THE IMPACT OF COVID-19 ON THE INVESTORS' RISK APPETITE: EVIDENCE FROM THE STOCK MARKET IN TURKEY

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ABSTRACT

The Covid-19 outbreak, which emerged at the end of 2019 and was declared as a pandemic in March 2020, has affected all economies, sectors, and financial markets in the world. The pandemic has caused a dramatic increase in the level of risk, fear, and stress while making investment decisions for the investors. This study aims to evaluate the impacts of the unprecedented Covid-19 pandemic on the investors' risk appetite in Borsa İstanbul. The stability and the volatility of the financial markets are reflected by the risk appetite indicators. In this regard, fluctuations in the RISE Index, which is a predictor of investors' risk appetite in the Turkish stock market, has been revised. For this purpose, the index values for different investor profiles including foreign investors, domestic investors, and private corporations are examined. And, whether there is a significant difference between the risk appetites of the investor groups is analysed through the analysis of variance tests. Also, the change in the risk appetite before and during the pandemic is assessed. As a result of the tests conducted in the study, although there are minor differences among the investor groups, no statistically significant difference could be detected. On the other hand, the analysis findings confirm the severe surge of the investors' risk appetite in the early phase of this pandemic episode. By following the RISE Index, financial actors could have an idea about the uncertainty and volatility as well as fear in the markets and thus they could plan their future investments. In this sense, the study results reveal that the data of the RISE Index will be useful for investors to make the right decision during this epidemic, where historical fluctuations are experienced in financial markets.

Key Words: Covid-19, RISE Index, Borsa Istanbul

INTRODUCTION

The Covid-19 outbreak, which emerged at the end of 2019 and was declared as a pandemic in March 2020, has affected all economies, sectors, and financial markets in the world. Covid-19, the new type of coronavirus affecting the world, first appeared in Wuhan, China's Hubei province in December 2019 and became an epidemic in a very short time. This epidemic adversely affects many social, political and economic areas as well as health problems all over the world.

With the spread of this epidemic, various measures have been taken in most countries. To prevent the spread of the epidemic, touristic activities, entry and exit are prohibited; emphasizing the importance of social isolation, activities such as sports competitions where people are collectively have been cancelled and many measures such as curfews, quarantine practices and school holidays have been taken. Unfortunately, the measures are taken not only affect social life but also affect the economy seriously.

When Covid-19 is evaluated economically, it can be said that it causes many unfavourable consequences such as sharp decreases in stock market returns, decrease in production and decrease in oil prices, decrease in tourism revenues as a result of the cessation of tourism activities, decrease in people's consumption and investments as uncertainties about the future increase, fluctuations in exchange rates and other commodity prices.

This study aims to investigate the impact of the Covid-19 pandemic on investors' risk appetites. For this purpose, RISE (Investor Risk Appetite) Index data were used for different types of investors in Borsa Istanbul stock market of Turkey. The data between December 2019 and mid-November 2020 were used in

the study. Also, statistical information has been included since the beginning of 2008, when the index was created. As method variance tests were used to assess the difference in the risk appetites of the investor groups. The RISE Index for Turkish financial market is an important indicator revealing the changes that occur in financial risk perception of investors to the market and future expectations.

The findings of the study show how risk perceptions change during the pandemic process according to different types of investors such as individual or corporate. Several studies have been done to test the relationship between the recent Covid-19 crisis and stock market volatility. In this regard, to the best of our knowledge unlike other studies, this study is the first to investigate the effects of Covid-19 on the risk appetite in the Turkish stock market. Thus, the study raises an issue that has not been discussed yet in Turkey and aims to provide contributions to both the investors and academic literature.

LITERATURE REVIEW

Many scientific studies ((Al-Awadhi et al., 2020; Corbet et al., 2020; Goodell 2020; Hale et al., 2020; Ozili and Arun 2020; Sohrabi et al., 2020; Yang et al., 2020; Zhang et al., 2020) have been conducted on the Covid-19 and the effects of this epidemic on the economy, the new type of coronavirus, which has become the most important agenda of countries since its first appearance in the world and the studies continue with the course of the epidemic. In this section, the results of some studies conducted on the effect of Covid-19 on financial markets, the volatility it creates in financial markets and thus the change in the risk appetite of the investors are included.

In the study conducted by Sarı and Kartal (2020) the relationship between the Covid-19 case numbers and commodity prices as well as the VIX Index, which is an indicator of risk perception for the US financial markets are investigated with data covering the period January- April 2020. In the analysis performed by using the ARDL Limit Test it was concluded that the number of cases significantly affected the VIX Index. During the period experienced with the Covid-19 outbreak, there was an increase in financial volatility and it was observed that the VIX Index reached historical record levels.

In the sector-level analysis of Covid-19 and stock volatility, Baek et al. (2020) observed significant increase in total risk for the US stock market. In the study examining 30 sectors, it was found that idiosyncratic risk increased in all sectors with the inception of Covid-19. The study covers the data from January 2020 to April 2020 and it uses the number of Covid-19 cases as well as macroeconomic indicators. Distinctly, the study findings demonstrate that the changes in volatility are more sensitive to Covid-19 news than economic indicators. Also, the market reaction to Covid-19 news shows a positive-negative asymmetry. In other words, the negative news regarding number of deaths is twice as impactful as positive news regarding recoveries.

Zaremba et al. (2020) examined the effects of coronavirus on stock return volatility worldwide. In this direction, they examined the government interventions and policies aimed at preventing the spread of Covid-19's effects in 67 countries including Turkey. These government actions include closures of school and workplace, cancelling public events, closing of public transportation, public information campaigns, restrictions on internal movement, and international travel controls. The study results show that non-pharmaceutical interventions significantly increase equity market volatility.

In a study examining the effects of the Covid-19 pandemic on the volatility of financial markets, Albulescu (2020) evaluates these effects separately in China and countries other than China. The death ratio and new cases data from Covid-19 published by the World Health Organization were used in the study. The study covers the period between January 20 and February 28, 2020. The coronavirus effect on financial volatility was tested by a simple regression analysis through a stepwise procedure. The results of the study exhibit that the death ratio has a significant and positive impact on VIX for China and outside China.

Onali (2020) modelled the volatility caused by the number of Covid-19 cases and deaths in the stock markets of countries including America, Italy, France, Spain, China, Iran and the UK through using GARCH and VAR methods. Study findings show different results for each country. In general, it has been determined that the number of Covid-19 cases and deaths negatively affect the stock returns and increase market volatility.

Lopatta et al. (2020) studied how the stock performances and risks were affected during the Covid-19 process on a sample of 300 international firms in ten countries. The capital market model was used in the study. The results of the study show that companies' early release of their situation regarding Covid-19 in their financial reports reflects a decrease in companies' betas. Thus, predicting and reporting the potential risks previously provide companies to manage and assess the stock risks better.

In the research evaluating the economic effects of Covid-19 on the world economies, Fernandes (2020) addresses many economic variables from tourism to exports. In the volatility part of the study, the change in the VIX index, which reflects the fears of investors and uncertainties about the future, is examined. The long-term VIX index was realized as 20% on average and it is seen that the index, which saw the peaks in the 2008 mortgage crisis, showed a higher increase in the Covid-19 period. The study emphasizes that the global economy is under great threat with the spread of coronavirus. The conclusion of the study states that there is no benchmark for estimating the economic effects of such a situation, which has not been encountered before in the history, and therefore it is very difficult to make predictions.

Devpura and Narayan (2020) examined the volatility in oil prices with the onset of the coronavirus. The study findings reveal that there is a significant rise in oil price volatility with the emergence and spread of Covid-19. The results of the research show that the volatility change is between 8 percentage and 22 percentage.

DATA, METHODOLOGY AND FINDINGS

The Risk Appetite Index (RISE) data used in the study were obtained from the Central Registry Agency (MKK). The agency acts as the central securities depository of the Turkish capital markets. The index data are weekly and are calculated in seven different groups as qualified investors, domestic investors, foreign investors, domestic funds, domestic natural persons, domestic legal entities and all investors. Index data started to be calculated regularly in 2008. The course of the index from the beginning to the present is additionally reported and the significant change periods in the index are interpreted. In particular, within the scope of the study, the change in the index after March 2020, when the Covid-19 outbreak was declared a pandemic, was analysed.

Descriptive statistical information for each investor group including 672 weeks of data from the inception of the index is presented in Table 1 below.

Table 1: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation	Variance
Qualified Investors	15,70	78,50	54,2181	13,54913	183,579
All Investors	13,25	69,05	46,7151	12,29586	151,188
Foreign Investors	11,61	70,20	46,8540	13,22053	174,782
Domestic Funds	13,03	80,34	55,8276	12,34957	152,512
Domestic Natural Persons	17,94	73,64	51,2801	11,98252	143,581
Domestic Legal Entities	18,68	76,52	50,0907	13,42639	180,268
Domestic Investors	17,97	75,06	51,2277	12,50710	156,428

(Number of observation: 672 weeks per group)

The RISE Index is calculated on the weekly portfolio value changes of approximately 1.7 million investors. The index is used to measure the investor's risk appetite by a scoring method. Due to the different risk perception of each type of investor in the markets, besides the general RISE index covering all investors, separate indices are calculated for 6 different investor groups.

RISE Index threshold value is accepted as 50. While the figures above the threshold value indicate that the risk appetite of the investors has increased, below 50 indicates that the investors avoid the risk and turn to lower risk and more secure investment instruments.

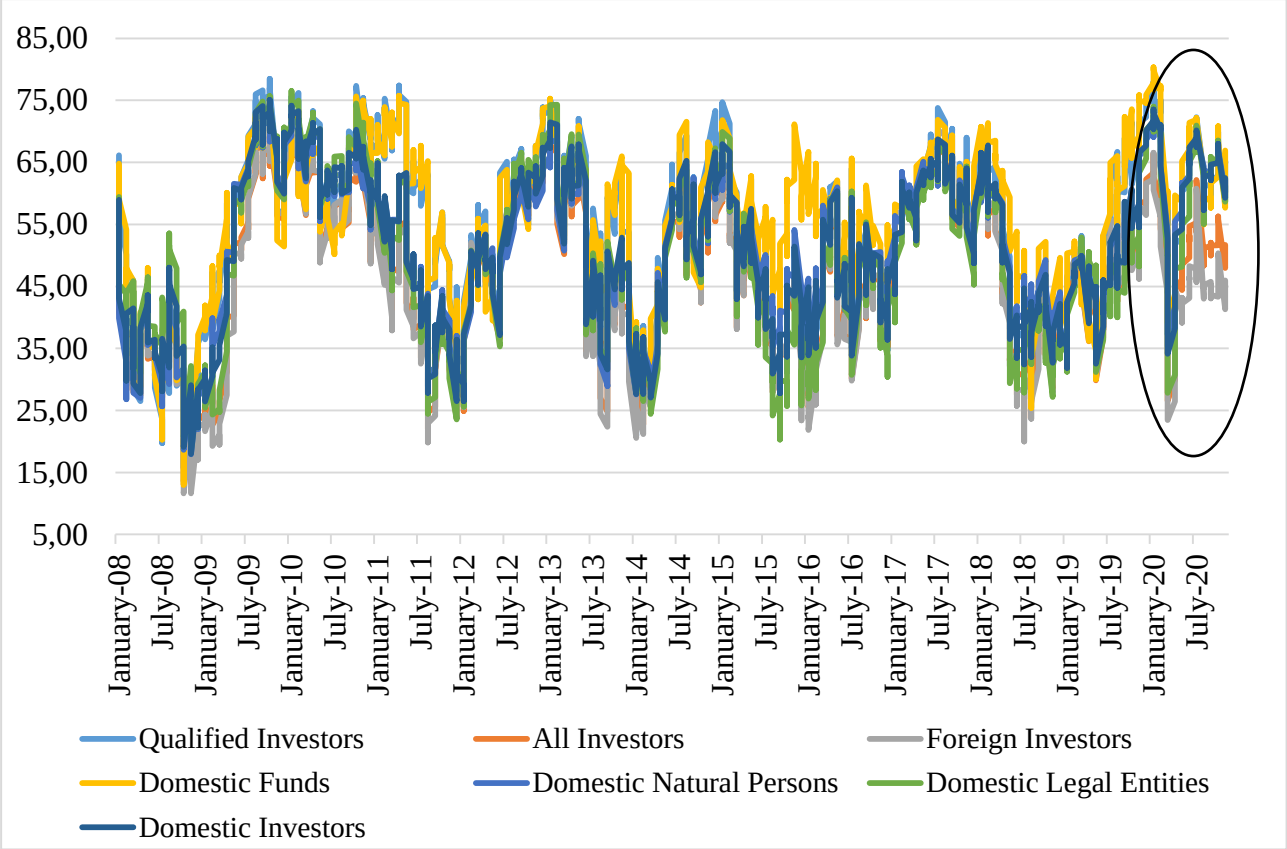
According to the table results, the risk appetite of domestic investors and domestic funds is relatively higher than foreign investors on average. The risk appetite of all investors (46.71) and risk appetite of foreign

investors (46.85) are almost equal. It is seen from the table results that these values are different from other investor types on average. This situation is an indication that foreign investors are the main determinants of the RISE Index, which is based on the risk appetite of all investors.

When sub-investor groups are examined, the domestic fund group has the highest risk appetite on average with an index value of 55.82. This group is followed by qualified investors with an average of 54.21. And, lastly, foreign investors have the lowest risk appetite.

The course of the index from the beginning is presented in the chart below for different investor groups.

Graph 1: Historical Course of the Index



In March 2020, the Covid-19 outbreak was declared as a global pandemic. In Turkey, the first case appeared on March 11, 2020. This pandemic has unsettled investors in Turkey as well as in all international markets. This uncertainty and uneasiness reduced investors' risk appetites.

As it can be seen on the chart, there was a sudden decrease in the risk index on these dates. This decline continued until the end of April 2020. The index, which was in the range of 60-75 before the pandemic, showed a decline of about 60% and decreased to 25-30 levels between March-April 2020.

On the other hand, this decline in the risk appetite was not a lower decrease than the previous periods when the historical progress of the index is analysed. This finding is relatively different from other studies and markets. For example, in the study of Fernandes (2020), it was stated that the VIX index rose to a higher level than the 2008 mortgage crisis, which saw historical peaks with the onset of Covid-19. However, in the process of the pandemic process, the risk appetite index has decreased to 25-30 levels in the Turkish market. This decline was higher in the 2008 mortgage crisis, the index decreased to the level of 10-15. Similarly, in July 2018, the risk appetite index decreased to 20 levels, especially during the sudden fluctuation in the exchange rate, in the face of the political discussions with the United States and threats of sanctions.

Another result that can be drawn from the chart is that foreign investors are generally less willing to take risks, whereas domestic investors have a higher risk appetite. The reason for this can be shown as the

information asymmetry among investor groups. Additionally, the graph results show us that investor groups have moved linearly in terms of risk appetite since the date the index was calculated. However, it is observed that this co-movement deteriorated and investors' risk appetites differ from each other in some periods. For example, in December 2015-January 2016, the risk appetite of domestic investors was around 70, while the risk appetite of foreign investors was around 20.

On the other hand, many pioneering studies on the Covid-19 have addressed the relationship between the number of cases, death rates and stock returns, market volatility and other financial indicators. The general result of these studies is that the number of cases and death rates have a serious impact on the markets. This study shows that, unlike other studies especially in the early period of Covid-19, market volatility and investor risk appetite do not have a linear relationship with the number of cases and death rates despite the increase in case and death rates.

Although it is known by all market participants that the number of cases and death rates are increasing gradually, it is understood that the measures taken such as incentive packages for the business world and the economy, credit supports and economic reform steps are more closely related to the investor's risk appetite.

In the Covid-19 process, after April 2020, the risk appetite of investors started to increase with the economic measures taken. However, as it can be seen on the graph, it is clearly understood that there is a divergence among investor groups in terms of risk appetite. In this period, while the risk appetite for domestic investor groups was around 60-65, the risk appetite of foreign investors remained below the threshold value of 50. Whether this divergence among investor groups is statistically significant or not was tested by variance analysis. In the table below, the statistical results of the difference between investor risk appetites in the period from December 2019, when the Covid-19 outbreak started, are given.

The Levene test statistic's value (0,193) is greater than %5. According to this result, the group variance is homogeneous so the F test should be utilised to test the difference among group means.

Table 2: Anova Test Results

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13127,825	6	2187,971	23,788	,000
Within Groups	31548,777	343	91,979		
Total	44676,602	349			

The hypotheses for the F test are as follows;

H_0: There is no difference between group averages.

H_1: At least one of the group averages is different

Considering the significance values of the F test given in Table 2 above, the H0 hypothesis is rejected at 95% confidence interval (sig=0.000 <0.05). That is, at least one of the group averages is different. In other words, there is a difference in risk appetites among investors.

Table 3: Multiple Comparison

Group		Mean Difference (I-J)	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Qualified Investors	All Investors	11,21178842*	**,000**	7,4390436	14,9845332
	Foreign Investors	15,47798582*	**,000**	11,7052410	19,2507306
	Domestic Funds	-2,23894712	,244	-6,0116919	1,5337977
	Domestic Natural Persons	,43776486	,820	-3,3349799	4,2105096

	Domestic Legal Entities	2,94972910	,125	-,8230157	6,7224739
	Domestic Investors	,81467326	,671	-2,9580715	4,5874180
All Investors	Qualified Investors	-11,21178842*	**,000**	-14,9845332	-7,4390436
	Foreign Investors	4,26619740*	**,027**	,4934526	8,0389422
	Domestic Funds	-13,45073554*	**,000**	-17,2234803	-9,6779908
	Domestic Natural Persons	-10,77402356*	**,000**	-14,5467683	-7,0012788
	Domestic Legal Entities	-8,26205932*	**,000**	-12,0348041	-4,4893145
	Domestic Investors	-10,39711516*	**,000**	-14,1698599	-6,6243704
Foreign Investors	Qualified Investors	-15,47798582*	**,000**	-19,2507306	-11,7052410
	All Investors	-4,26619740*	**,027**	-8,0389422	-,4934526
	Domestic Funds	-17,71693294*	**,000**	-21,4896777	-13,9441882
	Domestic Natural Persons	-15,04022096*	**,000**	-18,8129657	-11,2674762
	Domestic Legal Entities	-12,52825672*	**,000**	-16,3010015	-8,7555119
	Domestic Investors	-14,66331256*	**,000**	-18,4360573	-10,8905678
Domestic Funds	Qualified Investors	2,23894712	,244	-1,5337977	6,0116919
	All Investors	13,45073554*	**,000**	9,6779908	17,2234803
	Foreign Investors	17,71693294*	**,000**	13,9441882	21,4896777
	Domestic Natural Persons	2,67671198	,164	-1,0960328	6,4494568
	Domestic Legal Entities	5,18867622*	**,007**	1,4159314	8,9614210
	Domestic Investors	3,05362038	,112	-,7191244	6,8263652
Domestic Natural Persons	Qualified Investors	-,43776486	,820	-4,2105096	3,3349799
	All Investors	10,77402356*	**,000**	7,0012788	14,5467683
	Foreign Investors	15,04022096*	**,000**	11,2674762	18,8129657
	Domestic Funds	-2,67671198	,164	-6,4494568	1,0960328
	Domestic Legal Entities	2,51196424	,191	-1,2607805	6,2847090
	Domestic Investors	,37690840	,844	-3,3958364	4,1496532
Domestic Legal Entities	Qualified Investors	-2,94972910	,125	-6,7224739	,8230157
	All Investors	8,26205932*	**,000**	4,4893145	12,0348041
	Foreign Investors	12,52825672*	**,000**	8,7555119	16,3010015
	Domestic Funds	-5,18867622*	**,007**	-8,9614210	-1,4159314
	Domestic Natural Persons	-2,51196424	,191	-6,2847090	1,2607805
	Domestic Investors	-2,13505584	,266	-5,9078006	1,6376889
Domestic Investors	Qualified Investors	-,81467326	,671	-4,5874180	2,9580715
	All Investors	10,39711516*	**,000**	6,6243704	14,1698599
	Foreign Investors	14,66331256*	**,000**	10,8905678	18,4360573
	Domestic Funds	-3,05362038	,112	-6,8263652	,7191244
	Domestic Natural Persons	-,37690840	,844	-4,1496532	3,3958364

	Domestic Legal Entities	2,13505584	,266	-1,6376889	5,9078006

Considering the results of Table 3, in which the averages of different investor groups are compared, a general evaluation can be made as follows;

- The average risk appetite of Qualified Investors significantly differs from the group of Foreign Investors and All Investors. And it can be said that the average risk appetite of this group is higher than other investors.
- Risk appetite averages of All Investor and Foreign Investor groups significantly differ from all other groups. And, the average risk appetite of these groups is lower than the other groups.
- Another general result is that Domestic Funds, Domestic Natural Persons, Domestic Legal Entities and Domestic Investors groups differ from the Foreign Investor group. It is understood that these groups have a higher risk appetite.

CONCLUSION and RECOMMENDATION

The Covid-19 outbreak, which emerged at the end of 2019 and was declared as a pandemic in March 2020, has affected all economies, sectors, and financial markets in the world. The pandemic has caused a dramatic increase in the level of risk, fear, and stress. Risk appetite is not directly observable. However, it is often referred to as a factor that explains the price movements of assets, and various indicators are used by market participants to measure this. Risk appetite is tried to be measured by using indices linked to numerical indexes produced by combining various indicators in different markets. In this context, the RISE Index is used to measure the risk appetite of investors in the Turkish financial market.

The study analyses the changes in the risk appetite index created for different investor groups starting from the date of the index calculation. Furthermore, with the Covid-19 process, it examines whether the risk appetite differs among investor groups or not.

The study findings show that, in general, the domestic investor group has a higher risk appetite than foreign investors. This risk appetite between domestic and foreign investor groups started to differentiate with the Covid-19 process

Similarly, expanding the study to include different country groups will allow comparison between different markets.

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