AN EXAMINATION OF COVID-19'S IMPACT ON BORSA ISTANBUL SECTOR RETURNS WITH A CASE STUDY(*)

COVİD-19'UN BORSA İSTANBUL SEKTÖR GETİRİLERİ ÜZERİNE ETKİSİNİN OLAY ÇALIŞMASI İLE İNCELENMESİ

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Abstract: The new coronavirus (Covid-19) pandemic, which arised in Wuhan, China end of the December 2019, has spread to all countries in a short time and several measures have been taken around the world. The measures have had a profound impact on world trade, financial markets, and the country's economies. Accordingly, this study examines the Borsa Istanbul sector returns, which are the most affected by Covid-19 pandemic. The case study method was used in the study, where the dates when the first Covid-19 case occurred, the new normalization period started, and the first Covid-19 vaccine was administered in Turkey were determined. The study also used the food and beverage, services, construction, industry, trade, tourism, and transportation indices. As a result, the study determined that all sector indices dropped, but tourism and transportation indices dropped faster.

Keywords: Covid-19, Case Study

JEL: G14

Öz: *2019 yılı Aralık ayının sonunda Çin'in Wuhan eyaletinde ortaya çıkan yeni tip koronavirüs (Covid-19) salgını kısa sürede tüm ülkelere yayılmış ve dünya genelinde tedbirler alınmıştır. Alınan tedbirler dünya ticaretini, finansal piyasaları ve ülke ekonomilerini derinden etkilemiştir. Bu doğrultuda, bu çalışmada, Covid-19 salgının en çok etkilediği Borsa İstanbul sektör getirileri incelenmiştir. Çalışmada olay çalışması yöntemi kullanılmış olup, bu yöntem kapsamında; ilk Covid-19 vakasının ilan edildiği, yeni normalleşmenin başladığı ve Türkiye'de aşının vurulduğu tarihler belirlenmiştir. Ayrıca çalışmaya, Gıda-İçecek, Hizmetler, İnşaat, Sınai, Ticaret, Turizm, Ulaştırma endekslerine dahil edilmiştir. Yapılan olay çalışmasının sonucunda, tüm sektör endekslerinin düştüğü ancak turizm ve ulaştırma endekslerin daha hızlı düştüğü tespit edilmiştir.*

Anahtar Kelimeler: *Covid-19, Olay Çalışması*

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1. Inroduction

Since the First World War, various pandemic diseases have swept the globe. Approximately 3 million people died as a result of various diseases over the world, resulting in a decline in the global population at times (Kılıç, 2020: 67). For example, Spanish flu struck Spain in 1918, Asian flu struck Asia in 1957, Hong Kong flu struck Hong Kong in 1968, Swine flu, also known as H1N1, struck America in 2009, SARS-Cov) struck Hong Kong in 2002, MERS struck Saudi Arabia in 2012, Ebola struck Congo in 2014, and a new coronavirus (Covid-19) struck Wuhan, China in December 2019 (Baldwin and Mauro, 2020: 5). As of March 11, the World Health Organization (WHO) declared the new coronavirus, which has afflicted the entire world in less than three months, a pandemic disease. On this date, the first official case of Covid-19 was detected in Turkey. By the end of 2020, there were 85 million Covid-19 cases worldwide, dispersed over 218 nations. (Worldometer, 2021). Figure 1 below shows the distribution of Covid-19 cases worldwide, as of week 52-2020.
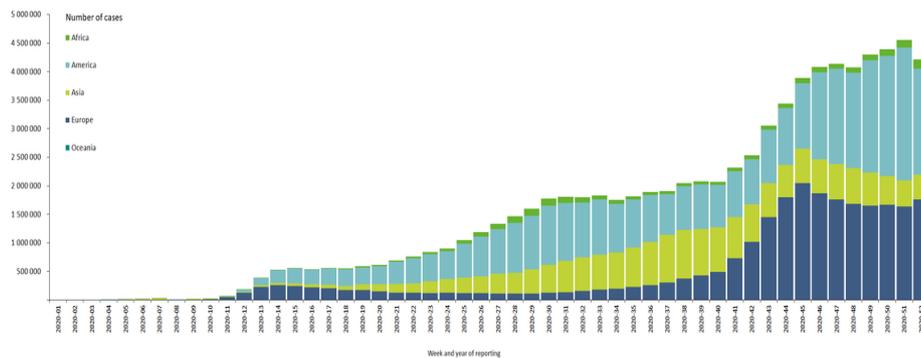
Source: (European Centre for Disease Prevention and Control, 2021)
Figure 1. Distribution of Covid-19 cases worldwide, as of week 52-2020

The impact of a growth in Covid-19 cases around the world is not confined to the loss of human lives; it also jeopardizes the economic stability and existence of governments (Bobdey & Ray, 2020: 9). This pandemic, which has spread over the world, has had a devastating impact on social life and trade, impacting individuals and even countries. For example, a country's financial crisis impacts neighboring countries directly or indirectly due to the dynamic structure of its financial system (Barut and Kaygın, 2020: 61). With the Covid-19 pandemic, for example, consumer demands have shifted to the food industry. Production and household consumption have plummeted because of the Covid-19 outbreak in China and its trade partners, who first restricted their borders. With the spread of Covid-19 disease to other nations, some governments have stepped up their efforts to mitigate the pandemic's impact on their population and economy (Boone et al., 2020: 39). In other words, the globe has evolved into a global market in which country economies are easily influenced by one another. Stock markets have also turned negative because of the Covid-19 pandemic, which is a leading predictor of economic, political, social, and cultural trends. Stock exchanges have the ability to respond fast to new information. Stock market indexes have fallen sharply in response to the sudden rise in Covid-19 cases and deaths (Şenol, 2020: 80). This situation demonstrates the global economy's instability and rising

hazards, posing a serious threat to countries. The consequences of government actions to prevent the spread of the Covid-19 pandemic, including as curfews, education disruptions, restaurant and cafe closures, and the closure of various workplaces, have been felt across the board. Several Turkish industries, such as food, textiles, construction, forestry, paper, printing, real estate, transportation, banking, insurance, and technology, were first pleasantly impacted by the Covid-19 pandemic in China but were adversely impacted when the pandemic spread to Turkey (Peker and Demirhan, 2020: 4). This case demonstrates how the value of corporations with stock exchange securities is influenced by economic conditions and future expectations in their country of origin (Peiro, 2016: 287). This study aimed to reveal the effect of Covid-19, which caused a global crisis in a short period of time, on sectors in Turkey. For this purpose, Borsa Istanbul sector indices data, which can be observed daily, were used in the study as the macroeconomic data are released quarterly or annually. The case study method is used in the study, where the dates of the first Covid-19 case (11.03.2020), the start of new normalization (01.06.2020) and the arrival of Covid-19 vaccines in Turkey (13.01.2021) were determined and their effects on trade, services, construction, transportation, tourism, industrials, and food-beverage indices were examined. The seven Borsa Istanbul sector indices included in the study are the indices that are directly or indirectly affected by the restrictions introduced by the government and scientific board decisions in the Covid-19 pandemic and by the mandatory holidays imposed by workplaces, but they are also the indices that appeal financial investors. These indices are considered suitable for this study to determine the reflection of the first effects of the Covid-19 pandemic on the markets. In the following parts of the study, a literature review was performed, the case study method was used, and the results were evaluated.

2. Literature Review

Even though there are many studies on the Covid-19 epidemic, particularly in the domain of medicine, the number of studies on the topic in the social sciences is growing by the day. The need to investigate this issue is emphasized by the market volatility caused by the Covid-19 epidemic. The global repercussions of the Covid-19 pandemic have been studied in terms of the economy and financial markets.

Loayza and Pennings (2020) examined the macroeconomic effects of the Covid-19 pandemic on developed countries. They have revealed that the measures taken to protect against the Covid-19 virus affect the countries' workforce, health sectors, financial markets, and governmental decisions.

Using a scenario study, McKibbin and Fernando (2020) looked at the worldwide economic impact of the Covid-19 pandemic. According to the scenario study, the Covid-19 pandemic could have a considerable impact on the global economy in the short term. According to the authors, the pandemic's greatest impact will be felt in the health sector, particularly in developing nations with large populations. In addition, the study indicated that during the epidemic, public health systems had greater investment expenditures.

Ozili (2020) examined the effect of the Covid-19 outbreak spreading across Nigeria on the sudden drop in oil prices. Because Nigeria is one of the world's main oil producers, the drop in oil prices during the epidemic had a significant impact on the country's economy. To put it another way, the rapid spread of the Covid-19 pandemic indicates the start of a new crisis in the country.

Yan (2020) investigated the influence of the Covid-19 pandemic on the Chinese stock market in the aftermath of its occurrence and found that as the number of Covid-19 cases increased, stock values fell sharply. In the other words, the rise in Covid-19 instances had a detrimental impact on the Chinese stock market.

Prabheesh et al. (2020) examined the relationship between stock and oil price returns using the Covid-19 method. In the Covid-19 epidemic, they analyzed daily data to determine this association for Asian countries and discovered a substantial positive relationship between oil and stock price returns. Falling oil prices, then, appear to be a negative indication for stock returns.

Topçu and Gülal (2020) focused on the impact of the Covid-19 pandemic on emerging stock markets from March 10 to April 30, 2020 and discovered that the pandemic's influence on emerging stock markets gradually diminished and began to have slower impacts in mid-April. Furthermore, while the pandemic has the greatest impact in developing countries such as Asia, it has the least impact in developing areas like as Europe.

Khan et al. (2020) investigated into the influence of the Covid-19 epidemic on 16 different countries' stock markets. They used weekly data from 16 countries on the number of Covid-19 cases and stock returns. As a result, they found that an increase in the number of Covid-19 instances on a weekly basis had a negative impact on stock market results. Furthermore, they revealed that investors did not react to Covid-19 news in the market at the outset of the pandemic, but that when the risk of contamination was significant and the disease began to spread, all stock market indexes reacted negatively.

Using the case study method, He et al. (2020) investigated the impact of the Covid-19 pandemic on market performance and the Chinese manufacturing industry, concluding that the pandemic had a detrimental effect on transportation, electricity and heating, mining, and the environment, whereas manufacturing, information technology, education, and healthcare industries were resistant to the pandemic.

Alam et al. (2020) compared the 15-day period of curfew declared due to the Covid-19 pandemic and the 20-day period without curfew using the case study method. They selected a total of 31 businesses randomly and included in the analysis according to their transaction in the Bombay Stock Exchange. As a result, they determined that the stock exchange reacted positively during the curfew period. The reason for this situation is that investors do not panic during this period. However, the opposite reaction was observed in the period when there was no curfew.

Öztürk, et al. (2020) used daily data to analyze the relationships between Borsa Istanbul sector indexes and the number of Covid-19 cases in Turkey, Europe, and the rest of the world. As a result, metal products, machinery, sports, insurance, and banking were found to be the industries most affected by the number of Covid-19 in Turkey, while food and beverage, wholesale and retail, and real estate investment were found to be the least affected. Furthermore, the investigators discovered that the number of Covid-19 cases in Europe and around the world had an impact on industry indexes.

Tayar et al. (2020) examined the sectorial effects of the Covid-19 pandemic in Turkey and determined a significant adverse relationship between the Covid-19 pandemic and electricity, transportation, financial, industry, technology sector indices. However, they found no significant relationship between the Covid-19 pandemic and food-

beverage, trade, textile, tourism and services sector indices. This suggests that each sector may have different dynamics.

Yılmaz and Özaytürk (2021) examined the supply and demand shocks caused by cyclical fluctuations in the economy due to the Covid-19 pandemic by taking into consideration automotive, health, food, banking and finance, tourism, transportation and energy sectors. They observed that the simultaneous occurrence of the supply and demand shock in many countries caused greater effects and more damage to global economic activities through international trade and financial connections.

Shahzad et. al. (2021) examined the influence of epidemic illness outbreaks on stock returns for Pakistan's listed banks from 2011 to 2020. The event study method was used, with a five-day pre- and ten-day post-event window examined for each disease. Except for Covid 19 and Dengue Fever during the event day, the data show that none of the epidemic disease's outbreaks have a substantial impact on the CAAR for all listed banks. Covid 19 has had a negative and considerable influence on the stock returns of all Pakistan banks from the event day to day eight, except for day seven. Covid 19 is revealed to be a significant indicator for private bank stock returns.

The Covid-19 pandemic has had a significant impact on not just developed and developing country financial markets, but also a few industries, including tourism and airline travel. It has been also shown that the Covid-19 epidemic has resulted in sharp and unexpected decreases in oil prices. These findings imply that the Covid-19 epidemic has a broader worldwide impact than previously thought.

3. Metodology

3.2. Data and Methodology

As a result, 7 sector index that are thought to be affected the most by the pandemic process were included in the study. These sector indexes are given in Table 1 below.

Table 1: 7 Sector Index

	Index	Number of Firms Included
1	Trade	18
2	Services	66
3	Construction	9
4	Transportation	8
5	Tourism	8
6	Industrials	160
7	Food Beverage	23

Source: (Kamu Aydınlatma Platformu, 2021)

The study consists of three separate parts as March 11, 2020, June 1, 2020, and January 13, 2021 and the data were used for daily closing prices. BIST 100 index was used as the market index. All data used in the study were obtained from Is Investment.

In the study, 3 different dates were determined as the case study March 11, 2020, 1 June 2020, and 13 January 2021. The purpose of determining the date of March 11, 2020, is the Health Minister's explanation of the first case in Turkey at that time. Likewise, on June 1, 2020, Turkey entered a new normalization process, and the first vaccine was given on January 13, 2021. In the study, a total of 21-day return rates covering 10 days before and 10 days from the date determined as case study for each index were obtained.

The method is obtained from 5 steps. These steps are given below (Chan - Lau, 2001:8; Cowan and Sergeant, 1996: 1734; Campbell et al, 1997: 159; Binder, 1998:112; Sakarya, 2011: 154-155; Korkmaz et al., 2017: 177-178; Kandil Göker et al., 2020: 20-21);

Stage 1: The rate of return of each firm (i) subject to the study is calculated for each day (t) within the event.

$$Rit = (Pit - Pit{-}1) / Pit{-}1 \qquad \textbf{(1)}$$

$Rit = the\ return\ of\ i\ on\ day\ t,$

$Pit = the\ price\ of\ i\ on\ day\ t,$

$Pit - 1 = the\ price\ of\ 1\ i\ on\ t - 1\ day.$

Stage 2: The rate of return of the BIST 100 Index as the market return is considered.

$$Rmt = (It - It{-}1) / It{-}1 \qquad \textbf{(2)}$$

$Rmt = The\ return\ of\ the\ BIST\ 100\ Index\ on\ day\ t,$

$It = the\ price\ of\ the\ BIST\ 100\ Index\ on\ t\ days.$

$It{-}1 = the\ price\ of\ the\ BIST\ 100\ Index\ on\ t - 1\ days.$

Stage 3: Abnormal return (AR) is calculated for each firm subject to the study.

$$ARit = Rit - Rmt \qquad \textbf{(3)}$$

$ARit = the\ abnormal\ return\ of\ i\ on\ day\ t.$

Stage 4: The average abnormal return (Avarage Abnormal Return-AAR) is calculated for each day within the event.

$$AARt = \sum (1/N\ N\ i = 1\ )AR \qquad \textbf{(4)}$$

$AARt$ = the average abnormal return on t days.

Stage 5: Cumulative Abnormal Return-CAR is calculated for each day within the event.

$$CARt = \sum_{t=1}^{n} AARt \qquad \textbf{(5)}$$

$CARt$ = the cumulative abnormal return on t days.

According to the analysis results, it can be said that investors can obtain an abnormal return in case the returns of the relevant stocks show a negative or positive difference from zero (Seans and Sandoval, 2005: 311). In order for a market to be strong in semi-strong form, announced events should not have an impact on the related stock returns. It can be said that the market is not effective in the semi-strong form spread if the stock returns change in a direction different from zero (Kaderli, 2007:145).

4. Results

The average abnormal returns and cumulative average abnormal returns obtained as a result of the Event Study analysis of the 7-sector index included in the study on March 11, 2020, with the announcement of the first case in Turkey, are given in Table 2.

Table 2. Average Abnormal Returns and Cumulative Average Abnormal Returns

Event Time	Food Beverage	Trade	Industrials	Tourism	Transportation	Services	Construction	Average Abnormal Returns	Cumulative Average Abnormal Returns
Day	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	ARR_{it}	CAR_{it}
t-10	0,010332	0,055919	0,010633	0,008327	0,03814	0,007573	0,000314	0,018749	0,15179
t-9	-0,04395	0,022047	0,066471	0,145521	0,12719	-0,01335	0,065769	0,052813	0,13304
t-8	0,039761	-0,05664	-0,0665	-0,06122	-0,0671	-0,00413	-0,06042	-0,03947	0,08023
t-7	-0,01704	-0,00742	-0,00144	-0,02645	0,00119	0,003689	-0,01447	-0,00885	0,11969

t-6	0,022859	-0,02394	0,011746	0,008825	0,00947	0,003347	-0,01821	0,002013	0,12854
t-5	0,008838	0,013454	0,027201	0,018113	0,04106	-0,00407	0,008085	0,016097	0,12653
t-4	-0,0177	0,000263	0,011212	0,004958	0,01255	-0,01759	-0,00704	-0,00191	0,11043
t-3	-0,00873	-0,010016	0,017448	0,033003	0,02786	-0,007	0,029149	0,011653	0,11234
t-2	0,005023	0,015601	0,037904	0,021026	0,0082	-0,00161	-0,02103	0,009302	0,10068
t-1	0,013423	0,053115	0,039704	0,064599	0,04164	0,0223	0,057212	0,041713	0,09138
t =0	-0,011115	0,032933	0,067481	0,088103	0,0628	-0,0342	0,064925	0,038699	0,04967
t+1	0,020444	-0,00558	0,06372	0,091696	0,04534	0,017136	0,003929	0,033812	0,01097
t+2	-0,027213	0,018253	-0,02492	-0,028825	-0,0273	-0,00035	-0,02269	-0,016114	-0,02284
t+3	0,046256	0,004196	0,02077	0,033138	0,01013	-0,00359	-0,02673	0,012023	-0,0067
t+4	0,017277	0,030764	0,010824	0,045728	0,02656	0,011314	0,010759	0,021899	-0,01872
t+5	0,00126	-0,007388	0,025808	0,0161	-0,018	-0,02333	-0,01623	-0,0031	-0,04061
t+6	-0,04694	0,006367	0,006985	-0,00431	0,0147	-0,00547	0,01174	-0,002422	-0,03751
t+7	-0,01541	-0,00051	-0,00758	-0,00873	0,02556	-0,02503	0,036028	0,000619	-0,03509
t+8	-0,00663	-0,02425	0,009484	0,022235	0,00494	-0,01937	-0,03368	-0,006674	-0,03571

t+9	0,002946	-0,03859	-0,00614	0,020774	-0,022	0,015626	0,003795	-0,00338	-0,02897
t+10	-0,02614	-0,03288	-0,02271	-0,03256	-0,0618	-0,00369	0,000584	-0,0256	-0,0256

Table 2 shows that the cumulative returns of the seven sector indexes studied were different from zero in the 10 days prior to and 10 days after Turkey's Minister of Health announced the first case on March 11, 2020. When the data is analysed, it is shown that the cumulative average returns of seven sector indexes differed positively ten days before the event date and adversely ten days after the event date. When the abnormal returns of the sector indices were examined, the 7 sector indices included in the analysis showed reductions. The food and beverage, trade, and service industries, on the other hand, were found to have witnessed the highest declines. For this reason, it can be said that 7 sector index included in the study with the statement of the first case in Turkey by the Minister of Health on March 11 2020, showed sensitivity to the event and that investors could obtain abnormal returns from these stocks. Cumulative average abnormal returns are given in Figure 2.
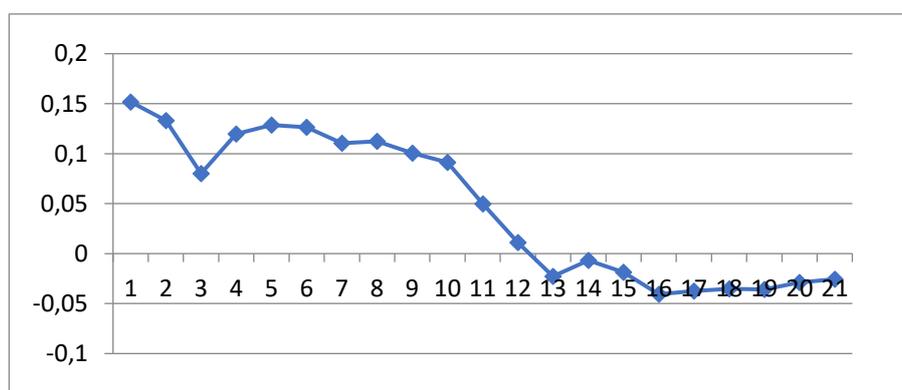

Figure 2. Cumulative Average Abnormal Returns

Average abnormal returns and cumulative average abnormal returns obtained as a result of the Event Study analysis of 7 sector index included in the study as Turkey entered the new normalization process on June 1, 2020, are given in Table 3.

Table 3. Average Abnormal Returns and Cumulative Average Abnormal Returns

Event Time	Food Beverage	Trade	Indust-rials	Tourism	Trans-portation	Services	Const-ruction	Average Abnormal Returns	Cumulative Average Abnormal Returns
Day	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	ARR_{it}	CAR_{it}
t-10	-0,00631	0,01048	-0,00794	0,027905	0,011326	-0,00324	-0,02664	0,000798	-0,01141
t-9	-0,01087	-0,00153	0,004021	0,003902	-0,00399	-0,02325	-0,03699	-0,00981	-0,01221
t-8	-0,00193	0,008543	0,00163	-0,01026	-0,01318	0,003056	0,020462	0,001189	-0,0024
t-7	0,013961	0,006313	0,013754	-0,01808	-0,00366	-0,02175	0,009343	-1,7E-05	-0,00359
t-6	-0,00514	-0,003558	-0,004887	-0,01968	0,002319	0,002603	-0,01187	-0,00575	-0,00357
t-5	-0,00515	0,007988	0,002266	0,009977	-0,01325	-0,004777	0,011176	-0,00011	0,002179
t-4	-0,01069	-0,00035	0,004804	-0,00815	-0,02401	0,005009	0,013973	-0,00421	0,002288
t-3	-0,01596	0,002642	-0,003531	0,052203	-0,04728	0,004826	-0,010422	-0,0025	0,006503
t-2	0,03264	-0,003555	0,004499	0,029947	-0,01511	0,006712	0,010813	0,009421	0,009002
t-1	0,013937	-0,00039	0,012673	-0,00342	-0,00708	-0,01648	0,005611	0,000693	-0,00042
t =0	0,007553	-0,005355	-0,004776	-0,0017	0,020872	0,019078	-0,024655	0,001579	-0,00111

t+1	0,018598	-0,00787	-0,00209	0,002984	0,018368	0,015058	0,005035	0,007155	-0,00269
t+2	-0,01346	-0,00099	0,004887	-0,00217	0,013389	-0,00754	0,013615	0,001105	-0,00985
t+3	0,006153	0,009638	0,004177	-0,00373	0,00216	-0,01361	0,006898	0,001669	-0,01095
t+4	0,00231	-0,00534	-0,00615	-0,03179	-0,00367	0,011494	0,003401	-0,00425	-0,01262
t+5	0,001036	-0,0046	-0,00376	-0,02616	0,000711	0,002981	0,005158	-0,00352	-0,00837
t+6	-0,00146	0,001075	-0,00107	0,018363	0,003978	-0,00412	-0,00014	0,002374	-0,00485
t+7	0,002917	0,001851	-0,00312	-0,03695	-0,00339	0,001574	-0,00623	-0,00619	-0,00723
t+8	0,009313	-0,00022	-0,003	-0,03015	0,015766	0,005194	-0,00833	-0,00163	-0,00103
t+9	-0,0046	-0,00188	-0004,05	0,01807	-0,01816	-0,0057	0,003781	-0,00122	0,000599
t+10	-0,01097	-0,00096	0,000725	0,006954	0,017025	-0,00656	0,006508	0,001818	0,001818

Table 3 shows that the cumulative returns of the seven sector indexes studied after Turkey began the new normalization process on June 1, 2020, were different from zero in the 10-day period preceding and following the stated date. When the data is analyzed, it is discovered that the cumulative average returns of seven sector indexes differ unfavorably and positively in the 10 days leading up to and 10 days after the event date. When the abnormal returns of the sector indices are examined; service, trade and industrial sector indices experienced the greatest decline. A relative increase was observed in the transportation and construction sectors. Therefore, it can be said that 7 sector indexes included in the study as Turkey entered the new normalization process on June 1, 2020, showed sensitivity to the cumulative event and investors could obtain abnormal returns from these stocks. Cumulative average abnormal returns are given in Figure 3.
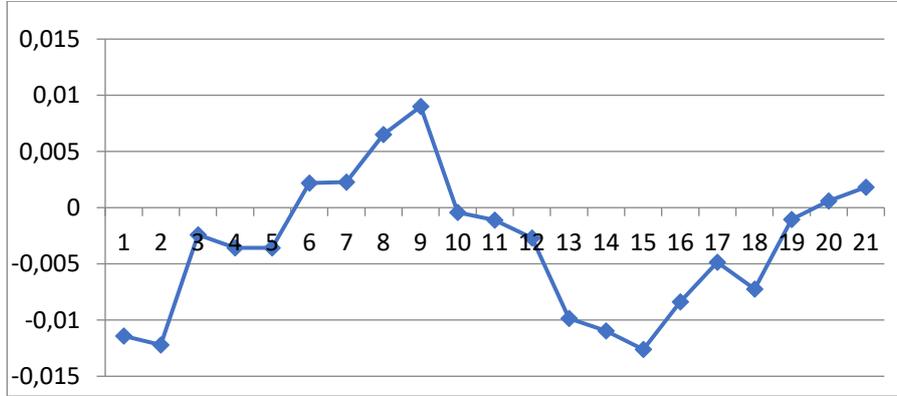
Figure 3. Cumulative Average Abnormal Returns

Average Abnormal Returns and Cumulative Average Abnormal Returns obtained as a result of the Event Study of 7 sector index included in the study after the first vaccine was made in Turkey on January 13 2021, are given in Table 4.

Table 4. Average Abnormal Returns and Cumulative Average Abnormal Returns

Event Time	Food Beverage	Trade	Industrials	Tourism	Transportation	Services	Construction	Average Abnormal Returns	Cumulative Average Abnormal Returns
Day	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	AR_{it}	ARR_{it}	CAR_{it}
t-10	0,012431	0,002152	0,000895	0,030002	-0,01282	0,000825	-0,0123	0,00302	-0,04434
t-9	-0,00045	0,001849	0,003437	-0,01583	0,005527	0,004402	0,01232	0,001609	-0,04736
t-8	-0,00538	-0,00668	-0,00067	-0,04128	-0,00668	0,002719	-0,0093	-0,00962	-0,04897
t-7	0,0069	0,003045	0,003698	0,002005	0,035847	-0,00254	-0,0213	0,003944	-0,03936

t-6	0,001085	0,00051	-0,0024	-0,02467	0,003319	6,69E-06	-0,0022	-0,00348	-0,0433
t-5	0,002765	-0,00496	0,003744	-0,01579	0,00478	-0,00234	0,00498	-0,00097	-0,03982
t-4	0,006245	-0,00965	-0,00306	0,001103	0,001362	0,010908	0,00933	0,00232	-0,03885
t-3	-0,02444	0,00935	-0,00331	0,000534	0,00856	-0,00267	0,01948	0,001071	-0,04117
t-2	-0,01431	0,004844	-0,0133	-0,00948	0,005879	0,006668	0,00139	-0,00262	-0,04224
t-1	0,008878	0,003326	-0,0028	-0,00993	-0,00632	-0,00204	-0,0041	-0,00186	-0,03962
t =0	0,004858	0,000842	0,00385	-0,01782	-0,03378	-0,00427	0,01925	-0,00387	-0,03776
t+1	-0,021288	0,001099	-0,00438	-0,04306	0,005551	-5,6E-05	-0,0018	-0,00913	-0,03389
t+2	0,003816	0,001885	-0,01017	-0,04432	-0,0083	-0,00067	-0,0195	-0,01103	-0,02477
t+3	-0,011886	0,006081	-0,01003	0,019003	0,018969	0,009921	0,00298	0,005009	-0,01374
t+4	0,010836	-0,00351	0,002008	0,047931	-0,01575	-0,00166	0,01338	0,007605	-0,01874
t+5	-0,00828	-0,000016	-0,00427	-0,05135	0,016364	-0,00095	0,0009	-0,00682	-0,02635
t+6	-0,011886	-0,0056	-0,00126	0,002577	0,00959	-0,00051	-0,0357	-0,00611	-0,01953
t+7	-0,001766	0,000601	-0,00278	-0,07607	0,004897	-0,00284	0,00147	-0,01093	-0,01342

t+8	-0,00847	0,00907	-0,01315	-0,02395	0,022857	-0,00405	-0,0561	-0,01054	-0,00249
t+9	0,005127	-0,00321	0,004356	0,006732	-0,00295	-0,00544	0,00622	0,001548	0,008049
t+10	0,012026	0,003953	0,010903	0,004522	0,003422	-0,01478	0,02546	0,0065	0,0065

Table 4, it is seen that the cumulative returns of the 7-sector index included in the study in the period covering 10 days and 10 days prior to the announcement that the first vaccine was made on January 13, 2021, were different from zero from the specified date. When the results are examined, it is determined that the cumulative average returns of 7 sector index differ negatively 10 days before the event date and positively in the period covering 10 days after the event date. When the abnormal returns of the sector indices are examined; In the 7 sector indices included in the study, increases were observed, except for the Service sector index. However, it has been determined that the sector indexes where the biggest increases are experienced are Construction, Transportation and Trade sectors. Therefore, with the announcement that the first vaccine in Turkey was made on January 13, 2021, it can be said that the cumulative returns of the 7-sector index included in the study are sensitive to the event and investors can earn abnormal returns from these stocks. Cumulative average abnormal returns are given in Figure 4.
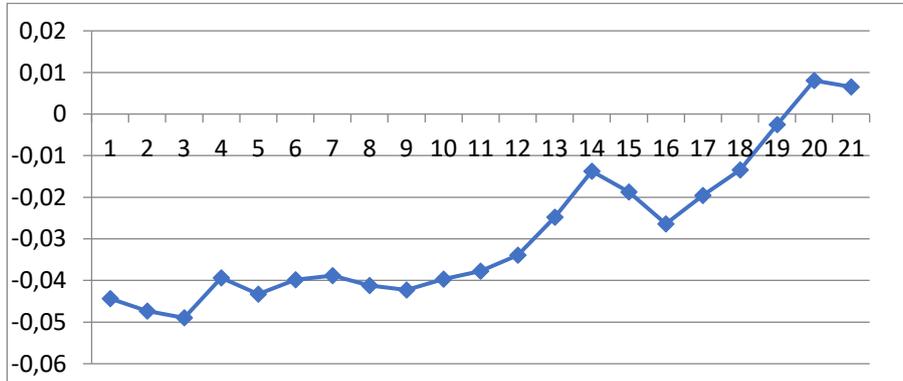

Figure 4. Cumulative Average Abnormal Returns

As a result of the Event Study method regarding the events dated March 11, 2020, June 1, 2020, and January 13 2021, it was determined that the cumulative returns of 7 sector index included in the study were different from zero in the period covering 10 days and 10 days before the specified date. In this case, it can allow investors to earn abnormal returns.

5. Conclusion

The results of the analysis determined that like many economies in the world, Borsa Istanbul indices were also affected by the pandemic process. When the abnormal returns of the sector index are analysed, a decrease is determined due to the closure of restaurants, although the food and beverage sector index constitutes the basic needs of people. Likewise, due to the unfavourable conditions experienced in the world economies, a decrease has been observed in the trade sector index during this period. On the other hand, in the industrial sector index there has been a decline in production due to quarantine processes. Accordingly, the service and transportation sector index has been affected by the quarantine and restrictions experienced in the world and in Turkey. In addition, people's orientation towards their basic needs caused a decline in the construction sector index.

In the periods when the economy is experiencing major crises, it can be thought that investors can invest in basic needs sectors that they think will not be affected by these crises or in developing and growing sectors that they think will be positively affected.

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