The protective role of corporate social responsibility performance during the coronavirus pandemic disease; performance evaluation using a mathematical model of the directional distance function

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(Communicated by Mohammad Bagher Ghaemi)

Abstract

The outbreak of coronavirus worldwide has created many problems for companies. Companies are looking for a suitable solution to overcome this crisis. One of the measures that can reduce the negative effects of this crisis is the expansion of corporate social responsibility (CSR) activities. The purpose of this study was to investigate the protective role of the performance of CSR activities from stock returns and its effect on shareholder attention during coronary heart disease. This study is an event study that is considered for a period of six months from the beginning of the outbreak of coronavirus in Iran (February 2020) to the end of August 2020. The data analysis was performed using Eviews software and information of 33 sample member companies listed on the Tehran Stock Exchange, in three industries: pharmaceutical, food, and transportation, by least squares regression (OLS) method. The results show that the performance of CSR activities related to community indicators, employee relations, and human rights in the event periods have a positive role on the corporate stock returns and other activities do not play an effective role. The results also show that the performance of CSR has a positive and significant effect on the attention of shareholders. Using the obtained results, it can be concluded that corporations can attract stakeholders and protect the value of the companies by increasing the performance of CSR activities, especially in the community, employee relations, and human rights during the coronavirus pandemic disease period.

Keywords: Corporate Social Responsibility, Stock Returns, Shareholder Attention, Coronavirus Pandemic Disease
2020 MSC: 00A71

1 Introduction

In 2019, the world economy was predicted to grow and everything promised great growth in the financial markets, but with the outbreak of the coronavirus, all equations and predictions were shattered [5] and as a result, it had a

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negative effect on the business of commercial units in various aspects [50]. In a way that it has affected the stock market all over the world and has created many problems for companies [42]. Since the increase in systematic risk is directly related to the increase in coronavirus disease [52], it can be said that the stock risk of companies will also increase [39]. On the other hand, the extent and duration of the impact of the coronavirus on the global economy and companies are unclear. Its rapid spread around the world has caused an economic shock to all business units and caused many problems for them [11]; therefore; companies are currently looking for appropriate solutions to support and mitigate the negative effects of the coronavirus [51]. Undoubtedly, one of the most important and necessary factors for the continuation of the activities of business units is to pay attention to the actions and activities of social responsibility [22]. Corporate social responsibility(CSR) activities can attract shareholders' attention and increase stock returns during the Corona pandemic disease [42]. Since CSR reports cover a wide range of factors related to society, the economy, the environment, and many other factors, and makes shareholders and investors pay more attention to it [23] and use reports and information on CSR in their decisions; this information is of great importance to users [19]. Therefore, such a view can increase the value of the corporation [23] The great importance and acceptance of CSR in recent years have caused users to pay special attention to it [16]. In fact; CSR has an insurance-like function for the effects of negative news [44, 48]. But it is not clear whether this function works the same way during the period of Corona disease [25], therefore; Research in this field seems necessary. In previous studies, little attention has been paid to the impact of social activities on the stock returns of companies during the pandemic period. Most of these studies are case studies and qualitative. For example, we can refer to research on the pandemic of SARS [4, 15, 17, 18, 27]. There is now little information about the real impact of social practices on the stock market value of companies in the pandemic period [42]. Therefore, the global economy is facing a new economic and social challenge, and to solve this problem, it must look for useful strategies and measures to maintain the public welfare of society. This critical situation is more prevalent in developing countries than in other countries. To solve this problem, the need for public cooperation and the pursuit of a common goal seems necessary. This common goal can be found in indicators of social responsibility [15].

Various studies have been conducted in other countries on the effect of Corona disease on business units in different industries [25, 28, 37, 42] and most of these studies are based on CSR measures in order to protect the economic interests of companies [40]. Since the Iranian financial market, like other global markets, has been affected by the coronavirus, the conduction of research in this regard seems necessary. The results of previous research show that CSR can be a protector for the stock value of companies [51, 42] and on the other hand, the inverse effect of pandemic disease on the stock value of companies has been proven [12, 21, 41, 42, 53]. researches also show that few studies have been performed in Iran during the period of Corona disease; Therefore, in order to expand the previous studies, we are looking to see if the CSR performance can be a protector for the stock returns of companies listed on the Tehran Stock Exchange during the Corona disease or not? And does CSR performance affect stakeholder attention during a period of coronary heart disease?

2 Theoretical Foundations

2.1 CSR and its classification

The expansion of studies in the field of CSR, especially in the field of economics and business, indicates that society and business are intertwined and will not be separated [35]. Thus, social responsibility is essential for the continuity of the company [22] and has a significant relationship with social, economic, environmental, and moral issues [23]. In terms of the nature of fulfilment of obligations, CSR is classified in two ways: voluntary and legal [35]. But before the legal obligations, the fulfilment of the obligations is considered voluntarily [6]. This indicates the responsibility of the company [33, 10]. As a result, it can be said that CSR was voluntary before it was legal because companies believe that it has economic benefits in the long run. Therefore, providing social responsibility measures can increase stock returns and ultimately increase the value of the company in the long run [17].

2.2 The role of CSR during Corona disease

Recent studies show that Corona disease has a significant impact on financial markets around the world [13, 18, 39, 42, 52]. This disease has caused widespread health, economic and social problems [51]. The problems caused by the coronavirus have changed the way stakeholders follow the goals of companies, and the greatest focus of followers in this period is related to the role of companies in society. During this period, companies perform their social responsibility activities in a way that is recognized as a business commitment to society and vulnerable people. The strategy and goals of companies to survive in this crisis are in line with profit balance and helping society [7, 24]. Therefore, today, the

economic interests of business units increasingly require CSR activities [34, 44, 11, 47]. In the current situation where companies are facing the Corona pandemic disease, their professional and ethical behavior has been distinguished. In fact, companies have based their social responsibility activities on current needs [1]. The dissemination of social responsibility news in a favorable and timely manner in this critical period is a positive advantage for companies and can affect the current and future customers of business units [11]. Conversely, if companies do not pay special attention to social responsibility during the period of Corona disease, its negative news may have irreparable consequences for them [50]; thus, the Corona disease crisis is not just a public health problem, but a major problem that has affected all sectors. It is the social duty of all people to fight this disease in any way possible. In such a sensitive and critical situation, where an atmosphere full of fear and mistrust has arisen, people all over the world are working together to alleviate the problems that have arisen. Businesses are no exception and must increase their social responsibility activities to maintain reputation, help employees, the community and customers [33].

2.3 The CSR and the value of stock returns during the Corona pandemic disease

Providing CSR activities in the public sector and society causes people to pay more attention to such companies, and this factor will lead to gaining fame and increasing the value of the company [45]. One of the most important social responsibility activities of a company in a critical period is to pay attention to the weak sections of the society through benevolent help and humanitarian sense. By using such activities, companies can gain the trust of investors and thereby increase the stock return of the company [42]. When a crisis occurs, companies are expected to focus their social responsibility activities on helping the public [32]. However, it should not be overlooked that companies may be severely damaged in such crises and may face a shortage of resources. In this case, companies are forced to reduce their social responsibility activities to reduce their costs [29]. Nevertheless, it should be investigated under what circumstances investing in CSR in times of crisis can be cost-effective in order to strengthen the financial performance of the company. According to shareholder theory, social responsibility activities can increase financial performance and thus profit if shareholders pay attention to these activities [32]; therefore, providing CSR activities in times of crisis can attract a large number of people and thus increase its reputation and attract more investors [42].

2.4 CSR and stakeholder attention during the Corona pandemic disease

According to Mitchell et al. [36], corporate executives should pay special attention to their shareholders and highlight this issue. Managers must use all their managerial power to attract the attention and demands of shareholders. One of the priorities of managers to satisfy shareholders is to pay attention to the company's social responsibility activities [42]. After many years, the theory of shareholder prominence was developed by Bruna and Nicolò [9], and a new theory was proposed that shows that CSR and corporate value are intertwined. In fact, shareholders who pay more attention to CSR activities during coronary heart disease and pursue it with particular delicacy can have a greater impact on corporate stock prices.

3 Research background

A. Mahmud et al, in line with the global economy being affected by the coronavirus, sought to find an appropriate response for businesses in the face of this pandemic crisis. To this end, they examine the role of CSR, such as; employees, customers and the community. The results showed that companies that respect their employees during this period and pursue the relationship between the company and customers, as well as the community, have performed better [33]. Shangzhi et al. investigated the impact of CSR on the stock value of host companies in the face of a sharp decline in the stock market of Chinese companies due to the outbreak of the Coronavirus. While there was little information on the stock movement after the company's CSR activities, by studying the event by measuring the stock change points of hospitality companies, they concluded that social responsibility activities of the community towards the customer and employees have a stronger impact on the stock returns of these companies during the Corona pandemic disease. As a result, hospitality companies seeking to improve their stock market performance during the Corona disease can attract the opinion of shareholders and reduce their problems in this period [42] by increasing social responsibility activities in the community, customers and employees. Ternence and Baliira conducted research on whether shareholders can benefit from the advantages of CSR during the Corona pandemic disease. This study was conducted based on the Malaysian market index during the period of Corona pandemic disease. The results of this study indicate that the levels of CSR before and during the Corona pandemic disease affect the stock portfolio [46]. Zhai et al. conducted a study on physical proximity, CSR, and the effect of negative shareholder sentiments on stock returns based on evidence from companies in China's Hueyi Province during the Corona pandemic. Analyzing the data, they found that companies

that take the company's social responsibility activities seriously have the same performance as insurance [25]. In a study on large Spanish companies during the Corona pandemic disease, Isabel-María and Alejandra concluded that companies that have a high commitment to social responsibility and due to the actions they take in this field, reduce the consequences of Corona disease and its negative effects on companies [43]. Shahzad et al. state that the corona pandemic has had a negative impact on the stock returns of companies. On the other hand, research in this field shows that CSR activities can improve stock returns during the corona pandemic disease [50]. Zarei, Rahimi, and Haghverdizadeh [50] examined the coronavirus crisis and CSR mismanagement. The results of their research showed that social awareness has a positive effect on environmental awareness. The positive effect of social awareness on the usefulness of information has been recognized as the most important pattern of behavioral intention. The results also show that stakeholders react to negative news of social responsibility [26]. Garuosi, Izadinia and Dastgir investigated the relationship between the level of social responsibility disclosure and the corporate market value and found that companies with more responsibility also have a higher market value and their capital costs have decreased. In a way that stakeholders use CSR reports in their decisions [19]. Hasas Yeganeh, Sohrabi, and Ghavvasi Konari conducted a study entitled Correlation between Valuable CSR Reporting, which showed that there is a positive and significant relationship between CSR and stock value. Also, the results of their research show that the combination of financial information and social responsibility information expresses changes in stock value to a greater extent [23]. Foroughi, Amiri and Javanmard studied the effect of social responsibility on cash retention through the simultaneous effect of selected variables. The results showed that social responsibility through unsystematic risk has a significant and positive effect on cash retention and has a negative and significant effect through systematic risk. The results of this study also show that the effect of social responsibility through corporate governance on cash retention is positive and significant [14].

3.1 Research Hypotheses

Based on what was stated in the theoretical foundations and the questions and goals that were raised, we express the research hypotheses as follows:

1. Increasing the performance of CSR activities improves the stock returns of companies in the period of coronary heart disease.
2. The CSR performance has a significant effect on the attention of shareholders during the period of Corona pandemic disease.
   (a) Increasing the performance of CSR activities has a significant impact on shareholder attention during the coronary heart disease.

4 Research Method

In this study, the event study method has been used to answer questions and measure changes in corporate stock prices during the coronavirus crisis. Thus, the duration of the research period is six months from the beginning of the outbreak of coronavirus in Iran, and the sample member companies must have submitted their social responsibility report up to one month before the end of the considered period. Since previous studies have used the event study method to test the effect of sudden events on stock returns [12, 31, 42, 48], we also use this method in this study. The event study method helps researchers identify instant stock price changes due to unforeseen events such as the spread of the coronavirus [42]. Although the event study method has been used to demonstrate stock price changes during critical periods, few studies can be found to examine the impact of CSR activities on stock returns during the Corona disease. Studies show that so far no research has been done on the effect of CSR on stock returns during the period of Corona disease in Iran; therefore; we considered it necessary to study the effect of the CSR activities on the stock returns of companies listed on the Tehran Stock Exchange during the Corona disease.

4.1 Population and statistical sample

Due to the fact that the spread of the Coronavirus in Iran has been officially announced since February 19, 2020, in order to achieve the desired result, we have studied the changes in stock returns over a period of 6 months from the beginning of February 20, 2020, to the end of August 21, 2020. In a way that since the publication of the report on the company's social responsibility activities, the stock returns of the sample member companies for 30 working days have been examined using the models presented in this study and the abnormal cumulative return of each company is obtained which operating definition is given below. It seems that Corona disease can affect some commercial companies such as pharmaceuticals, food, tourism and transportation more than others, therefore; in this research,

three pharmaceutical, food and transportation industries have been studied and the sample member companies have been selected with the following restrictions.

1. The end of their fiscal year should be March 19.
2. From the time of the outbreak of the Coronavirus until one month before the end of the research period, the CSR report has to be disclosed.
3. Companies must not have trading interruptions during the research period.

After screening by systematic elimination method, 33 companies from three pharmaceutical, food and transportation industries were selected as a sample.

4.2 Research templates

In this study, to examine and test the first hypothesis models No. 1 to 4, which show changes in stock returns against CSR activities during the Corona disease, were used. Since for measuring abnormal returns and cumulative abnormal returns, at least 30 days must be considered after the publication of the CSR activity report [42] and on the other hand, to estimate the expected return, the modified market method and weighted return should be used [3, 8], In this study, to examine changes in corporate stock returns after reporting CSR activities, we considered a period of 30 working days during which the company's stock was traded. We divided this period into 4 periods (1 to 5 days, 1 to 10 days, 1 to 20 days and 1 to 30 days. Then, according to the model used by Shangzhi et al. [33, 42], in order to obtain the abnormal return and the cumulative abnormal return of the company, the following has been done. The method of market regulation is as follows: for each company, 30 days and at least 5 days before the report of social responsibility activity is estimated. To do this, we first examine the overall effects of the market. In this way, we compare the stock returns of the company with the market index and obtain it using model [5].

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{4.1}$$

R_{it} shows positive of corporate share of company i at time t; R_{mt} represents positive of the index at time t; ε_{it} represents the remainder of company i at time t. In the next step, using the following model and Eviews software, we estimate the market model coefficients α_i and β_i using the regression of ordinary least squares (OLS) method:

$$ER_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{4.2}$$

and

$$AR_{it} = R_i - ER_{it}. \tag{4.3}$$

Finally, we use the following formula to obtain the abnormal cumulative return from t_1 to t_2:

$$CAR_{i(t_1 - t_2)} = \sum_{t-t_1}^{t_2} AR_{it}. \tag{4.4}$$

To test the second research hypothesis, patterns 5 and 6 are used as follows. The operational definition of each of the variables is given below:

$$St - At_{i(t_1, t_2)} = \alpha_0 + \alpha_1 CSR_{it} + \alpha_2 Growth_{it} + \alpha_3 Lev_{it} + \alpha_4 Loss_{it} + \alpha_5 ROA_{it} + \alpha_6 Size_{it} + \alpha_7 STKHD_{it} + \varepsilon_{it} \tag{4.5}$$

$$\begin{aligned} St - At_{i(t_1, t_2)} = {} & \alpha_0 + \alpha_1 CSR - Community_{it} + \alpha_2 CSR - Employee_{it} + \alpha_3 CSR - Environment_{it} \\ & + \alpha_4 CSR - Product_{it} + \alpha_5 CSR - Diversity_{it} + \alpha_6 CSR - Human\ rights_{it} \\ & + \alpha_7 Growth_{it} + \alpha_8 Lev_{it} + \alpha_9 Loss_{it} + \alpha_1 0ROA_{it} + \alpha_1 1Size_{it} + \alpha_1 2STKHD_{it} + \varepsilon_{it} \end{aligned} \tag{4.6}$$

4.3 Dependent variable

$St - At_{i(t_1,t_2)}$: shareholders' attention; Shangzhi et al. [42] used the Baidu search engine in China from the beginning of December 2019 to May 31, 2020, to measure the variable of shareholders' attention from the total frequency of searches for company shares from December 2019 to May 31, 2020. In this research, the kwfinder website search engine has been used to measure the variable of shareholders' attention. Since this site shows the number of all searches related to a company, in order to obtain the desired result, some of the searches that were related to the shares and symbols of the company during the research period from the beginning of February 20, 2020, to August 21, 2020, were selected. And other search items were removed. Thus, the total frequency of the number of searches performed on the stock and symbol of the company is considered as the variable score of shareholders' attention.

4.4 Independent variable

CSR_{it} : corporate social responsibility; The six dimensions of CSR with relevant indicators and how to measure it, following Grougiou et al. [20], are presented in Table 1:

After collecting social responsibility data, to determine the performance of social responsibility and ranking companies, the Directional Distance Function (DDF), is used according to the research of Portella et al [38], Aparicio, J, Kapelko, M. [2]. Due to the fact that the weaknesses of social responsibility are not reported in Iran, the formula of the negative points section of the social responsibility report has been removed from the following models.

First model:

Take m to be the observation of the social responsibility performance, which is represented by y in the following formula for each unit of study (DMU)35 in size of kh of each company and industry of h, $(h = 1, ..., H)$. Using the mathematical method, a special observation such as j is separated from the belongings of company j in industry h, thus $Y_{j1}^h...Y_{jM}^h$. According to these notations, the following model can measure a large set of related data with a combined index. To measure each DMU of a certain industry boundary, we follow this formula:

$$D_0^h(y_0^h; g_0^y) = \max \beta, \tag{4.7}$$

$$\sum_{k=1}^{k^h} z_k y_{km}^h \geq y_{0m}^h + \beta g_{0m}^h, \quad m = 1, ..., M, \tag{4.8}$$

$$\sum_{k=1}^{k^h} z_k = 1 \tag{4.9}$$

and

$$K = 1, ..., k^h. \tag{4.10}$$

Vector $g = (g_o^y)$ indicates that

$$g_{om}^y = \max_{1 \leq h \leq H} \{ \max_{1 \leq h \leq k^h} \{y_{km}^h\} \} - y_{om}^h. \quad m = 1, ..., M. \tag{4.11}$$

Second model:

Model (2) evaluates the performance in terms of distance and boundary of a company's belongings of industry h, which is obtained by total observations in different industries:

$$D_0^{1...H}(y_0^h; g_0^y) = \max \tag{4.12}$$

$$\sum_{P=1}^{H} \sum_{k=1}^{k^P} z_k^P y_{km}^P \geq y_{0m}^h + \beta g_{0m}^h, \quad m = 1, ..., M, \tag{4.13}$$

$$\sum_{P=1}^{H} \sum_{k=1}^{k^P} z_{km}^P = 1 \tag{4.14}$$

and

$$z_{km}^P \geq 0, \quad k = 1, ..., k^P. \quad p = 1...h...H \tag{4.15}$$

If h is constant in vector $D_O^I; ...; H(y_o^h; g_o^y)$, Indicates the distance and boundary between two companies in the industry h. p is written in top in y_{km}^P and z_k^P and kp in second model. y_{0m}^h while h is constant and y_{0m}^P when $P = 1...h...H$ should not be confused. Finally, according to the vector $(y_0^h; g_0^y)D_0^{1,...,H}$, f a company does not have the capacity for social responsibility, it may be due to the disintegration of the industry. Also, the lack of CSR capacity due to the vector $(y_0^h; g_0^y)D_0^b$ in the non-negative residual sector is related to the gap between industry and social responsibility.

Table 1: Measurement of CSR variables

Dimensions of CSR	indicators	Operational definition
If the company has provided any of the proposed indicators, it will be considered as 1 and otherwise 0. The average score of each dimension is obtained by adding the scores divided by the number of relevant indicators as follows.		
(Community)	Charity, innovation, humanitarian aid, housing construction assistance, education assistance, volunteer programs and more.	$Community_{it} = \frac{\text{Sum of scores}}{7}$
(Employee)	Union relations, profit allocation, employee participation, health and safety, retirement benefits and more.	$Employee_{it} = \frac{\text{Sum of scores}}{6}$
(Environment)	Useful products and services, pollution prevention, waste recycling, clean energy, management systems and more.	$Environment_{it} = \frac{\text{Sum of scores}}{6}$
(Product)	Quality, innovation, helping the poor economy and more.	$Product_{it} = \frac{\text{Sum of scores}}{4}$
(Diversity)	(Diversity) Change of CEO, promotion, diversity of the board of directors, employment of the disabled and other items.	$Diversity_{it} = \frac{\text{Sum of scores}}{5}$
(Human rights)	Observance of the rights of the people of the region, observance of labor rights and other matters.	$Human\ rights_{it} = \frac{\text{Sum of scores}}{3}$
SUMCSR=$Community_{it} + Employee_{it} + Environment_{it} + Product_{it} + Diversity_{it} + Human\ rights_{it}$		

4.5 Control variables

Growth: changes in sales in year t compared to year t_1; Return on Assets (ROA): Companies with high financial performance seem to devote more resources to social responsibility activities [19]; Therefore, the rate of return on assets is obtained by dividing the net profit by the total assets of the company in year t; Loss: A fictitious variable, if the company i has identified a loss in year t, the number is 1 otherwise 0; Company Size: Company size, the natural logarithm of the total assets of the company i in year t; Financial Leverage (Lev): It is obtained by dividing the sum of short-term and long-term liabilities by the total assets of Company i in year t. Debts, through their supervisory role, increase the demand for information disclosure [19]. Number of Shareholders (STKHD): The natural logarithm of the number of ordinary shareholders of a company is obtained [49].

5 Findings

The descriptive statistics of this study show the information about the statistical sample of the relationship between stakeholder attention and CSR activities during the Corona disease. These statistics are related to the dependent and independent variables of the research, the results of which are presented in Table 2. Statistical results show that the lowest score of shareholders' attention is 16 and the highest score is 421. The average number of shareholders in this study is 1.655. The level of significance of the data indicates that the data have a normal distribution.

5.1 Pearson correlation coefficients between variables

Table 3 shows Pearson correlation coefficients between dependent and independent variables. The results show the overall correlation between CSR; the number of shareholders and the attention of shareholders is positive and significant. It can be interpreted that companies that pay more attention to social responsibility activities attract

Table 2: Descriptive statistics of research variables

Variable	symbol	Middle	average	max	min	Standard deviation
Attention of shareholders	ST-AT	166	196.273	421	16	116.778
Corporate social responsibility	CSR	0.540	0.519	0.720	0.170	0.111
Social responsibility of society	CSR-COM	0.240	0.269	0.570	0	0.171
Employee social responsibility	CSR-EMP	0.170	0.199	0.420	0.080	0.088
Environmental social responsibility	CSR-ENV	0.250	0.255	0.500	0	0.133
Social responsibility of products	CSR-PRO	0.750	0.629	1	0	0.189
Social responsibility Diversity of governance	CSR-DIV	0.600	0.558	0.800	0.200	0.179
Human rights social responsibility	CSR-HUM	0.330	0.362	0.500	0.170	0.113
Sales growth	GROWTH	0.150	0.198	0.760	-0.260	0.201
Financial Leverage	LEV	0.530	0.519	0.800	0.050	0.208
Damage	LOSS	0.000	0.030	1	0	0.174
Return on assets	ROA	0.150	0.180	0.390	-0.010	0.102
size of the company	SIZE	15.690	15.492	16.590	13	0.766
Number of shareholders	STKHD	1.610	1.655	3	0	0.653

more shareholders and ultimately pay more attention to such companies. The results show that the correlation between sales growth, return on assets and company size is negative.

Table 3: Pearson correlation coefficients between variables

Variable symbol	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) St-At	1													
(2) CSR	-0.01	1												
(3) CSR-COM	-0.20	0.65	1											
(4) CSR-EMP	0.05	0.50	0.47	1										
(5) CSR-ENV	-0.21	0.74	0.50	0.28	1									
(6) CSR-PRO	-0.10	0.64	0.28	0.09	0.48	1								
(7) CSR-DIV	0.18	0.41	0.20	0.13	0.18	0.07	1							
(8) CSR-HUM	0.15	0.39	-0.02	-0.01	0.07	0.05	0.11	1						
(9) GROWTH	-0.27	0.01	0.20	-0.09	0.11	-0.03	-0.06	-0.09	1					
(10) LEV	-0.18	0.42	0.30	0.13	0.19	0.35	0.41	0.12	0.17	1				
(11) LOSS	-0.03	-0.11	-0.13	-0.24	-0.23	0.11	0.24	-0.05	-0.17	0.04	1			
(12) ROA	-0.05	-0.13	-0.07	-0.04	-0.17	0.06	-0.24	-0.01	0.15	-0.19	-0.33	1		
(13) SIZE	-0.23	0.14	0.17	0.25	-0.05	0.15	0.08	0.09	-0.41	0.30	0.25	-0.16	1	
(14) STKHD	0.93	-0.09	-0.16	-0.02	-0.27	-0.20	0.23	0.13	0.15	-0.07	-0.01	-0.06	-0.22	1

5.2 Results of research hypotheses

The first hypothesis test seeks to analyze the event of cumulative abnormal returns of stocks following the presentation of the CSR activity report. This test shows the stock market response to social responsibility activities. This analysis has been performed in several time periods compared to the activity reporting date. The results of the event study examining the effect of CSR dimensions on the cumulative abnormal returns of stocks are presented in Table 4.

The results of Table 4 show that the social responsibility activities of the company in the community sector during the event period (1-5) days with a coefficient of 0.790 and a significance level of 0.138 and in the event period (1-20)

Table 4: The effect of CSR dimensions on the cumulative abnormal returns of stocks

CSR dimensions Event Period	community			Employee relations			environment		
	coefficient	t-value	Significance	coefficient	t-value	Significance	coefficient	t-value	Significance
(1-5)	0.790	1.416	0.138	1.233	1.523	0.143	-2.113	-2.284	0.034
(1-10)	0.404	0.801	0.433	2.683	1.756	0.094	-0.593	-0.376	0.711
(1-20)	1.742	1.570	0.132	5.344	2.516	0.020	-4.831	-1.724	0.100
(1-30)	1.101	0.658	0.518	7.480	2.210	0.039	-5.065	-1.270	0.219
CSR dimensions Event Period	Products			Diversity of rule			human rights		
	coefficient	t-value	Significance	coefficient	t-value	Significance	coefficient	t-value	Significance
(1-5)	0.406	0.755	0.459	0.147	0.237	0.815	2.040	3.478	0.002
(1-10)	0.177	0.179	0.859	0.115	0.093	0.927	1.768	1.702	0.104
(1-20)	1.128	0.713	0.484	0.667	0.351	0.729	1.003	0.614	0.546
(1-30)	1.746	1.179	0.252	0.905	0.368	0.707	2.187	0.954	0.352

days with a coefficient of 1.742 and a significance level of 0.132 has a positive relationship with the abnormal cumulative return of stocks. Also, the company's social responsibility activities in the employee relations department during the event period (10-1) days with a coefficient of 2.683 and the significance level of 0.094 and the event (1-20) days with a coefficient of 5.344 and the significance level of 0.020 and the event (1-30) days with a coefficient of 7.480 and the significance level of 0.039 at the 95% confidence level has a positive and significant relationship with the abnormal cumulative return of stocks. The company's social responsibility activities in the human rights sector during the event (1-5) days with a coefficient of 2.040 at the level of 99% confidence has a positive and significant relationship. Also in the event period (1-10) days with a coefficient of 1.768 at the level of 90% confidence is positive and significant. The other CSR activities do not have a significant effect on the cumulative abnormal returns on stocks. The results show that activities related to society, employees and human rights improve stock returns more than other activities of social responsibility and their results are in line with the first hypothesis; Therefore, it can be said that providing CSR activities in the community, staff and human rights sectors during the period of Corona epidemic can be a safeguard to improve the company's stock returns. Since the data of this research is related to an event period; therefore, the ordinary least squares regression (OLS) method has been used to test the second main and secondary hypotheses; therefore, the results of the second main hypothesis are presented according to Table 5.

The second main hypothesis is tested according to the results of Table 5 at the 5% error level for all research variables. The adjusted coefficient of determination indicates that 89% of the dependent variable changes are explained by independent and control variables. The Durbin-Watson statistic shows no correlation between variables. The F statistic with a value of 40.8119 and a significance level (0.0000) shows that the model has high reliability. According to the results of the VIF test and given that numbers are smaller than 5, it shows that there is no collinearity between the variables. The results show that the CSR with a coefficient of 143.2179 and a significance level of 0.0448 at a 95% confidence level has a positive and significant effect on shareholders' attention during the period of Corona disease. The coefficients and significance level of other variables indicate the absence of a relationship with the attention of shareholders; therefore, according to the results of Table 5, the second main hypothesis is confirmed.

The test of the second hypothesis was performed according to the results of Table 6 at 95% confidence level for all research variables. The adjusted coefficient of determination shows that 89% of the dependent variable changes are explained by independent and control variables. The fact that the Durbin-Watson statistic is close to 2 indicates the absence of autocorrelation between variables and f statistic with a value of 22.6163 and a significance level (0.0000) indicates the high reliability of the model and also the results of the VIF test show There is no collinearity between the variables. The test results indicate the relationship between CSR activities in the employee relations with a coefficient of 159.7785 and a significance level of 0.0967 and products with a coefficient of 95.4794 and a significance level of 0.0782 at the confidence level of 90% with the shareholders' attention is positive and significant. There is a positive

Table 5: The Test of Social Responsibility Impact on Stakeholder Attention (OLS)

$$St - At_{i(t1,t2)} = \alpha_0 + \alpha_1 CSR_{it} + +\alpha_2 Growth_{it} + \alpha_3 Lev_{it} + \alpha_4 Loss_{it} + \alpha_5 ROA_{it} + \alpha_6 Size_{it} + \alpha_7 STKHD_{it} + \varepsilon_{it}$$

Variable	symbol	coefficient	t- statistic	Significance level	VIF
vertical intercept	C	93.8760	0.4878	0.6299	NA
Corporate social responsibility	CSR	143.2179	2.1125	0.0448	1.29
Sales growth	GROWTH	-85.3264	-1.9847	0.1098	1.70
Financial Leverage	LEV	-66.9882	-1.6580	0.6220	1.62
loss	LOSS	-0.2028	-0.0048	0.9962	1.23
Return on assets	ROA	15.4155	0.2152	0.8313	1.22
size of the company	SIZE	-12.2164	-0.0277	0.3139	1.89
Number of shareholders	STKHD	160.7987	14.4847	0.0000	1.20
Weight statistics					
Determination coefficient R2	0.91	F statistic		40.8119	
Adjusted coefficient Adj.R2	0.89	F Significance level		0.0000	
		DW statistic		1.89	

and significant relationship between the variable of the number of shareholders and shareholders' attention. There is no significant relationship between other variables and stakeholder attention. In fact, according to the results obtained during the event period, it can be said that each activity alone does not have a significant impact on stakeholder attention. In fact, shareholders consider all aspects of CSR.

6 Conclusion

Coronavirus has had a very negative impact on corporate stock returns [43], affecting the stock market around the world and causing many problems for companies [42]; therefore; to get out of this pandemic crisis, companies are looking for the right solution [51]. Since CSR plays an important role in society [30] and the previous literature also shows that CSR activities can draw shareholders' attention to companies and increase stock returns during the coronary heart disease period [51, 42, 43], our first objective in this study was to investigate the protective role of CSR activities from abnormal cumulative stock returns during the Corona epidemic period and the second objective was to investigate the effect of CSR on shareholder attention during this critical period. The results of testing the first hypothesis obtained by analyzing the event of cumulative abnormal returns of stocks around the CSR activity report show that community-related activities during the event period of (1-5) and (1-20) days have a positive effect on the abnormal cumulative stock returns. The effect of activities related to employee relations in the period of events of (1-1-20) and (1-30) days at the 95% confidence level is positive and significant and in the period of events of (1-10) and (1-5) days at the 90% confidence level is positive. The impact of human rights activities during the event of (1-5 days) is positive and significant in 99% confidence level and during the event of (1-10) days is positive at the 90% confidence level. In other periods, the company's social responsibility activities have a weak effect on the cumulative abnormal returns on stocks. In fact, the first hypothesis is confirmed in the period of events that have a significant effect on the cumulative abnormal returns of stocks and is rejected in other events; We can therefore interpret those socially responsible activities related to the community; employee relations and human rights have a stronger relationship than other activities with the abnormal cumulative stock returns during the period of Corona disease and protect the value of the company during this period. The results obtained are consistent with the results of Shangzhi et al. [42] and Zhai et al. [51]. The previous researches show that CSR activities attract the attention of shareholders and are of great importance to them [19, 23, 42]. Therefore, the results of the second main hypothesis indicate that social responsibility at the level of 95% confidence has a positive and significant relationship with the attention of stakeholders and is consistent with the results of research by Shangzhi et al [42]; therefore, the second main hypothesis is confirmed. But the results of each of the social responsibility activities separately in the second sub-hypothesis indicate that only the effect of social responsibility of employees and products is positive at the 90% confidence level and there is no significant relationship in other activities; Therefore; It can be stated that stakeholders

Table 6: The Test of Social Responsibility Activities Impact on Stakeholder Attention (OLS)

$$St - At_{i(t1,t2)} = \alpha_0 + \alpha_1 CSR - Community_{it} + \alpha_2 CSR - Employee_{it} + \alpha_3 CSR - Environment_{it} + \alpha_4 CSR - Product_{it} + \alpha_5 CSR - Diversity_{it} + \alpha_6 CSR - Human\ rights_{it} + \alpha_7 Growth_{it} + \alpha_8 Lev_{it} + \alpha_9 Loss_{it} + \alpha_{10} ROA_{it} + \alpha_{11} Size_{it} + \varepsilon_{it}$$

Variable	symbol	coefficient	t- statistic	Significance level	VIF
vertical intercept	C	109.6904	0.5891	0.5624	NA
Social responsibility of society	CSR-COM	-49.3230	-0.9379	0.3595	1.88
Employee social responsibility	CSR-EMP	159.7785	1.7429	0.0967	1.53
Environmental social responsibility	CSR-ENV	-18.4054	-0.2307	0.8199	2.73
Social responsibility of products	CSR-PRO	95.4794	1.8565	0.0782	2.08
Social responsibility Diversity of governance	CSR-DIV	2.9693	0.0579	0.9544	1.76
Human rights social responsibility	CSR-HUM	42.9267	0.6741	0.5079	1.09
Sales growth	GROWTH	-62.8568	-1.2441	0.2278	1.98
Financial Leverage	LEV	-70.7470	-1.3267	0.1995	2.16
Loss	LOSS	-16.2068	-0.4314	0.6708	1.96
Return on assets	ROA	-39.6740	-0.7439	0.4656	1.61
size of the company	SIZE	-13.7538	-1.2528	0.2247	2.33
Number of shareholders	STKHD	-160.2893	10.5271	0.0000	1.57
Weight statistics					
Determination coefficient R2	0.93	F statistic		22.6163	
Adjusted coefficient Adj.R2	0.89	F Significance level		0.0000	
		DW statistic		1.82	

in the period of Corona disease consider all aspects of social responsibility and pay special attention to the activities of social responsibility. In line with the results of the study, as well as the uncertainty of the end of the coronavirus in the world and the high importance of the issue, it is suggested that in future research, researchers study the relationship of other components of social responsibility and other variables that may reduce the negative effects of the crisis on stock returns and company value.

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