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Investigating the Interactive Effect of Corporate Governance and Corporate Social Responsibility on the Firm Value in the Tehran Stock Exchange

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Abstract

The purpose of this study is to investigate the effect of corporate governance (CG), corporate social responsibility (CSR) and their interactive effect on the value of companies listed on the Tehran Stock Exchange. For this purpose, the data of 194 companies listed on this stock exchange, which was selected using a systematic elimination method, from 2011-2017 were collected and analyzed using the pool data technique. This research is applied and is an analytical-explanatory study. The research findings showed that corporate governance, social responsibility, and the interactive effect of corporate governance and social responsibility have a direct effect on the company's value in all four models of capital asset pricing in the companies listed in the Tehran Stock Exchange. It was also shown in the comparison of models that the market-based, single-factor model explains the relationship between these variables better than other models discussed in this study.

Keywords

Corporate governance, Corporate social responsibility, Company value, Capital asset pricing models.

Introduction

The competitive world and efforts to increase the value of the company have led organizations to use different research groups to find the necessary factors for the company's value. On the other hand, determining the value of a company and identifying its effective factors in the capital market has always been a challenging issue for investors and financial market analysts. They always sought to identify the factors affecting the company's value, so that they can control the value of the company in real terms (Valipour, Rostami, & Shabani, 2010).

As Eslami Bidgoli stated in his research in 2009, financial scholars have developed a variety of models for valuing companies over the years. These models can be expected to be very simple, elaborate or very sophisticated. Therefore, there is no comprehensive theory for corporate valuation, and new factors constantly emerge that affect the value of the company. Some valuation models that are currently used to determine the value of companies include Gordon Growth Model, two-step dividend yields, discounting free cash flows payable to stockholders, adjusted current value, price / income ratio and remaining earnings, etc. The capital asset pricing models can also be used to determine the value of the company. These factors are the obvious factors that influence the value of the company, but there are also a number of other factors that invisibly affect the value of a company. Jorion et al. (2009) claimed that the information included in the financial statements loses its value in the passage of time and no longer relates to the items in the account. They believe that other criteria are more important than financial criteria in affecting the judgment of investors and thus the value of the company. The effects of the company's stakeholder engagement on the company can be emphasized by these factors.

The company's stakeholders include any individual or group that benefit from the existence and activities of a company. Nowadays, the stakeholder circle has become pervasive in corporate and big organizations. Stakeholders include the government, society, people, stockholders, employees, providers, etc. Therefore, it can be stated that the value of the company is influenced by the level of interest of the company's stakeholders. The interests of each stakeholder are provided in a variety of ways, and the company tries to optimize these benefits if it aims at survival and excellence in the competition. One of the ways to secure the interests

of the two main groups of stakeholders, i.e. the stockholder and the community, is the implementation of corporate governance and the fulfillment of social responsibility that can be achieved through their satisfaction. Corporate governance includes a set of relationships between shareholders, managers, auditors, and other stakeholders, and involves establishing a control system to observe shareholder rights and enforcing the approval of the forum and preventing potential misuse (Khodadadi & Taker, 2012). Corporate Social Responsibility also means submitting a report on the company's environmental and social information that discloses information about the product, consumer interests, employee benefits, social activities, and environmental impacts. This disclosure is part of the organization's responsibility towards its stakeholders and its response to their expectations (Aziz Islam, 2009). The purpose of this paper is to discuss the simultaneous impact of corporate governance and corporate social responsibility on corporate value. In this regard, following the presentation of the theoretical foundations and literature in this field, data collection and analysis will be reviewed and, finally, conclusions will be discussed.

Theoretical Foundations and Literature Review

Today, enterprises operate in a highly variable and competitive environment, and a quick and correct response to very volatile market conditions can play a significant role in corporate positions. With the development of monetary and financial markets and, consequently, the domination of a viable situation, many companies are bankrupt (a sharp decline in the value of the company) and out of competition. This has raised concerns for the owners of capital, and in order to prevent their core capital from being refined, they are seeking ways to anticipate the monetary crisis of companies and changes in the value of the company (Pourheidari and Koupaei, 2010).

Corporate governance

It can be argued that the interests of the stockholders of the company are provided through the proper implementation of corporate governance of the company. Corporate Governance is a collection of rules and procedures that defines the relationship between stakeholders, management, and board members, and affects the way a company operates. Corporate governance,

which regards guidance, oversight and control of decision making and implementation, has a valuable role for all stakeholders. This constructive role is achieved in the three sides of the triangle of company, stakeholders and society only by establishing equilibrium leverage between internal and external organizational performance (Hasas Yeganeh & Baghomian, 2005). The importance of corporate governance in the world is so high that the Standard & Poor's Financial Services Company has introduced criteria for the ownership structure, financial interpersonal relationships, board structure and performance, accountability, transparency and disclosure of information for corporate governance (Asaadi, 2016).

Shleifer and Vishny (1997) argued that effective corporate governance was created through an innovative legal framework and an active capital market or through focused ownership. This analysis was expanded by Pystvr and others (2000), with more emphasis on the effectiveness and impact of legal institutions and external financing on transition economies. Effective corporate governance is a fundamental factor in the process of restructuring the economies in transition. This system improves the performance of companies by adapting and adjusting the conflict of interest and reducing opportunistic and fraudulent behaviors, improves the quality of existing information to participants in the capital market and facilitates access to foreign capital. With the implementation of corporate governance, fair and fairly, corporate governance can also increase the value of a company. All transition economies have made significant progress in developing the corporate governance framework and have voluntarily or compulsorily adapted to the principles of the Organization for Economic Development (Hosseini & Haghighat, 2016).

Tamizi (2017) argued that the value of the company (Q Tobin) has a significant effect on the relationship between ownership concentration and the level of corporate governance standards with stock liquidity. Pazoki (2015) concluded that there is a significant difference between corporate governance and value (Q Tobin) of the companies listed in the Tehran Stock Exchange before and after the global financial crisis. This means that economic conditions along with the implementation of corporate governance have a significant impact on the value of the company. Khodadadi and Taker (2012) believed that there was a good and significant relationship between the corporate governance of the company (Q Tobin)

and its performance. While Jo and Harjoto (2011) concluded that board leadership, board independence, block-holder ownership, and institutional ownership played a relatively weak role in increasing company value. Given the influence of corporate governance on corporate value in the conception of theories and previous research, it can be used to state the first hypothesis of the research that:

H1: There is a significant relationship between corporate governance and company value.

For hypothesis 1, the following sub-hypotheses were developed:

Hypothesis 1-1: There is a significant relationship between corporate governance and company value within the framework of the market model.

Hypothesis 1-2: There is a meaningful relationship between corporate governance and company value within the framework of the three-factor model.

Hypothesis 1-3: There is a significant relationship between corporate governance and company value in the framework of the four-factor model.

Hypothesis 1-4: There is a significant relationship between corporate governance and company value in the framework of the five-factor model.

Corporate Social Responsibility

The expansion of the presence and background of the organizations' activities has significantly increased their cultural, economic, and social impacts on society, and they are closely linked to those who not only share the company but also directly or indirectly benefit from its organization. This widespread relationship between laws and regulations and each of these stakeholders creates value for the organization. This part of the impact on corporate governance is related to the social environment and beyond the economic realm, known as social responsibility. The concept of "corporate social responsibility" is among the concepts of business ethics and is related to the role that companies play in the social sphere. As accountable organizations, excellent organizations, have a very ethical way of ensuring transparency and accountability to their stakeholders. These organizations have a special sensitivity and focus on the social

accountability and environmental sustainability of the organization in the present and future and promote this view. Social responsibility is reflected in the values of these organizations. Through open communication with stakeholders, they understand, observe and exceed the expectations and regulations of the local and the world. Since corporate social responsibility becomes the main business activity, it becomes a major component of management to the marketing, accounting or investment sector (Crane et al., 2008). Today, businesses are a set of community responsibilities and behavioral challenges in the economic, social, ethical, environmental, legal and other fields. Each organization or any economic activity is legally responsible for social responsibility and is required to comply with its obligations under the law. In this way, commitment to social responsibilities through fostering the community's mental environment reduces the likelihood of economic crises. However, in economic crises and corporate depreciation, there are several parameters involved, and it is impossible to identify one factor in it, but the crises caused by non-accountability lead to huge costs for companies that would not be affected by economic problems (Daneshvar, 2016). A great deal of research has shown that social responsibility affects the company's value, including Eghtedari (2017), Singh et al. (2017) Darabi, Waqfi and Salmanian (2016), Li et al. (2015), Dimitripoulos and Verundo (2015), Akbari, Qasemi Shams and Houshmand (2015), Servaes & Tamayo (2013) and Crisóstomo et al. (2011), despite Jafarzadeh and Zeinali's (2014) conclusion that corporate social responsibility cannot have any effect on the value of companies.

Considering the impact of social responsibility on the company's value as outlined in the previous research, the second hypothesis of the research can be stated as follows:

H2: There is a significant relationship between social responsibility and company value.

For hypothesis 2 of the research, the following sub-hypotheses were developed:

Hypothesis 2-1: There is a significant relationship between social responsibility and company value within the framework of the market model.

Hypothesis 2-2: There is a significant relationship between social responsibility and company value within the framework of the three-factor model.

Hypothesis 2-3: There is a significant relationship between social responsibility and company value in the framework of the four-factor model.

Hypothesis 2-4: There is a significant relationship between social responsibility and company value in the framework of the five-factor model.

Nesbitt, Outslay, and Persson (2016) achieved a positive relationship between corporate governance, corporate social responsibility and company value. In addition to the results of their research, which tested the impact of variables individually on the value of the company, due to the complementarity of the role of corporate governance and social responsibility in satisfying the stakeholders, the third hypothesis of the research can be stated as follows:

H3: There is a significant relationship between the interactive effect of corporate governance, social responsibility and company value.

For hypotheses 3, the following sub-hypotheses were developed:

Hypothesis 3-1: There is a significant relationship between the interactive effect of corporate governance and social responsibility within the framework of the market model.

Hypothesis 3-2: There is a significant relationship between the interactive effect of corporate governance and social responsibility within the framework of the three-factor model.

Hypothesis 3-3: There is a significant relationship between the interactive effect of corporate governance and social responsibility in the framework of the four-factor model.

Hypothesis 3-4: There is a meaningful relationship between the interactive effect of corporate governance and social responsibility in the framework of the five-factor model.

Methodology

In terms of the purpose, this study is an applied research project, and with regard to its nature, it is descriptive. Since the purpose of this study was to study the correlation coefficient and estimation of coefficients for the

variables under study, and finally to present the model, the regression of pool data using the generalized least squares method is used to test the hypotheses.

The data have been gathered from reports that are annually published. Descriptive and inferential statistics were utilized to analyze the data. Based on these points, the following regression models were used to test the hypotheses:

Table 1. Initial research models

$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 CG_{it} + \beta_3 CSR_{it} + \beta_4 CG_{it}*CSR_{it} + \beta_5 LEV_{it} + \beta_6 Size_{it} + \beta_7 Sale_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon_{it}$	**Market model**
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 CG_{it} + \beta_5 CSR_{it} + \beta_6 CG_{it}*CSR_{it} + \beta_7 LEV_{it} + \beta_8 Size_{it} + \beta_9 Sale_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \varepsilon_{it}$	**Three factor model**
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_5 CG_{it} + \beta_6 CSR_{it} + \beta_7 CG_{it}*CSR_{it} + \beta_8 LEV_{it} + \beta_9 Size_{it} + \beta_{10} Sale_{it} + \beta_{11} ROA_{it} + \beta_{12} ROE_{it} + \varepsilon_{it}$	**four factor model**
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_5 CMA_{it} + \beta_6 CG_{it} + \beta_7 CSR_{it} + \beta_8 CG_{it}*CSR_{it} + \beta_9 LEV_{it} + \beta_{10} Size_{it} + \beta_{11} Sale_{it} + \beta_{12} ROA_{it} + \beta_{13} ROE_{it} + \varepsilon_{it}$	**five factor model**

Table 2. Research variables and their measurement

Symbol Variable	Type of variable	measure the variable
$\mathbf{R_{it}}$	Dependent	=Rate of return on securities in period t
$\mathbf{R_{ft}}$	Dependent	=Rate of return free risk
$\boldsymbol{\alpha_i}$	-	=The width of the source
β	-	=Agent sensitivity
$\mathbf{R_{mt}}$	Independent	=Market returns
$\mathbf{SMB_{it}}$	Independent	Size factor: The average monthly return on shares of small and large companies. To calculate this variable, the companies were extracted according to the size and ratio BV / MV in six portfolios (S / H, S / M, S / L, B / H, B / H, B / L) and monthly returns of each company. The monthly average of each portfolio was calculated and the difference between the small and large portfolios by the method (SMB = (S / H + S / M + S / L) / 3 - (B / H + B / M + B / L) / 3) were achieved (Hezbi & Salehi, 2016)
$\mathbf{HML_{it}}$	Independent	=Book Value to Market Value factor: The difference between the average stock returns of companies with high BV / MV ratios and companies with low BV / MV ratios.

Symbol Variable	Type of variable	measure the variable
WML_{it}	Independent	To calculate this variable, first, the monthly average of six portfolios were calculated according to BV / MV ratio using the (HML = (S / H + B / H) / 2 - (S / l + B / L) / 2) method (Hezbi & Salehi, 2016) =Profitability factor (momentum): The average difference between the winning and losing stock portfolio. For the momentum factor, the stock is firstly classified into separate portfolios based on the size of the classification and based on the stock performance of which the average returns of 12 months are considered in this study. Stocks were classified from the bottom to the top based on the average returns of the past 12 months, and then the stock, which was up 30%, was in the losing portfolio (L) and the stock, whose average returns of 12 months ago were about 40% in the middle of the portfolio Medium and stocks down 30% are placed in the winning portfolio (W) (Hezbi & Salehi, 2016)
CMA_{it}	Independent	=Investment factor: The difference between firms' stock returns with high investments (Daring) and low-investment companies (conservative) (Hezbi & Salehi, 2016)
CG_{it}	Independent	=Corporate governance factor: using the corporate governance checklist and the company's rating in establishing this factor, in the first stage, and using the corporate governance letter, the factors of corporate governance assessment were extracted. Using the views of the people responsible for the establishment of corporate governance in the stock company and overseas as well as the university professors, the checklist was turned into a narrative assessment. In the next step, using the final checklist and data mining in the reports of the board of directors, the corporate website, as well as the association with the companies, a corporate governance score was assigned to the sample companies (the criteria to which the company adheres received the number one, the criteria in the reports that were not observed received zero, and the remainder of the scores were obtained from the sum of the numbers divided by all the criteria, which are shown in Table 3).(Author made)
CSR_{it}	Independent	= Corporate Social Responsibility factor: Using the social responsibility checklist and the participation rate in implementing this factor, in the first stage, using internal and external research, the factors of corporate social responsibility were extracted. The checklist was validated

Symbol Variable	Type of variable	measure the variable
		using the opinion of the university professors. In the next step, using the final checklist and with data mining in board reports, as well as the corporate site, the corporate governance score was attributed to sample companies (the criteria that the company followed received the number one, the criteria not reported in the reports received zero , and the remainder of the scores were obtained from the sum of the numbers divided by all the criteria, which are shown in Table 4). (Author made)
LEV	control	= Total long-term debt and current debt divided by total assets (Jahankhani & Parsaiian, 2003)
Size	control	= Natural logarithm of the amount of assets (Jahankhani & Parsaiian, 2003)
Sale	control	= Rate of sales or revenues changes (Faghani et al.)
ROA	control	= Net profit divided by total assets (Jahankhani & Parsaiian, 2003)
ROE	control	= Amount of net profit divided by equity (Jahankhani & Parsaiian, 2003)

Table 3. Corporate governance checklist[1]

Components	Metrics
Facilitate the process of applying and enforcing rights by stockholders	**Stockholders and stakeholders' rights**
Board of Directors Accountability to Stockholders	
Number of shares of the company in the hands of the board	
Independence and non-compliance of members of risk and accounting committees	
Attendance a board meeting by any member of the board	
Attend committee meetings by any member of the board	
Number of Board members	
Non-conflicts of interest in the positions of the board of directors	
Observe the principle of non-disclosure of confidential information	
Effective board management on executive management	**Board of Directors, its committees and**
Checking the minimum internal control system	
Hassan is a member of the board of directors	

1. Excerpted from the Corporate Governance Letter, 2007

Components	Metrics
Knowledge and skill of board member	**Commitment to Corporate Governance**
Meeting with the Vice-President of Corporate Affairs and Performance Review	
Establishment of an internal audit unit	**Auditing**
Supervision of internal audit by the board	
Fair disclosure of financial position, performance, ownership and corporate governance	**Public disclosure and transparency**
Disclosure of internal control reports	
Timely disclosure of financial status, performance, ownership and corporate governance	
Access to timely and reliable company information	
Presentation of CEO Performance Report	
Creating a website for timely notification	
Presenting the report of the board of directors at least 10 days before the assembly	**Notices**
Provide independent auditor and statutory auditor at least 10 days before the meeting	
Provides information on financial, economic, environmental and social issues in the form of integrated reporting	
Keep confidential information	**Observe ethical conduct of the board**
Reliable and non-discriminatory communication with staff	
Behavior is the same and respectful with the client	
Secrets in dealing with domestic colleagues	**Ethical and ethical behavior of employees**
Respectful behavior with colleagues and superiors	
Non-use of services and facilities for personal purposes	

Table 4. Social responsibility checklist

Components	Metrics[1]
Public health support	
Support for education	
Charitable activities	
Welfare, health and education services to employees	**Cultural**
Religious / Cultural activities	
Environmental education for employees	
Air pollution information	
Support for sports activities	
Recreational, cultural and religious support	
Charity aid	
Commitment to employee affairs	
Commitment to deal with clients	**social**
Commitment to community members	
Social investment (which means investing in sustainable social projects instead of direct charitable donations).	
Legal actions, lawsuits	
Air pollution control	
Prevention of environmental damage, especially water pollution	
Recycling or preventing waste	
Conservation of natural resources	
Having a specific policy in the environmental field	
Environmental Award (i.e. ISO 14000)	**environmental**
Development of green space and landscaping	
Conserving and saving energy	
Investing in environmental projects	
Observing the environmental laws	
Use of renewable resources	
Research and Development	
Product development	
Increasing market share	
Product Quality / ISO	**Products and Services**
Safety and health of the product	
after sales service	
Other products and services	
Union relations	
Subscription to cash profit	**Staff**
Employee participation in decision making	

1. Based on the variables identified by Fakhari et al. (2016), Hasas Yeganeh and Barzegar (2015), Pourali and Hejami (2014) and Hajihah and Sarafraz (2014)

Health and safety of work environment	
Retirement benefits	
Ownership of employee contributions	
The ethical health of the staff environment	
Attention to commitment, expertise and competence	
Number of employees (statistics on the employment increase)	
Monthly salary or cash bonus and benefits	
The health of the customers	
Customer satisfaction	**Customers**
Providing facilities and services to customers	
Meeting customers' needs	

Statistical Sample

The statistical population of this research project comprised of all companies accepted in the Tehran Stock Exchange.

An example of this includes the companies admitted to the Exchange during the years 2011 to 2017 that have the following conditions:

A) Playing an active role in the stock market since the beginning of 2011 and remain in the stock exchange until 2017 (companies that have been admitted to the exchange since 2012 are not included in the sample);

B) Since the stock returns are seen as one of the major variables in the current research, there are no defaulting companies for more than 4 months in the research period;

C) Completing the comparison of their fiscal year to the end of March;

D) Not being among insurers, banks, investment and financial intermediation (due to the different nature of the activity and the different presentation of financial statements);

E) Not changing the financial year during 2011-2017 period (If a company did so, it would be removed from the sample inevitably due to the impossibility of comparing with other companies):

F) Availability of All information required by the company;

G) Provision of the financial information at the end of July 2017 for the 2017fiscal year:

Based on these conditions, 194 companies were selected as sample companies.

Data Analysis

Descriptive statistics and unit root tests

The descriptive statistics of this study, which contains an introduction to the distribution of observations, are summarized in Table 5. The results demonstrate that the research data are appropriately consistent with inferential statistics and research hypotheses. Unit root test of variables, i.e. whether the time series variable is non-constant and has a single root, is also provided. The zero hypothesis is generally defined as the existence of a single root.

Table 5. Descriptive statistics and maneuverability test of research variables

Symbol Variables	CG	CMA	CSR	HML	LEV	RIRF	RMRF	ROA	ROE	SALE	SIZE	SMB	WML
Mean	0.39	-0.00	0.19	-0.02	0.61	-0.08	-0.05	0.35	0.21	0.09	6.09	-0.00	0.01
Median	0.40	-0.00	0.19	-0.00	0.60	-0.15	-0.03	0.11	0.17	0.02	6.01	-0.00	0.01
Maximum	0.70	0.01	0.67	0.01	3.06	1	0.92	1.50	0.69	1	8.28	-0.00	0.02
Minimum	0.10	-0.01	0.00	-0.12	0.00	-1	-0.84	-0.30	-0.19	-1	0.00	-0.012	-0.01
Std. Dev.	0.13	0.01	0.14	0.04	0.31	0.57	0.48	0.53	0.24	0.45	0.78	0.00	0.01
Skewness	-0.05	0.36	0.47	-1.44	2.13	0.62	0.57	1.23	0.07	-0.13	-1.56	-0.36	-1.39
Kurtosis	2.38	1.75	2.41	3.75	14.10	2.518	3.4	3.17	1.57	3.34	17.78	1.38	4.06
Levin, lin & chu	-41	-43	-17	-18	-16	-61	-34	-211	-2374	-42	-43	-27	-24.92
Prob.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

The table below shows that the absolute value of the average risk premium of the companies (0.08) is greater than the absolute value of the average risk premium of the market (0.05). Also, the standard deviation of the risk premium of the surveyed companies (0.57) is higher than the market risk (0.48), which indicates the higher dispersion of the risk premium of the companies under study. The maximum corporate governance variable is 0.7, which is attributable to one of the pharmaceutical companies. This reflects the efforts of some companies to establish a fairly complete corporate governance framework against companies with a CG value of 0.1. The maximum corporate social responsibility variable is 0.67, which is linked to one of the pharmaceutical companies. In addition, this table shows all variables using the Levine, i.e.

unit root tests, and there is no requirement for a Cointegration test. Therefore, the problem of regression dishonesty will not exist.

Variance Inflation Factors test

Collinearity is a situation that indicates an independent linear function of other independent variables. If the linearity is higher than 10, then there is a high correlation between the independent variables, and they may not be highly valid despite the high R^2.

Table 6. Results of VIF test

ROE	ROA	Sale	Size	LEV	CG*CSR	CSR	CG	CMA	WML	HML	SMB	RMRF	**models**
1.83	1.98	1.01	1.07	1.10	14.06	10.69	3.64	-	-	-	-	1.01	**The first model**
1.84	1.99	1.01	1.08	1.10	14.07	10.69	3.64	-	-	1.39	2.72	2.55	**Second model**
1.85	1.99	1.01	1.08	1.10	14.07	10.69	3.64	-	1.45	1.40	3.60	3.35	**The third model**
1.86	1.99	1.02	1.10	1.10	14.07	10.70	3.65	4.89	2.15	2.33	3.69	6.69	**Fourth model**

Table 7 shows that CSR and CG * CSR variables are collinear with other variables, so it is not possible to fit all variables into a model according to the initial models of the research, and should model these variables separately. The initial research models are as follows.

Table 7. Research models

Model	Hypothesis number	Model name
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 CG_{it} + \beta_5 LEV_{it} + \beta_6 Size_{it} + \beta_7 Sale_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon it$	1-1	**Market model**
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_3 CSR_{it} + \beta_5 LEV_{it} + \beta_6 Size_{it} + \beta_7 Sale_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon it$	2-1	
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_4 CG_{it}*CSR_{it} + \beta_5 LEV_{it} + \beta_6 Size_{it} + \beta_7 Sale_{it} + \beta_8 ROA_{it} + \beta_9 ROE_{it} + \varepsilon it$	3-1	
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 CG_{it} + \beta_7 LEV_{it} + \beta_8 Size_{it} + \beta_9 Sale_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \varepsilon it$	1-2	**Three factor model**
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_5 CSR_{it} + \beta_7 LEV_{it} + \beta_8 Size_{it} + \beta_9 Sale_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \varepsilon it$	2-2	

$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_6 CG_{it}*CSR_{it} + \beta_7 LEV_{it} + \beta_8 Size_{it} + \beta_9 Sale_{it} + \beta_{10} ROA_{it} + \beta_{11} ROE_{it} + \varepsilon it$	3-2	
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_5 CG_{it} + \beta_6 LEV_{it} + \beta_7 Size_{it} + \beta_8 Sale_{it} + \beta_9 ROA_{it} + \beta_{10} ROE_{it} + \varepsilon it$	1-3	**four factor model**
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_6 CSR_{it} + \beta_8 LEV_{it} + \beta_9 Size_{it} + \beta_{10} Sale_{it} + \beta_{11} ROA_{it} + \beta_{12} ROE_{it} + \varepsilon it$	2-3	
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_7 CG_{it}*CSR_{it} + \beta_8 LEV_{it} + \beta_9 Size_{it} + \beta_{10} Sale_{it} + \beta_{11} ROA_{it} + \beta_{12} ROE_{it} + \varepsilon it$	3-3	
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_5 CMA_{it} + \beta_6 CG_{it} + \beta_9 LEV_{it} + \beta_{10} Size_{it} + \beta_{11} Sale_{it} + \beta_{12} ROA_{it} + \beta_{13} ROE_{it} + \varepsilon it$	1-4	**five factor model**
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_5 CMA_{it} + \beta_7 CSR_{it} + \beta_9 LEV_{it} + \beta_{10} Size_{it} + \beta_{11} Sale_{it} + \beta_{12} ROA_{it} + \beta_{13} ROE_{it} + \varepsilon it$	2-4	
$R_{it} - R_{ft} = \alpha_i + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_{it} + \beta_3 HML_{it} + \beta_4 WML_{it} + \beta_5 CMA_{it} + \beta_8 CG_{it}*CSR_{it} + \beta_9 LEV_{it} + \beta_{10} Size_{it} + \beta_{11} Sale_{it} + \beta_{12} ROA_{it} + \beta_{13} ROE_{it} + \varepsilon it$	3-4	

Fit research models

As shown in Table 8, at first, the chow tests (Row 18) for all models and the meaning of that model are estimated to be pooling. In addition, the following table shows that the components of the disruption are normal (mean of zero disruption components, row 20) due to the heterogeneity of the variances of the EGLS model for the model estimation (row 22). Considering the significance of the F statistics (row 15), it can be said that the fitted models are all meaningful and because the DW statistics (row 16) are numbers between 1.5 and 2.5, we can say that there is no correlation between the components of the disturbance.

Table 8. Results of the research models

Five-factor model			Four-factor model			Three-factor model			Market model			Models	No.
3-4	2-4	1-4	3-3	2-3	1-3	3-2	2-2	1-2	3-1	2-1	1-1	Coefficient (Prob.)	
0.41 (0.01)	0.4 (0.01)	0.44 (0.01)	0.5 (0.01)	0.49 (0.01)	0.51 (0.01)	0.4 (0.02)	0.39 (0.01)	0.4 (0.02)	046 (0.04)	0.5 (0.01)	0.46 (0.04)	α_i	1
0.75 (0.00)	0.75 (0.00)	0.75 (0.00)	0.58 (0.00)	0.57 (0.00)	0.58 (0.00)	0.65 (0.00)	0.65 (0.00)	0.65 (0.00)	0.67 (0.00)	0.67 (0.00)	0.67 (0.00)	RMRF	2
11.08 (0.55)	10.9 (0.56)	10.93 (0.56)	8.91 (0.50)	8.66 (0.52)	8.81 (0.52)	5.8 (0.48)	5.44 (0.55)	5.54 (0.52)	-	-	-	SMB_{it}	3
3.26 (0.01)	3.26 (0.01)	3.27 (0.01)	1.88 (0.01)	1.88 (0.01)	1.87 (0.01)	1.47 (0.01)	1.52 (0.02)	1.64 (0.01)	-	-	-	HML_{it}	4
6.64 (0.02)	6.63 (0.02)	6.73 (0.02)	2.74 (0.22)	2.75 (0.22)	2.76 (0.22)	-	-	-	-	-	-	WML_{it}	5
9.12 (0.13)	9.10 (0.14)	9.30 (0.13)	-	-	-	-	-	-	-	-	-	CMA_{it}	6

No.	Models	Market model		Three-factor model			Four-factor model			Five-factor model	
	Coefficient (Prob.)	1-1	2-1	3-1	1-2	2-2	3-2	1-3	2-3	3-3	1-4	2-4	3-4
7	CG_{it}	0.03 (0.02)	-	-	0.08 (0.03)	-	-	0.09 (0.02)	-	-	0.13 (0.01)	-	-
8	CSR_{it}	-	0.21 (0.00)	-	-	0.06 (0.03)	-	-	0.08 (0.02)	-	-	0.04 (0.04)	-
9	CG*CSR	-	-	0.09 (0.04)	-	-	0.26 (0.04)	-	-	0.25 (0.04)	-	-	0.23 (0.01)
10	LEV	-0.01 (0.66)	-0.01 (0.48)	-0.01 (0.67)	-0.05 (0.44)	-0.05 (0.40)	-0.05 (0.38)	-0.04 (0.52)	-0.05 (0.47)	-0.05 (0.47)	-0.07 (0.39)	-0.07 (0.40)	-0.07 (0.38)
11	Size	-0.09 (0.16)	-0.08 (0.16)	-0.08 (0.17)	-0.06 (0.18)	-0.06 (0.18)	-0.06 (0.18)	-0.08 (0.12)	-0.08 (0.12)	-0.08 (0.12)	-0.05 (0.09)	-0.05 (0.09)	-0.05 (0.09)
12	Sale	0.00 (0.23)	0.00 (0.22)	0.00 (0.28)	0.03 (0.01)	0.04 (0.00)	0.04 (0.01)	0.06 (0.00)	0.06 (0.00)	0.06 (0.00)	0.07 (0.00)	0.07 (0.00)	0.07 (0.00)

No.	Models	Market model		Three-factor model			Four-factor model			Five-factor model		
	Coefficient (Prob.)	1-1	2-1	3-1	1-2	2-2	3-2	1-3	2-3	3-3	1-4	2-4	3-4
13	ROA	0.13 (0.01)	0.13 (0.01)	0.13 (0.01)	0.13 (0.00)	0.14 (0.00)	0.13 (0.00)	0.14 (0.00)	0.14 (0.00)	0.14 (0.00)	0.13 (0.00)	0.14 (0.00)	0.14 (0.00)
14	ROE	-0.07 (0.04)	-0.06 (0.04)	-0.07 (0.04)	0.02 (0.61)	0.001 (0.90)	0.01 (0.70)	0.01 (0.90)	-0.002 (0.97)	0.004 (0.95)	-0.02 (0.74)	-0.03 (0.71)	-0.03 (0.71)
15	F (Prob.)	5.33 (0.00)	5.77 (0.00)	5.3 (0.00)	5.17 (0.00)	5.21 (0.00)	5.20 (0.00)	3.63 (0.00)	3.63 (0.00)	3.64 (0.00)	3.59 (0.00)	3.58 (0.00)	3.59 (0.00)
16	D-W	2.42	2.42	2.42	2.42	2.41	2.42	2.44	2.44	2.45	2.43	2.43	2.43
17	R^2	0.47	0.499	0.478	0.475	0.477	0.476	0.389	0.390	0.390	0.388	0.388	0.388
18	chow (Prob.)	0.43 (1)	0.43 (1)	0.43 (1)	0.45 (1)	0.45 (1)	0.45 (1)	0.45 (1)	0.45 (1)	0.45 (1)	0.44 (1)	0.44 (1)	0.44 (1)

No.	Models	Market model			Three-factor model			Four-factor model			Five-factor model	
	Coefficient (Prob.)	1-1	2-1	3-1	1-2	2-2	3-2	1-3	2-3	3-3	1-4	2-4	3-4
19	Result	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D	Pool.D
20	(Prob.) (mean=0)	1	1	1	1	1	1	1	1	1	1	1	1
21	Result	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
22	$\delta 2 = 1$ (Prob.)	38683 (0.00)	28680 (0.00)	28680 (0.00)	28677 (0.00)	28674 (0.00)	28671 (0.00)	28384 (0.00)	28386 (0.00)	28377 (0.00)	28442 (0.00)	28448 (0.00)	28447 (0.00)
23	Result	EGLS	EGLS	EGLS	EGLS	EGLS	EGLS	EGLS	EGLS	EGLS	EGLS	EGLS	EGLS

As shown in Table 8, row 2 represents the market risk factor for each of the pricing models. In addition to the finding that this value is significant in all the models, this value in the five-factor model is more than any other model. Row 3 indicates the meaninglessness of the factor of size in all pricing models. Row 4 suggests that the effect of the book value to market value factor on the firm value in the five-factor model is higher than other models. Row 5 shows that the impact of the momentum factor on the firm

value in the five-factor model is more than the other models. Row 6 indicates the effect of the investment factor on stock returns, which has a significant and strong effect in this study. The table above also shows that the effect of corporate governance on the value of the company is higher in the five factor model, while the impact of social responsibility on the value of the company is high in the single-factor market model. The interactive effect of corporate governance and social responsibility on the company's value in the three-factor model is more than other models. Comparing the four-model determination coefficient (row17), it can be concluded that in general, the explanation of the market model has been more than fresh ones.

Discussion and Conclusion

The purpose of this research is to investigate the effect of corporate governance and social responsibility as well as their interactive effect on the value of companies listed in the Tehran Stock Exchange. The test of the relationship between these variables was performed in the form of capital asset pricing models.

The results of the first hypothesis test indicated that there was a significant and positive relationship between corporate governance and company value within the framework of pricing models for single-factor capital assets (market model), three-factor Fama and French model, Carhart four-factor model, and five-factors Fama and French model. This implies that the value of the company will increase if the company establishes corporate governance principles. This increase can be understood with the point that as the company's corporate governance, stockholders' equity, and their satisfaction increase, they will tend to buy more shares and also to offer shares to their customers. This increase in purchases will increase stock prices and ultimately increase stock returns and the company's value. On the other hand, if the company needs to raise capital through its stockholders' cash flow to finance itself, it can do it to the satisfaction of the stockholders more easily and quickly. The results in this section confirm the research carried out by Nesbitt, Outslay, and Persson and Khodadadi and Taker (2012).

It is recommended to managers that in the current competitive era when all companies are trying to attract as many customers as possible, they need to increase the value of their company, through paying particular attention

to the establishment of corporate governance in the company, which will both protect their interests and the interests of stockholders whose representation costs can be reduced this way.

The results of the second main hypothesis test showed that there is a significant and positive relationship between CSR and company's value in the framework of single-factor capital market pricing model, three-factor Fama and French model, Carhart four-factor model and the five-factor Fama and French model. This means that the fulfillment of the company's responsibility towards society in the best way in areas such as charity, education, environmental protection to all personnel and the obligation to stay by its commitment to deal with clients, preserving natural resources, recycling of waste, safety and product safety, increasing the employment statistics, etc. can increase the value of the company by increasing the buyers' share and increasing the stock price of the company. The results of this section confirm the previous research projects carried out in this area, including Darabi, Waqfi and Salmanian (2016), Akbari, Ghasemi Shams and Hushmand (2015), Singh et al. (2017), and Nesbitt, Outslay and Persson (2016).

Managers are advised to increase the value of the company, given that at this time companies are seeking to create lasting competitive advantages, to carry out community duties. Moreover, all stakeholders in the social responsibility urge for an increased focus on individuals outside the organization and the community and those who are not stockholders of the company. This can be a kind of marketing and indirect advertising for the company and shares of the company, thereby increasing the number of stockholders and increasing the value of the company.

The results of the third main hypothesis test showed that with regard to the interactive effect of corporate governance and social responsibility on the company value, there is a meaningful and positive relationship among the one-factor capital asset pricing models (market model), three-factor Fama and French model, Carhart four-factor model and five-factor Fama and French model. This means that when a company simultaneously deploys corporate governance and its social responsibility, it increases the value of the company through the greater satisfaction of all stakeholders in the company. Investigating the interactive effect of corporate governance

and social responsibility on the value of the company has not been studied so far and is one of the innovations of this research.

It is recommended to managers to increase the value of the company through the establishment of corporate governance, take on corporate social responsibility and carry out all their duties in order to be able to increase the value of their company by creating a sustainable competitive advantage over their competitors.

Comparing different models of capital asset pricing, with each considering certain variables to be effective on stock returns, the study concluded that the single-factor model of capital asset pricing, which is the only factor affecting market efficiency, helps the company's stock to return an explanatory power (R2) higher than any other model. However, it is argued that other models do not differ much in explanatory terms with this model, and are close to each other in the explanatory terms. Based on the results of this research, it can be said that the inclusion of factors such as rankings by size, book value to market value, attention to the division of companies into winners and losers, as well as the amount of investment, have little effect on the relationship between corporate governance, social responsibility and the interactive effects of these two variables on the company value.

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