

The Impact of The Covid-19 Pandemic on Investor Risk Tendency: The Case of Turkey

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ABSTRACT

Introduction and Aim: It is an important issue that what kind of changes occur in the risks that people face in the face of emerging problems and the role of people in possible pandemics in the last twenty years and in the future. The solution of the problems that arise in the control and management of these risks attracts the attention of many researchers. In this study, the causality effect of the COVID-19 pandemic on risk appetites representing the attitudes and behaviors of securities investors.

Materials and Methods: In the study; To represent the pandemic, weekly time series data of the number of COVID-19 cases (COVID) and the Risk Appetite index (RISK) announced by the Central Registry Agency for the period 30.03.2019-30.08.2021 were used. In order to determine the causality relationship, the Hatemi-J Causality test was performed.

Results: It was determined that the negative shocks of the COVID variable were a cause of the positive shocks of the RISK variable at a statistical significance level of 1%.

Conclusion and Suggestions: The effect of the pandemic process on the investment decisions of the investors is reduced, with the expectation that the economy and financial markets will improve, positively affecting the behavior and risk perceptions of the investors, and this expectation causes the investment behavior and risk appetite to increase. can be expressed.

Keywords: COVID-19, Risk appetite, Pandemic, Hatemi-J

INTRODUCTION

In the last two decades, the world has struggled with epidemics such as SARS (2002), Swine Flu (2009), MERS (2015), and finally, starting from Wuhan in December 2019 and (COVID) -19 pandemic appeared which spread very rapidly all over the world at a worrying level. Regarding the COVID-19 pandemic, which is the primary atypical (viral) pneumonia, the World Health Organization (WHO) declared the disease as a Public Health Emergency of International Concern (PHEIC) on January 30, 2020, and a Pandemic on March 11, 2020. As of September 23, 2021, 229,373,963 COVID-19 cases and 545,202 deaths have occurred all over the world, and the number of people who have been vaccinated has reached 5,776,127,976 people. WHO recommends some rules such as mask use, social interaction, and hygiene to reduce the spread of COVID-19 cases. In addition to this, public awareness campaigns are carried out to increase the severity of the pandemic and social sensitivity, and the importance of the role of positive psychology is emphasized.¹

This emerging situation has also been an indication that the world may be defenseless and helpless, contrary to popular belief.² Factors such as the uncertainties that have arisen since the beginning of the pandemic, new findings about vaccines, the emergence of variants, the measures taken by countries for public health, the formation of serious restrictions on social life, the changes in business and economic life have created very important changes in attitudes and behaviors on human lives and caused many psychological effects. In the meantime, some practices such as lockdown and closure of businesses applied by governments to reduce the number of cases during the pandemic process have brought unemployment, living difficulties, and mental health problems.³ The COVID-19 pandemic, which has a great impact on human life, has

caused insecurity and a change in risk perceptions in many areas of life such as health, social life, and finance.

Human risk perception differs depending on factors such as social structure, educational status, ethnicity, and also become a psychological problem by creating feelings such as stress, fear, and disappointment on individuals and society.⁴ While these effects affected the decision-making processes of people, this process also had an impact on the investment decisions of investors in financial markets. This change in financial decisions has been effective in the changes in the financial markets due to the pandemic, as well as the changes in the attitudes and behaviors of individuals.

Due to the integration and contagion effect in the financial markets, the effects of events affecting the process such as increases or decreases in the number of cases during the pandemic and vaccination rates have had similar effects in all financial markets. Therefore, it has relatively reduced the advantages of local and international diversification and risk reduction for financial market investors.⁵

The role of people in pandemics that occurred in the last two decades and the possible to happen in the future, the changes in the risks faced by people during these crises, and the control and management of risks let many researchers be interested to solve these problems. In the researches, health, psychology, and economic activities were evaluated separately as well as evaluated together.

At the British Psychological Association, in March 2020, Prof. Dr. A COVID-19 coordination commission consisting of expert psychologists was established under the chairmanship of Angel Chater. The purpose of the Commission, named Behavioral Science and Disease Prevention (BSDP), is to predict behavioral problems and produce solutions for them. The commission has published twelve official guidelines up to the present for many

behaviors such as hand hygiene, testing, and taking the practice of craving.

There have been many studies in the literature on the pandemic and its psychological effects. Song et al. (2020) In their study, which examined the impact of the COVID-19 pandemic on school psychology, examined the education system and new practices in education, reflecting the developments related to education.⁶ Burke and Arslan (2020), who examined the effects of the pandemic on the school life of young people, stated that young people miss the social aspects of their school life, teachers have difficulties in distance education, and positive school psychology research should be increased.⁷ Pillay et al. (2020) stated that there are serious concerns due to the restrictions made due to COVID-19, problems such as unemployment, poverty, and mental health faced by society and that the science of psychology will make important contributions during the pandemic.³ Durankas and Aksu (2020), who examined the effects of the pandemic on the depression and anxiety levels of pregnant women in China, stated that pregnant women should be provided with urgent psychological support during the pandemic and these effects of the pandemic will affect the mother and the fetus.⁸ Dhar et al. (2020) examined the effects of the pandemic on university students in Bangladesh. They concluded that social awareness should be monitored in addition to government support to eliminate students' anxiety and mental health problems.⁹ Neem (2021), who examined the purchasing behavior of consumers during the COVID-19, made suggestions that the fear, risk perception, and conformist tendency caused by the pandemic will positively affect the purchasing decisions of consumers (10). From the studies on the financial aspect of the COVID-19 pandemic, Kaya (2020) concluded that the pandemic was effective on all financial markets and had a contagious effect in financial markets⁵, and Gülhan (2021) concluded that there is a long-term relationship between the number of COVID-19 cases and crypto money prices². Soine et al. (2021) examined the risk phenomenon caused by financial insecurity. Risk perceptions of individuals are also different due to their different economic situations and psychology. Since the concerns of individuals with a high-risk perception will be high, the risk creates serious psychological pressure on the individual and society. In the study, they stated that there are different risk perceptions on different ethnic groups in Germany.⁴ Shehzad (2020) argued that during the COVID-19, there are negative pricing in European and American stock markets, inadequate health system and quarantine conditions damage financial markets, sustainable development is at risk, and governments should increase the proportion of health expenditures in their budgets against pandemics and crises in the future.¹¹

In the literature review, no study was found that examined the impact of the COVID-19 pandemic on investor behavior and risk perception. In this study, it will be investigated whether the COVID-19 pandemic has a causal effect on the risk appetite, which is the component of investment decision and risk perception of stock exchange investors.

MATERIAL AND METHODS

The study aims to determine whether the COVID-19 pandemic has a causal effect on the risk appetite of securities investors. Time series data of the total number of weekly COVID-19 cases in Turkey (COVID) and domestic investor risk appetite (RISK) for the period 30 March 2020-30 August 2021 were used. The number of COVID-19 cases was obtained from the official website of the World Health Organization, and the risk appetite data of domestic investors were obtained from the Central Registry Agency.

In the causality analysis between the variables, the Hatemi-J asymmetric causality test, which can test for causality by taking into account the positive and negative shocks in the variables, was used. The causal relationship between the two variables has been examined in many empirical studies. The Granger Causality test, especially developed by Granger (1969), is an intensely preferred analysis method. In the Granger causality test, it is examined whether there is a causality between two variables and it is accepted that this relationship exists in negative shocks by examining positive shocks. The main reason why positive and negative shocks are not considered separately is that an asymmetrical structure is not taken into account. An important reason for the existence of asymmetric causal effects between the variables is the existence of asymmetric information phenomenon.¹² First studies on the existence of asymmetrical markets were done by Akerlof (1970), and Spence (1973) and Stiglitz (1974) discussed this study extensively. It has great importance to consider asymmetric behavior in causality tests.¹³⁻¹⁴⁻¹⁵ For this reason, the asymmetric causality analysis developed by Hatemi-J (2012), which takes into account the causality relationship between the variables, asymmetric behavior, and delayed augmented preload simulations and can be applied to the efficient markets hypothesis, will be used in the study. In the procedure to be followed for testing the causality relationship between COVID and RISK variables for the Turkish economy, $y1t$ represents the COVID variable and $y2t$ the RISK variable. The random walking process of the variables is determined by the equations (1) and (2).

$$y1t = y1t-1 + \varepsilon1t = y10 + \sum_{i=1}^t \varepsilon1i, \quad (1)$$

$$y2t = y2t-1 + \varepsilon2t = y20 + \sum_{i=1}^t \varepsilon2i, \quad (2)$$

The constant values $y1.0$ and $y2.0$ in the equations represent the initial values. Positive and negative shocks, respectively; It is calculated as $\varepsilon_{1i}^+ = \max(\varepsilon_{1i}, 0)$, $\varepsilon_{2i}^+ = \max(\varepsilon_{2i}, 0)$, $\varepsilon_{1i}^- = \min(\varepsilon_{1i}, 0)$ and $\varepsilon_{2i}^- = \min(\varepsilon_{2i}, 0)$. Therefore, the calculation of $y1t$ and $y2t$ will turn into equations (3) and (4).

$$y1t = y1t-1 + \varepsilon1t = y1,0 + \sum_{i=1}^t \varepsilon1i^+ + \sum_{i=1}^t \varepsilon1i^-, \quad (3)$$

$$y_t^+ = y_{t-1}^+ + \varepsilon_t^+ = y_0^+ + \sum_{i=1}^{t-1} \varepsilon_{1i}^+ + \sum_{i=1}^{t-1} \varepsilon_{2i}^+ \quad (4)$$

The cumulative positive and negative shocks of each variable; $y_{1t}^+ = \sum_{i=1}^t \varepsilon_{1i}^+$, $y_{1t}^- = \sum_{i=1}^t \varepsilon_{1i}^-$, $y_{2t}^+ = \sum_{i=1}^t \varepsilon_{2i}^+$ and $y_{2t}^- = \sum_{i=1}^t \varepsilon_{2i}^-$ will be determined by calculations. In testing the causality relationship between the variables, the autoregressive model of the p degree will be obtained with the VAR(p) model (5) using the following vector.

$$y_t^+ = v + A_1 y_{t-1}^+ + \dots + A_p y_{t-p}^+ + u_t^+ \quad (5)$$

Determining the appropriate lag length is an important criterion in causality tests. In the Hatemi-J causality test, the created VARp+d model and Hatemi-J critical information values are used to determine the appropriate lag lengths. By creating the VAR (p) model numbered (14),

the hypothesis H0: Granger is not the cause is tested by following the method numbered.⁶⁻¹⁶

$$Y = DZ + \delta \quad (6)$$

$$Wald = (C\beta)'[C((Z'Z)^{-1} \otimes S_U)C']^{-1}(C\beta) \quad (7)$$

RESULTS

Since the COVID-19 case numbers and domestic investor risk appetite data used in the analysis are time series, they have to be stationary to be included in the analysis.¹⁷ For this reason, Augmented Dickey-Fuller (ADF) unit root test was applied to the variables before proceeding to the analysis. Test results are presented in Table 1.

Table 1: The ADF Results of the Variables

Variable	Intercept		Trend and Intercept	
	Level	First Difference	Level	First Difference
COVID	-2,609**		-3,264**	
RISK	-2,155	-8,531*	-3,126	-9,095*
Critical Values	a=%1	-3,524	-4,090	
	b=%5	-2,902	-3,473	
	c=%10	-2,588	-3,163	

*: 1% and **: represent 10% significance level.

When Table 1 is examined, it has been determined that the COVID variable is statistically stable at the 10% significance level, while the RISK variable is not stationary at the level value, and is statistically stationary at the first difference value at the 1% significance level. For this reason, the level value of the COVID variable and the RISK

variable with the first difference value will be included in the causality analysis.

The results of the Hatemi-J asymmetric causality test performed to determine whether the COVID variable is a cause of the RISK variable are presented in Table 2.

Table 2: Hatemi-J Asymmetric Causality Test Results

Variable Pair	Op.Lag Length	Test Stat. (MVald)	Critical Values
COVID (+) → RISK (+)	3	4,624	%1 10,986 %5 7,639 %10 6,512
COVID (+) → RISK (-)	11	13,496	%1 25,316 %5 20,121 %10 17,697
COVID (-) → RISK (-)	2	1,769	%1 11,395 %5 5,386 %10 4,313
COVID (-) → RISK (+)	11	106,460*	%1 28,566 %5 21,385 %10 18,121

*: represents 1% significance level.

When Table 2 showing whether the positive and negative shocks of the COVID variable is a reason of the positive and negative shocks of the RISK variable, it is seen that the negative shocks of the COVID variable are a reason of the positive shocks of the RISK variable, at a statistical significance level of 1%. In other words, it was concluded that the other shocks of the COVID variable did not have a causal effect on the RISK variable and that the decrease in the number of COVID-19 cases increased the risk appetite of the investors.

CONCLUSION

This study aims to detect a causality effect of the COVID-19 pandemic on risk appetite, which is a component of investment decision and risk perception of stock exchange investors in the sample of Turkey. For this purpose, the total number of weekly COVID-19 cases in Turkey between 30 March 2020 and 30 August 2021 and time-series data of domestic investor risk appetite variables were used. The causality test between the variables was examined with the Hatemi-J asymmetric causality test.

Before the analysis, the Augmented Dickey-Fuller (ADF) unit root test was performed to determine whether

the variables were stationary or not. As a result of the unit root test, it was determined that the COVID variable was stationary at the level value and the RISK variable was stationary at the first level value. The Hatemi-J asymmetric causality test was performed with the values that the variables were stationary. As a result of the causality test, it was concluded that the negative shocks of the COVID variable were a cause of the positive shocks of the RISK variable.

It can be stated that the effect of the pandemic during on the investment decisions of the investors, with the expectation that the effect of the pandemic, which occurred only due to the decrease in cases, will decrease and the economy and financial markets will improve, positively affect the behavior and risk perceptions of the investors, and this expectation has led to an increase in their investing behavior and risk appetite.

It can be said that during the COVID-19 pandemic or similar pandemics or crises, the negative atmosphere in the economy will recover more quickly if the effects of pandemics or crises can be reduced. In addition, it will be possible for stock exchange investors to take more accurate investment decisions by following these during, as the appropriate investment times for their investments during pandemic periods are periods when the speed of the pandemic decreases.

In studies to be conducted on investor behavior and risk perception of pandemic, different risk appetite indices can be used, and findings can be determined by applying surveys directly to investors.

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