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ORIGINAL ARTICLE

EFFECT OF COVID 19 PANDEMICS ON INSURANCE INDUSTRY IN TURKEY: EVIDENCE FROM BIST INSURANCE INDEX

Selim Kayhan

Abstract
The COVID-19 pandemic, which has affected both human and economic life since the first half of 2020, has significantly affected the insurance sector as well as many sectors in the economy. The impact of this change on the insurance industry has not yet been clarified. In the limited literature, there are claims that this situation may have different consequences on the insurance sector in the short and long term. For this reason, this study measures the economic effects of the COVID-19 pandemic on the insurance industry.
In this study, which investigated whether the economic effects of the COVID-19 pandemic on the insurance sector cause different results in the short and long term, it was determined that there exists an asymmetric linkage running from COVID-19 pandemic to the performance of the insurance sector. On the other hand, an increase in the number of cases would not affect the insurance sector neither positive nor negative. Furthermore, findings demonstrate that the COVID-19 pandemic caused significant effects only in the short and medium term by using advanced causality analysis methods.

Keywords
Covid 19 pandemics, Insurance sector, Bist insurance.

JEL Classification
G22, I11, I18, M10, M40.

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1. INTRODUCTION

When the historical development of the insurance sector is examined, it can be said that it is generally associated with economic growth, that is, the development in the insurance system interacts with economic development. In this context, the contraction and expansion periods in the economy and in the insurance sector are directly and indirectly related to each other.

It can be said that the impact of the COVID-19 pandemic, which affects the whole world in socio-economic terms, on the insurance sector is due to both its specific effects on the insurance sector and its economic effects. For this reason, the measurement of the impact of the COVID-19 pandemic on the insurance sector has a certain importance, both in terms of sectoral and economic outputs.

According to Uniyal (2021), the COVID-19 pandemic has had significant effects on the insurance industry all over the world. The sector has been subject to new working rules and changing regulations with digital initiatives, and regulations have been made to reduce costs while reducing profits. At the same time, it is aimed to increase performance by increasing efficiency. The pandemic has also caused a shift/change in customer preferences. Indirectly, the insurance system has also been affected by the course of the economy. On the other hand, while the pandemic caused an increase in compensation claims in certain sectors, the digital economy offered promising opportunities for the growth of the sector in the post-pandemic period. Therefore, determining the net effect is not easy.

Uniyal (2021) divides the effects of the pandemic on the insurance sector into two as direct and indirect. First of all, the pandemic has had a negative impact on health, travel and accommodation. This effect is obvious. New measures need to be taken for insurance activities in these sectors. On the other hand, demand for health insurance is expected to increase after the pandemic. Some companies have added new questions to the questionnaires asked during the policy process for health insurance, and some are planning to lower the upper limit for health insurance.

The pandemic caused the cancellation or postponement of many global events, and although the industrial sector was relatively less affected by this situation, the losses exceeded hundreds of millions of US dollars. The pandemic has also directly affected the cyber security part of the industry. The growth in the dimensions of the digital economy has also caused the cyber insurance sector to show a strong growth performance.

Losses are expected to increase due to disruptions in the supply chain, payment delays and bankruptcies during the pandemic process. However, due to the nature of increasing risks and threats, losses in the insurance sector are also expected to increase. Because, with the increase in claims over commercial credit insurances, it is certain that there will be deterioration in the basic indicators such as the profitability of the sector.

Finally, it is possible to say that the pandemic has a direct impact on the liquidity of insurance companies. For example, some institutions, such as the Australian Prudential Regulatory Board, have taken initiatives to accelerate the demands for early access to pension funds for individuals adversely affected by the COVID-19 pandemic. This situation causes insurance companies to review their liquidity status and reserves (Uniyal, 2021).

When the indirect effects of the pandemic on the sector are examined, the change in customer behaviors and preferences is striking. Online sales and insurance processes have started to be demanded by customers in the post-pandemic period. On the other hand, the increase in unemployment rates changed the spending priorities of the insurance customers. In this case, the amount that individuals plan to make for different types of insurance also decreased.

The pandemic period, which caused a decrease in the distances traveled due to mobility restrictions, also caused a decrease in vehicle sales. All of these have led to a decrease in claim inquiries after an accident and a decrease in loss rates in vehicle insurance. This can be seen as the positive effect of the pandemic on the insurance sector.

Finally, it is possible to talk about the negativities in the sub-sectors related to commercial insu-

rance. For example, air transport and maritime transport have been affected by reduced travel, while other sectors such as energy and construction have also decreased in the volume of the insurance sector due to low economic activity, labor restrictions and mobility restrictions. Therefore, there has been a decrease in the income and profitability rates in the sub-sectors.

The insurance sector in Turkey was also affected by the pandemic conditions. According to Meral (2021), business interruption, receivables and unemployment insurance stand out as sub-sectors where catastrophic damages may occur due to the pandemic. The share of these products in the total insurance sector in Turkey is low, and therefore, the risks arising from the pandemic have been limited. The biggest threat for the Turkish insurance sector is the weakening in consumer demand that may occur after the slowdown in economic activity (Meral, 2021: 444).

In the light of statistics published by the Insurance Association of Turkey, we evaluate performance of the insurance sector in Turkey through years 2019 and 2020. According to the results, it is seen that performance of the life and non-life insurance sectors are very different. Accordingly, the sector's premium production grew by around 4% in real terms, while life insurance grew by 10% and non-life by 2.7%. In terms of profitability, it can be said that although there is an increase in the operating profitability of the sector, it is at a lower level compared to previous years. Looking at the determinants of profitability, it can be said that the non-life insurance sector is successful in terms of profitability.

Similarly, when the insurance sector is evaluated in terms of sales methods, it is possible to say that traditional sales methods are still valid in the non-life sector and almost 99% of sales are made through traditional sales methods. In life insurance, it is seen in the statistics published by the Insurance Association of Turkey that traditional marketing methods had a share of 94.6% as of 2016, and by 2020, sales through e-commerce were realized with a share exceeding 12%.

In the light of all these explanations, it is seen that it is very difficult to express clearly how the insurance sector was ultimately affected by the COVID-19 pandemic. Therefore, empirical analysis is needed. Because, seeing the net effect of the pandemic on the insurance sector, it is likely that it will be a guide for both sector players and policy makers who design policies related to the sector. Because the development of the sector is important for developing economies from different aspects. For Turkey, the insurance sector has important duties in terms of both maintaining the socio-economic balance and ensuring financial stability. For this reason, in the study, the change in the insurance sector during the pandemic period in the Turkish economy is tested with econometric methods. Both cointegration and causality tests show how the COVID-19 pandemic drives the Turkish insurance industry.

In the next part of the study, in order to better understand the interaction of the pandemic and the sector in a theoretical sense, how the subunits of the insurance sector are affected by this situation is briefly explained. In the third part of the study, the literature on the subject is summarized. In the fourth section, empirical analysis is given, and in the last section, the results are interpreted, and policy proposals are included.

2. THEORETICAL INTERPRETATION OF EFFECTS OF COVID-19 PANDEMIC ON SUB-SECTORS OF INSURANCE INDUSTRY

In this section, theoretical explanations are given about how the insurance industry is affected by the COVID-19 pandemic in general, and how life and other sub-insurance areas can be affected by the pandemic. These disclosures are summarized from the Deloitte (2020) report.

First of all, when the insurance system is examined in general, it is possible to summarize the results as follows. Undoubtedly, the pandemic has negatively affected new premiums in certain business lines such as travel, event and trade credit insurance, and losses from these business lines may become significant. Vehicle and home insurance remained relatively stable. Because the travel restrictions due to the closure led to a decrease in compensation claims for motor vehicles.

However, it is not the same in the commercial part of the insurance sector. In the perspective of the

continuity of commercial transactions, there has been a significant increase in claims. For this reason, insurers demand some conveniences from policy makers.

When the life and pension insurance sector is examined, it is seen that the spending power of consumers has decreased, at least in the short term, with the effect of the COVID-19 pandemic's decline in economic activity and therefore employment. Insurers responded to this situation with payment deductions (customers' fees) in order to avoid possible major payment delays.

The decline in willingness to spend coupled with uncertainty has caused life insurers to prepare for a significantly lower volume of business during this period of uncertainty. In addition to low volume, increased payment delays caused a decrease in market values and interest rates. The impact of this on the income of life insurers has in some cases resulted in financial strain and unpleasant spending cuts.

Although there is loss of life in the society in general, from the insurance perspective, since most of the deceased were not covered by insurance, they did not face a large amount of life insurance claims. However, for other age groups, there is a risk of increased mortality from hospital or self-isolation stress.

Finally, it is possible to conclude that there are very important differences in the world in terms of the global health insurance system. So, the impact of COVID-19 on health insurers is not the same. For example, in Ireland, the government directed private hospital services to serve COVID 19 patients, while in other countries private hospitals provided their services voluntarily. Therefore, testing the interaction on a country basis will lead to a more accurate result (Deloitte, 2020: 3 – 5). Because the depth of the insurance sector of each country is different. Moreover, the role that each country imposes on the insurance sector and the demand for products may differ.

3. LITERATURE SURVEY

The number of studies investigating the economic effects of COVID-19 pandemic in the literature is increasing very rapidly. When we take a look at the related literature, it is possible to conclude that initial studies are written at the end of the 90's, but they are related to different kinds of pandemics such as AIDS, SARS etc. (Bloom and Mahal, 1997; Loh et al., 2006; Chen et al., 2009; Chen et al., 2018; Edu – Afful, 2019).

Studies related to COVID-19 pandemics focus on different dimensions of economics. Several studies take stock exchange indices into account. On the other hand, initial studies analyze the case by employing macroeconomic indicators such as unemployment and gross domestic product. One of them belongs to Luo and Tsang (2020). They analyze Chinese and global economic conditions. According to the authors, output loss in China will be 4% and hence global output would lose around 1% due to supply chain connection.

Kılıç (2020) examined the impact of the pandemic on the economy through the change in Borsa Istanbul. The author tested the movements of eight different indices in the stock market through descriptive statistics, and investigated which index moved positively or negatively, and which index was more volatile. According to the results of the study, it was found that the tourism and textile sectors were the sectors most negatively affected by the pandemic, and the trade sector was the most positively affected sector. The insurance sector, on the other hand, is positively affected by the pandemic but the level of effect is very low.

Çetin (2020) tested how the economic activities and the stock market behaved on March 23 - April 24, 2020, period. The curfew and social distance practices in this period affected the economic activity by -0.7 units, on the other hand, there was no negative effect on the stock market index. Evidence has been obtained that international travel practices affect the stock market index by -0.058 units.

Şenol and Zeren (2020) aimed to test the effect of the pandemic on the economy through stock markets. The stock market indices of both developing and European and G-7 countries, they used. As a result of their studies, there is a long run relation between stock market performances and pandemics in all markets.

Şenol and Otçeken (2020) investigate possible effects of pandemics on BIST in the context of sub-indexes. According to cointegration analysis techniques, financial and industrial indexes were mostly affected by pandemics in the long run.

Demirhan (2020) examined the impact of the pandemic on stock markets and CDS premiums. While examining the relationship between the volatility and returns in the stock market index in the Turkish economy in the analysis, he concluded that the epidemic affected the volatility, and this situation is also related to the mobility in CDS premiums.

As it can be seen, in the studies carried out to measure the impact of the COVID-19 pandemic on the economy, it has been tried to analyze the interaction through the movements of stock market indices in general. However, there are few studies analyzing the impact of the pandemic on the insurance sector. In these studies, the impact on the sector was measured through indicators such as policy volume and/or the number of policies. The literature investigating pandemics and the insurance sector is summarized in the below.

Kılıç (2020), on the other hand, examined the progress of stock market indexes of many sectors through descriptive statistics, in which he considered stock market indices. One of these sectors is the insurance sector. The author concluded that the insurance sector was relatively unaffected by the pandemic. Although the author's statistical analysis method provides very limited information, it is thought that using stock market indices to evaluate the course of the sector in macro terms would be healthier in order to see the net effect. Because, while the number of policies or the policy amount may be good for the relevant sub-sector, it will not represent the negativities related to trade receivables insurance, for example.

Babuna et al. (2020) investigated Ghana in the context of the insurance sector - COVID-19 pandemics interaction. They analyze the March 2020 – June 2020 period and employ qualitative and quantitative interview methods. According to the results of the study, insurers should adapt to working from remote locations, train and equip staff to work under social distancing regulations, enhance cybersecurity protocols and simplify claims/premium processing using e-payment channels.

Richter and Wilson (2020) developed a scenario analysis in which they evaluate and summarize the lessons learned from the pandemic crisis by baselining actual developments against a reasonable, pre-COVID-19 scenario. Their results support the hypothesis that financial market developments dominate claims losses due to the demographics of pandemics (Stojkoski, et al., 2021: 224).

Wang et al. (2020) investigated the Chinese insurance sector by employing data belonging to 29 preovidences. Panel data analysis results imply that insurance density, insurance depth and commercial insurance premium income all decreased in the pandemic s time yearly, 2019, 2020 and 2021.

Acs and Karpman (2020) investigated the unemployment insurance situation in the United States. According to the authors, the number of claims for unemployment insurance has increased. Even though some workers turned to their jobs, it is still high due to COVID-19 pandemics.

Pulawska (2021) analyzed European insurance companies by investigating their financial statements. According to the results, the pandemic has negatively affected the functioning of the insurance sector in Europea. In particular, the return on assets decreased in German and Italian insurance companies during the pandemic. Furthermore, the solvency ratio decreased in the Belgian, French, and German insurance sectors. Conversely, the Polish insurance sector was unaffected.

Nebolsina (2021) measured the effect of COVID-19 pandemics on the economics of the United States. The time period covers from January 22 2020 to June 28 2020. According to panel autoregressive model results, the demand for insurance services due to the COVID-19 outbreak in the United States can be expected to increase 2–6 times, with the total amount of the incurred costs for the economy due to the virus ranging from 0.3 to 7 percent of the US-2019 GDP.

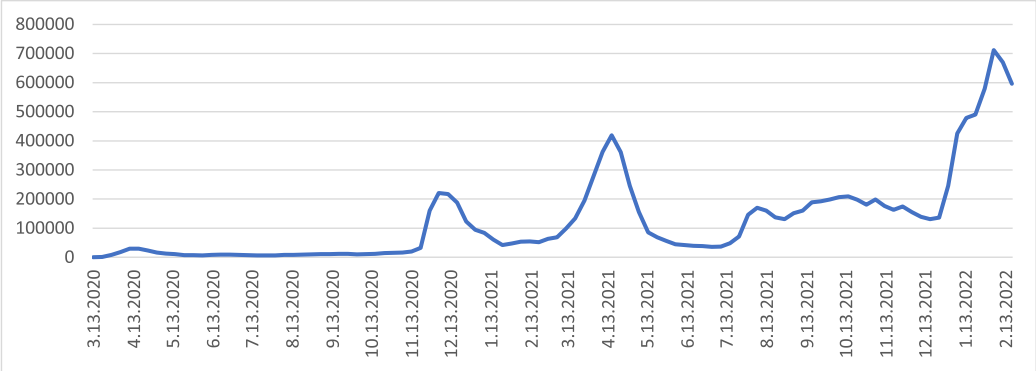
In the light of the explanations above, the contribution of this study is twofold. In the literature there are limited studies investigating effects of pandemics on various economic indicators. So it will contribute to the COVID-19 pandemics literature. Secondly, advanced econometric methods employed to understand symmetries and to see differences in the short and long run relations would imply

robust results at the end of the study.

4. DATA AND EMPIRICAL FINDINGS

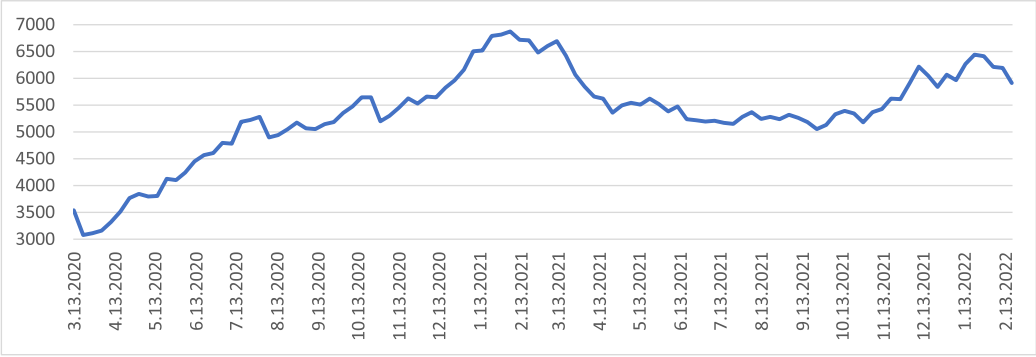
In the empirical part of the study, the relationship between the number of cases and the BIST Insurance index, which is formed by the stocks of insurance companies traded in Borsa Istanbul, from the beginning of the COVID-19 pandemic on March 11, 2020, to the present day. In this context, the analysis covers the dates between 09.03.2020 and 20.02.2022. The frequency of the data used is weekly. BIST Insurance data is obtained from Bloomberg data terminal. Case data from the COVID-19 pandemic were obtained from the "Our World in Data" database published by the University of Oxford and Global Change Data. While the data related to the stock market is defined as the closing data of the week, the case and death data are obtained from the total of the week. Graphs belonging to the series are presented in graphs below.

Graph 1
The Number of COVID-19 Case (Weekly)



Source: Our World in Data (Access date: 20.02.2022)

Graph 2
BIST Insurance Index



Source: Bloomberg (Access date: 20.02.2022)

Although the hypotheses to be used in the analyzes are not clear, the theoretical explanations are controversial about the direction and existence of the relationship. The ultimate impact of the pandemic on the insurance sector is related to which of the different factors drawn in the theoretical framework is dominant. If the dominance of losses related to commercial insurance in the non-life insurance segment increases, the increase in the number of cases will cause the profitability of the insurance companies and therefore the stock market index to decrease. On the other hand, an increase in the

profitability rate with the digitalization in the insurance sector and an increase in life insurance with the regulations made may cause a possible positive relationship between the number of cases and the stock market index. In the light of these explanations, the course of the pandemic may also have an impact on the values of the stocks of insurance companies traded in the stock market through the channel of forward-looking expectations in the economy.

To test the validity of all these possible explanations, the first step in the empirical analysis is the unit root test. Results of Augmented Dickey – Fuller unit root test developed by Dickey and Fuller (1981) are presented in Table 1. According to the results, the insurance variable has a unit root in its level value and becomes stationary when its first difference is taken. The number of cases, on the other hand, carries a unit in the level value in the constant term model, but does not carry a unit root at the 5% significance level in the constant term and trend variable model. When the first difference of the number of cases variable is taken, it does not carry a unit root. Therefore, it is appropriate to continue the analysis by taking the first differences.

Table 1
ADF (1981) Unit Root Test Results

		Variables	ADF	*F*	ADF
Level	*Constant*	**BIST INS**	-2.068 (0) [0.257]	*irst Difference*	-8,946 (0) [0.00]***
		NO of CASE	-1.729 (3) [0.413]		-6.224 (1) [0.00]***
	Constant+Trend	**BIST INS**	-1.604 (0) [0.784]		-9.172 (0) [0.00]***
		No of CASE	-3.572 (3) [0.037]**		-6.293 (1) [0.00]***

Note: ***, ** and * values indicate the stationarity of the series at 1%, 5% and 10% significance levels, respectively.

In the second step, we employ an asymmetric causality analysis method developed by Hatemi J and Roca (2014). In conventional causality analysis methods, it is not possible to obtain asymmetric relations. In the case of pandemic and insurance sector development relation s, there is possible asymmetric interaction. That is why it is necessary to be able to obtain asymmetries between series. Results are presented in table 2. According to results, there is no symmetric relation between variables. On the other hand, an increase in the number of cases does not affect the BIST INSURANCE index, but a decrease in the number of cases increases BIST INSURANCE index.

Table 2
Hatemi J-Roca (2014)Asymmetric Causality Test Results

Direction of Causality	**MWALD**	**1%**	**5%**	**10%**
$(CASE)^{+} \neq> (BIST)^{+}$	0.012 (0.969)	7,329	3.779	2.668
$(CASE)^{+} \neq> (BIST)^{-}$	0.885 (0.643)	10.019	5,766	5,584
$(CASE)^{-} \neq> (BIST)^{-}$	1,696 (0.428)	16,209	8.258	5,086
$(CASE)^{-} \neq> (BIST)^{+}$	10,328 (0.00)***	10,763	6,802**	4,978*

Note: The ≠> notation indicates the null hypothesis of no causality. Values in parentheses show pro-

bability values asymptotically. ***, ** and * values indicate causality between variables at 1%, 5% and 10% significance levels, respectively. Bootstrap count is 10,000. The optimal lag length obtained from the vector autoregression model was chosen as 3.

In the next step, frequency domain causality test is employed. According to results presented in table 3, causality relation running from number of cases to BIST INSURANCE index exists in the short and medium run. That means causation linkage disappears in the long run.

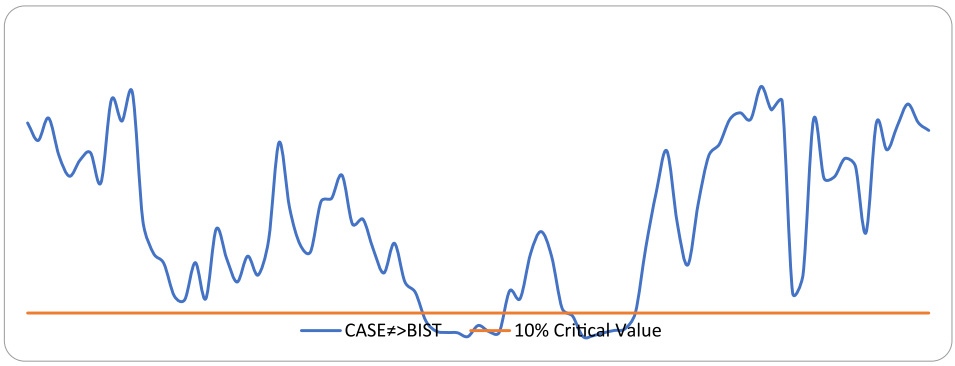
Table 3
Breitung and Candelon's (2006) Frequency Domain Causality Test Results

	long run		**medium run**		**short run**	
ω_i	0.01	0.05	1.00	1:50	2.0	2.50
CASE ≠> BIST	0.084	0.074	2,393*	0.776	2,968*	4.212**

Note: The table value of F with degrees of freedom (2.N-2p) is 4.835, 3.092, and 2.359 for approximately 1%, 5%, and 10%, respectively. 0 and π.ω □ (0,π) for each frequency domain ( ) in between. . ***, **, and * denote statistical significance at the 1%, 5% and 10% level of significance, respectively.

In the last step, we investigate the exact timeline of causality by employing the Rolling Windows causality analysis method developed by Balcılar et al. (2010). According to results, causation linkage occurs on March 19th 2021 – April 14th 2021 and June 25th 2021 – August 13th 2021 periods.

Graph 3
Balcılar et al. (2010) Rolling Windows Causality Analysis Test Results



5. CONCLUSION

In this study, we aim to investigate possible relation between pandemics and insurance sector performance via empirical tests to see whether COVID-19 pandemics affect the insurance sector negatively, or not. To do so, we employ stock market performance of insurance companies via BIST INSURANCE index and pandemics via daily number of cases in Turkey. We investigate the relation by the beginning of pandemics in the second week of March 2020 till the second week of February 2022.

Results imply that there is an asymmetric relation running from pandemics to insurance sector performance, a reduction in the number of cases would accelerate insurance sector performance in the stock exchange market. On the other hand, an increase in the number of cases would not affect the insurance sector neither positive nor negative. Moreover, causal relation appears only in short and medium run. It disappears in the longer period. Lastly, causation linkage from pandemics to the insurance sector occurs on March 19th 2021 – April 14th 2021 and June 25th 2021 – August 13th 2021 periods.

Empirical findings imply that the effect of pandemics in the insurance sector of the Turkish economy is less than expected. At least, its net effect on the sector is not negative. It is found that the sole effect of pandemics is in the case of decrease of the number of cases via expectations channel. Periods where causation linkage appears are spring and summer times in which the number of cases decreases relatively. So, it might give courage to have new businesses such as buying new cars, expanding trade and buying new policies for health and/or life. In this regard, it is not necessarily important for the insurance sector to get help from governmental policies.

When we compare results with the existing literature, it is possible to conclude that the impact of the insurance sector in Turkey to pandemics is not simple. Studies in the existing literature imply the negative effect of pandemics on the insurance sector in different economies. But they analyze the relation quantitatively, but analysis methods are not complicated. This paper reveals asymmetries in interaction between variables. Moreover, relationships disappear in the long run. Although existing studies did not take time frequency into account, this study might be one of the initial studies concluding that the insurance sector would keep up with pandemic conditions.

Declaration of Research and Publication Ethics

This study which does not require ethics committee approval and/or legal/specific permission complies with the research and publication ethics.

Researchers' Contribution Rate Statement

The authors declare that they have contributed equally to the article.

Declaration of Researcher's Conflict of Interest

There are no potential conflicts of interest in this study.

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