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COVID-19 CASES INFLUENCING THE STOCK EXCHANGE INDICES ON THE EXAMPLE OF BIST100 IN TURKEY, NASDAQ IN THE USA AND WIG IN POLAND

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Abstract

The purpose of the article/hypothesis: The goal of this paper is to show differences between markets' reactions to a number of Covid-19 new cases. Stock exchanges and their indices from Turkey, the USA and Poland are analyzed during the first year of the global pandemic. The hypothesis that there are significant differences between markets regarding the reaction to new Covid-19 cases is tested in this research paper.

Methodology: BIST100 Index representing the Istanbul Stock Exchange in Turkey, NASDAQ Composite representing NASDAQ Exchange in the USA and WIG Index representing the Warsaw Stock Exchange in Poland are analyzed in relation to Covid-19 new cases. The correlation analysis with delays of markets' reactions and panel data OLS regression models are tested with rates of return as dependent variables.

Results of the research: The findings show the immediate negative influence of new cases rates of change on the stock indices rates of return, although there are some differences and similarities between correlation coefficients, especially when the delays in reactions are taken into consideration. The Turkish exchange was reacting immediately to the rates of change of new Covid-19 cases, the US exchange needed more time to adjust, while in Poland the correction was detected after investors' over-reaction in the first two weeks. The significant difference between the Polish and US markets regarding the correlation is confirmed indicating that the reactions on the global market were not identical. What the findings add to the literature is the evidence of differences and similarities between markets representing different religions, continents, and cultures.

Keywords: Covid 19, Stock Exchange, Rate of Return.

JEL Class: G1.

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INTRODUCTION

During the outbreak of the pandemic, and then during the calming down of market situation, behaviors and mechanisms that could not have been observed before, appeared on the global market. The financial crises that took place in the past were related to the economic system and revealed a response to its internal problems. In the case of the pandemic, an external factor appeared, for which no one was prepared, and this caused interesting phenomena in terms of research. This article is part of the discourse and the authors' aim is not to duplicate other studies, but to carry out an original assessment that will help to understand markets' reactions on the global level.

New events can influence the business and the financial markets in a positive or negative way. The results for the economy are difficult to predict and investors can react in a different way in relation to new information in stressful times, by pricing companies according to new patterns. The reaction of markets to the information about new cases of Covid-19 may not be the same. Some markets react faster because of the higher level of information efficiency, while others are more resistant to new information. Also, the strength of market reaction can be different depending on the domination of sectors, subjective assessment of the current situation and the forecast of the future market conditions. Culture can be recognized as a significant factor influencing the decisions of market participants, too.

The literature indicates the findings about the growth in a number of cases of Covid-19 related in a negative way to the rates of return. This paper provides the results of one-year period analysis for three different indices representing the stock exchanges in Turkey, the USA and Poland. The pandemic may be a global phenomenon, but the reaction is expected to be locally specific. The choice of three developed markets representing different cultures and regions can justify these differences.

The active response of the policymakers to the pandemic can affect business and exchanges in a positive or negative way. The lockdown can reduce a number of cases but, on the other hand, it can lead to financial distress of many companies (restaurants, tourist agencies). Some companies can grow faster (courier companies, internet businesses, healthcare, pharmaceutics) due to the fact that some services are highly required by the society in a situation of restrictions and fear for life. Turkey, Poland, and the USA represent different types of markets and their comparison can bring an idea about investors' reaction to the distress and information related to the Covid-19 new cases.

Pandemic can influence the administration efficiency in a negative way when the staff are ill and do not work efficiently. It can influence the application of different programs directed to companies suffering from lockdowns. The budget suffering from the outflows of cash may rely on a tax increase that can affect the

earnings of companies in a negative way. Sick personnel in companies influences the productivity in a negative way through sick leaves and isolation resulting in lower earnings. As a result, the pandemic can affect the development of business and economy on its own. The lack of growth is affecting the expectations of investors who require rates of return based on risk that is rising in the times of pandemic. Long term consequences of the pandemic may result in economic stagnation affecting the stock exchanges around the world, or contrary, can be a signal for the development. The pandemics can be a motor of development, especially in the area of healthcare, shopping and distribution, education, communication or IT technology.

The goal of this paper is related to the analysis of Covid-19 number of new cases that could influence the rates of return of three different stock exchange indices: BIST100 quoted on the Istanbul Stock Exchange, NASDAQ Composite Index and WIG quoted on the Warsaw Stock Exchange during the first year of the pandemic. The hypothesis that there are significant differences in the strength of reaction, and time the information affected the prices of shares on these markets is tested. This paper is organized as follows. Section one provides the literature overview, data and methods are presented in section two followed by results, discussion of results and conclusions.

1. LITERATURE OVERVIEW

The literature related to the influence of a pandemic on financial markets is not new, especially that mankind has dealt with pathogens or other plagues before. In the literature related to a pandemic, costs and market behavior are most often discussed. Haacker (2004: 198-258) analyzed the impact of HIV/AIDS on government finance and public services. Moreover, Yach et al. (2006: 62-66) presented economic consequences of the global epidemics of obesity and diabetes. The consequences of Covid-19 illness seem to be long term resulting in economic losses. The current epidemic is more severe and higher costs are related to the fight and prevention on the levels of governments and companies.

Gurav and Kotrappa (2020: 108-115) found that the Covid-19 pandemic spread fear and uncertainty among investors who then made their investment decisions under the ambience affecting stock market prices in a negative way. Markets will often react negatively to such incidents in the short term, but in the long term, they will eventually correct and improve. The analysis of many markets and their reaction to pandemics around the world are presented in a great number of research papers. Ngwakwe (2020: 255-269) analyzed global stock markets and concluded that indices reacted in a different way, and there was a change in their behavior before and during the Covid-19 pandemic. Ramelli and Wagner (2020:

622-655) examined the US companies and the impact of the Covid-19 on the international trade, and found a negative market reaction, especially in cases of trade with China. Mazur et al. (2021: 1-8) found, when examining S&P500 that natural gas, food, healthcare, and software stocks earned high positive returns, whereas petroleum, real estate, entertainment, and hospitality sectors lost a lot of their value in March 2020 that was a critical period for markets around the world.

There is some evidence that in many countries, i.e. the USA, the UK, Germany, and South Korea stock markets volatility increased significantly (Ali et al., 2020: 1-6). Zhang et al. (2020: 1-6) confirmed a significant impact of the Covid-19 pandemic on global markets and their volatility that increased substantially. Sharma (2000: 1-6) confirmed more prominent volatility and found differences between markets.

The impact of a pandemic is compared to that of the natural disasters or terrorist attack, therefore, markets may react in a similar way according to Goodell (2020: 1-5). It should be stressed that contrary to the natural disasters affecting every sector of business, during a pandemic some sectors can benefit. Additionally, high level of uncertainty with the scenarios that are unpredictable are related to decisions on the market. After a sharp reaction, markets have started the recovery process but there are differences between their performances (Seven and Yilmaz, 2021: 1-13). Fiscal policy, natural resources and tourism revenues are negatively associated with countries' stock markets recovery performance. Moreover, Elnahas et al. (2018: 1-50) found that companies operating in the regions characterized by a higher disaster frequency, adjusted to be less leveraged and therefore are more immune. It can be expected that high leveraged companies will change their aggressive approach to the management resulting in higher earnings, to a more conservative approach, offering investors lower rates of return supported by a lower risk. There are just few examples how the Covid-19 pandemic can affect and change the economy.

The question that arises concerns investors and their behavior. They can either accept the pandemic situation and lower expectations toward rates of return, or decide to remove capital from the exchanges and invest on other markets. The risk premium of the country can increase due to the Covid-19 pandemic, affecting the values of companies and their shares. Lee and McKibbin (2004: 113-131) found the influence of SARS on the market risk premiums for China and Hong-Kong, for example, in the previous local pandemic. As the findings are related to the specific countries, it is intriguing how Covid-19 can influence the global market.

The impact of pandemic on investors can explain the market behavior. The results presented by Naseem et al. (2021) show that investors' reaction and psychological resilience are negatively related to stock markets represented by Shanghai, Nikkei 225, Dow Jones indices.

There are differences between markets that are related to the religion and culture. Salisu and Sikiru (2020: 1-5) found that Islamic markets, usually effective in hedging strategies, during a pandemic became less effective. The pandemic made markets divided by religion more alike. Analyzing the differences between markets Harjoto et al. (2021: 1-15) found that impacts of COVID-19 on emerging markets were different from developed markets.

Market sentiment can play an important role in patterns of share prices. The sentiment is defined as investors' optimism or pessimism about the future stock prices, which cannot be explained by rational decisions (Baker and Wurgler, 2006: 1645-1680). The sentiment becomes a reason for the mispricing of stocks because investors do not behave rationally following other market players rather than making decisions on their own. The bubble periods for instance, are characterized by several months of sustained optimism followed by several months of sustained pessimism (Cheema et al., 2020: 225-233). The financial crisis changed the situation of market competition, and currently, a positive relationship exists between sentiments and returns (Ryu et al., 2020: 1804-1816).

The information plays a very important role in the market efficiency and stocks pricing, but during the pandemic, the financial news, media, and amplifiers have worked as fear spreaders about Covid-19 that could significantly affect the sentiment of the market as Tetlock (2007: 1139-1168) indicated, pointing out that spread of news about the stock market strongly affected investor psychology. Herding behavior is a process where investors imitate the actions of others (Hirshleifer and Hong, 2003: 25-66). Findings confirm that the Covid-19 pandemic increased herding behavior on the capital markets in Europe (Espinosa Mendez and Arias, 2021: 1-6). Moreover, Dhall and Singh (2020: 366-390) found, when testing the Indian market, the evidence of herding behavior during the post- Covid-19 outbreak period (01 January 2020 to 01 June 2020). Further, the findings suggest that Covid-19 pandemic caused the formation of herding behavior at the industry level.

The pandemic should be treated as a special period that is characterized by extraordinary behavior of investors. The reaction of markets on the information about new cases and the rates of their change should be analyzed considering the delays and market differences to fill one of many gaps in understanding what is happening around us.

2. DATA AND METHODS

The indices representing daily closing prices of BIST100 Index quoted on the Istanbul Stock Exchange in Turkey, NASDAQ Composite Index quoted on

NASDAQ Exchange in the USA and WIG Index quoted on the Warsaw Stock Exchange in Poland are analyzed. Daily data of new cases and closing value of indices are cumulated for weekly values to equalize the periods of Covid-19 cases reporting and stock exchanges working days. Reporting of new cases during weekends is not always as efficient as during other weekdays and this is the reason for including it in one, average observation. As a result, there are 51 weekly observations for Covid-19 new cases in surveyed countries and BIST100 Index, 58 for NASDAQ Composite Index and 52 for WIG Index.

Pearson correlation between numbers and prices and rates of change of variables is analyzed. The delays in reaction of the markets are analyzed for the periods of 0, 1, 2, 3 and 4 weeks. Moreover, panel data regression models are tested with the rate of return (*R*) as a depended variable and the rate of change of number of cases (*C*) as the explanatory variable according to the formula (1):

$$R_{it} = a_{it} + bC_{it} + \mu_{it} \tag{1}$$

The inequality of the correlation coefficients between countries are tested at the end of the survey. To verify the significance of the difference between two Pearson correlation coefficients from two independent populations, the t-test based on the Fisher transformation is used. The null hypothesis states that these correlation coefficients are equal.

The t-statistic is given by the formula (2):

$$t = \frac{z_A - z_B}{\sqrt{\frac{1}{n_A - 3} + \frac{1}{n_B - 3}}} \tag{2}$$

where:

$z_A = \frac{1}{2} ln\left(\frac{1+r_A}{1-r_A}\right)$,

$z_B = \frac{1}{2} ln\left(\frac{1+r_B}{1-r_B}\right)$,

r_A, r_B denote the estimated correlation coefficients in the two samples of companies and

$n_A, n_B > 3$ are the numbers of companies in each sample.

The test statistic has a t-Student distribution with $n_{countryA} + n_{countryB} - 4$ degrees of freedom.

The results of the research are presented in the next section.

3. RESULTS

The results of the research on the influence of Covid-19 cases on exchange markets and their indices in Turkey, the USA and Poland are presented in this section.

3.1. Turkey

Weekly number of cases and the close price of BIST100 Index for Turkey is presented in Figure 1:

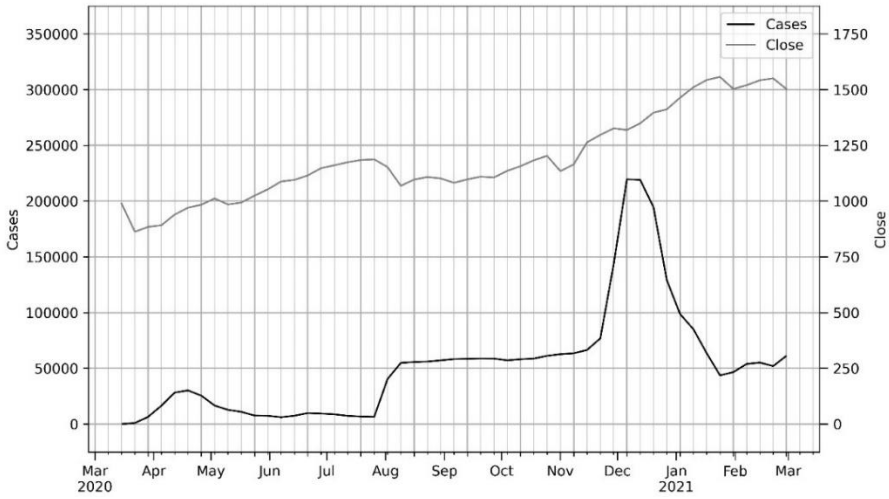

Figure 1. Weekly numbers of Covid-19 cases in Turkey and the close price of BIST100 Index

Source: Own study.

The weekly rate of return of the BIST100 Index and the rate of change of Covid-19 cases for Turkey are presented in Figure 2:

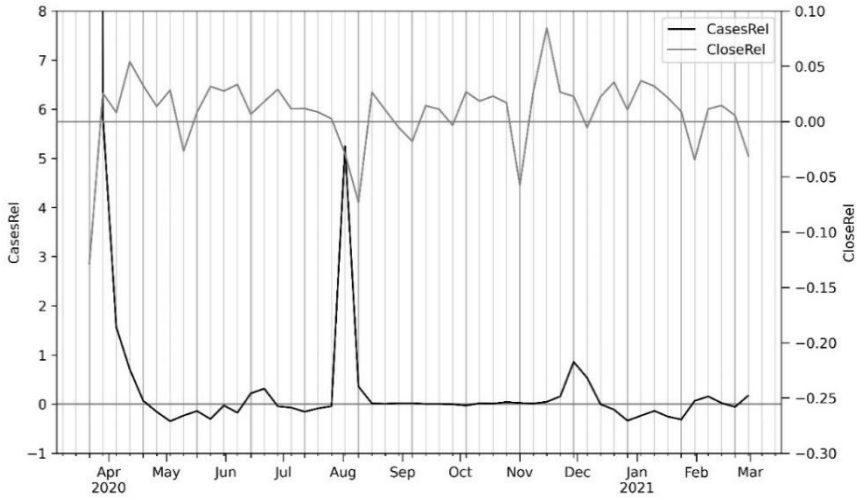

Figure 2. Weekly BIST100 index rates of return and number of Covid-19 cases rate of change for Turkey

Source: Own study.

The Pearson correlation analysis between variables is presented in Table 1:

Table 1. Pearson correlations for dataset, Turkey

	Covid-19 cases	Index close price	Cases rate of change	Index rate of return
Covid-19 new cases	*1.000*	*0.507*	*-0.154*	*0.119*
Index close price		*1.000*	*-0.257*	*0.136*
Covid-19 cases rate of change			*1.000*	*-0.607*
Index rate of return				*1.000*

Source: Own study.

The correlation between Covid-19 number of cases rate of change and rate of return of BIST100 Index is negative. The correlation between index rates of return and a number of cases is positive on the other hand. The correlation for rates is higher and is explored with delays of market reaction in the next step.

Correlations for weekly delays related to the reaction of the market to the information about the rate of change of Covid-19 cases are presented in Table 2:

Table 2. Covid-19 cases rate of change and BIST 100 rates of return correlations with delays

Delay of market reaction	Pearson correlation	p-value
0 week(s)	*-0.607*	*0.0000**
1 week(s)	*0.063*	*0.6668*
2 week(s)	*-0.004*	*0.9761*
3 week(s)	*0.240*	*0.1028*
4 week(s)	*0.122*	*0.4159*

* For all values of $p < 0.05$ the relationship is statistically significant.

Source: Own study.

No delay is statistically significant when the Turkish exchange market is analyzed. The correlation is negative indicating that investors react immediately to the information related to a change of a number of cases.

In the next step, the OLS model parameters estimation is presented in Table 3:

Table 3. OLS model estimation, using observations (n = 51), dependent variable: weekly rate of return of BIST100 Index

	Coefficient	Std. Error	t-ratio	p-value
Const.	*0.012*	*0.004*	*3.181*	*0.003**
Covid-19 cases rate of change	*-0.009*	*0.000*	*-5.303*	*0.000**

Tests					
Durbin-Watson	*1.623*	Jarque-Bera	*18.340*	F-stat	*28.12*
R-squared	*0.369*	Prob (JB)	*0.0001*	P-value(F)	*0.0000*
Adjusted R-sq.	*0.356*	Skew	*-0.827*	Kurtosis	*5.464*

* For all values of $p < 0.05$ the relationship is statistically significant.

Source: Own study.

Tests related to the model estimation enable to formulate conclusions. The rate of change of a weekly number of Covid-19 cases by 1 causes the negative change of a weekly rate of return of BIST100 Index by 0.009 with the adjusted R-squared on the level of 35.6%.

3.2. The USA

Weekly numbers of Covid-19 new cases and the close price of NASDAQ Composite Index are presented in Figure 3:

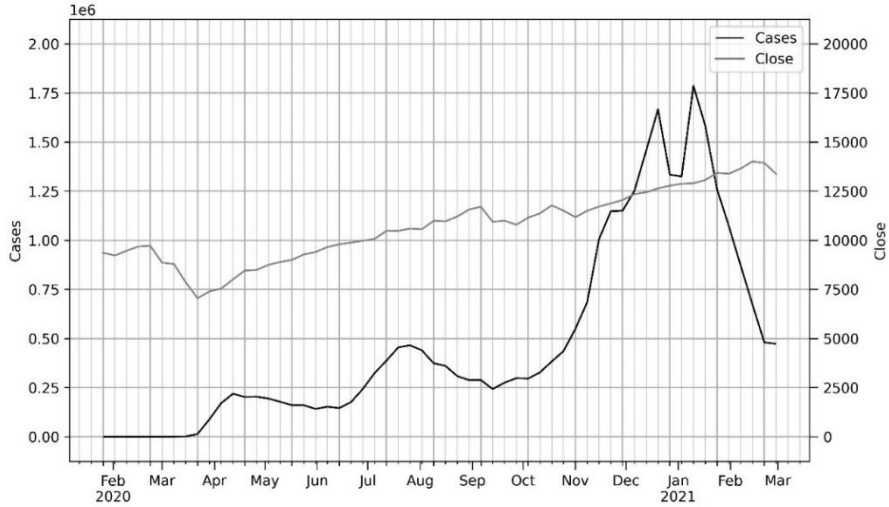

Figure 3. Weekly number of cases and the close price of NASDAQ Index for USA

Source: Own study.

Weekly rates of return of NASDAQ Index and the relative changes of a number of Covid-19 cases for the USA are presented in Figure 4:

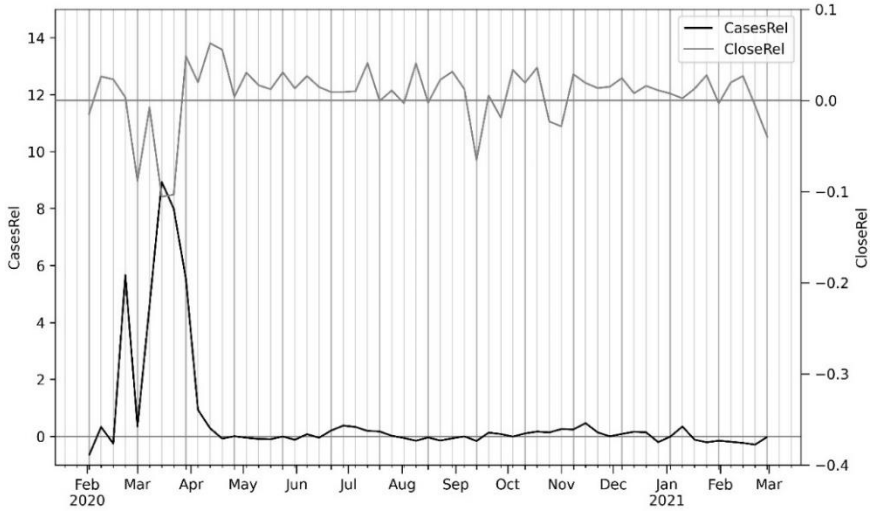

Figure 4. Weekly NASDAQ Composite Index rates of return and Covid-19 cases rate of change for the USA

Source: Own study.

The Pearson correlation analysis for the dataset is presented in Table 4:

Table 4. Pearson correlations for dataset, USA

	Covid-19 new cases	Index close price	Cases rate of change	Index rate of return
Covid-19 newa cses	*1.000*	*0.748*	*-0.292*	*0.155*
Index close price		*1.000*	*-0.479*	*0.133*
Cases rate of change			*1.000*	*-0.479*
Index rate of return				*1.000*

Source: Own study.

The correlation between rates of change of a number of Covid-19 cases and rates of return of NASDAQ Index is negative, and the correlation between a number of cases and rates of return is positive. The analysis for relative changes of variables is the strongest and they are chosen for the next correlation test.

Correlations related to the delays in time of market reactions to the information about the changes of a number of Covid-19 cases are presented in Table 5:

Table 5. Covid-19 cases rate of change and rates of return correlations with delays

Delay of market reaction	Pearson correlation	p-value
0 week(s)	-0.479	0.0002*
1 week(s)	-0.438	0.0007*
2 week(s)	0.069	0.6125
3 week(s)	0.100	0.4691
4 week(s)	0.129	0.3536

* For all values of $p < 0.05$ the relationship is statistically significant

Source: Own study.

The statistically significant negative correlations are reported for 0- and 1-week delays. These results indicate that investors reacted immediately and one week after announcements related to the change of a number of Covid-19 cases.

In the next step, the model parameters estimation is presented in Table 6:

Table 6. OLS model estimation, using observations (n = 52), dependent variable: weekly rate of return of NASDAQ

	Coefficient	Std. Error	t-ratio	p-value
Const	*0.0119*	*0.004*	*2.906*	*0.005**
Covid-19 cases rate of change	*-0.0083*	*0.002*	*-4.050*	*0.000**

Tests					
Durbin-Watson	*2.111*	Jarque-Bera	*16.998*	F-stat	*16.41*
R-squared	*0.230*	Prob (JB)	*0.0002*	P-value(F)	*0.0001*
Adjusted R-sq.	*0.216*	Skew	*-0.694*	Kurtosis	*5.286*

* For all values of $p < 0.05$ the relationship is statistically significant

Source: Own study.

Tests related to the model estimation enable to formulate conclusions. The relative change of a weekly number of Covid-19 cases by 1 caused the negative change of a weekly rate of return of NASDAQ Index by 0.008 with the adjusted R-squared on the level of 21.6%.

3.3. Poland

Weekly numbers of cases and the close price of WIG Index are presented in Figure 5:

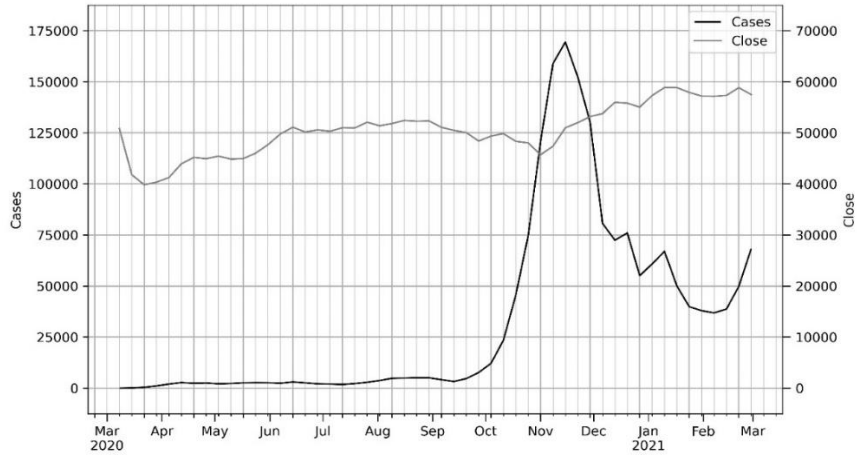

Figure 5. Weekly numbers of cases and the close price of WIG Index for Poland

Source: Own study.

Weekly rates of return and the rates of changes of number of Covid-19 cases for Poland are presented in Figure 6:

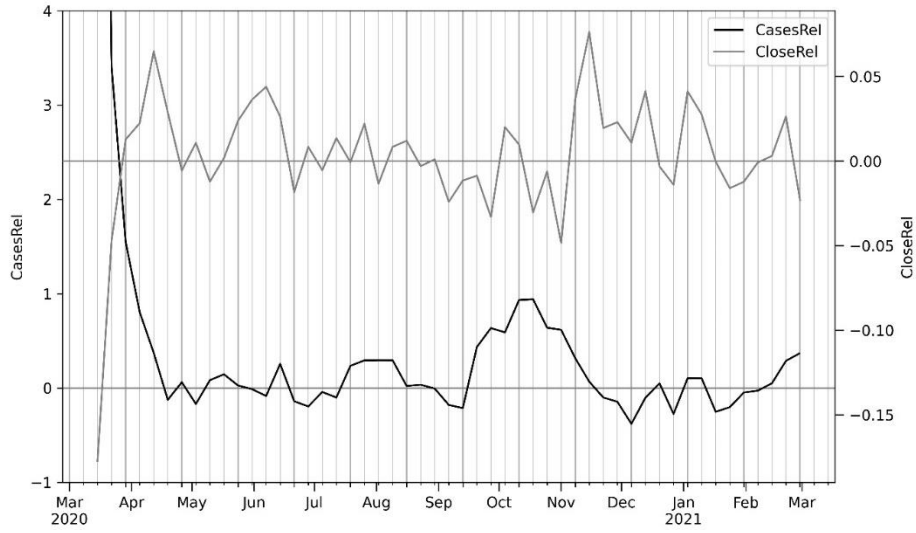

Figure 6. Weekly WIG Index rates of return and Covid-19 cases rate of change for Poland

Source: Own study.

The Pearson correlation analysis for the dataset is presented in Table 7:

Table 7. Pearson correlations for dataset, Poland

	Covid-19 new cases	Index close price	Cases rate of change	Index rate of return
Covid-19 new cases	*1.000*	*0.321*	*-0.133*	*0.222*
Index close price		*1.000*	*-0.3750*	*0.212*
Cases rate of change			*1.000*	*-0.742*
Index rate of return				*1.000*

Source: Own study.

The results indicate a positive correlation between a number of cases and WIG rates of return and a negative correlation between rates of changes of cases and index rates of returns. The last one is the strongest and taken for further analysis.

Correlations related to delays in the reaction of the market to information about the change of the number of Covid-19 cases are presented in Table 8:

Table 8. Covid-19 cases rate of change and rates of return correlations with delays

Delay of market reaction	Pearson correlation	p-value
0 week(s)	*-0.742*	*0.0000**
1 week(s)	*-0.283*	*0.0462**
2 week(s)	*0.083*	*0.5685*
3 week(s)	*0.172*	*0.2000*
4 week(s)	*0.366*	*0.0112**

* For all values of $p < 0.05$ the relationship is statistically significant

Source: Own study.

The results presented in Table 8 indicate that delays related to the announcements of a number of cases are statistically significant and negative in case of 0- and 1-week delay. In the case of 4-week delay the correlation becomes positive and it can be considered as a market correction.

In the next step, the OLS model parameters estimation is presented in Table 9:

Table 9. OLS model estimation, using observations (n = 52), dependent variable: weekly rate of return of WIG

	Coefficient	Std. Error	t-ratio	p-value
Const	*0.0095*	*0.004*	*2.689*	*0.0000**
Covid-19 cases rate of change	*-0.0122*	*0.002*	*-7.760*	*0.0003**

Tests					
Durbin-Watson	*1.537*	Jarque-Bera	*2.337*	F-stat	*60.21*
R-squared	*0.551*	Prob (JB)	*0.311*	P-value(F)	*0.0000*
Adjusted R-sq.	*0.542*	Skew	*-0.827*	Kurtosis	*5.464*

* For all values of $p < 0.05$ the relationship is statistically significant

Source: Own study.

Tests related to the model estimation enable to formulate conclusions. The rate of change of a weekly number of Covid-19 cases by 1 causes the negative change of a weekly rate of return of WIG Index by 0.012 with the adjusted R-squared on the level of 54.2%.

3.4. Differences between markets

The differences between correlations of relative changes of a number of cases and rates of return are presented in Table 10:

Table 10. Test for the difference between Pearson correlation coefficients

	USA	**Poland**
Turkey	*t-stat: -0.927* *k = 58+51-4 = 105* *p-value: 0.4000*	*t-stat: -1.234* *k = 51+52-4 = 99* *p-value: 0.2000*
Poland	*t-stat: -2.209* *k = 52 + 58 = 110* *p-value: 0.0300**	

* For all values of $p < 0.05$ the relationship is statistically significant

Source: Own study.

The statistically significant difference between correlation coefficients related to the relative changes of a number of cases and rates of return are found for the Polish and US markets. For other correlations, the differences are not statistically significant. The analysis of the differences between the correlation indices concerning the rates of return of indexes and the rates of change of the number of new cases showed that there is a significant difference between markets that reacted in their own way to the pandemic.

4. DISCUSSION OF RESULTS

The correlation results indicate that there is a negative correlation between new cases rates of change and rates of return of indices. Results are confirmed by Gurav and Kotrappa (2020: 108-115) findings regarding the negative impact of the pandemic on markets. The negative, strong reaction of all surveyed markets was recognized in the first month of the pandemic confirming the findings presented by Goodell (2020: 1-5)

There are differences between markets' reaction patterns taken into consideration according to Ngwakwe (2020: 255-269) findings. The Turkish market is the most efficient, it immediately reacted in a negative way to the rates of change of a number of cases. The US market reacted negatively within two weeks (0- and 1-week delays) to the announcements about the rate of change of a number of cases. The Polish market was found to be the least efficient. First, it reacted very strongly in a negative way in the weeks 0 and 1, but the correction was detected after four weeks with a positive correlation between the rate of change of a number of cases

and index rate of return. Turkish investors are the most settled, whereas Polish investors the least in the process of reaction to new Covid-19 rates of change. On the other hand, WIG Index is influenced by the rate of change of new cases in the highest degree.

The highest regression coefficient for a rate of change of a number of cases is found for the Polish market followed by the Turkish market with the lowest one for the USA. It can indicate that the information about the announcements is a very important component of pricing regarding WIG Index and less important in case of NASDAQ Index. There is a difference between Pearson correlations regarding the Polish and US markets and in case of other correlations the differences are not significant. The significant difference between markets confirms findings presented by Sharma (2000: 1-6) and Seven and Yilmaz (2021: 1-13).

It can be indicated that the sentiment after one year of pandemic is bullish. During the period under review, share prices rose in all markets, confirming the previous findings. The pandemic, apart from the initial period when there was a lot of uncertainty, has generally positively affected markets. The results may confirm a positive relationship between sentiments and returns (Ryu et al., 2020: 1804-1816).

CONCLUSIONS

The research results confirmed, as it was expected, a negative reaction of analyzed markets to the information about the rate of change in a number of new cases of Covid-19. Further analyses show the differences in the reaction between markets.

It can be concluded that taking into account one full year of pandemic, the reaction of the markets to the information about the change in a number of cases can be realized, but the overall situation of the exchange markets is not as dramatic as it was expected. The first reaction was very strong and negative, when uncertainty related to Covid-19 affected the decisions of investors behaving according to herding patterns. In the next stage of the pandemic, the situation stabilized and business took advantage over the health crisis. At the same time, the pandemic has negatively affected the global economic growth in 2020 and reduced it to a rate of around -3.2%. The growth rate at the level of 5.9% is projected for 2021 but inflation has begun rising in developed economies, and it may result in another destabilization that can affect the sustained economic growth in a negative way. All players on the market cooled down after the first reaction and began to react more optimistically although the changes in the number of new cases everywhere provoked negative reactions.

Research findings may indicate that market responses are not homogeneous, and potential factors that might influence such results should be detected. Three different markets were selected based on culture, region, religion and size, which can have a significant impact on investors' decisions and should therefore be explored in the subsequent research.

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WPŁYW COVID-19 NA INDEKSY GIEŁDOWE NA PRZYKŁADZIE BIST100 W TURCJI, NASDAQ W USA I WIG W POLSCE

Streszczenie

Cel artykułu/hipoteza: Celem niniejszego artykułu jest analiza wpływu wykrytych nowych przypadków Covid 19 na rynki giełdowe w Turcji, USA i Polsce w ciągu pierwszego roku trwania pandemii. Testowana hipoteza brzmi: istnieją istotne różnice między reakcją badanych rynków na informacje o liczbie nowych przypadków Covid-19.
Metodyka: Do analizy korelacji i regresji na danych panelowych wzięto pod uwagę indeksy reprezentujące giełdy: BIST100 z Istanbul Stock Exchange w Turcji, NASDAQ Composite z NASDAQ w USA oraz WIG z Warszawskiej Giełdy Papierów Wartościowych w Polsce.
Wyniki/Rezultaty badania: Wyniki wskazują na bezpośredni negatywny wpływ względnej zmiany liczby przypadków na stopy zwrotu indeksów giełdowych na rozpatrywanych rynkach, chociaż istnieją pewne różnice i podobieństwa między współczynnikami korelacji, zwłaszcza gdy uwzględni się opóźnienia reakcji rynków. Giełda turecka natychmiast reagowała na ogłaszaną liczbę nowych przypadków Covid-

19, giełda amerykańska potrzebowała więcej czasu na reakcję, podczas gdy w Polsce korekta była konieczna po nadmiernej reakcji na informację o nowych przypadkach. Wykazano, że istnieje istotna różnica między współczynnikami korelacji między badanymi zjawiskami na rynkach w Polsce I USA.

Słowa kluczowe: Covid-19, giełda, stopa zwrotu.

JEL Class: G1.

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