

The Impact of COVID-19 Pandemic on Firms Performance: Analysis of the Companies from the MBI10 Index

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Abstract

The purpose of this paper is to evaluate the effect of Covid-19 pandemic on firms' performance with a special focus on companies whose shares form the MBI10 index at the Macedonian Stock Exchange. The objective of the study is to examine a set of firms' characteristics implying the firms' performance, such as: ROA, ROE, EBIT, profit margin, leverage, liquidity, share price and dividend per share in order to determine the difference prior and post Covid-19 pandemic. The hypotheses are tested according to the constructed model and, based on financial data of companies from MBI10 index, descriptive and regression analysis is used in order to investigate the pandemic impact on firms' performance. The results and conclusions reveal the extent of Covid-19 pandemic influence on firms' performance. This paper contributes to the limited literature by providing empirical evidence on the impact of the ongoing pandemic on the firms' performance in the Macedonian economy.

Key words

Firms Performance, COVID-19, MBI10 Index, EBIT, Profit Margin, Share Price, DPS

1. Introduction

The significance of the Coronavirus (Covid-19), which during 2020 spread literally around the world, creating one of the most severe pandemics in history, is not limited only to aspects related to health problems, but also includes the impact on almost all economies in world scale. This pandemic has become more than a health problem that has undermined the stability of the economy, both globally and locally. Businesses have faced problems and challenges in a variety of ways as a result of government measures to combat the spread of the coronavirus, which have included various measures to restrict movement, social distance policies, quarantines, staying at homes, changing habits, or simply said, blocking the community.

The damage caused by the coronavirus pandemic to human health, wealth, and well-being is unique in its aftermath after the devastating effects of World War II. From the first case reported in December 2019 in Wuhan, China, to mid-June 2021, over 176 million cases and over 3.8 million deaths occurred. In the same period, over 155.000 cases were registered in the Republic of

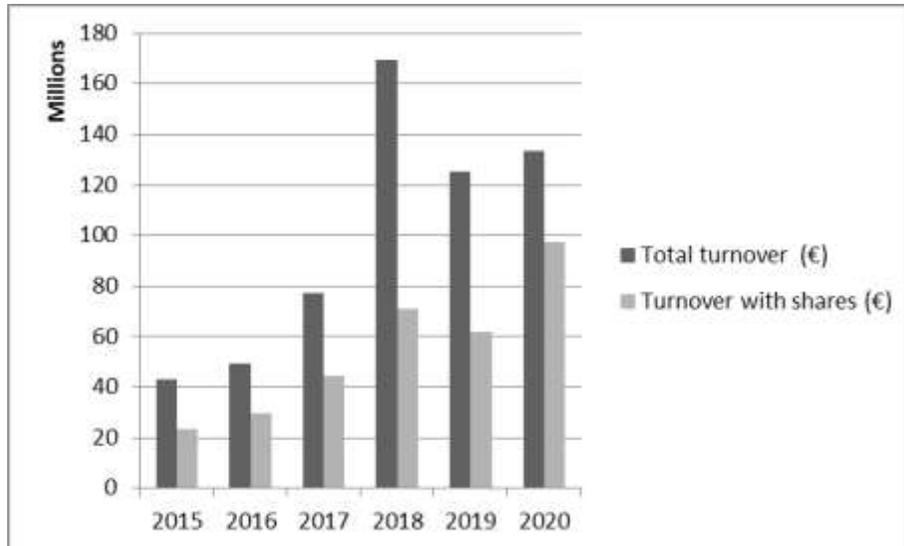
Macedonia, of which, so far, 5.472 ended with a fatal outcome [2]. Precisely because of such numbers, health care measures were necessary, which, in turn, caused a sharp decline in the mobility of the population, which led to weakened consumer power and stagnation in the economy.

At the macro level, the Covid-19 pandemic caused the worst global recession since 1930, with a significant decline in the gross domestic product of the strongest economies in the world, and in R. Macedonia GDP fell by 5.9% in 2020 compared to 2019 [3], which implies reduced business activity, reduced volume and income, but also lost jobs. It is necessary to assess the impact of this great health phenomenon on the performance of companies in these difficult economic times, because the activity of companies is at the core of the national economy. Numerous studies discuss the nature of the factors that may be the main reasons for the economic decline. However, the recent recession is primarily due to external factors, mainly the mandatory restrictive measures for protection against the Covid-19 pandemic. Therefore, the current analysis and measurement of the impact of financial crises from the past cannot be applied as a benchmark for determining the impact of the Covid-19 pandemic on firms' performance. Currently, there are limited methodologies for assessing the impact of the Covid-19 pandemic on the economy, industries and firms.

The biggest concern in the world so far - to save human lives, under the influence of the economic downturn that cannot be ignored, has turned into a concern to save businesses and jobs. However, the effects of a series of business support measures can only be evaluated by analyzing the current performance of firms affected by the ongoing pandemic. The activity of the capital market and the performance of the listed companies are part of the fundamental indicators for the health of the national economy. Therefore, the purpose of this paper is to evaluate the effect of Covid-19 pandemic on firms' performance with a special focus on companies whose shares form the MBI10 index at the Macedonian Stock Exchange.

The Macedonian Stock Exchange in the past specifically difficult year realized a turnover of cca 133 million euros, which is an increase of 6.4% compared to the previous 2019. It is considered that the increase in turnover, despite the extraordinary conditions for many businesses, is largely due to the improvement of stock trading in the BEST system, which last year reached about 92 million euros, ie an increase of 48.8% compared to 2019. In 2020, the stock exchange index MBI10 increased by 1.2% compared to 2019 (with a value of 4,704.85 index points).[4]

Figure 1 Total turnover and turnover with shares in BEST

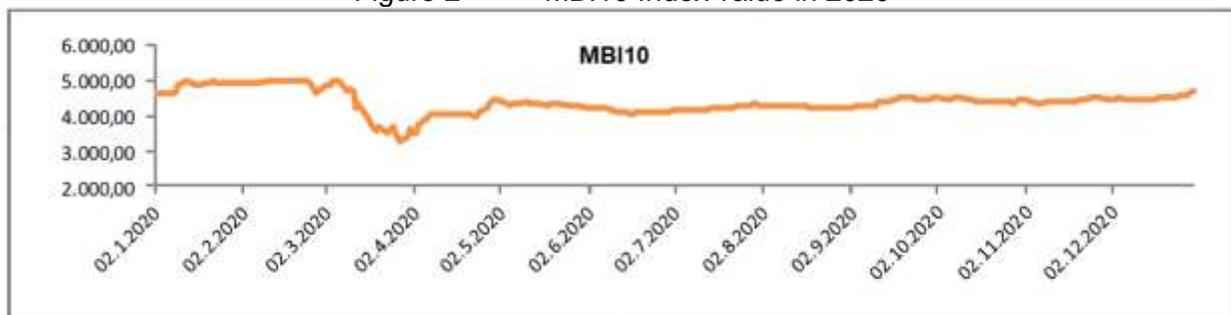


Source: Authors calculations

Figure 1 shows the analysis of stock turnover in classical trading in the last 5 years. There is a growing trend, and the turnover in 2020 is lower only compared to the turnover in 2018, and higher than the turnover in 2019 (before the occurrence of the Covid-19 pandemic). The same trend is observed in the average daily number of transactions, which in 2020 is 101.

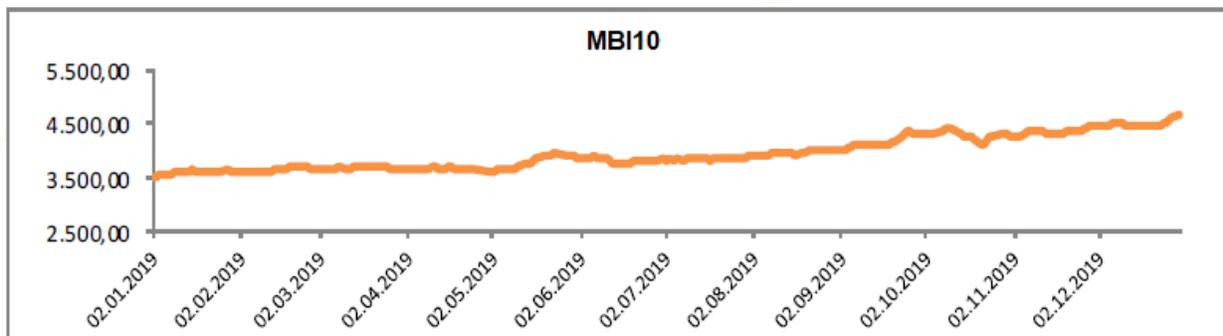
The value of the MBI10 index, after the emphasized price correction in March 2020 (decline of -22.47%) and the April positive performance (+23.2%), registered small oscillations in the further part of the year, to record an upward line again in September (+6.60%) [5]. At the end of 2020 an increase of 1.2% can be seen, compared to the last value of the index at the end of 2019 - Figure 2. The value of the index was in the interval 3,256.92 (min. 27.3.2020) - 5,002.11 (max. 11.2.2020). For comparison, Figure 3 shows the trend of MBI10 in 2019 with an interval of fluctuations 3,482.27 - 4,648.89.

Figure 2 MBI10 Index value in 2020



Source: Annual statistical bulletin of the Macedonian Stock Exchange, 2020

Figure 3 MBI10 Index value in 2019



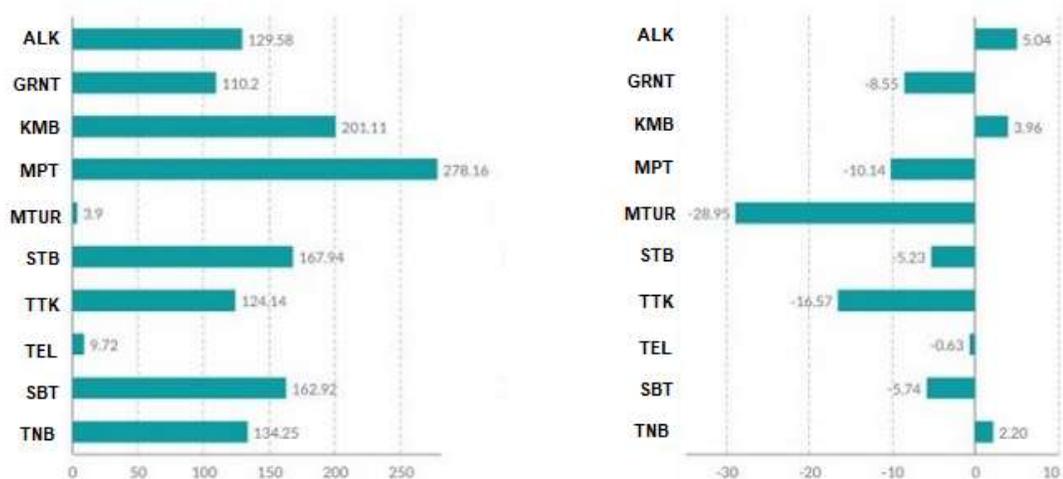
Source: Annual statistical bulletin of the Macedonian Stock Exchange, 2019

The analysis of the price movements of the individual shares from the current composition of the MBI10 index in 2020 shows that only three shares show a price increase, while the others have a downward correction of prices. Figure 4 shows the price performance of these stocks in the last five years.

Figure 4 Price performance of the shares from the MBI10 index

% price change MBI10
30.9.2020/30.12.2015

% price change MBI10
30.9.2020/30.12.2019



Source: Main accents for the period January - September 2020 on the Macedonian Stock Exchange, 2020

Table 1 synthesizes the stock trading within the MBI10 index. The analysis reveals that the dominant share traded during the pandemic is the share of Komercijalna Banka, with a share of over 40% of the total turnover within the index, followed by the share of Alkaloid with 19%. Although these are the winners within the index, it is noted that the sectoral analysis and the different impact of the pandemic in individual sectors is one of the key catalysts for investors' behavior in medium term.

Table 1 Overview of MBI10 index stock trading

Share	Max price (€)	Min price (€)	Average price (€)	Quantity	Total turnover (€)	% Turnover share	Market capitalization (€)
ALK	219.50	135.84	197.95	97,111	18,369,289	19.10	307,379,682
GRN	20.33	11.32	16.60	463,812	7,606,288	7.91	55,881,582
KMB	130.08	82.18	107.15	369,907	39,402,901	40.97	270,510,430
MPT	1,333.33	703.38	1,101.48	10,306	11,099,693	11.54	134,541,026
MTU	97.56	58.54	75.71	11,265	880,840	0.92	30,641,683
STB	21.46	13.50	18.02	132,386	2,355,518	2.45	325,065,966
TTK	28.46	17.24	22.39	100,883	2,310,911	2.40	19,984,608
TEL	5.35	4.24	5.04	111,348	552,091	0.57	489,323,202
SBT	53.59	34.15	45.24	41,685	1,939,192	2.02	18,372,740
TNB	315.45	198.42	278.67	41,999	11,671,775	12.14	255,662,813
Total					96,188,498	100.00	1,907,363,732

Source: Authors calculations based on MSE data

The market capitalization, as a stock market statistical indicator that shows the market value of all listed companies on a given day and is obtained as a product of the number of issued shares of each company multiplied by the last market price, of the 100 listed companies decreased for 1.21% at the end of 2020 compared to the end of 2019 [6]. The market capitalization of the listed companies on 30.09.2020 in relation to the gross domestic product is 26% [7].

2. Theoretical Analysis and Research Hypotheses

Researchers' opinions on the impact of the coronavirus pandemic are divided, from those who warn that it is too early to estimate the exact effect of the coronavirus pandemic, to a growing number of published studies on the impact of this pandemic on business management, finance and a range of micro and macro-economic aspects. At the firm level, it has already been examined how the Covid-19 pandemic can affect the stock market [8] and the performance of firms in selected industries [9], [10].

Although demand in some industries increased during the pandemic, in many other industries the decline was dramatic. As the global recession intensified, companies were forced to adopt various financial policies, operational flexibility, and technological change to combat the harmful effects of Covid-19 [12]. However, there are few studies on the impact of Covid-19 on corporate characteristics such as: corporate performance, corporate governance, capital structure and dividend policy, especially for the companies in the Macedonian economy.

To achieve the purpose of this paper, we set the following basic hypothesis within the research:

H0: The Covid-19 pandemic has a negative impact on the performance of listed companies whose shares form the MBI10 index.

The basic question that arises is: how, through which channel, in which way to examine the impact of Covid-19 on the performance of the company? One of the first steps managers demonstrated was to delay investment when uncertainty grows, which can lead to stagnation or avoidance of profitable projects. Also, due to the higher external risks of the pandemic, managers sought to concentrate cash and hold it for emergencies. Cash holdings and avoidance (delay) of investments reduce the momentum of sustainable development of companies. In addition, in the short run, based on several theories of hierarchy of needs, the demand for products and services to meet existential and security needs is more urgent than that of social contact during a pandemic, resulting in a contraction in demand for a range of product categories and services, which directly affects the revenues and thus the performance of the firms. The productivity and revenues of the companies have sharply decreased due to the implementation of measures to prevent the spread of the virus, which inevitably leads to the assumption of a decline in performance.

3. Research design

The research includes data on the 10 listed companies whose shares form the MBI10 index on the Macedonian capital market for 2019 and 2020, in order to evaluate the relationship between several key financial parameters as indicators of firms' performance and the impact of the Covid-19 pandemic on these variables. We used data from the audited financial statements of the companies, published on the website of the Macedonian Stock Exchange. Consistent with several other similar studies but with different domains [13], [14], [15], we use a conventional t-test to assess the impact of the Covid-19 pandemic on the performance of companies whose shares form the MBI10 index through analysis before and during the pandemic. Additionally, the paper includes descriptive statistics of key financial indicators as variables for measuring firm performance, as well as regression analysis to determine the impact of selected financial indicators (independent variables) on ROA and ROE before and during the pandemic (2019 and 2020). Table 2 includes the variables included in the study in alphabetical order.

Table 2 Variables included in the study

Variable		Explanation
Dividend per share	DPS	The sum of declared dividends issued by a company for every common share outstanding. The figure is calculated by dividing the total dividends over a period of time (in this case a year), by the number of outstanding ordinary shares issued.
Dividend yield	DY	Dividend to market price ratio.
Earnings before interest and tax	EBIT	Profitability indicator that can be calculated as revenue minus expenses excluding tax and interest.
Earnings per share	EPS	The company's profit divided by the outstanding shares of its common stock.
Leverage	LEV	Total debt to total assets ratio.
Liquidity	LIQ	The quick asset ratio or ratio of cash to current liabilities at the end of each financial year.
Market capitalization	MC	The number of shares issued by the company multiplied by the last market price.

Price/ earnings per share	PE	The ratio current share price relative to its per-share earnings (EPS). The price-to-earnings ratio is also known as the price multiple or the earnings multiple.
Return on assets	ROA	The ratio of earnings before interest and taxes to total assets.
Return on equity	ROE	The ratio of earnings before interest and taxes to equity.
Total revenues from regular activities	TR	Operating revenue that the company generates from its primary business activities.

4. Empirical Results

4.1 Descriptive analysis

The descriptive analysis was conducted on all factors involved in the study. As shown in Table 3, the mean value of ROA as one of the main indicators of the firms performance is 2.63% and 7.89% for ROE indicating that Macedonian listed companies have been performing slightly worse in the last year compared to the prior period, which might be also attributed to the Covid-19 crisis. The minimum and the maximum value of performance (ROA: 8.01% and -1.40%, ROE: 13.85% and -1.42% respectively) indicate that there is a great difference between the firms. Furthermore, the average value of TR, EBIT, DPS and PE is followed by significant value of standard deviation, which once again, proves the evident difference among the companies which shares form the MBI10 index.

Table 3 Descriptive statistical analysis of key variables

Variable		Obs.	Mean	Max	Min	Std. Dev.	P50
Total revenues from regular activities	TR	10	97,304,265	271,872,569	1,060,163	90,868,404	75,498,837
Earnings before interest and tax	EBIT	10	14,541,935	35,405,805	-1,416,504	14,609,715	13,198,431
Return on assets	ROA	10	2.63%	8.01%	-1.40%	0.03	0.02
Return on equity	ROE	10	7.89%	13.85%	-1.42%	0.05	0.09
Leverage	LEV	10	0.0074	0.0329	0.00000	0.01	0.00
Liquidity	LIQ	10	0.2221	0.4622	0.01862	0.15	0.21
Earnings per share	EPS	10	11.6132	50.4535	-1.27	17.11	2.60
Dividend per share	DPS	10	13.9886	32.5203	0.26	14.08	11.59
Dividend yield	DY	10	3.09%	5.10%	1.49%	0.01	0.03
Price/ earnings per share	PE	10	19.39	60.37	8.58	16.12	13.87
Market capitalization	MC	10	190,736,372	489,323,203	18,372,748	162,351,800	195,101,918.70

Source: Authors calculations

4.2 T-test analysis

The *t*-test analysis compares the mean value of all variables involved in this study before and after the Covid-19 crisis. As shown in Table 4, there is clear evidence that the Covid-19 pandemic has affected all firm characteristics implying the firms performance, including: total revenues, earnings before interest and tax, return on assets, return on equity, leverage, liquidity, earnings per share, dividend yield, price/ earnings per share, except dividend per share and market capitalization. However, the t-test analysis showed that the difference prior and post Covid-19 is not significant and therefore failed to support the basic hypothesis H0. It should be noted that the aggravated performance is contributed to the Covid-19 crisis in 2020, indicated by the negative ROA, ROE, and EBIT compared to the prior year. Several explanations could be combined with this influence including the measures taken by the government to fight against the pandemic.

Other firm characteristics have also experienced modification and reduction during the pandemic period. There was a decrease (but not significant) in the leverage level while liquidity in form of quick ratio has remained almost the same with slight decline. This reduction can be explained by the managers' intentions to minimize the risks from the following uncertainty. Hence, managers tend to increase the firm's cash level and reduce leverage to cope with the operational risks caused by Covid-19 and ensure that firms can smoothly survive the pandemic. To sum up, the listed companies from the MBI10 index have not been significantly affected in terms of several performance indicators, i.e. these firms have adequately withstood the onslaught of the pandemic.

Table 4 T-test prior and during Covid-19 pandemic

Variable	Obs.	Prior COVID-19 (2019)		During COVID-19 (2020)		Mean difference	t-test
		Mean	Std. Dev.	Mean	Std. Dev.		
TR	10	107,126,486	110,915,234	97,304,265	90,868,404	-9,822,221	0.1722
EBIT	10	18,207,483	16,037,111	14,541,935	14,609,715	-3,665,548	0.0344
ROA	10	4.07%	3.33%	3.35%	0.03	-0.01	0.0512
ROE	10	10.27%	5.45%	9.08%	0.05	-0.01	0.0519
LEV	10	0.013	0.019	0.007	0.01	-0.01	0.0278
LIQ	10	0.232	0.160	0.227	0.15	-0.01	0.2511
EPS	10	21.25	38.52	16.4311	29.43	-4.82	0.1178
DPS	10	7.66	11.39	9.9585	12.15	2.30	0.1845
DY	10	4.68%	2.20%	4.10%	0.02	-0.01	0.2866
PE	10	19.21	19.13	19.29	17.28	0.09	0.4695
MC	10	188,467,752.85	159,989,227.50	189,602,063	156,880,389	1,134,309.76	0.3311

Source: Authors calculations

4.3 Regression analysis

In this section, we evaluate the association between key financial indicators (independent variables) and firm performance. As shown in Table 5, several performance attributes (previously used in the t-test) were utilized to estimate the panel data regression. According to previous analysis [16], return on assets (ROA) and return on equity (ROE) are used to measure firm performance before and after the Covid-19 crisis.

Table 5 Regression statistics for ROA prior and during Covid-19 pandemic

Regression Statistics for ROA																	
	2020								2019								
	TR	LEV	LIQ	EPS	DPS	DY	PE	MC	TR	LEV	LIQ	EPS	DPS	DY	PE	MC	
Multiple R	0.81	0.31	0.03	0.21	0.19	0.88	0.08	0.74	0.89	0.64	0.49	0.67	0.65	0.01	0.32	0.36	
R Square	0.65	0.10	0.00	0.05	0.04	0.78	0.01	0.55	0.79	0.41	0.24	0.44	0.42	0.00	0.10	0.13	
Adjusted R Square	0.61	-0.01	-0.12	-0.07	-0.09	0.75	-0.12	0.49	0.77	0.33	0.15	0.38	0.35	-0.12	-0.01	0.02	
Standard Error	0.02	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	
B	0.00	-0.88	0.01	0.00	0.00	1.51	0.00	0.00	0.00	-1.13	-0.10	0.00	0.00	0.02	0.00	0.00	
A	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
Observations	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	

Source: Authors calculations

The results shown in Table 5 reveal that a high positive regression ratio exists between total revenue and return on assets in both 2019 and 2020, with a slight decrease in the ratio in 2020, but still a sufficiently high positive correlation, leading to the conclusion that the companies whose shares form the MBI10 index cope relatively well with the challenges posed by the pandemic. A similar relationship can be seen in the other variables, with lower regression coefficients, but with similar changes in the performance analysis in 2020 compared to 2019. There is an obvious deviation in the dividend yield variable, which is due to the individual decisions of some companies to pay dividends in conditions of pandemic, which, in turn, is due to the sectoral impact on the performance of selected companies. There is also a deviation from the direction and intensity of the relationship between market capitalization and return on assets - a higher rate of regression during the pandemic, which in turn can lead to the conclusion that the stock prices of these companies remain unchanged during the pandemic. In any case, according to the results of the panel regression, again, the basic hypothesis cannot be clearly accepted.

Table 6 Regression statistics for ROE prior and during Covid-19 pandemic

Regression Statistics for ROE																	
	2020								2019								
	TR	LEV	LIQ	EPS	DPS	DY	PE	MC	TR	LEV	LIQ	EPS	DPS	DY	PE	MC	
Multiple R	0.33	0.02	0.29	0.31	0.26	0.09	0.34	0.70	0.59	0.30	0.18	0.59	0.48	0.00	0.73	0.50	
R Square	0.11	0.00	0.08	0.09	0.07	0.01	0.11	0.49	0.34	0.09	0.03	0.35	0.23	0.00	0.53	0.25	
Adjusted R Square	-0.01	-0.12	-0.03	-0.02	-0.05	-0.12	0.00	0.43	0.26	-0.03	-0.09	0.27	0.14	-0.12	0.47	0.16	
Standard Error	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.06	0.06	0.05	0.05	0.06	0.04	0.05	
B	0.00	-0.10	0.10	0.00	0.00	0.26	0.00	0.00	0.00	-0.86	-0.06	0.00	0.00	0.00	0.00	0.00	
A	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
Observations	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	

Source: Authors calculations

Regarding the panel regression for assessing the impact of the selected independent variables on ROE before and during the pandemic, similar relationships can be found as in the previous analysis, but with a lower intensity of correlation. In this case, there is an increase in the regression coefficient between liquidity and ROE, which once again indicates the companies' efforts to accumulate cash during the pandemic. Finally, despite the deterioration, these results do not indicate a sufficiently valuable change to confirm that the Covid-19 pandemic has a negative impact on the performance of listed companies whose shares form the MBI10 index.

5. Conclusion

The coronavirus pandemic continues to be the source of problems and challenges that severely affect many businesses around the world, including listed companies. Having in mind that the performance of companies is one of the hottest topics, one question remains to be empirically answered - what is the impact of the Covid-19 pandemic on listed companies on the Macedonian Stock Exchange, especially since the literature is very limited in this area. In this paper, the answer to the question was sought through analysis of the sample of companies whose shares form the MBI10 index of the Macedonian Stock Exchange for the period 2019 and 2020 (before and during the crisis) in order to assess the impact of Covid-19 on firms' performance.

The empirical research included descriptive and regression statistics as well as t-test, and the results, although showing a general deterioration in the indicators used as key variables in the study, could not lead to a clear conclusion over a strong negative impact of the Covid-19 pandemic on the performance of companies from the MBI10 index, i.e. indicate that these companies cope relatively well with the challenges imposed by the current pandemic.

This paper contributes to the current literature by expanding the limited knowledge about the impact of pandemics on the various characteristics of companies. The analyzes in this paper are one of the first empirical studies on how Covid-19 influences the existing relationship between the key variables that determine the firms' performance within the Macedonian economy, with a focus on companies whose shares form the MBI10 index. However, this study is not without limitations, in terms of sample size, comparison with the performance of companies listed on stock exchanges in the region and in Europe, i.e. developed and emerging markets, as well as significant sectoral impact, given the high concentration of companies of the same sector within MBI10 (mostly from the banking sector). In the future, this research could be expanded by considering a larger sample size, comparing several different capital markets, and analyzing the long-term impact of the coronavirus. Finally, it is claimed that this pandemic has affected and affects different companies differently. Hence, different firm-level or country-level characteristics and the impact of Covid-19 on their performance need to be assessed in future.

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