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THE DETERIORATION OF FINANCIAL RATIOS DURING THE COVID-19 PANDEMIC: DOES CORPORATE GOVERNANCE MATTER?

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Abstract

Research background: Corporate governance plays an important role in companies' financial performance and its true importance and relevance are revealed during an economic shock, such as the COVID-19 pandemic. In the past, research regarding corporate governance and financial variables focused solely on

performance variables such as Tobin's Q and ROA. This assessment completely ignores that corporate governance principles have a broader implication on financial variables than only performance.
Purpose: Our research aimed to determine whether companies with good corporate governance practices were more resilient during the COVID-19 pandemic, measured by the deterioration of various financial variables.
Research methodology: To achieve the aim, in the empirical part of the article, information on companies' corporate governance and financial variables was collected, and based on them, correlation, regression and scatter plot analyses were conducted.
Results: Our correlation, regression, and scatter plot analyses revealed that on both group and individual company levels, companies with higher levels of corporate governance would have their financial variables deteriorate significantly more compared to companies with low levels of compliance.
Novelty: This is the first publication on the given topic. While few publications are assessing the impact of the pandemic on companies using corporate governance, none of these publications have focused on financial variables.

Keywords: Corporate Governance, Corporate Governance Index, COVID-19 pandemic, Bratislava Stock Exchange

JEL classification: G19, G28, G30 G34

Introduction

The effects of the COVID-19 pandemic have been devastating for economies and will be felt for many years to come. Organizations globally are either folding up or being liquidated at worst, or operating below their normal capacities due to the pandemic (Tijani, Osagie, Afolabi, 2021). Social distancing measurements were harder to implement in certain companies and remote work was not possible for all companies. This caused an increase in unemployment, most significantly in youth unemployment which in certain countries doubled (Lambovska, Sardinha, Belas, 2021). Further challenges include raising adequate capital to continue operations, lack of financial means to purchase needed material, increased cost of procuring needed materials for operations, and inadequate access to loans and credit facilities (Tijani et al., 2021). In short, companies' ability to create value was heavily impaired (Mitan, Siekelova, Rusu, Rovnak, 2021).

The epidemiological situation was not that bad in Slovakia, which was the result of the swift reaction from the government and allowed an early containment of the virus with a gradual reopening. However, back in September 2020, the second, larger infection wave devastated Slovakia. While the economy continued without much damage, partly thanks to the first softer wave, cases started to increase, and more prevention policies were reintroduced. As a result, the toll on both the economy and companies started to increase (Musa, Rech, 2020).

Following good corporate governance practices, in theory, is supposed to make companies more resilient, as they encourage them to focus on long-term sustainability without taking any unnecessary risk. The COVID-19 pandemic had a major short-term implication forcing companies to take on debt to cover short-term liquidity issues, decreasing business activities significantly, and disrupting supply chains.

The objective of our research was to determine whether companies with good corporate governance practices were more resilient during the COVID-19 pandemic, measured by the deterioration of various financial variables. The subjects of our research were 43 non-financial companies listed on the Bratislava Stock Exchange in 2020. Out of a total of 14 financial variables, 10 measured the year-over-year change for the period 2019–2020, while 4 measured the year-end situation. In our research, we employed correlation, regression, and scatter plot analyses to determine the impact of the pandemic on the company's individual level as well as on a group level.

1. Literature review

Agency theory provides the theoretical framework for empirical research on corporate governance, which was developed by Jensen and Meckling (1976), Fama (1980), and Fama and Jensen (1983). It suggests that better performance and higher valuation can be achieved by a better-governed company due to lower agency costs. The effect of corporate governance on financial performance is well researched. Brown and Caylor (2006, 2009), Dittmar and Mahrt-Smith (2007), Ammann, Oesch and Schmid (2011), Sami, Wang and Zhou (2011), Hassan Al-Tamimi (2012), Al-Ahdal, Alsamhi, Tabash and Farhan (2020), Kyere and Ausloos (2021), and many more found a positive relationship between corporate governance and company performance. Another stream of literature focused on the effect of corporate governance on financial distress. Fathi and Jean-Pierre (2001), Lee and Yeh (2004), Hassan Al-Tamimi (2012), Udin, Khan and Javid (2017), and many more found that corporate governance has a significant impact on the likelihood of financial distress.

While corporate governance plays an important role in companies' financial performance and financial distress, its true importance and relevance are revealed during an economic shock (Metzker, Marousek, Zvarikova, Hlawiczka, 2021). Lee and Yeh (2004), Mitton (2002), and Johnson, Boone, Breach and Friedman (2000) found that poor corporate governance was one of the key factors behind the Asian financial crisis in 1997. According to Johnson et al. (2000), poor economic prospects made agency problems even worse. The effects were mostly

felt in countries with poor corporate governance, where the crash of the stock market and currency depreciation were more severe. The Great Financial Crisis also attracted the attention of researchers focusing on corporate governance, mostly in the financial sector. Erkens, Hung and Matos (2012) found on a cross-country sample of financial institutions that worse stock returns were experienced during the financial crisis by companies with higher institutional ownership and more independent boards. Beltratti and Stulz (2009) concluded that there is no consistent evidence supporting a claim that better corporate governance led to better performance during the crisis. On the contrary, more shareholder-friendly boards had a significantly worse performance. Da Silva's (2019) findings indicate no effect of corporate governance on abnormal crash risk. Gupta, Krishnamurti and Tourani-Rad (2013) found on a large sample of publicly-traded non-financial companies that corporate governance quality proxies as a broad-based index were not associated with better performance, as compared to poorly governed companies. Francis, Hasan and Wu (2012) using traditionally defined board independence found no significant effect on company performance. However, upon creating a new measurement called true independence, i.e., outside directors who are less likely connected with the current CEO, they found a positive and significant effect on performance. The effect of corporate governance on financial performance seems to diminish during a crisis. One possible explanation is that "during the crisis, stock markets in developed countries became less efficient in incorporating company-specific information into prices" (Gupta et al., 2013).

The recent recession caused by the COVID-19 pandemic in 2020 was a unique event. As compared to the previous crisis, which could have been foreseen, there was nothing that could predict the pandemic and the flash crash of all the markets. Indeed, upon the spread of the COVID-19 virus, many countries implemented very strict lockdown policies, effectively slowing down certain economic sectors while completely stopping other sectors (e.g. Dvorský, Čepel, Kotásková, Bugánová, 2021). There is limited evidence of corporate governance and its effect on companies' financial performance during the pandemic. Ding, Levine, Lin and Xie (2021) provide evidence that the pandemic-induced drop in stock returns was milder in companies with less entrenched executives. The rest of the studies focused on CSR (Corporate Social Responsibility) with mixed results. In a cross-country sample of hospitality companies, Clark, Mauck and Pruitt (2021) found no predictive power of CSR on daily abnormal stock price returns, while Yi, Zhang and Yan (2021) concluded the opposite on a sample of Chinese companies. Ding et al. (2021) present evidence of CSR softening the pandemic-induced drop in stock returns.

2. Methodology

2.1. Variables and model

To compute the CGI (Corporate Governance Index) we followed the methodology developed by Musa, Musová and Debnárová (2015; 2018). Their methodology is further used by the SACG (Slovak Association of Corporate Governance) to get a detailed picture of corporate governance compliance in Slovakia. The Corporate Governance Index was also used in previous studies (Anglin, Edelstein, Gao, Tsang, 2011; Cai, Liu, Qian, Yu, 2015; de Carvalho, Dal'Bó, Sampaio, 2020; Kanagaretnam, Lobo, Whalen, 2007) to determine the level of corporate governance. The methodological approach of Musa et al. (2015; 2018) is designed to mirror the relatively new scene of corporate governance in Slovakia, its capital market standards, and its disclosure by companies. The CGI relies on ordinal measurement depending on the criterion information level of disclosure, where value 0 is assigned when no information is available, value 1 when partial information is available, and value 2 when comprehensive information is available. The following criteria are used for the CGI evaluation:

a) disclosure of the current annual report in the Central Register of regulated Information,
b) disclosure of the current annual report in the Register of Financial Statements,
c) disclosure of the current annual report on the companies´ websites,
d) the scope and clarity of the information about corporate governance in the annual report according to § 20 of the Accounting Act,
e) the scope, clarity, and quality of the information in the corporate governance statement,
f) information about board members, such as names, experience, responsibility, and functions,
g) information about the structure and amount of remuneration for individual members of the board,
h) information about risk management, defined predictable risks and risk quantification,
i) information about the establishment and activities of an Audit Committee, or the failure to establish one,
j) information about the establishment and activities of a Remuneration Committee, or the failure to establish one,
k) information about the establishment and activities of a Nomination Committee, or the failure to establish one.

During the evaluation process, Musa et al. (2015, 2018) encountered several problems and limitations, which are discussed in detail in their paper. Each criterion of the CGI has

a different level of importance, which was evaluated by the authors based on expert estimation and theoretically supported by Saaty's method. The final formula of the CGI with assigned weights is as follows:

$$CG\ index = 0.095 \times (a + b + c) + 0.079 \times d + 0.159 \times e + 0.079 \times f + \\ + 0.079 \times g + 0.079 \times h + 0.079 \times j + 0.079 \times k \quad (1)$$

To determine, whether good corporate governance practices were influential on companies' financial variables during the COVID-19 pandemic, we chose 14 financial variables, where 10 measured the year-over-year change, to determine whether higher levels of CGI softened the impact of the pandemic in the short-term:

1. Change in Short-term Debt Obligations (SDO), focusing on indebtedness and liabilities with a maturity of less than 1 year. Good corporate governance practices would imply that in the wake of the pandemic companies would move their SDO into long-term obligations as their operations and revenues were hit hard by the pandemic.
2. Change in Long-term Debt Obligations (LDO) includes all the debt and liabilities with a maturity of over 1 year. Logic implies that companies would focus on decreasing their SDO and trying to move it into LDO as much as possible.
3. Change in Total Debt Obligations (TDO) is a sum of SDO and LDO. In the best-case scenario, where companies would just move their SDO into LDO it would be expected that TDO remains stable. This variable measures how the total indebtedness changed amid the pandemic and whether CGI played a role.
4. Change in Sales (Sales), measured the effects of the strict lockdowns temporarily closing companies and the decreased demand for certain products. With this variable, our goal is to determine whether good corporate governance principles influenced companies' sales.
5. Change in Earnings Before Taxes (EBT), is a more complex measurement of performance than only sales. It includes expenses, which fueled a lot of worries during the pandemic, as companies' operations were hammered while the level of expenses either remained at best or increased at worst.
6. Change in Current Assets (CA), measured the impact of the pandemic on the companies' most liquid assets. This variable measured whether companies with higher levels of CGI had a lower change in their Current Assets, i. e. being able to maintain their operations without the need to dramatically decrease their CA.

7. Change in Current Liabilities (CL), measured the impact of the pandemic on companies' most liquid obligations. Those are obligations payable within 1-year, regardless of whether the company operates or not. CL was the biggest challenge during the pandemic as companies' operations were hit hard.
8. Change in Working Capital (WC), measured as the subtraction of CA and CL. During the pandemic, short-term liquidity problems posed a big threat to companies. With this variable, we want to identify whether companies with good corporate governance practices had their WC more likely to increase or maintain at best, or less likely to decrease at worst.
9. Change in Debt (D), measured as companies' total liabilities. During the pandemic, companies had two choices in raising capital: debt or equity. This variable identifies whether corporate governance was influential in increasing debt and to what extent.
10. Change in Equity (E), measured as companies' total equity. Raising equity to battle short-term liquidity problems was one of the options of companies. With this variable, we want to identify whether companies with higher levels of CGI were more likely to rise Equity or whether the equity of those companies decreased less.

The remaining 4 variables measured the year-end position, to determine whether companies with high levels of CGI dealt with the pandemic more efficiently and had a better position at the end of the year of 2020. The variables are as follows:

1. Retained earnings/Total assets (RE/TA), derived as the cumulative sum of retained earnings over the whole operational period divided by total assets. Retained earnings are another tool to battle short-term liquidity issues. This ratio focuses on whether companies with good corporate governance practices had at the end of 2020 better positions in retained earnings.
2. Current Ratio (CR), also known as the liquidity ratio was calculated as CA divided by CL and it measured whether companies with higher levels of CGI had a better position to pay for their short-term obligations.
3. Working capital/Total assets (WC/TA), is also a liquidity measurement. The inclusion of this variable is solely for the purpose of determining which of the liquidity variables is more influenced by the CGI.
4. Debt/Equity ratio (D/E) is measured as total liabilities divided by total shareholder equity. This variable is commonly known as the financial leverage and it measures the ability of shareholder equity to cover all outstanding debt. D/E focused on whether

companies with good corporate governance practices had lower leverage at the end of 2020.

To analyze whether our CGI was influential on companies' financial variables during the COVID-19 pandemic, we use the following model:

$$FV = \beta_0 + \beta_1 \times CGI + \beta_2 \times LN(TA) + \beta_3 \times Age + \varepsilon \quad (2)$$

where:

FV – all the financial variables listed above, each representing one model,

CGI – the evaluated Corporate Governance Index,

LN(*TA*) – the natural logarithm of Total Assets and together with age are the control variables.

2.2. Data and sample

A total of 43 non-financial companies listed on the Bratislava Stock Exchange were chosen for our analysis. The period of our analysis consists of only one year of data as we focused on the yearly change in chosen financial variables during the COVID-19 pandemic. Ten financial variables measured the year-over-year change for the period 2019–2020, while 4 financial variables measured the year-end situation in 2020.

The information was collected from annual financial reports publicly available in CERI (the Central Register of Regulated Information). The amendment to the Act on Stock Exchange No. 429/2002 requires to provide regulated information in CERI of the National Bank of Slovakia.

Next, we used Pearson's correlation to check for multicollinearity among any of the variables. Pearson's correlation as well as our regression analysis assume linear distribution; therefore, variables with log-normal distribution, i.e. SDO, CA, CL CR, and D, were transformed logarithmically. Because the data report a year-over-year change, we used indexation to avoid negative numbers. According to Gujarati and Porter (2009), possible evidence of multicollinearity can be present if the correlation coefficient is above 0.8. The results in Table 1 did not confirm any multicollinearity problem. In addition, there is no heteroscedasticity problem arising as the data in this research only cover one year (Kyere, Ausloos, 2021).

Table 1. Pearson's correlation between the financial variables

	CGI	LN(TA)	Age
CGI	1.00	0.44	0.11
LN (SDO)	–0.29	–0.11	0.15
LDO	–0.09	–0.03	–0.22
TDO	–0.10	0.15	–0.1
Sales	0.15	0.03	0.12
EBT	0.22	0.14	–0.07
RE/TA	0.00	0.48	–0.15
LN (CA)	–0.34	–0.05	0.00
LN (CL)	–0.07	0.03	0.05
LN (CR)	–0.29	0.00	–0.33
WC	–0.41	–0.18	–0.07
WC/TA	–0.38	0.00	–0.09
D/E	0.00	0.02	–0.37
LN (D)	–0.22	0.02	–0.05
E	–0.35	0.06	–0.12

Source: own processing.

3. Empirical results and discussion

3.1. Data analysis

In Table 2 we present the financial summary of the collected data. As it can be observed, the COVID-19 pandemic had the biggest influence on EBT, which declined by 290%, SDO, an increase of 218%, and WC, a decline of 133%. Interestingly, if looking at SDO, LDO, and TDO, we can simultaneously observe that companies tended to reduce their LDO in favor of SDO, even decreasing the TDO by 2%. The opposite trend would normally be expected, i. e. trying to move their debt obligations into long-term debt. A decrease of sales by only 9% may seem like a positive development, however, when looking at EBT, which also accounts for expenses and amortization, the situation is not as positive. Looking at RE, companies listed on the Bratislava Stock Exchange had a long tendency of accumulating negative earnings and thus were not prepared for the shock. CA moved very little in contrast with CL, which increased by 39%, which was also the main reason why WC decreased by 133%. Variable D increased by 5%, while E decreased by 12%.

Table 2. Financial summary of the variables

Variable	2020	2019	YoY (%)
SDO	561,626,978	176,726,589	218
LDO	620,154,229	977,059,745	–37
TDO	1,107,383,316	1,127,077,043	–2
Sales	736,413,147	809,781,004	–9
EBT	(29,938,797)	15,770,295	–290
RE	(194,287 528)	(186,062,588)	4
CA	553,824,889	570,828,355	–3
CL	600,093,452	431,075,917	39
WC	(46,268,563)	139,752,438	–133
D	2,021,513,809	1,927,241,287	5
E	476,076,576	542,930,265	–12

Source: own processing.

The summary statistics, including the number of observations, minimum, maximum, median, mode, standard deviation, skewness, and kurtosis are reported in Table 3 for the dependent, independent, and control variables for companies listed on the Bratislava Stock Exchange. The number of observations varies as we adjusted the data for extreme outliers.

The closeness of the median and standard deviation of CGI signifies that corporate Governance practices among Slovak companies are closely netted, which is reflected in the standard deviation of 0.275. Skewness and kurtosis indicate a close to a normal distribution of the data.

Change in SDO exhibits a high standard deviation, indicating that the data is largely spread around the mean. In total, 19 companies had a value of their change in SDO 0. This is because many companies in our sample did not use any SDO. While the change in LDO and TDO exhibits lower variation as their standard deviation is comparably low, 27 companies out of 39 had no change in LDO. Same as with SDO, also LDO are highly underutilized by companies listed on the Bratislava Stock Exchange. The kurtosis above 4 for SDO, LDO, and TDO indicates that most of the data are concentrated near the mean. Interestingly, the skewness of LDO exhibits a normal distribution. SDO is slightly positively skewed, while TDO is slightly negatively skewed. While using debt has its benefits in increasing the productivity and expansion of a company, during a situation like the COVID-19 pandemic, it may have put an unnecessary burden on companies. From this perspective, no publicly-traded company in Slovakia defaulted or was even close to defaulting on their debt.

The variable change in sales also exhibits a high variation with a standard deviation of 37.27, while the mean is –10.61%. Skewness indicates a normal close to a normal distribution, while the kurtosis of 3.6 indicates a high concentration of data around the mean. In general, it was expected that sales would drop significantly during the pandemic as many companies were effectively closed for a certain period, thus a –10.61% drop in sales is a very positive sign. This is also due to the reason that the travel sector, which was hit the most, has only four publicly listed companies. The data suggest that from the sales perspective, publicly traded companies in Slovakia generally resisted the shock quite well.

Change in EBT has a minimum value of year-to-year change –317.45% and a maximum value of 384.39%. The mean of -1.32% and the standard deviation of 118.37% indicate a high level of variation. This is due to the extreme values of the minimum and maximum as the skewness indicates a half-normal distribution. Kurtosis of 4.443 indicates that most of the data are concentrated around the mean. The variable EBT includes expenses as well, so it is a better proxy to measure operational performance. Indeed, the pandemic did not just decrease sales, but mostly increased expenses. The data indicate that companies did not have any issue managing excess expenses due to the pandemic and the results are similar to changes in sales. The variable RE/TA has a minimum value of –3.69 to 0.36. The mean value of –0.529 with a standard deviation of 0.99 indicates a high level of variation. The asymmetrical distribution of the data is apparent from the value of skewness and kurtosis. Retained earnings are a great tool to decrease the impact of a sudden shock, as a pandemic for example, and to operate without a need to increase indebtedness at best or cease the operation completely at worst. On the positive side, for 21 companies, RE/TA values range from –0.04 to 0.36. On the flip side, companies having a value of their RE/TA below –0.04 witnessed a much higher variation.

Change in CA has a mean value of 10.37 with a standard deviation of 68.42, indicating a high variation within the data set. The data set is positively skewed. Interestingly, the kurtosis of 21.108 indicates an occurrence of extreme values as well as data concentration. Considering the dataset, 19 companies were within the range of –15% to 15%. Most companies from the data set had a close value to this range. Change in CL, on the other hand, has a mean of 24.95% and a standard deviation of 84.66%, which is a comparably lower variation. The high number of skewness and kurtosis exhibits the same properties as with the change in CA, although the concentration appears to be lower. The data suggest that CL increased on average on a higher basis with a lower variation than did CA. Change in CR exhibits the same properties as CA and CL. Surprisingly, the overall liquidity situation did not improve, nor did it deteriorate, as the mean value is 4.62 and the median value is –3.32. A high standard deviation indicates high

variation in data. Considering skewness and kurtosis, this variation can be attributed to the variation in the lower half of the data set while the upper half is more concentrated. Change in Working Capital has a mean of 10.32% with a high standard deviation of 136.38. Upon looking at the minimum, maximum, skewness, and kurtosis we can conclude that there are extreme values on both sides, but the distribution appears to be close to normal with a high concentration around the mode. The variable WC/TA, in contrast, having a lower standard deviation, resembles a distribution close to normal with a lower level of concentration. The variables WC and WC/TA are important proxies of companies being able to pay for their short-term liabilities without the need of an external source.

Table 3. Descriptive statistics of the financial variables

Variable	N	Min.	Max.	Mean	Median	St. dev.	Skew.	Kurt.
CGI	41	0.269	1.393	0.72	0.602	0.275	0.779	–0.270
SDO (%)	38	–100.00	203.56	–0.084	0.00	57.72	1.532	4.890
LDO (%)	39	–100.00	110.96	–3.64	0.00	36.20	0.063	4.481
TDO (%)	39	–100.00	67.47	–7.16	0.00	31.63	–1.243	4.026
Sales (%)	39	–100.00	115.52	–10.61	–2.26	37.27	0.128	3.600
EBT (%)	36	–317.45	384.39	–1.32	–8.45	118.37	1.009	4.443
RE/TA	40	–3.690	0.360	–0.529	–0.024	0.990	–1.788	2.484
CA (%)	39	–72.98	371.92	10.37	3.42	68.42	4.070	21.108
CL (%)	40	–87.95	306.17	24.95	9.00	84.66	2.272	4.965
CR (%)	39	–90.38	325.92	4.62	–3.32	66.87	3.013	13.826
WC (%)	39	–533.32	419.34	10.32	2.11	136.38	–0.436	8.768
WC/TA	41	–1.070	0.890	0.102	0.086	0.370	–0.900	1.638
D/E	41	–7.400	22.950	2.480	0.936	5.600	2.389	6.969
D (%)	40	–46.64	203.91	17.14	0.257	57.43	2.372	5.143
E (%)	41	–189.91	46.58	–14.95	0.006	50.35	–2.477	6.045
TA (Euros)	41	72,482	561,927,000	62,001,747	10,909,970	124,187,819	2.864	8.062
Age	41	2	48	23.95	28	9	–1.073	2.169

Source: own processing.

Concerning the next variable D/E, we can observe that companies in Slovakia have a tendency not to leverage their business extensively, which agrees with our previous statement of debt underutilization. On average, the variable D/E has a value of 2.48 with a relatively low standard deviation of 5.6. Data are also positively skewed with the majority having a lower value than the median. On the positive side, high kurtosis indicates high concentration around

the mode. A change in D indicates that companies increased their indebtedness on average by 17.14% during the COVID-19 pandemic. Simultaneously, the variable change in E decreased on average by 14.95%. Both variables have a relatively high variation and high concentration around the mode. The difference lies in a change in D being positively skewed while the change in E is negatively skewed. Increasing indebtedness with a decreasing portion of equity can be attributed to the pandemic, as it forced companies to take on debt to continue their operations or survive at worst.

Our two control variables are TA and age. The smallest company in our data set had a value of their Total Assets just over 72 thousand, while the biggest company had well over 500 million euros. The age varies from 2 to 48 years of operation.

3.2. Correlation analysis

As was shown in Table 4, many variables did not have properties of normal distribution, and therefore, Spearman's Rho was used to determine the correlation between variables.

Table 4. Spearman's rank correlation between CGI and financial variables

Variables	Spearman's Rho	p-Value
SDO	–0.07784	0.6423
LDO	–0.22628	0.1660
TDO	–0.19859	0.2255
SALES	–0.0755	0.6478
EBT	0.08258	0.6321
RE/TA	0.15515	0.3391
CA	–0.31018*	0.0546
CL	–0.17496	0.2802
CR	–0.29104*	0.0722
WC	–0.2039	0.2131
WC/TA	–0.26723*	0.0912
D/E	–0.11524	0.4908
D	–0.13461	0.4076
E	–0.24253	0.1266
TA	0.43811***	0.0042
AGE	–0.01717	0.9152

*** 0.01 significance level, ** 0.05 significance level, * 0.10 significance level.

Source: own processing.

Of the presented financial variables, only TA is significant at a 0.01 significance level with a moderate level of correlation. This means that companies with a higher asset value tend to have higher levels of CGI. Variables CA and CR are both significant at a 0.10 significance level with a relatively low negative Spearman's Rho of 0.31 and 0.29. Companies with a higher level of CGI experienced a decrease in their CA and CR more frequently than companies with low levels of CGI. Lastly, WC/TA is also significant at a 0.10 significance level with a relatively low negative Spearman's Rho of 0.267, indicating that companies with a higher level of CGI had a lower portion of WC to TA.

3.3. Regression analysis

The next section focuses on the regression results. Variables as RE/TA and E had a high negative skewness, which would make the results less optimal and potentially biased; therefore, we excluded them from our regression analysis. All the other variables have a close to normal distribution or were logarithmically transformed to resemble a normal distribution. The results from the regression models are presented below in Table 5.

Table 5. Regression results

Dependent variable	R2	SE	Intercept	Independent variable	Control variables	
				CGI	LN (TA)	Age
LN (SDO)	0.167	1.327	4.6063*	–2.4338**	0.0854	0.0044
LDO	0.069	0.364	0.7012	0.0010	–0.0272	–0.0123
TDO	0.058	0.319	–0.5710	–0.2686	0.0388	0.0021
SALES	0.032	0.382	–0.4447	0.1504	0.0069	0.0049
EBT	0.056	1.203	–0.6678	1.0055	0.0103	–0.0097
RE/TA						
LN (CA)	0.157	0.437	4.3522***	–0.7593**	0.0456	0.0025
LN (CL)	0.054	0.599	3.5973***	–0.2957	0.0491	0.0185
LN (CR)	0.181	0.604	5.7307***	–0.5094	–0.0197	–0.0236
WC	0.171	1.294	1.7769	–1.9695**	–0.0046	–0.0068
WC/TA	0.187	0.353	–0.2654	–0.7024***	0.0481	0.0041
D/E	0.124	2.123	–2.3414	–1.2345	0.2768	–0.0563
LN (D)	0.075	–0.002	4.4111	–0.4322	0.0332	0.0021
E						

*** 0.01 significance level, ** 0.05 significance level, * 0.10 significance level.

Source: own processing.

Out of 12 models, the independent variable CGI was only significant in 4 cases: SDO, CA, WC, and WC/TA. The first model indicates that CGI influenced softening the impact of the pandemic as with each one-unit increase in CGI, the change in SDO would increase –2.43 times. This model can explain the 16.7% variation in SDO, however a high standard error indicates low precision.

While the first model indicates the positive impact of CGI on the company's financial situation due to the COVID-19 shock, the following three models indicate a negative impact. The second model concerning CA can explain the 15.7% variation. The precision is very low, as 95% of the observations should fall within plus/minus 0.88 of the fitted line. The CGI variable is significant on a 5% significance interval, indicating that an increase of 1 unit in CGI would result in increasing the change in CA –0.759 times. The third model can explain 17.1% of variation with low precision. Increasing CGI by 1 unit would increase the change in WC by –1.97. The last model has a similar explanation power at 18.7% with a low precision indicated by the standard error value of 0.353. The relation is also negative, indicating that an increase in CGI by 1 unit would result in increasing the WC/TA by –0.70.

3.4. Divided sample analysis

The regression and correlation analysis proved CGI to be influential on some financial ratios during the year of the COVID-19 shock on an individual company level. However, any conclusion drawn from these results needs to be taken very carefully as the models have low explanatory powers and low precision. The reason might be found in the low variation of CGI, especially in the lower half, and in many companies having the same CGI value, again, especially in the lower half. In the following section, we divide the sample into two equal sub-samples based on their CGI. With this methodology, we focus on observing specific variations and trends within the lower (CGI value 0.68 and above) and upper half (CGI level of 0.602 and below) of the sub-samples to conclude if there are any specific differences.

Financial summary

Table 6 presents the financial summary of the divided sample. As it can be seen, in both years most business activities and operations were performed in the upper half. The most significant is the allocation of debt. As much as 94% of all the TDO was allocated within the upper half of companies. The least notable difference can be seen in CA, but still, as much as 71% of CA are allocated in the upper half. The year-over-year change also tells us that companies within the upper half were hit more by the pandemic on average compared to their

counterparts from the lower half. However, such a simple conclusion may be misleading. When there is a high disproportion in a business activity conducted, it is natural that there will be disproportionality in the year-over-year change. Taking this into consideration, the upper half performed better.

Table 6. Financial summary of the divided sample

	2020		2019		YoY (%)	
	upper half (n = 20)	lower half (n = 21)	upper half (n = 20)	lower half (n = 21)	upper half (n = 20)	lower half (n = 21)
CGI	19.001	10.08				
SDO	530,672,350 (94%)	30,954,628 (6%)	158,948,961 (90%)	17,777,628 (10%)	234	74
LDO	508,850,460 (82%)	111,303,769 (18%)	908,683,987 (93%)	68,375,758 (7%)	–44	63
TDO	1,039,522,810 (94%)	67,860,506 (6%)	1,067,632,948 (95%)	59,444,095 (5%)	–3	14
Sales	636,394,298 (86%)	99,918,507 (14%)	710,534,971 (88%)	98,885,663 (12%)	–10	1
EBT	–33,200,496	3,259,053	14,302,556	1,437,858	–332	127
RE	–174,678,830	–19,879,224	–164,531,501	–21,787,082	–6	9
CA	391,890,843 (71%)	161,400,667 (29%)	466,676,048 (82%)	103,500,885 (18%)	–16	56
CL	548,827,491 (92%)	50,784,034 (8%)	381,195,566 (89%)	49,269,262 (11%)	44	3
WC	–156,936,648	110,616,633	85,480,482	54,231,623	–284	104
D	1,530,489,082 (76%)	490,541,300 (24%)	1,509,199,482 (78%)	417,429,716 (22%)	1	18
E	407,255,776 (86%)	68,094,127 (14%)	476,563,184 (88%)	65,641,710 (12%)	–15	4
TA	1,958,401,781 (77%)	582,459,770 (23%)	1,903,875,599 (79%)	500,589,601 (21%)	3	16

The proportion of total value in the current year is in parentheses.

Source: own processing.

Scatter plot analysis

In this section, we use a scatter plot analysis to visualize the different trends within the two sub-samples. As to debt obligations, many companies reported no usage of debt, especially from the lower half, and therefore had a 0% change every year. From the perspective of the COVID-19 pandemic, those companies were not endangered by debt, however, in other years, they were losing investment opportunities.

Out of the presented 14 variables, there was no influence of CGI levels on variables changing in LDO, TDO, and RE/TA show no influence. Variables changing in SDO and WC, although proved to be influenced by CGI levels, exhibit small differences within the two subsamples. This is mostly due to companies with lower levels of CGI not having any debt. Variables changing in Sales and D were not proven by our regression analysis to be influenced by CGI and the scatter plot analysis shows a very small difference in their subsamples. Furthermore, variables changing in CA and CR did prove the influence of CGI levels, however, there is no significant visible difference in the lower and upper half subsamples. The focus in this chapter is going to be on the rest of the variables, namely change in CL, EBT, WC, WC/TA, E, and D/E ratio, which show significant differences in their subsamples. All the scatter plots can be found in Table 7.

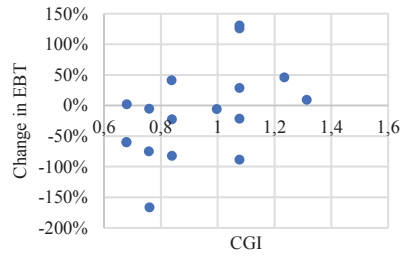
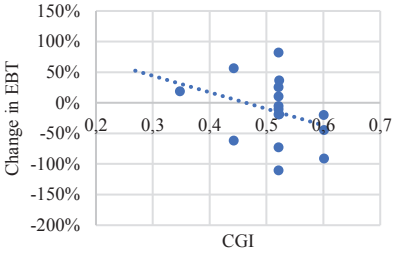
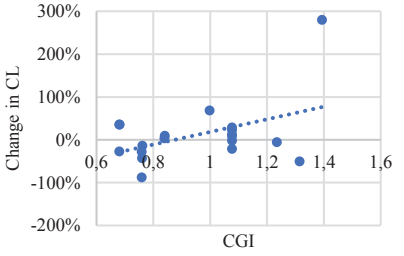
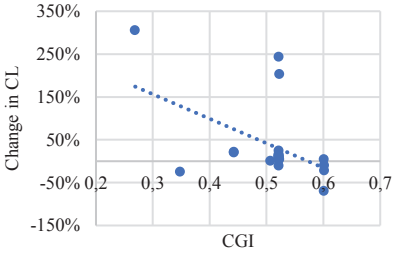
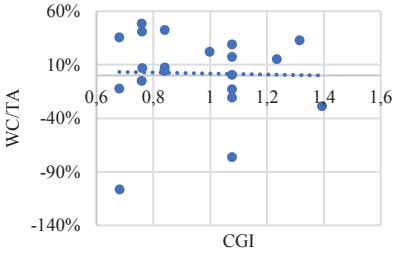
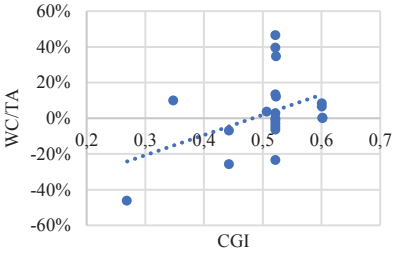
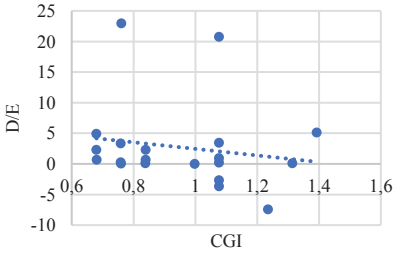
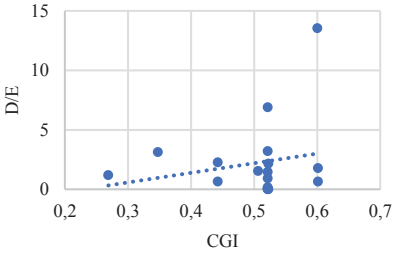
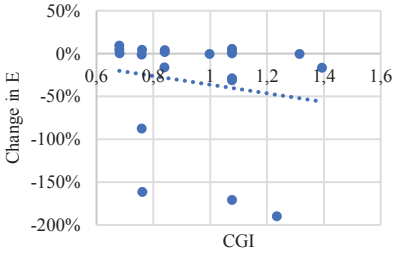
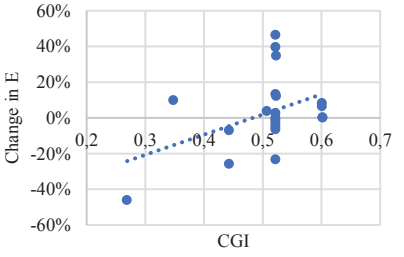
In the case of the variable in EBT, its upper half trend line is considerably skewed by the two outliers. Without them the trend line would be flat, indicating no relationship between the CGI levels and EBT. In its lower half, a clear decreasing trend can be observed, indicating a negative influence of the CGI levels on companies EBT. The variable is also skewed by outliers, most notably in its upper half, where most of the companies are located above the trend line.

Looking at the change in CL we can see that Upper half companies were more likely to increase their CL, while Lower half companies were more likely to decrease their CL because of the COVID-19 shock. However, it needs to be noted that the trend line in the Lower half is heavily influenced by the three outliers, and without them, there would be no relation between CGI and CL.

The variable WC/TA, which focused on the liquidity situation during the year of the COVID-19 shock, indicates that companies with higher CGI levels in the Lower half were more likely to have a better liquidity position at the end of the year. The situation in the Upper half needs a careful examination. Even though the trend line is showing no relation between CGI and WC/TA, the two outliers contributed significantly to skewing it. Without them, a clear decreasing pattern of deteriorating liquidity position with increasing CGI levels could be observed.

The relation in the Upper and Lower halves of the D/E variable is again heavily skewed by a small number of outliers. Without the two outliers in the Upper half and the Lower half, the D/E ratio would have a decreasing tendency with increasing CGI and no relationship respectively. Lastly, in the case of the variable E, companies with higher levels of CGI in the Upper half were more likely to decrease their E as compared to those companies in the Lower half, where the trend line was increasing, indicating a positive relationship with CGI levels and E.

Table 7. Scatter plot analysis

Upper half	Lower half
	
	
	
	
	

Source: own processing.

4. Discussion

The COVID-19 pandemic was unique, causing a slow-down in company activities at best, stopping them temporarily or even closing them at worst. This had a tremendous impact on financial variables. The most impacted areas were, as expected, EBT, SDO, and WC. The EBT decreased by 290%, SDO increased by 218% and WC decreased by 133% year over year, which can be considered as a serious deterioration in financial health. In our research, we analyzed whether the chosen financial variables deteriorated less in companies with higher levels of CGI compared to companies with lower levels of CGI during the COVID-19 pandemic.

The correlation analysis revealed the negative impact of CGI levels on CA, CR, and WC/TA, meaning companies with higher levels of CGI had their CA, CR, and WC/TA variables deteriorate more compared to companies with lower levels of CGI. In the case of variables CA and WC/TA, this was also confirmed in the regression analysis, while the model investigating CR did not confirm any relationship. In the case of CA, an increase of 1 unit in the level of CGI would mean increasing the change in CA –0.759 times, and in the case of WC/TA, increasing the change in WC/TA –0.7 times. The regression analysis further revealed the negative impact of CGI on WC, which would increase 1.97 times by an increase of 1 unit in CGI levels. The only positive impact can be found in SDO, where an increase of 1 unit in CGI levels would increase the change in SDO –2.43 times. To summarize our regression analysis, CGI had a positive impact only on decreasing short-term debt obligations, and a negative impact on decreasing companies' liquidity position, specifically variables CA, WC, and WC/TA. In addition, the negative impacts outweigh the positive ones. It needs to be added that the explanatory power and the precision of the models are very low.

The reasons behind this result can be found in the low sample size, low variation of CGI, especially in the lower half of the sample, as well as in many companies having the same CGI value, again, mostly in the lower half. Because of the above-mentioned reasons, we decided to divide the sample by CGI levels into two equal sub-samples, named Upper half and Lower half, and use a scatter plot to visualize the differences. With this regard, we focused on (1) evaluating the CGI on a group level instead of an individual company level, and (2) evaluating the CGI influence on individual companies within a subsample. On a group level evaluation, out of 11 variables, where a trend could be detected, only 3 proved that the Upper half sub-sample (companies with high levels of CGI) variables improved (WC, D/E, and D) in contrast with the Lower half, while the rest concluded a deterioration (SDO, sales, CA, CL, CR, WC/TA) or no relation (EBT, E).

Another consideration is that most of the business activity (70% or more, depending on the variable) in Slovakia is concentrated in the Upper half, providing some evidence of the importance of the CGI levels. However, these companies also suffered the most during the pandemic. This is also confirmed after examining the divided sub-sample, where the Upper half of companies' variables deteriorated more compared to the Lower half. The same conclusion can be drawn from examining companies individually within the two sub-samples. Increasing CGI levels for most of the variables where a trend could be detected would result in deteriorating the financial variable.

Conclusions

We studied whether non-financial companies with higher levels of corporate governance listed on the Bratislava Stock Exchange were more resilient during the COVID-19 pandemic. The evaluation was based on 14 financial variables, where 10 measured a year over-year-change during the period 2019–2020 and 4 measured the year-end position in 2020. The three main findings are presented below.

First, our summary statistics revealed that most of the business activity was concentrated in companies with higher levels of corporate governance and that those same companies suffered the most during the COVID-19 pandemic. Considering the proportionality, the results are obvious. If most of the business activity is conducted by only a handful of companies, then the drop will be more significant for them compared with the Lower half companies. This finding serves as evidence of the importance of corporate governance.

Second, according to our correlation and regression analysis, which focused on the individual impact of corporate governance on chosen financial variables, in most cases, corporate governance did not influence the chosen financial variables, except for variables changing in Short-term debt obligations, Current assets, Working capital and Working capital/Total Assets. Increasing corporate governance compliance had a positive impact on decreasing short-term indebtedness during the COVID-19 pandemic, and a negative impact on decreasing Current Assets, Working capital, and Working capital/Total Assets. It needs to be added that those models had a very low explanatory power and precision.

Third, in our divided sample per our Corporate Governance Index, we focused more on a group-level comparison. For the purposes of the analysis, we implemented the scatter plot analysis, which revealed a negative impact of corporate governance levels on most of the variables. This was consistent in both the Lower and Upper half sub-samples.

The corporate governance scene is relatively new in Slovakia, dating back to 2011. Previous studies confirmed a low level of adoption, hypothesizing a weak capital market as the main reason. The same studies also revealed that there is a slowly increasing trend in adoption. Our study focused on the short impact of the COVID-19 pandemic. While corporate governance is focusing more on the long-term sustainability of companies, it also advises companies to be better prepared for short-term shocks. The COVID-19 pandemic was a great test for companies, although at a great cost, in the future it might fuel further adoption.

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