19 pandemic had a positive impact on all types of risk, and the extent to which total risk and idiosyncratic risk increased due to the pandemic seems related to the level of excess leverage – more heavily indebted companies increased their risk more. Once more, companies with higher

market-to-book ratios tend to experience lower risk of all types. Company size was positively linked with systematic risk (beta coefficients) but negatively associated with total risk. This negative relationship between size and idiosyncratic risk was only confirmed with the pooled-OSL model, not with the fixed effects model.

Table 4. Total risk, systematic risk, and idiosyncratic risk, Hungary

	Total risk		Systematic risk		Idiosyncratic risk	
	OLS	Fixed effects	OLS	Fixed effects	OLS	Fixed effects
Const	−0.1722***	0.1136	−1.8125***	−3.5372***	−0.1346***	0.3062*
COVID	0.0265***	0.0155***	0.2275***	0.1613***	0.0208***	0.0107***
Excess	−0.0517	0.0227	−0.8870***	−0.5120***	−0.0464	0.0245
Excess*COVID	0.0961**	−0.0120	1.0055***	0.5401***	0.0924***	−0.0131
Optimal	0.1308***	–	0.8311***	–	0.1204***	–
Size	0.0056***	−0.0014	0.0737***	0.1698***	0.0041***	−0.0094
ROA	−0.3271**	0.1757**	−0.7552	0.2518	−0.3568***	0.1723**
MTB	0.0116***	−0.0029***	0.0154**	−0.0096	0.0121***	−0.0037***

Source: authors' elaboration.

In Hungary, represented by only 26 companies, once more, the COVID-19 pandemic appears to have stimulated all three types of risk, as indicated by the positive and statistically significant coefficients for the "COVID" variable. However, there is less evidence that this increase in risk was related to excess leverage. While the coefficients for "Excess*COVID" variables are positive and statistically significant for systemic risk in both the pooled-OLS and the fixed effects model, they are statistically significant only in the pooled-OLS model for total risk and idiosyncratic risk. A similar conclusion can be drawn for company size and its impact on risk. Higher market valuation of companies (market-to-book ratio) is negatively related to total risk and idiosyncratic risk but not to systematic risk. What is more, return on assets seems to be positively linked to both total risk and idiosyncratic risk.

Romania is the only country where random effect models were estimated instead of fixed effects due to the results of the Breusch-Pagan and Hausman tests. The results show that the COVID-19 pandemic had a positive impact on total risk and idiosyncratic risk and that it influenced risk more significantly for more heavily indebted companies. Conversely, the pandemic had a negative impact on systematic risk, but again, the scale of this reduction was higher for more indebted companies. This finding aligns with arguments presented in the previous section: although companies' risk – measured by the volatility of their stock returns – was higher, the increase relative to market risk may have been insignificant or even resulted in declining betas.

Table 5. Total risk, systematic risk, and idiosyncratic risk, Romania

	Total risk		Systematic risk		Idiosyncratic risk	
	OLS	Random effects	OLS	Random effects	OLS	Random effects
Const	0.2714***	0.1052**	−2.3232***	−0.7636	0.3334***	0.1708***
COVID	0.0079***	0.0089***	−0.0241	−0.0277**	0.0060***	0.0071***
Excess	0.1232***	0.0270***	0.5073***	−0.0989	−0.1272***	0.0195***
Excess*COVID	0.1057***	0.0138**	−0.8632***	−0.2446***	0.1060***	0.0156**
Optimal	0.0710***	0.1324***	−0.5391***	−0.9985***	0.0759***	0.1344***
Size	−0.0107***	−0.0030	0.1499***	0.0749**	−0.0141***	−0.0066**
ROA	−0.1064***	−0.0585***	0.6757	0.4010**	−0.1179*	−0.0739***
MTB	−1.43e-05	2.40e-05***	0.0001	0.0002***	−1.50e-05*	−2.53e-05***

Source: authors' elaboration.

It is important to note that the sample of companies under study does not cover the whole stock market due to limitations in data availability for the whole analysis period. Because the beta for the whole market is 1, some companies may have experienced declines in their betas while others saw increases. The results for size, return on assets, and market-to-book value are quite mixed.

Table 6. Total risk, systematic risk and idiosyncratic risk, Bulgaria

	Total risk		Systematic risk		Idiosyncratic risk	
	OLS	Fixed effects	OLS	Fixed effects	OLS	Fixed effects
Const	1.1104***	1.0755***	−6.3492***	−21.750***	1.1582***	0.9848***
COVID	0.0152***	0.0251***	0.1344***	−0.1154***	0.0123***	0.0211***
Excess	0.0735***	0.0038	1.4789***	0.5576***	−0.0706***	0.0052
Excess*COVID	−0.0750	0.0497***	−0.9470	−3.1318***	−0.0903*	0.0293**
Optimal	0.2412***	–	−1.9937***	–	0.2402***	–
Size	−0.0595***	−0.0515***	0.4173***	1.2106***	−0.0621***	−0.0466***
ROA	1.0841**	0.2290***	−17.325***	−9.1615***	1.0376**	0.1963***
MTB	−0.0050***	−5.0e-05	0.0137**	0.0024	−0.0050***	−3.68e-05

Source: authors' elaboration.

The main results for Bulgaria are quite similar to those obtained for Romanian companies. The COVID-19 pandemic had a positive impact on total risk and idiosyncratic but a negative effect on systematic risk. The pandemic influenced risk more significantly for more heavily indebted companies. Additionally, returns on assets appear to be positively related to both total risk and idiosyncratic risk but negatively associated with systematic risk. The opposite conclusions can be drawn for company size and its impact on risk.

Conclusion

The outbreak and subsequent waves of the COVID-19 pandemic resulted in a huge increase in the risk associated with business activities, which is reflected in increased stock price fluctuations. This finding was also confirmed by the research results presented in this article. In all four countries analyzed separately, as well as in the combined group of companies from these countries, the pandemic had a positive impact on total risk, as measured by the volatility of returns, and on specific risk, measured using the standard deviation of the residuals in Sharpe's single-index model.

Importantly, the extent to which both kinds of risk increased due to the pandemic appears to be related to the level of excess leverage: more heavily indebted companies increased their risk more, which confirms the hypothesis outlined in the article. The impact of the pandemic on systematic risk measured by beta coefficients is more ambiguous. In the overall group of companies and in Poland and Hungary treated separately, the impact of the pandemic on the average beta coefficients was positive and increased with the level of leverage. In contrast, in Romania and Bulgaria, the relationship was negative.

This discrepancy can be explained by the fact that an increase in risk across the entire economy – reflected in the increase in the volatility of stock returns – did not necessarily lead to an increase in market risk measured by betas. While some companies may have experienced rising betas, others may have experienced a decline. Therefore, theoretically, it is impossible to predict the direction of change in the average beta of the analyzed companies.

The control variables used in the models also appear to influence risk. In the pooled sample of all companies, as well as in Poland and Hungary analyzed separately, higher-valued companies with higher market-to-book ratios experienced lower risk of all types. Conversely, lower-valued companies appear to be more risky. In Bulgaria, market valuation appears to be unrelated to risk, while in Romania, the results are more complex. In the pooled sample, larger companies appear to be more risky throughout the analysis period; however, when examining individual counties separately, the results are mixed. Similarly, for the return on assets and its impact on risk, the results are inconclusive.

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Struktura kapitału a zmiany ryzyka spółek w czasie pandemii COVID-19 w krajach Europy Środkowo-Wschodniej

W artykule rozpatrywana jest problematyka zarządzania finansami spółek w kontekście pandemii COVID-19. W szczególności badany jest związek między strukturą ich kapitału a zmianami ryzyka w czasie pandemii. Celem opracowania jest określenie, jak zmieniało się ryzyko całkowite, systematyczne i specyficzne spółek w czasie pandemii COVID-19 w zależności od ich struktury kapitałowej na próbie spółek notowanych na giełdach w Polsce, na Węgrzech, w Rumunii i w Bułgarii. W badaniu wykorzystano panelowy model regresji danych. We wszystkich krajach analizowanych oddzielnie, a także we wspólnej grupie spółek pandemia COVID-19 miała pozytywny wpływ na ryzyko całkowite mierzone zmiennością stóp zwrotu, a także na ryzyko specyficzne mierzone odchyleniem standardowym reszt w modelu jednoindeksowym Sharpe'a. Stopień, w jakim oba rodzaje ryzyka wzrosły w wyniku pandemii, jest powiązany z poziomem nadmiernej dźwigni finansowej: bardziej zadłużone spółki w większym stopniu zwiększają swoje ryzyko. Bardziej niejednoznaczny jest wpływ pandemii na ryzyko systematyczne mierzone współczynnikami beta. W artykule podano wiarygodne wyjaśnienie tego wyniku.

Słowa kluczowe: struktura kapitału, COVID-19, ryzyko spółki, rynek kapitałowy