Araştırma Makalesi / Research Article

Effects of Global Outbreaks on Insurance Companies' Stocks: An Event Study on Stock Markets of Turkey and G7 Countries

Cengiz Toraman[1], Nevzat Tetik[1], Ersin Kanat[2]

Abstract

An event occurring anywhere in the world can affect many regions with the development of globalization and communication networks. This case is also true for diseases. When the history of the world is examined, it is seen that various global outbreaks have occurred that have affected the world. However, today the spread of diseases and information about these diseases is happening faster than in the past. For this reason, the economic, sociological and psychological effects of the epidemics are felt more. In this study, the effects of global outbreaks on stock returns are investigated. The aim of the study is to show the effects of significant diseases, which occurred globally after 2000, on the stock returns of insurance companies located on the Turkish and G7 country exchanges. Event study method is used in the research. Selected events consist of global outbreak announcements and notices made by World Health Organization (WHO). It is understood from the results of the study that some country markets are more susceptible to most epidemics than others. In general, the effects of other global outbreaks outside the COVID-19 have lasted much shorter on the countries' stock exchanges. Markets appear to normalize more rapidly during other epidemics.

Keywords: Stock return, event study, stock exchange, global outbreak, pandemic.

Küresel Salgınların Sigorta Şirketlerinin Hisse Getirilerine Etkisi: Türkiye ve G7 Ülke Borsaları Üzerine Bir Olay Çalışması

Öz

Küreselleşme ve iletişim ağlarının gelişmesiyle dünyanın herhangi bir yerinde olan bir olay birçok bölgeyi etkileyebilmektedir. Bu durum hastalıklar için de geçerlidir. Dünya tarihi incelendiği zaman, dünyayı etkisi altına alan çeşitli salgınların meydana geldiği görülmektedir. Ancak, günümüzde hastalıkların ve bu hastalıklarla ilgili bilgilerin yayılımı geçmişe nazaran daha hızlı gerçekleşmektedir. Bu sebeple, salgınların ekonomik, sosyolojik ve psikolojik etkileri daha fazla hissedilmektedir. Bu çalışmada salgınların hisse senedi getirileri üzerine etkileri araştırılmaktadır. Çalışmanın amacı, 2000 yılından sonra kendini küresel çapta hissettiren önemli hastalıkların, Türkiye ve G7 ülke borsalarında bulunan sigorta şirketlerine ait hisse senedi getirilerine etkilerini ortaya koymaktır. Araştırmada, olay çalışması yöntemi kullanılmaktadır. Seçilen olaylar DSÖ tarafından salgınlarla ilgili olarak yapılmış ilan ve duyuruları kapsamaktadır. Çalışmada elde edilen sonuçlardan bazı ülke piyasalarının diğerlerine göre çoğu salgın hastalığa karşı daha duyarlı olduğu anlaşılmaktadır. Ülke borsalarının genel olarak COVID-19 salgını dışında kalan diğer salgınlardaki etkileri çok daha kısa süreli gerçekleşmiştir. Piyasaların diğer salgınlarda daha hızlı bir şekilde normale döndüğü görülmektedir.

Anahtar Kelimeler: Hisse senedi getirisi, olay çalışması, borsa, küresel salgın, pandemi.

[1] Prof. Dr., İnönü University, Department of Business Administration, cengiz.toraman@inonu.edu.tr, https://orcid.org/0000-0001-8601-5542

[1] Doç. Dr., İnönü University, Department of Business Administration, nevzat.tetik@inonu.edu.tr, https://orcid.org/0000-0002-3152-8217

[2] Corresponding Author (Sorumlu Yazar), Doç. Dr., Zonguldak Bülent Ecevit University, Department of Banking and Finance, ersinkanat@beun.edu.tr, https://orcid.org/0000-0002-9361-4495

INTRODUCTION

Various epidemic diseases that have affected the world in history can be mentioned. It is known that these diseases leave various sociological, psychological and economic traces. Now, the emerging diseases turn into epidemics rapidly and affect the whole world faster and easier with the effects of globalization. Although the acceleration of epidemics is seen as a negative dimension of globalization, thanks to globalization and the development of communication channels, news about diseases can be received very early. This situation makes it possible to obtain early information and to take necessary precautions about diseases that occur in another part of the world and carry epidemic risk. Today, one of the important news sources that people trust and follow about epidemics is seen as the World Health Organization (WHO) (Kaya, 2020: 4; Basheti *at al.*, 2021). Therefore, WHO's warnings and news about diseases create a stimulating effect on issues that require precaution.

Compared to the past, diseases have gained different momentum in terms of being heard and spread, suggesting that it would be more meaningful to examine the events in recent years in order to understand today's conjuncture. For all these reasons, this study focused on the important announcements of WHO after 2000. Attention has been paid to the selection of diseases that are thought to have the greatest impact on a global scale after 2000. Diseases used in the study are SARS, H1N1, Ebola and COVID-19.

SARS virus was first seen in China in February 2003. The disease can cause severe acute respiratory failure. On March 12, 2003, the WHO issued a global warning due to the spread rate and severity of the outbreak. Before the global outbreak was brought under control, it spread to many countries in North America, South America, Europe and Asia over a period of approximately 6 months. The announcement that the Global SARS outbreak was brought under control was announced by the WHO on July 5, 2003 (Centers for Disease Control and Prevention [CDC], 2013).

The H1N1 virus was first seen in the United States in April 2009. The rapid spread of the virus has caused vaccine studies to begin. WHO declared an international emergency regarding the virus on April 25, 2009. On June 11, 2009, it declared a pandemic. At the same time, the alarm level of the global outbreak has been raised to Stage 6. This shows that the virus has spread to many regions around the world (Centers for Disease Control and Prevention [CDC], 2019).

Ebola virus first appeared in 1976. The global outbreak was reported again on August 1, 2018 by the Democratic Republic of the Congo. Today, this epidemic is seen as the largest Ebola outbreak in the Democratic Republic of the Congo and the second largest in the world. This is a very important and worrying situation to keep the epidemic under control. On July 17, 2019, the WHO declared a public health emergency of international concern. The potential risks of the global outbreak are still serious (European Centre for Disease Prevention and Control [ECDC], 2019).

COVID-19 was reported in Wuhan, China in December 2019. This virus has been identified as a novel coronavirus. The rapid spread of the virus and its lethal effects have affected the world in many areas in a short time. The virus was described as a pandemic by the WHO on March 11, 2020 (WHO, 2020).

The global effectiveness of all these viruses has been the source of inspiration for new researches. Numerous researchers from many fields have examined the effects of these viruses in their own fields. When the literature on the subject is examined, it is seen that there is a lack of international studies on stock market and stock returns in which all these diseases are examined. Differently in this study, all of the aforementioned diseases are examined together in international stock markets. In addition, the effects of diseases in the study are discussed in terms of share returns of insurance companies. Although such events affect almost all sectors, insurance companies are thought to be more closely related to the issue than many other industries. Due to the events in question are related to health; they can increase the demand for health insurance, cause insurance premiums to change, or put too much burden on

insurance companies. It is possible to talk about many positive and negative scenarios like all these. Therefore, it is necessary to investigate how investors can perceive and act on such events and the effects of events on stock returns. However, it is possible to say that the insurance sector is a growing sector in general. According to the latest report published by Swiss Re (SwissRe, 2020), one of the largest reinsurance companies in the world, in 2020, it generated a total of USD 6.2 trillion in premium production in the world in 2019. 2.5 trillion USD of this production was realized in America and 1.7 trillion USD in Europe. According to the report, world premium production has been growing steadily in real terms in recent years.

1. LITERATURE REVIEW

It is possible to talk about many global outbreaks that have affected the world from the past to the present. These global outbreaks cause many activities to change in almost every field and affect the ordinary course of life. As in every field, financial markets are thought to be affected by such events. Therefore, the effects of outbreaks on financial markets have always been wondered by researchers.

Giudice and Paltrinieri (2017) examined the impact of the Arab Spring and the Ebola outbreak on investor decisions. The study was carried out with monthly data for the period 2006-2015 of African equity mutual funds. In the study, which used regression methods, it was revealed that fund flows, fund performances and returns were affected by both important events. It has been observed that the more the aforementioned events increased in the media, the more the effects increased. So, it was argued that these events are highly correlated with the media. In addition, Ichev and Marinč (2018) investigated the extent to which stock prices in the US were affected by news about the Ebola outbreak. They focused on the effects of media reports about the Ebola outbreak in the period 2014-2016 and geographic proximity. In the study, it was observed that the stocks of businesses located closer to the Ebola outbreak events were more affected by the news. In addition, it has been observed that small, variable and businesses that subject to media are more affected by the news. In general, it was claimed that the perception of risk increased in the wake of the Ebola outbreak and subsequent volatility increased. Sali and Bacon (2015) investigated the effects of the Ebola epidemic by event study method. They performed their analysis within the event window of [-30, +30] and thus analyzed the risk-adjusted rate of return in the airline market. For this purpose, 15 airline stocks were selected. In summary, it was tested how quickly stock prices responded to Ebola-related information and also tested the efficiency of the market and form of the market efficiency.

Currently, the intensity of research on COVID-19 is remarkable. Salisu, Ebuh, and Usman (2020) examined the link between the COVID-19 outbreak and oil stocks. They used the panel vector autoregression (pVAR) method to measure the response of oil prices and stocks to shocks. In addition, panel logit model was applied for the effects of variables in the study. They emphasized that both oil and stock markets may experience more shocks during the pandemic compared to the previous period. Besides, panel logit model also supports the possibility of obtaining negative returns from related markets due to uncertainties. Fernandes (2020) examined the economic effects of the COVID-19 outbreak in terms of the world economy. Furthermore, estimates have been made about the potential economic costs of COVID-19 and the GDP growth of the countries. For this purpose, 30 different countries were examined and worked on various scenarios. According to the 30-country sampling, there was a median decline of 2.8% in GDP. In fact, according to some scenarios, it is estimated that the decrease in GDP can be over 10-15%. It is stated that especially service oriented countries will be affected more from this situation. Alber (2020) researched the impact of COVID-19 on European stock markets. Abnormal returns are measured according to the market model in the study. In the research, daily data from February 15, 2020 to May 24, 2020 were analyzed. In the study conducted with stock exchanges of 7 countries, it was seen that the spread of the epidemic had a negative effect on abnormal returns. Liu *et al.* (2020a) examined the short-term relationship of 21 leading stock market indices with COVID-19. Researchers, using the event study method, found sudden declines in markets after the global outbreak. During the epidemic, it was revealed that especially Asian countries had more negative abnormal returns than others. Moreover, the authors

pointed out that investors have pessimistic feelings, such as fears of future returns and uncertainty. Erdem (2020) examined the relationship between the COVID-19 announcements and the countries' stock markets in terms of the freedom of countries. The study includes the stock market indices of 75 countries. In the study it is stated that the country's stock markets have been negatively affected by the global outbreak. It is concluded that the impact of the virus on stock markets is less in freer countries than in others. In short, it is stated that the impact of the pandemic on the stock markets is more intense in less free countries. Baker *et al.* (2020) investigated the effects of COVID-19 on the stock market using text-based methods. Researchers have claimed that no epidemic has been as effective on the stock market as COVID-19 to date. For this reason, they tried to explain the greater stock market response compared to previous epidemics. According to the study, the main reasons for the reaction of the US stock market are the effects of the government's commercial activity restrictions and service-oriented activities. Liu *et al*. (2020b) investigated the response of the Chinese stock markets to COVID-19 outbreak using the Event Study method. In the study, it was revealed that the stock markets were negatively affected. However, the sectoral analysis revealed that the pharmaceutical and technology sectors were affected positively, while other sectors were affected negatively. Similarly, Göker *et al*. (2020) investigated the effects of COVID-19 for the Turkish Stock Exchange using the Event Study method. The results of the research showed that the sectors that experienced the biggest losses in Borsa Istanbul were Sports, Tourism and Transportation. Kılıç (2020), who investigated the effects of COVID-19 in Borsa Istanbul with the event study method, reached the conclusion that the highest negative return was in the tourism and textile sector and the positive return in the trade sector.

There are also studies on many different outbreaks in the literature. Chen, Jang and Kim (2007) investigated the effects of the SARS outbreak on the performance of Taiwan hotel businesses' stocks using case study method. According to the researchers, the epidemic affected the entire Taiwan economy, and the biggest loss was in the tourism sector with an average of 29% stock price drops. In the study, which used the method of event study, it was seen that the SARS outbreak had a significant impact on hotel stocks on the day of the event and afterwards. In addition, significant cumulative negative abnormal returns have occurred on these stocks. Jiang *et al*. (2017) discussed the effect of daily H7N9 reports in China on stock price indices. Data between 02.19.2013-03.31.2014 were used in the study. In the study using a distributed lag non-linear model, it was revealed that the epidemic caused losses in stock prices. Paarlberg, Seitzinger, and Lee (2007) examined the effects of avian influenza in the United States and the consequences of regionalization. Researchers have stated that the epidemic caused very serious economic effects. In addition, they claimed that regionalization reduced economic prosperity and export losses. Macciocchi *at al*. (2016) carried out a study to reveal the short-term economic effects of the Zika virus. Linear regression method was used in the study. The analysis revealed that the markets subject to the study showed a resilience and that large negative returns did not occur. Kim, Kim, Lee and Tang (2020) examined the effects of epidemics on the financial performance of restaurants. Event study and Mann-Whitney U Test were preferred as methods in this study. Four epidemics and a total of 9 events between 2004 and 2016 were included in the study. The effects of three firm characteristics, which are brand reliability, advertising effects and service types, on firm value have also been investigated. In addition to confirming the negative effects of the epidemics on the restaurant sector, it has been revealed that all three firm characteristics are risk-reducing factors.

As can be seen from past studies, the impact of epidemics on financial markets cannot be denied. Despite many past epidemics, the effects of global outbreaks on markets have again aroused great curiosity with COVID-19 outbreak. In this study; differently, the news about the important epidemics (SARS, H1N1, Ebola, COVID-19) that have affected the world since 2000 and the effects of these news on insurance stocks belonging to developed countries are investigated.

2. METHODOLOGY

In the study, the effect of global outbreaks on stock returns of insurance companies was examined by Event Study method. In short, Event Study is a method that enables inferences and predictions about the effect of an event in a certain period (Serra, 2002). The basis of the method is the unusual response of the market to an event. These responses are mainly expressed in Abnormal Returns. Thanks to the method, it is possible to obtain information such as whether a news has an impact on returns, how fast the impact is, the magnitude and direction of the impact. In addition, the speed of market reactions around an event date can provide important clues about the efficiency of the market. Since it is a method that aims to separate company-specific events from market and sector-specific events, it is frequently used in studies that support and oppose the efficient market hypothesis (Benninga, 2014).

There is no single model that needs to be followed regarding event studies, and different steps can be performed. Generally; There are steps such as defining the event, determining the event window, evaluating the effects of the event and evaluating the results. (Eppli ve JTu, 2005).

In order to use the Event Study method, determining the event window, which is the next step after defining the events, is very important. At this stage, it is determined in which periods the stock returns are affected by the event. Periods related to the event study can be shown as in Figure 1 (MacKinlay, 1997).

Figure 1: Time-Line of an Event Study
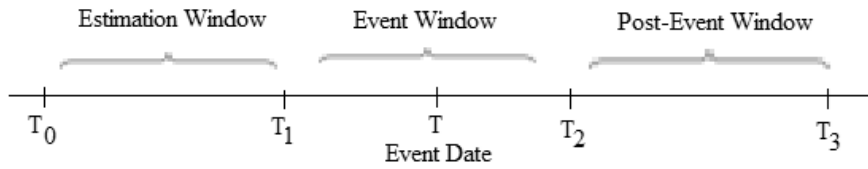
Source: MacKinlay, 1997: 20.

Estimation window (T0 - T1) in Figure 1 is the period in which abnormal (AR) and cumulative abnormal returns (CAR) are predicted. In general, the estimation period can be used between 100 and 300 days for daily studies and between 24 and 60 months for monthly studies. However, there is no set standard regarding this issue and the length of the event window (Peterson, 1989).

In order to calculate AR and CAR, normal returns must be calculated at first. In case of the event does not occur or a certain news does not appear, the expected return is the normal return.

Two most commonly used methods for calculating returns are the constant mean return model and the market model. In the constant mean return model, it is assumed that the average return of an asset does not change over time. The market model is more advanced than the constant mean return model and can be expressed by formula 1 below (Campbell vd, 1997).

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{1}$$

In the formula "R_{it}" shows the return of firm "i" at time "t", and "R_{mt}" shows the return of the market at time "t". "ε_{it}" is the error term, and "α_i" and "β_i" refer to the parameters of the market model. Ordinary Least Squares (OLS) method can be used to find the parameters of the market model. The parameters of the market model for an estimation period can be calculated with OLS as follows (MacKinlay, 1997).

$$\beta_i = \frac{\sum_{T=T_0+1}^{T_1} (R_{iT} - \hat{R}_i)(R_{mT} - \hat{R}_m)}{\sum_{T=T_0+1}^{T_1} (R_{mT} - \hat{R}_m)^2} \tag{2}$$

$$\hat{\alpha}_i = \hat{R}_i - \hat{\beta}_i \hat{R}_m \tag{3}$$

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{L_1-2}\sum_{T=T_0+1}^{T_1}(R_{iT} - \hat{\alpha}_i - \beta_i R_{mT})^2 \tag{4}$$

Above, "$\hat{R}_i$" is the average value of the asset, "$\hat{R}_m$" is the average value of the index and "L_1" is the length of the estimation period. The parameters in the first formula are calculated for both the estimation window and the event window. While calculating abnormal returns, the difference between the actual return and the expected return is taken. Abnormal return can be calculated with the formula number 5. In this formula, "R_{it}" is the return of the asset in the period "t", "R_{it}^*" is the expected or predicted return (Peterson, 1989).

$$AR_{it} = R_{it} - R_{it}^* \tag{5}$$

It is also possible to use different ways to calculate an asset's abnormal return. For example, with the parameters obtained in formulas 2 and 3, abnormal return can be found as in formula 6. (MacKinlay, 1997: 20).

$$AR_{iT} = R_{iT} - \hat{\alpha}_i - \hat{\beta}_i R_{mT} \tag{6}$$

Cumulative abnormal returns are achieved by continuously adding up abnormal returns.

$$CAR_{i(T1,T2)} = \sum_{T=T_1}^{T_2} AR_{iT} \tag{7}$$

The fact that abnormal and cumulative abnormal returns are different from zero means that the event used in the study affects the returns. On the other hand, the fact that the results are zero or close to zero means that the news or the event that occurred has no effect. The significance of the statistical results can be examined with the help of the t-test. In this case, t-test can be applied as shown in formulas 8 and 9 for abnormal and cumulative abnormal returns. The symbol "s" in the formulas symbolizes the standard deviation.

$$tAR_{iT} = \frac{AR_{iT}}{s(AR_i)} \tag{8}$$

$$tCAR_{i(T_1,T_2)} = \frac{CAR_{i(T_1,T_2)}}{s(CAR_i)} \tag{9}$$

3. AIM, SCOPE AND DATA

The study basically aims to analyze how the epidemic diseases, which were being encountered in recent years and affected the world, affect the stock returns of insurance companies in developed countries by event study method. In other words; it is investigated whether important news about global outbreaks is causing abnormal returns on stocks of insurance companies and in what direction.

The main reason why the study was carried out with insurance companies is that global outbreaks are closely related to insurance companies. These kind of news may cause a change in premium payments, as well as cause insurance companies to undertake a burden due to their obligation to meet health problems. In short, epidemics threatening the world are particularly closely related to health insurances. Therefore, investors investing in insurance firms cannot be expected to be indifferent to news of diseases on a global scale.

G7 countries consisting of Germany, England, Japan, Italy, France, United States and Canada were examined together with Turkey within the scope of the study. The study was conducted through the insurance companies included in the indicative indices of these countries. Considered indices are BIST100, DAX30, FTSE100, NIKKEI225, FTSEMIB, CAC40, S&P500 and S&P-TSX Composite index. All data in the study were obtained from the "Thomson Reuters Data Stream" database.

On the grounds that the research focused on the news of epidemics after 2000, companies whose data could be accessed between 2000 and 2020 were selected from the insurance companies included in the specified indices. In other words, the companies included in the specified indices between the years 2000-2020 were included in the analysis, and the companies with uninterrupted data from 2000 to 2020

were used. The data about the companies were also obtained through the "Thomson Reuters Data Stream" database. The number of insurance companies in the index of their own countries between 2000 and 2020 is as in Table 1.

Table 1: Number of Insurance Companies Used in the Study

Countries	Indices	Number of Companies
Turkey	BIST100	2
Germany	DAX30	1
England	FTSE100	3
Italy	NIKKEI225	3
France	FTSEMIB	1
Japan	CAC40	1
USA	S&P500	17
Canada	S&P-TSX	6
Total # of Companies		**34**

In the study, the warnings and news made by the WHO) about outbreaks around the world were used. Mentioned events and their dates are as in Table 2.

Table 2: Event Dates

Yıllar	Veri 2
March 12, 2003	SARS Global Warning Announcement
July 5, 2003	Announcement that the SARS Global Epidemic is Under Control
April 25, 2009	H1N1 Emergency Notice
June 11, 2009	H1N1 Pandemic Announcement
July 17, 2019	Ebola Emergency Notice
March 11, 2020	COVID-19 Pandemic Announcement

4. ANALYSIS AND RESULTS

In the study, abnormal returns (AR) and cumulative abnormal returns (CAR) were tested using t-testing to investigate the effects of global outbreaks on the stock values of insurance firms. the event window has been used as [-10, + 10] because it is generally preferred not to use very long periods in event studies and it is thought that news about the global outbreaks may take effect within 10 days. In the literature, the use of longer periods is decision of analysts, but this kind of decision is not recommended as reliability may be reduced and false evaluations may occur. (Kothari & Warner, 2007: 8).

The AR and CAR tables of the insurance companies in each country's index associated with the global outbreak news are listed below. In these tables, each column shows the event dates and each row shows the companies. The + and - values in the box representing a specific date of a company indicate how many days before or after the event impact was seen. In addition to the plus and minus values indicating the days, values indicating the direction and strength of the effects are also included. Statistically insignificant results are not included in the table.

Table 3: The Results of AR and CAR Values for Turkey

AR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Ak Insurance Co.			**+3:** 3.352		**+3:** 3.2591	**+2:** -11.0903 **+3:** -2.7639 **+4:** -3.9583 **+8:** -2.8889
Gunes Insurance Co.			**+2:** 2.6261			**+1:** -2,9115
CAR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Ak Insurance Co.						-5.8979
Gunes Insurance Co.						

According to Table 1, both insurance companies in Turkey have been affected by the news that COVID-19 has been declared a pandemic by the WHO and declared a state of emergency related to the H1N1 outbreak. However, no abnormal return effect was observed in the announcement of the pandemic for H1N1. In addition; it is also revealed that Ak Insurance Co. was affected by the announcement of a state of emergency about Ebola. It is observed that these abnormal returns begin to occur in three days or less time intervals after the event date. In particular, it is noteworthy that a very large negative abnormal return such as -11 occurred 2 days after the declaration of COVID-19 as a pandemic. One of the biggest reasons for this is that the announcement of pandemic in the world and the first COVID-19 case in Turkey is the same date. At this point, the most interesting issue is that COVID-19 causes negative abnormal returns on the said stocks while other news causes positive effects. A possible reason for this result may be the thought that other global outbreaks will increase the demand for insurance and COVID-19 may harm insurance companies. It is also thought that it may result from changes in investor behavior and attitudes over time. It can also be said that COVID-19 has a more negative and frightening effect in Turkey. When the cumulative abnormal returns are examined, it is seen that only COVID-19 has significant and negative abnormal returns.

The insurance company in Germany's Dax30 index is shown in Table 2. The abnormal return on the company's stocks was affected by both the news about the SARS outbreak and the news about the COVID-19 outbreak. It is also seen that the cumulative abnormal return has occurred as a result of both epidemic news.

Table 4: The Results of AR and CAR Values for Germany

AR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Allianz SE	**+6:** -4.1845 **+7:** -2.6667					**-9:** -3.15 **-2:** -3.2833 **-1:** 3.7333 **+1:** -7.8333 **+3:** -8.9833 **+4:** -6.5333 **+5:** -5.8833 **+7:** 10.9333 **+9:** 8.65

CAR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Allianz SE	-2.6394					-2.6877

Table 5: The Results of AR and CAR Values for England

AR						
Event Dates Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Aviva Plc						**-7:** -2.9459 **-2:** -2.8018 **+3:** -3.5495 **+4:** -3.7207 **+6:** -7.7568 **+7:** 4.4595 **+8:** -5.0631 **+9:** 5.0901
Legal & General Group Plc	**-10:** 3.6071 **-9:** 2.8839					**-7:** 2.7376 **+3:** -3.4965 **+6:** -3.773 **+8:** -5.3191 **+10:** 6.3262
Prudential Financial, Inc.						**-10:** -2.6455 **-7:** 3.8364 **-6:** -6.1273 **-4:** -4.5091 **-2:** -9.3273 **-1:** 7.0545 **0:** -6.1 **+1:** -10.1455 **+2:** 9.9818 **+3:** -14.4727 **+4:** 4.4636 **+6:** -4,8545 **+7:** -5.0909 **+8:** -3.3273 **+9:** 9.6455 **+10:** 3.7364
CAR						
Event Dates Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Aviva Plc						-3.7294
Legal & General Group Plc						-2.8817
Prudential Financial, Inc.						-5.5269

In the UK, all three companies were affected by the COVID-19 pandemic announcement, while only one company was affected by the SARS global warning announcement. The news about SARS had positive abnormal returns. However, there was no significant difference in cumulative return in the ten-day event window.

Table 6: The Results of AR and CAR Values for Italy

AR						
Event Dates / **Companies**	**03.12.03**	**07.05.03**	**04.25.09**	**06.11.09**	**07.17.19**	**03.11.20**
Assicurazioni Generali S.p.A.	**-7:** 3.4933 **-5:** -3.3267					**-10:** -2.6034 **+2:** -5.5862 **+4:** -9.931 **+5:** -5.6379 **+6:** 2.6379 **+9:** 6.1724 **+10:** 2.6034
Unipol Gruppo S.p.A	**-10:** -8.75 **-9:** 5.45 **-8:** -5.7 **-4:** 5.05 **+5:** 5.35 **+6:** -5.5	**+3:** -8.5753 **+6:** -2.5753			**+3:** 2.9669	**-4:** -2.7658 **+4:** -6.1712 **+6:** 12.5405 **+7:** -8.4775 **+8:** 4.4775 **+9:** -3.6126
UnipolSai Assicurazioni S.p.A.			**+9:** -3.0257		**+3:** 2.6559	**-4:** -2.7419 **+1:** 8.7957 **+3:** 5.8602 **+4:** 3.0968 **+5:** 5.086 **+6:** 2.9892
CAR						
Event Dates / **Companies**	**03.12.03**	**07.05.03**	**04.25.09**	**06.11.09**	**07.17.19**	**03.11.20**
Aviva Plc	-3.1191					-2.9685
Legal & General Group Plc		-4.2029				-2.7897
Prudential Financial, Inc.						

Among the countries subject to the analysis, it is seen that Italy is the country most affected about the stock returns of insurance companies. It is observed that events cause negative abnormal returns in generally. Nevertheless, it is understood that only 3 days after WHO's Ebola emergency announcement, two companies had positive abnormal returns. Cumulative abnormal returns have emerged after the news about the SARS and COVID-19 outbreaks.

Table 7: The Results of AR and CAR Values for France

AR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Axa S.A.						**-2:** -4.026 **+1:** -7.039 **+3:** -10.5195 **+6:** -4.974 **+7:** 6.8182 **+9:** 12.2078
CAR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Axa S.A.						-3.1996

It can be said that only the COVID-19 pandemic announcement is effective for the insurance company in France. Abnormal returns were detected after the event date and only with the COVID-19 pandemic announcement, a cumulative abnormal return occurred.

Table 8: The Results of AR and CAR Values for Japan

AR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Sony Financial Holdings Inc.						**-9:** -3.4297 **-2:** -4.9062 **0:** -2.9453 **+1:** -6.5391 **+2:** 6.5859 **+3:** -6.2656 **+4:** 5.0937 **+7:** -4.0469 **+8:** 4.4219 **+10:** 4.6094
CAR						
Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Sony Financial Holdings Inc.						

In Japan, only the news that COVID-19 was declared a pandemic was effective. Although negative abnormal returns have occurred in general, it is seen that the market can recover quickly again with positive abnormal returns. This situation prevented the occurrence of cumulative abnormal return.

Table 9: The Results of AR and CAR Values for Canada

Event Dates Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
Fairfax Financial Holdings Limited						**0:** 3.0659 **+2:** 6.5824 **+4:** -6.9341 **+6:** -5.2418 **+9:** -6.7473 **+10:** -7.2637
Great-West Lifeco Inc.						**-7:** -4.9508 **-6:** -3.0164 **-2:** 9.7213 **0:** -7.1311 **+1:** -13.6066 **+2:** 6.7541 **+3:** -8.8197 **+4:** 4.377 **+6:** 8.7377 **+7:** -6.1311 **+8:** -16.5082 **+9:** 10.6721 **+10:** 3.9836
iA Financial Corporation Inc.						**-1:** -3.7143 **+1:** -3.0857 **+3:** -7.3333 **+4:** -2.8095 **+6:** -7.4857 **+8:** -11.3238 **+10:** 4.5714
Manulife Financial Corporation						**-8:** 4.7551 **-5:** -2.9592 **-2:** 12.7551 **0:** 4.4592 **+1:** 9.1327 **+2:** -8.4184 **+4:** -8.8571 **+5:** 8.3367 **+8:** 6.6122 **+9:** -5.2143
Power Corporation of Canada	**+3:** 2.7769					**+1:** -3.2816 **+2:** 6.0097 **+6:** 4.2718 **+7:** -5.4951 **+9:** 4.5437
Sun Life Financial Inc.	**+7:** -2.8625					**-2:** 3.6923 **+3:** 3.3585 **+4:** -7.0462 **+5:** 3.3692 **+6:** -10.7385 **+7:** -5.1692 **+8:** 6.1846

	CAR					
Event Dates / **Companies**	**03.12.03**	**07.05.03**	**04.25.09**	**06.11.09**	**07.17.19**	**03.11.20**
Fairfax Financial Holdings Limited						-5.4554
Great-West Lifeco Inc.						-4.8258
iA Financial Corporation Inc.						-6.2784
Manulife Financial Corporation						5.4688
Power Corporation of Canada						
Sun Life Financial Inc.						

The vast majority of the 6 companies in Canada were affected by the announcement about COVID-19 as in other countries. In addition, the stocks of only 2 companies revealed abnormal returns as a result of the news about SARS disease.

Among the countries where the analyses were carried out, the largest number of insurance companies are in the S&P500 index of the USA. The results regarding the insurance companies in the S & P500 are included in Table 10.

Table 10: The Results of AR and CAR Values for USA

	AR					
Event Dates / **Companies**	**03.12.03**	**07.05.03**	**04.25.09**	**06.11.09**	**07.17.19**	**03.11.20**
AFLAC Inc					+2: -2.7778 +5: -4.3016 +8: -2.746	-10: -2.7536 -8: -3.6812 -4: -4.5217 +1: -8 +3: -6.3333 +4: -2.9855 +5: -17.2609 +6: 8.5507 +7: 6.058 +9: 4.6377 +10: 32.1594
Allstate Corp		+7: -2.7275			+10: 8.3973	-8: -4.5854 -7: 4.0976 -4: -3.4878 -2: -6.6463 0: -3.6829 +1: -3.2317 +2: 4.1585 +5: -13.6585 +7: 2.6951 +10: 6.5854
						-7: -2.6532 -3: -3.9758 +1: -9.379

Company				
American International Group				+3: -4.379 +4: -8. 7339 +5: -8.5323 +6: 7.2339 +8: 3.2581 +9: 5.7903 +10: 8.4032
Chubb Limited			+5: 4	+1: -3.4018 +3: -7.3482 +4: 3.2679 +5: -4.9464 +7: 5.875 +8: -4.5714
Cincinnati Financial	+3: 3.8421	+1: -2.9178		-8: -3.85 -7: 4.98 +1: -3.15 +2: 4.93 +3: -4.2 +4: 3.5 +5: 4.74 +6: -4.34 +7: -5.21 +8: -9.2 +9: 8.7 +10: -5.74
Everest Re Group Ltd.				-8: -5.8941 -5: 4.3882 -4: -3.1647 -2: -3.7529 0: -2.9412 +1: -8.2235 +3: -9.6118 +4: 5.6118 +7: 7.5176 +8: -12.6118 +9: 2.9294 +10: -7.8118
Globe Life Inc.	-1: -2.6293		-4: -4.1176	-10: -3.5179 -8: -4.0179 -6: -4.6964 -4: -4.6607 -3: -3.3214 -2: -12.4464 0: -4.1786 +1: -8.1607 +2: 5.5357 +3: -4.2679 +4: 5.7679 +5: 7.4286 +6: -7.8036 +8: -4.7679 +9: 5.7143 +10: 4.5536 -8: -3.0275

Company					Values
Hartford Financial Svc.Gp.					**-7:** 3.0917
					-2: -3.3945
					0: -3.1651
					+1: -4.6422
					+3: -14.2202
					+4: -3.8624
					+5: -18.6055
					+6: 22.2569
					+7: -3.6514
					+9: 5.8257
					+10: -4.4128
Lincoln National					**-5:** -4.6331
					-3: -2.8705
					+1: -7.6259
					+4: -4.295
					+5: -2.8129
					+8: 5.6978
					+9: 6.9353
					+10: 5.223
Loews Corp.					**-10:** -2.6154
					-4: -2.9121
					-2: -3.4725
					-1: 4.6264
					0: -3.3297
					+1: -8.2198
					+3: 3.5165
					+4: 3.7253
					+6: 7.8462
					+7: -14.2857
					+9: 3.6264
					+10: -2.7253
MetLife Inc.					**-5:** -3.2794
					-4: -4.7353
					-2: -12.1029
					+1: -5.3824
					+5: 8.6029
					+6: -8.1912
					+7: -5.6618
					+9: 7
					+10: 8.8676
Principal Financial Group					**-9:** 2.7879
					-8: -3.8586
					-5: -2.9798
					-2: -5.2929
					0: 3.5455
					+4: -11.202
					+5: 3.3232
					+9: 6.6667
					+10: 8.0909
Progressive Corp.	**+2:** 3.4228	**+6:** -6.408	**-10:** 2.7481	**0:** -3.7059	**-7:** 3.5693
					+2: 4.5693
					+5: -2.7664
					+6: -5.5766
					+7: 3.2117
Prudential Financial			**+6:** 3.3128		**-5:** -4.1053
					-2: -8.5263
					+1: -10.2237

Company			
The Travelers Companies Inc.			+5: 8.6974 +6: -5.9868 +8: -3.9605 +9: 8.0921 +10: 8.9737 -7: 2.864 +3: -11.888 +4: 7.064 +5: -10.36 +6: 4.048 +7: 5.56
Unum Group	-2: -17.2697 -1: -11.4896 0: 3.6307 +2: 3.7261 +3: 5.6141 +9: 6.7635	-5: -4.7672	-5: -4.396 0: 3.2349 +1: -3.604 +2: -2.651 +6: -6.2953 +7: 4.3893 +8: 2.9329 +9: 3.8859 +10: 6.0403
W. R. Berkley Corporation	+5: -3.0079 +10: -2.8346	+5: 3.6027	-8: -3.1271 -2: -4.0424 0: -4.4576 +1: -5.4068 +2: 3.0085 +3: -7.8559 +4: 6.6525 +6: -4.161 +8: -6.4068 +9: 4.3051

CAR

Event Dates / Companies	03.12.03	07.05.03	04.25.09	06.11.09	07.17.19	03.11.20
AFLAC Inc					-2.8299	
Allstate Corp						-4.7396
American International Group						-4.257
Chubb Limited						-4.6293
Cincinnati Financial						-2.9088
Everest Re Group Ltd.						-8.626
Globe Life Inc.						-7.9299
Hartford Financial Svc.Gp.						-6.7027
Lincoln National						-3.2968
Loews Corp.						-3.7577
MetLife Inc.						-5.3463
Principal Financial Group						
Progressive Corp.		-3.7359				
Prudential Financial						-3.4484
The Travelers Companies Inc.						-2.9119
Unum Group						
W. R. Berkley Corporation						-6.0065

Due to the large number of companies in the USA, it can be said that there is at least one company that is affected by almost every news. There is no company that was affected by only the news about the announcement of H1N1 as a pandemic. It is seen that the most impactful news is related to COVID-19. In other terms, one of the two pandemic announcements that occurred in the short period of time had a very large effect, while the other had no effect. Although the effect of Ebola disease is seen in the second place in terms of impact, the effects of only COVID-19 and SARS related news have been observed on cumulative abnormal returns.

To put it briefly, it can be said that every country reacts differently to diseases in terms of stock returns of insurance companies. Among the diseases subject to analysis, the effects of only the news about the COVID-19 outbreak are similar in all countries. Although there have been many postings of epidemics and pandemics in the past, fragility and sensitivity were not observed as much as in the COVID-19 outbreak.

5. CONCLUSION

It is known that there were many epidemic diseases that have affected the world from the past to the present. These epidemics not only cause health problems, but also bring economic problems. The occurrence of outbreaks with global effects is generally unexpected and sudden. For this reason, various perceptions such as uncertainty, risk and opportunity are formed by investors in financial markets. It is thought that this situation may cause abnormal positive or negative returns in the markets. The fact that the subject is related to health raises the idea that such news may affect especially insurance companies and their stock returns. For the aforementioned reasons, this study examined the effects of news about global epidemics on the returns of insurance companies' stocks. The issue was investigated on Turkey and G7 countries' stock markets. Thus, the effects of the news about the epidemics for different countries have been revealed and various inferences have been obtained.

While the research is being carried out, 6 important announcements made by WHO to the whole world were included in the study. Since these announcements were made after 2000, the stocks of insurance companies, whose are included in the benchmark index of each country and data can be accessed back to this date, have been analyzed. Event study method was used in the research. In the study, [-10, + 10] event window was used. The size of the estimation window was determined as 100 days. The significance of the abnormal returns occurred in the study was examined by t-test.

As a result of the study, the returns of stocks of all countries were affected by the news about the COVID-19 outbreak, and negative abnormal returns occurred due to the news. These abnormal returns have occurred in a date close to the news date in all countries. On the other hand, cumulative abnormal returns have occurred in all countries except Japan. The events that cause abnormal returns in the stocks of insurance companies on a country basis are as follows;

- Turkey: April 25, 2009 – H1N1 emergency announcement; July 17, 2019 – Ebola emergency announcement; March 11, 2020 – COVID-19 Pandemic announcement

- Germany: March 12, 2003 – SARS global warning announcement; March 11, 2020 – COVID-19 Pandemic announcement

- England: March 12, 2003 – SARS global warning announcement; March 11, 2020 – COVID-19 Pandemic announcement

- Italy: March 12, 2003 – SARS global warning announcement; July 5, 2003 - Announcement that the SARS global epidemic was taken under control; April 25, 2009 – H1N1 emergency announcement; July 17, 2019 – Ebola emergency announcement; March 11, 2020 – COVID-19 Pandemic announcement

- France: March 11, 2020 – COVID-19 Pandemic announcement

- Japan: March 11, 2020 – COVID-19 Pandemic announcement

- USA: March 12, 2003 – SARS global warning announcement; July 5, 2003 - Announcement that the SARS global epidemic was taken under control; April 25, 2009 – H1N1 emergency announcement; July 17, 2019 – Ebola emergency announcement; March 11, 2020 – COVID-19 Pandemic announcement

- Canada: March 12, 2003 – SARS global warning announcement; March 11, 2020 – COVID-19 Pandemic announcement

As it can be seen from the results obtained, the reaction of the markets to the announcements is different in each country. When the results are analyzed in terms of abnormal returns, it is seen that the most sensitive countries to the news about the epidemics are the USA and Italy. One of the most interesting issues in the findings is that no country market is affected by the pandemic announcement of H1N1 disease. Although H1N1 was also declared a pandemic by WHO like COVID-19, the H1N1 virus was not as effective as the COVID-19 virus. The fact that epidemics have different effects in all countries and markets react differently to each disease may be the result of the noise trading theory developed by Black. According to this theory, there are rumor traders as well as rational investors. Such investors estimate the expected returns high in some periods and low in some periods depending on their sensitivity. This situation may cause their investments to be shaped differently over time. It should also be noted that the subject is open to manipulations. Also, while one of the two pandemics has an impact in all countries, the reason why the other pandemic has no effect in any country may be the change in investor perceptions over time. Similarly, some news of epidemics cause positive abnormal returns, but some news also cause negative returns. Again, this issue can be explained by investor psychology or behavior. It is also a possible reason that investors believed that the news of the disease will increase the demand for insurance in some periods and that these epidemics may burden insurance companies in some periods. As a result; although different effects occur in the markets of all countries, it can be said that the news and announcements about the epidemics contain serious risks due to the uncertainty. For this reason, investors need to take decisions carefully and be more careful when such news occur. In addition, because of the sudden occurrence of these events, it is always necessary to be prepared and the portfolios should be adjusted to minimize the risk of these events.

In future studies, the research topic may be expanded on stock markets of underdeveloped or developing countries. In addition, it is thought that it will be very useful to examine different sectors. Increasing the number of such studies on the subject, applying them to different sectors and countries, and analyzing them with various methods can provide to be prepared for a possible uncertainty that may occur in the future.

AUTHOR STATEMENT

Research and Publication Ethics Statement

This study has been prepared in accordance with the ethical principles of scientific research and publication.

Author Contribution

All authors have contributed the study equally.

Conflict of Interest

There is no conflict of interest arising from the study for the authors or third parties.

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