

Investigating the impact of corporate social responsibility performance on investment-cash flow sensitivity of companies on the Tehran Stock Exchange.

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ARTICLE INFO

Keywords:

Between corporate social responsibility performance, investment-cash flow sensitivity, stock exchange

ABSTRACT

The present study aims to investigate the impact of corporate social responsibility performance on investment-cash flow sensitivity of companies on the Tehran Stock Exchange. This is a definitive study with a descriptive type of research. The statistical population of this study includes all companies listed on the Tehran Stock Exchange for a seven-year period from 2018 to the end of 2023. Sampling was done by systematic elimination. This method was used to conduct research and collect the data needed to test the hypotheses. Data collection was carried out using the new Rahavard software and the websites of the Research, Development and Islamic Studies Management of the Stock Exchange Organization, the Stock Exchange Organization, the KODAL network, and the Iranian Financial Information Processing Center. In this study, the library method is first used to collect and compile data and information. In the library section, the theoretical foundations of the research were collected from specialized Persian and Latin books and magazines. In this study, the multivariate regression method was used as a statistical method. Also, the data analysis in the descriptive statistics section will begin with the calculation of central indices, including the mean, median, and dispersion indices, standard deviation, skewness, and skewness elongation. The coefficients of the regression model variables were tested using the Student's t-test. The time frame of this study was 1397 to the end of 1402. The data collection tool in this study is: Schwartz and Carroll's (2017) social responsibility questionnaire, and to calculate the investment-cash flow sensitivity, the score is the model of Arsalan et al. (2006), Arab Salehi and Ashrafi (2011), Jahanshad and Shabani (2015). The research findings show that there is a significant positive relationship between the performance of corporate social responsibility on the investment-cash flow sensitivity of Tehran Stock Exchange companies.

Introduction

In the era of complex and diverse business, attention to environmental, social and governance (ESG) issues is currently increasing. Corporate social responsibility covers various aspects including responsible environmental practices, fair social policies and good and transparent governance. Corporate social responsibility is not only a concern from an ethical perspective, but also has important implications for corporate performance and investment decision-making. Corporate social responsibility practices in business are increasingly gaining attention worldwide. Companies that incorporate aspects of corporate social responsibility into their business strategy are expected to achieve long-term sustainability and provide added value to stakeholders. Several studies have shown that companies with strong corporate social responsibility practices tend to have lower risk and better long-term performance.

Khan et al. (2015) assessed the impact of material sustainability on corporate financial performance and found that corporate sustainability is materially important and is associated with better financial performance. Zhang and Liu (2022) found that companies with good CSR performance in China also have higher financial flexibility, which means that adopting CSR practices can help companies facing an uncertain business environment and thus help reduce financing constraints. Quintilian (2022) found that there is a positive correlation between a company's CSR score and its value.

There is no capital rationing, as the company can always obtain external financing at the same cost as the cost of capital. However, in imperfect capital markets, the financial structure of a company becomes relevant. For example, if capital market participants face significant uncertainty about the company's future prospects, the cost of external financing often exceeds the cost of internal financing. This makes the company's investment decisions influenced by the availability of available cash flow. This phenomenon is known as investment-cash flow sensitivity.

This sensitivity is observed due to the cost difference between domestic and foreign capital, which causes financing constraints. The observed sensitivity can be due to agency costs of free cash flow (Jensen, 2009) or asymmetric information (Berardi, 2011). Therefore, factors that reduce capital market barriers (financial frictions) can reduce investment-cash flow sensitivity (Agka and Mozenmar, 2008). Samet and Jerbouï (2017) used corporate social responsibility as a factor affecting investment-cash flow sensitivity and found that good corporate social responsibility performance can weaken investment sensitivity in domestic funds and that companies that implement strong corporate social responsibility practices are in a better position to raise financing in capital markets. Through reducing financing constraints and agency costs. Given that there is still limited research examining how good CSR practices can influence corporate policies in investment decision-making, this study aims to fill this gap by examining the performance of CSR in companies in reducing the impact of investment-cash flow sensitivity. CSR performance can act as a positive signal (signaling theory) to stakeholders, including investors and shareholders. When a company demonstrates good performance in environmental, social, and corporate governance, this can be considered an indicator of the company having a sustainable and responsible strategy. By implementing sustainable business practices, companies can reduce environmental and social risks that can negatively impact the company's operations and reputation. This can lead to operational efficiency, cost reduction, and improved long-term performance of the company. This improved performance can

help increase shareholder welfare, through higher dividends or increased share value. In Iran, CSR implementation policies have advanced in recent years. The government has issued laws and regulations related to corporate social responsibility, such as the Capital Market Law and the Sustainable Reporting Guidelines, which require state-owned companies to report information related to corporate social responsibility and corporate governance practices. By conducting in-depth research on the impact of corporate social responsibility on investment cash flow sensitivity, a better understanding of how environmental, social, and governance factors affect a company's investment decisions about its cash flow can be gained. The results of this research can guide companies and investors to integrate corporate social responsibility factors into decision-making with a focus on achieving long-term sustainability and sustainable value added. Therefore, this research is expected to be an important contribution to enriching the understanding of corporate social responsibility implementation in the context of business and investment in Iran, as well as guiding the developing of sustainable and high-performance business strategies for companies and other stakeholders. In addition, the findings of this research are expected to contribute to the academic literature that considers the relationship between corporate social responsibility, investment cash flow sensitivity, and ownership structure. Therefore, this research is essential, considering the importance it will have in the sensitivity of investment for companies on the Tehran Stock Exchange and the progress of these companies.

Corporate Social Responsibility

If we were to explain social responsibility in a brief definition, we would say: "Brands' social activities and philanthropic work are also among these activities. In other words, companies should feel responsible for the society and the environment in which they operate and make efforts in this regard." Although the definitions of "corporate social responsibility" vary, it is widely accepted that corporate responsibility includes social and environmental obligations to various stakeholders in addition to profitability.

For example, a company may produce a product that is made from environmentally friendly materials or work closely with social organizations. This means that corporate social responsibility activities can affect the larger community. In general, corporate social responsibility is divided into three categories: environmental, charitable, and ethical responsibilities (Karimnejad, Malika et al. 1400).

Cash Flow Sensitivity

Alliannis and Mozamdar (2004) define the sensitivity of cash flows as the percentage change in cash holding levels to changes in cash flows. Fazari et al. (1988) argued that the sensitivity of cash flow usage increases with the increase in the difference between the cost of internal and external financing. In general, the study of the theoretical foundations of financial management shows that companies tend to hold cash heavily due to their cash needs, which can greatly affect the process of using cash and related decisions. Cash holding, in fact, helps to avoid high costs of external financing in the event of a cash shortage. For example, Bates et al. (2009) point out that the increase in cash and its holding is more likely to respond to growing liquidity demands against cash flow shocks (Foroughi and Sakini, 2016).

Almeida et al. (2004) proposed that there is a positive relationship between changes in the amount of funds and the sensitivity of the company's cash flows, such that a decrease in the increase in the company's cash balance at a given time leads to a decrease (increase) in the sensitivity of cash flows. Almeida et al.'s argument is based on the precautionary motive of cash. They proposed that due to various factors such as the existence of binding contracts to refrain from publishing bad news about the company's financial position, the company's incentives to maintain assets and cash resources, as well as agency problems, the company has different reactions to cash and the amount of cash it maintains, which can affect the sensitivity of cash flows, in a way that can affect the level of trust and confidence of owners in the company's managers. Riddick and Whited (2009) showed that in large and medium-sized companies there is a negative nonlinear relationship for the sensitivity of their cash flows. The focus of their study was the existence of a relationship between cash and the sensitivity of cash flows. Ben Mohammed et al. (2014) selected a sample of American companies between 1999 and 2010 and showed that investment has a positive and significant effect on cash flows and that the sensitivity of cash flows to investment is greater in companies that have financial constraints (Foroughi and Sakini, 2016).

1. The concept of investment

Investment in various matters by companies has always been considered as one of the important ways to develop companies and prevent stagnation and backwardness. Meanwhile, resource limitations have made it very important to increase investment in addition to developing investment (Foroughi and Sakini, 2016).

The growth and development of investment and the progress of countries depend on the actions of governments, especially in economic planning and policymaking, in order to create and expand competition in various processes in the production chain, trade (domestic and foreign), storage and warehousing, transportation, processing, and the supply of goods and services. In each of the supply and distribution chain processes, conditions are created in which the actors in that field compete with each other to earn income and consequently more profit, in reducing prices and increasing the quality of the relevant activity (such as maintaining and storing goods). Of course, along with the growth and development of various sciences in time efficiency, the standards related to consumer rights in these processes have also been improved, and the task of controlling, monitoring and inspecting the compliance of these standards by enterprises is the responsibility of national and local governments. Thus, further improving the quality of investment in the processes in the economic cycle of supply and distribution of any country depends on the formation and expansion of investment (Foroughi and Sakini, 2016).

Background of the study

In a study conducted by Rahbeh Boroumand et al. in 1403 titled "Investigating the effect of investment cash flow sensitivity on investment enthusiasm in companies listed on the Tehran Stock Exchange", they concluded that: The results of the study indicate that investment cash flow sensitivity in different classes of companies with and without financial constraints has a significant positive relationship with investment enthusiasm, therefore the present study introduces investment cash flow sensitivity as a suitable criterion for measuring investment enthusiasm, this result can be of interest to policymakers in the field of investment issues.

In a study conducted by Mohsen Akbari et al. in 1403 titled "Investigating the relationship between investment opportunities and investment sensitivity to cash flow", they concluded that: The results of the study show that there is no significant relationship between investment opportunities and investment sensitivity to cash flow.

Akbari et al. (1402) investigated the relationship between investment opportunities and investment sensitivity to cash flow. In this study, the financial information of 80 companies listed on the Tehran Stock Exchange during the period 2008 to 2014 was reviewed. In order to measure investment opportunities, three criteria were used: earnings per share to price per share, the ratio of market value of assets to book value of assets, and the ratio of market value of shares to book value of shares. The results of their research show that there is no significant relationship between investment opportunities and investment sensitivity to cash flow.

Nirovanto et al. (2024) conducted a study on the “Relationship between social responsibility disclosure and percentage of institutional ownership in the wood and paper industry” from 2008 to 2010. The results of the study showed that there is a significant and positive relationship between the percentage of institutional ownership and social responsibility disclosure and employee relations. There is no significant relationship between the percentage of institutional ownership and community and environmental participation, and there is a negative and significant relationship between the percentage of institutional ownership and production.

Damayanti et al. (2023) conducted an experimental study on the impact of disclosure on the “Corporate Social Responsibility and Institutional Ownership” context. The variable of social responsibility disclosure includes four dimensions of employee relations, social participation, production and environment. The results show that none of the four dimensions of social responsibility disclosure had a significant effect on institutional ownership.

Research Method

This is a definitive study with a descriptive type of research that is used to test the effect of cash flow availability on a company's investment decisions (investment - cash flow sensitivity) and the effect of corporate social responsibility performance in reducing investment - cash flow sensitivity.

The statistical population of this study includes all companies listed on the Tehran Stock Exchange for seven years from 1397 to the end of 1402. Sampling was carried out by systematic elimination and included all companies in the statistical population that meet the following conditions:

1. To make the information comparable, the companies' fiscal year ends on March 29.
2. They have not changed the fiscal period during the period under review.
3. All data required for the research is available and accessible for the companies under review.
4. They are not part of financial intermediary companies (banks, investment and leasing, and insurance companies).
5. Their shares in the market should not have a trading break of more than three months.

Considering the above conditions and limitations, they will be selected from among the companies admitted to the Tehran Stock Exchange.

This method was used to conduct research and collect the data needed to test the hypotheses. Data collection was carried out using the New Revenue Software and the websites of the Research, Development and Islamic Studies Department of the Stock Exchange Organization, the Stock Exchange Organization, the KODAL Network and the Iranian Financial Information Processing Center.

In this research, the library method is first used to collect and compile data and information. In the library section, the theoretical foundations of the research will be collected from specialized Persian and Latin books and magazines. Also, the required data will be collected from KODAL and New Revenue Software.

In this research, the multivariate regression method is used as a statistical method. In the regression method, the main goal is to investigate whether there is a significant positive relationship between corporate social responsibility performance and investment-cash flow sensitivity in Tehran Stock Exchange companies?

Also, data analysis in the descriptive statistics section will begin with calculating central indices including mean, median, and dispersion indices, standard deviation, skewness, and skewness stretch. The coefficients of the variables of the regression model will be tested using the Student's t-test.

In this study, Fisher's exact statistic (F) is used to test the overall significance of the fitted regression model at the 95% confidence level, and the Durbin-Watson test is used to test the absence of correlation between model errors. In this study, mixed data will be used to test the hypotheses. In the mixed data method, the F-limer test is used to select between panel and pooling methods. If the panel method is selected, the Hausman test is performed to select between fixed effects and random effects methods.

Descriptive Statistics

In this section, descriptive statistics indicators, which include central indices (maximum, minimum, mean) and dispersion indices including variance and standard deviation, and skewness indices, are first discussed and examined.

Descriptive Statistics

In this section, descriptive statistics indicators, which include central indices (maximum, minimum, mean) and dispersion indices including variance and standard deviation, and skewness indices, are first discussed and examined.

Table 1- Descriptive statistics of research variables

Skewness	Standard deviation	Minimum	Maximum	Middle	Average	Variable symbol	Variable name
14.96	3.9442	-24.63	98.38	-0.05	-0.05	$(CF/K)_{i,t}$	Investment sensitivity to cash flow
-0.133	0.0304	0.0	0.15	0.09	0.0876	$CRS_{i,t}$	Corporate Social Responsibility
1.87	0.0981	-0.61	0.75	0	0.0250	$(I/K)_{i,t-1}$	Ratio of capital expenditures to book value of total assets
14.39	1.1087	0	23.01	0.75	0.8877	$(S/K)_{i,t-1}$	Ratio of total revenue to book value of total assets
7.035	0.0431	0	0.56	0	0.0098	$(I/K)^2_{i,t-1}$	The square of the ratio of capital expenditures to the book value of total assets
19.91	1.4152	0	38.49	0.41	0.5696	$(D/K)^2_{i,t-1}$	The square of the ratio of total liabilities to the book value of total assets

As can be seen in Table 1, the average corporate social responsibility is 0.087, which shows that most of the data related to this variable are concentrated around this point. The median ratio of total income to book value of total assets is 0.75, which shows that half of the data for this variable is less than this value and the other half is more than this value. In general, dispersion indices are a measure for

determining the degree of dispersion of data from each other by the degree of their dispersion relative to the mean. Among the most important dispersion indices that are a desirable condition for entering a variable into a regression model is the standard deviation. As can be seen in Table 1, the standard deviation of the variables is not zero and meets this condition. In the statistical population under study, the highest and lowest values of this parameter are 14.403 and 0.304, which are related to the corporate social responsibility variable, respectively. The skewness parameter shows the degree of asymmetry of the frequency curve of the variable. If the skewness coefficient is zero, the population is completely symmetric, and if the coefficient is positive. If it is skewed to the right, and if it is negative, there will be skewed to the left. For example, the skewness coefficient of the variable ratio of capital expenditures to the book value of total assets is positive and equal to 1.87, which means that the frequency curve of this variable in the population under study is skewed to the right and deviates by this amount from the center of symmetry.

Inferential statistics

Inferential statistics includes methods that we use to generalize the information available in the sample to the entire population. The most important goal of statistics is to make inferences about the characteristics of the population according to the information available in the sample. A few statistical problems end at the descriptive statistics stage, but most statistical problems involve inferring about the characteristics of a population using information available in a sample.

-1 Correlation coefficient between research variables

Before examining the models and testing the hypotheses, the correlation and relationship between the research variables were examined using the correlation coefficient. This information is shown in Table 2, which shows the matrix of correlation coefficients of some of the main research variables for all observations in one place.

Table 2- Correlation coefficient between research variables

$FCF_{i,t}$	$(D/K)^2_{i,t-1}$	$(I/K)^2_{i,t-1}$	$(S/K)_{i,t-1}$	$(I/K)_{i,t-1}$	$CRS_{i,t}$	$(CF/K)_{i,t}$	
0/000	0/017	-0/011	-0/011	-0/053	0/001	1	$(CF/K)_{i,t}$
-0/003	-0/052	0/010	0/037	0/004	1	0/001	$CRS_{i,t}$
0/020	-0/062	0/536	0/005	1	0/004	-0/053	$(I/K)_{i,t-1}$
0/025	-0/035	0/010	1	0/005	0/037	-0/011	$(S/K)_{i,t-1}$
0/007	-0/019	1	0/010	0/536	0/010	-0/011	$(I/K)^2_{i,t-1}$
-0/010	1	-0/019	-0/035	-0/062	-0/052	0/0177	$(D/K)^2_{i,t-1}$
1	0/010	0/007	0/025	0/020	-0/003	0/000	$FCF_{i,t}$

The correlation coefficient shows the intensity of the relationship and the type of direct or inverse relationship. This coefficient is between 1 and -1, and if there is no relationship between two variables, it is equal to zero. As can be seen, the correlation coefficient between the research variables is between 1 and -1.

2- Collinearity test

The intensity of multiple collinearity in regression analysis (VIF = variance inflation factor) in statistics, the ordinary least squares variance inflation factor evaluates. In fact, an index is introduced that states how much of the changes related to the estimated coefficients have increased due to collinearity. The intensity of multiple collinearity can be analyzed by examining the magnitude of the variance value. As can be seen, in the model in question, the variance value is less than 5, and therefore there is no collinearity. Tables 3 to 5 show the results of the collinearity test for the first,

second, and third models of the study, respectively.

(1) Table 3- Results of the collinearity test of model

$\left(\frac{CF}{k}\right)_{i,t} = \alpha_1 CRS_{i,t} + \alpha_2 \left(\frac{I}{k}\right)_{i,t-1} + \alpha_3 \left(\frac{S}{k}\right)_{i,t-1} + \alpha_4 \left(\frac{I}{k}\right)_{i,t-1}^2 + \alpha_5 \left(\frac{D}{k}\right)_{i,t-1}^2 + \varepsilon_{i,t}$		
Variance Inflation Factor (VIF)	Extraction coefficient	Variable symbol
1.7531	3.0164	$CRS_{i,t}$
1.4954	2.1605	$(I/K)_{i,t-1}$
1.5645	0.0114	$(S/K)_{i,t-1}$
1.4772	1.20081	$(I/K)_{i,t-1}^2$
1.1311	0.0072	$(D/K)_{i,t-1}^2$

(2) Table 4- Results of the collinearity test of model

$\left(\frac{CF}{k}\right)_{i,t} = \alpha_1 CRS_{i,t} + \alpha_2 FCF_{i,t} \times CRS_{i,t} + \alpha_3 \left(\frac{I}{k}\right)_{i,t-1} + \alpha_4 \left(\frac{S}{k}\right)_{i,t-1} + \alpha_5 \left(\frac{I}{k}\right)_{i,t-1}^2 + \alpha_6 \left(\frac{D}{k}\right)_{i,t-1}^2 + \varepsilon_{i,t}$		
Variance Inflation Factor (VIF)	Extraction coefficient	Variable symbol
1.7554	3.0231	$CRS_{i,t}$
1.0019	0.0088	$FCF_{i,t} * CRS_{i,t}$
1.4958	2.1633	$(I/K)_{i,t-1}$
1.5654	0.0115	$(S/K)_{i,t-1}$
1.4772	1.2116	$(I/K)_{i,t-1}^2$
1.1312	0.0072	$(D/K)_{i,t-1}^2$

3. Residual Variance Heterogeneity Test

To analyze the data of the stated model, it is necessary to test the classical assumptions of the model before processing them and testing the hypotheses. One of the assumptions of linear regression by the ordinary least squares method is that all residual terms have equal variance. In practice, this assumption is not very true and in many samples, for various reasons such as the incorrect shape of the model function, the presence of outliers, structural failure in the statistical population of learning over time, etc., the phenomenon of variance heterogeneity exists. To examine this problem, tests such as the White test, the Park test, the Glaeser test, the Goldfeld-Quant test, and the Brosch-Pagan test have been introduced by various economists. To examine the variance heterogeneity assumption in this study, the White test was used, the results of which are presented in Table 5.

Table 5- Results of the test for heteroscedasticity of residual variance

Estimation method	Result	Test statistic	Significance level	Model	H0
OLS	.Accepted H0	0.507	0.9377	first	Homogeneity of variance
OLS	Accepted H0 Not	0.571	0.9311	second	Homogeneity of variance

To test the above hypothesis, Limer's (Chow) F statistic is used, the results of which are presented in Table 4-4

$$\left\{ \begin{array}{l} H_0: \alpha_1 = \alpha_2 = \alpha_3 = \dots \Leftrightarrow \text{The origins of the width are equal to each other.} \Leftrightarrow \text{Pooled} \\ H_1 = \alpha_1 \neq \alpha_j \Leftrightarrow \text{The rest are different from the origins of width from one to the least.} \Leftrightarrow \text{Panel} \end{array} \right.$$

Table 6- Model recognition test using the F-limer test (combined or panel test)

Result	Statistical probability	Fisher (Chow) test	Model	Test type
Integrated method	1.0000	0.893	First	FLimer
Integrated method	1.0000	0.0892	Second	FLimer

Table 7 shows the results of the F-limer test for the first and second hypotheses. Pooled or panel data are used to estimate these models.

As seen in Table 7, given that the significance level values in the first and second models are greater than 5 per cent, the null hypothesis of equal widths from the origins is accepted and the pooled method should be used to test the hypothesis. Now, in the pooled model, the fixed effects model should be tested against the random effects model. The Hausman test is used for this. In other words, the answer to the question that, assuming the coefficients related to the variables are constant, is the width from the origin constant for different sections? In other words, does the difference in the width from the origin of the cross-sectional units act consistently or can random functions express this difference between sections more clearly? These two methods are known in the pooled data literature as fixed and random effects methods, respectively. The methods mentioned are briefly discussed below.

Hausman Effects

As mentioned, the Hausman test statistic is used to examine fixed and random effects. The test of this hypothesis is as follows:

$$\begin{cases} H_0: \text{Random effects model} \\ H_1: \text{Fixed effects model} \end{cases}$$

Table 7- Hausman test selection test (fixed and random effects)

Result	Significance level	Degree of freedom	Chi-square statistic	Test type	Model
Pooled method with random effects	0.8940	5	1.659	Hausmann	First
Pooled method with random effects	0.9480	6	1.662	Hausmann	Second

As can be seen from Table 7, the Hausman statistic calculated for the first research model is greater than the chi-square with a degree of freedom of 5 and its significance level is also greater than 5 percent, so the null hypothesis is accepted in this model and the random effects method is used to fit the model. Also, the Hausman statistic calculated for the second research model is greater than the chi-square with a degree of freedom of 6 and its significance level is also greater than 5 per cent, so the null hypothesis is also accepted in this model and the random effects method is used to fit the model.

Hypothesis testing

After conducting the necessary statistical tests to determine the use of the data and ensure the accuracy of the fitted model, the final results of the research model estimation are presented below.

1.Results of the estimation of the first research model

To examine the first research hypothesis, a regression model was implemented based on pre-tests and its statistical results are presented in Table 8.

Table 8- Results from testing the first research model

$\left(\frac{CF}{k}\right)_{i,t} = \alpha_1 CRS_{i,t} + \alpha_2 FCF_{i,t} \times CRS_{i,t} + \alpha_3 \left(\frac{I}{k}\right)_{i,t-1} + \alpha_4 \left(\frac{S}{k}\right)_{i,t-1} + \alpha_5 \left(\frac{I}{k}\right)_{i,t-1}^2 + \alpha_6 \left(\frac{D}{k}\right)_{i,t-1}^2 + \epsilon_{i,t}$					
Result	Probability	Statistical values t	Beta coefficient	Symbol	Variable name
Positive and meaningful impact	0.0094	2.6022	-2.3014	$CRS_{i,t}$	Corporate Social Responsibility
Negative and significant impact	0.0000	-7.263	-1.2450	$(I/K)_{i,t-1}$	Ratio of capital expenditures to book value of total assets
No significant effect	0.1430	1.4660	0.0153	$(S/K)_{i,t-1}$	Ratio of total revenue to book value of total assets
Positive and meaningful impact	0.0655	1.8441	0.8316	$(I/K)_{i,t-1}^2$	The square of the ratio of capital expenditures to the book value of total assets
No significant effect	0.5811	0.5519	0.0071	$(D/K)_{i,t-1}^2$	The square of the ratio of total liabilities to the book value of total assets
-	0.106	-2.562	-0.1964	C	Width from origin
2.30	Watson camera test		1.720	Test valuesF	
0.30	Coefficient of determination valuesR ²		≠0.0000	Significant surface values	

To examine the significance and non-significance of regression to establish a linear relationship between independent and dependent variables, the following conditions apply .:

$$\begin{cases} H_0: \text{There is no meaning to the model.} \\ H_1: \text{There is a meaningful model.} \end{cases}$$

Therefore, using the above conditions, the significance and non-significance of the first model are examined. As can be seen in Table 8, the probability value or significance level of F in the model is equal to 0.0000. Since this value is less than 0.05, the null hypothesis is rejected at a confidence level of 95%. This means that the model is significant; in other words, the model under study is valid. The coefficient of determination in the model is also 30%. This coefficient indicates that the independent and control variables in this model have the ability to explain more than 30% of the changes in the levels of the dependent variable. One of the tests of the adequacy and correctness of the model is to examine the absence of autocorrelation between the residuals of the model. Autocorrelation causes the t and t values in the model to be too large, and as a result, the coefficients are falsely significant, which causes misinterpretation of the coefficients and the possibility of a type II error. The values of the Durbin-Watson test are used to examine the absence of autocorrelation. In this model, the significance level of the Durbin-Watson statistic in the above model is 2.30, which indicates the absence of autocorrelation between the residuals of the model.

2- Results of the estimation of the second research model

To examine the second research hypothesis, a regression model was implemented based on pre-tests and its statistical results are presented in Table 9.

Table 9- Results of the test of the second research model

$\left(\frac{CF}{K}\right)_{i,t} = \alpha_1 CRS_{i,t} + \alpha_2 FCF_{i,t} \times CRS_{i,t} + \alpha_3 \left(\frac{I}{K}\right)_{i,t-1} + \alpha_4 \left(\frac{S}{K}\right)_{i,t-1} + \alpha_5 \left(\frac{I}{K}\right)_{i,t-1}^2 + \alpha_6 \left(\frac{D}{K}\right)_{i,t-1}^2 + \varepsilon_{i,t}$					
Conclusion	Probability	t-statistic values	Beta coefficient	Symbol	Variable name
Positive and meaningful impact	0.0093	2.6082	2.3066	$CRS_{i,t}$	Corporate Social Responsibility
	0.5980	0.527	0.0002	$FCF_{i,t} * CRS_{i,t}$	The interactive effect of agency costs and corporate social responsibility
Positive and meaningful impact	0.0000	-7.314	-1.2466	$(I/K)_{i,t-1}$	Ratio of capital expenditures to book value of total assets
Negative and significant impact	0.1462	1.4543	0.0149	$(S/K)_{i,t-1}$	Ratio of total revenue to book value of total assets
No significant effect	0.0636	1.8577	0.8337	$(I/K)_{i,t-1}^2$	The square of the ratio of capital expenditures to the book value of total assets
Negative and significant impact	0.5780	0.5564	0.0072	$(D/K)_{i,t-1}^2$	The square of the ratio of total liabilities to the book value of total assets
-	0.0106	-2.562	-0.1966	C	Width from origin
2.30	DW		1.70	F-test values	
0.30	R ²		≈0.0000	Significant surface values	

To examine the significance or non-significance of regression to establish a linear relationship between independent and dependent variables, the following conditions apply.

$$\begin{cases} H_0: \text{There is no meaning to the model.} \\ H_1: \text{There is a meaningful model.} \end{cases}$$

Therefore, using the above conditions, the significance and non-significance of the first model are examined. As can be seen in Table 9, the probability value or significance level 4 in the model is equal to 0.0000. Since this value is less than 0.05, the null hypothesis is rejected at a 95% confidence level,

meaning that there is a significant model. In other words, the model under study is valid. The coefficient of determination in the model is also 30%. This coefficient indicates that the independent and control variables in this model have the ability to explain more than 30% of the changes in the levels of the dependent variable. One of the tests of the adequacy and correctness of the model is to examine the absence of autocorrelation between the residuals of the model. Autocorrelation causes the t values in the model to be too large, and as a result, the coefficients are falsely significant, which causes misinterpretation of the coefficients and the possibility of a type II error. To examine the absence of autocorrelation, the values of the Durbin Watson test are used. In this model, the value of the Durbin Watson statistic in the above model is equal to 2.30, which indicates the absence of autocorrelation between the residuals of the model.

Analysis of Hypothesis Estimation

Next, the hypotheses are analyzed according to the results of the research model estimation.

1- Analysis of the first hypothesis estimation

The aim of the first hypothesis of the research is to investigate the issue that corporate social responsibility reduces the sensitivity of cash flow investment, so the null hypothesis and its opposite are as follows:

Null hypothesis: Corporate social responsibility does not reduce the sensitivity of cash flow investment.

Opposite hypothesis: Corporate social responsibility reduces the sensitivity of cash flow investment. As can be seen, the calculated probability value for the corporate social responsibility variable is 0.0094. This shows that the relationship between these variables is significant at the 95% confidence level. Also, the estimated coefficient of the mentioned variable is -2.3014, which shows that the relationship under investigation is inverse, such that an increase in corporate social responsibility leads to a decrease in the sensitivity of cash flow investment. Therefore, considering the estimated probability of the corporate social responsibility variable, it can be said that corporate social responsibility reduces the sensitivity of cash flow investment, so according to these results, the first hypothesis of the research is confirmed.

Conclusion

Undoubtedly, the issue of investment is one of the most important tasks of company managers. If managers can correctly identify valuable investment opportunities with positive net present value in the market and invest in each of them in an appropriate amount, this will ultimately lead to the growth of the company and increase the wealth of shareholders. The amount of cash flows of the company has a great impact on the amount of investments of the company due to the lower cost of capital compared to external financing and also the greater control of managers over it (Arab Salehi et al., 2014). The sensitivity of investment costs to internal cash flow is a phenomenon that has been well addressed in the literature of financial economics. Fazari et al. (1988) showed that after controlling for growth opportunities, investment is sensitive to cash flow. This sensitivity is greater for companies that pay lower dividends. The European Commission considers corporate social responsibility to be a concept that, in addition to reporting on business activities, also includes issues such as environmental issues, social reporting, and the company's interactions with various stakeholders. The European Commission believes that although, according to the above concept, a large number of companies are currently subject to a culture of corporate social responsibility, there are different approaches to promoting

corporate social responsibility, and the existence of such responsibility is considered an accepted matter by all companies, a duty that is currently carried out voluntarily and will protect the long-term interests of companies. Policies and activities related to social responsibility can be associated with reducing the risk of companies. Reducing the risk of the company or immunity against risk can be reduced by reducing the conflict and conflict between the company and society; As a result, social responsibility activities help to reduce such conflicts (McCarthy et al., 2014).

Based on the results obtained, the first hypothesis of the study is accepted and it can be said that corporate social responsibility reduces the sensitivity of cash flow investment. The results of this hypothesis from the present study are in accordance with the research of Etiket et al. (2014), Marwa and Charboni (2017), Mahfouzi et al. (2017), who showed in their research that with increasing social responsibility activities, the sensitivity of investment to cash flow decreases for the samples under study. These results indicate that corporate social responsibility increases or decreases the sensitivity of cash flow investment. Companies involved in social responsibility activities force managers to produce high-quality financial reports and reduce earnings management. As a result, the quality of information related to social responsibility reduces the problems of asymmetric information that arise from superior management information, which ultimately reduces the problems of inappropriate selection and leads to less sensitivity of investment to cash flow.

In this regard, this study was conducted with the aim of investigating the impact of corporate social responsibility performance on investment-cash flow sensitivity of companies listed on the Tehran Stock Exchange. Considering the importance and application of the results of this study, which can provide a more appropriate context for making correct economic decisions, and also because the results of the study can be used in the decision-making process; the present study is an applied research type. It is also a descriptive correlational type in terms of nature and method. On the other hand, the present study is It is a semi-experimental post-event study, meaning it is based on the analysis of past and historical information of the companies' financial statements.

This research is also a library and causal-analytical study and is based on the systematic elimination method of a selected sample of 210 companies listed on the Tehran Stock Exchange. The library method was first used to collect and compile data and information. In the library section, the theoretical foundations of the research were collected from Persian and Latin specialized books and magazines. Also, the required data was collected from the Kodal site of the new Rahavard software to collect and compile data and information. Descriptive and inferential statistics were used to analyze the data of the present study. Descriptive statistics (mean, variance, correlation, covariance, etc.) were used to describe and summarize the collected data, and inferential statistics were used to analyze and test the research hypotheses. To determine the type of combined data and to select from panel and pooled data, the Limer test was used, and to select between fixed and random effects, the Hausman test was used, and also to test the research hypotheses, t-statistics and F-statistics were used. Excel and Iviews 10 software were used to analyze the data and extract the research results.

Finally, the results of the research hypothesis showed that corporate social responsibility increases or decreases the sensitivity of cash flow investment. Companies involved in social responsibility activities force managers to produce high-quality financial reports and reduce earnings management. As a result, the quality of information related to social responsibility reduces the problems of asymmetric information that arise from superior management information. Which ultimately reduces the problems of inappropriate selection and leads to less sensitivity of investment to cash flow.

According to the results obtained from the present study, the following suggestions are made:

The following are suggestions for future research to researchers:

- 1- This study was conducted for a period of one year, so it is suggested that it be examined in monthly and quarterly periods as well.
- 2- Investigating the effect of cost of equity on the relationship between corporate social responsibility and cash flow investment sensitivity

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