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The Effects of Firms' Board Gender Diversity on Their Financial Statement Fraud by the Considering Role of State Ownership

Ramin Zeraatgari [1*], Ali Hadavi [2], Masoumeh Hasanzadeh Badeli [3]

Abstract
In this paper, the effects of firms' board gender diversity on their financial statements fraud are examined by considering the role of state ownership. Using a logistic regression model, the role of female managers in financial statement fraud is examined for Iranian listed companies from 2013 to 2022. The methodology of this study is a quantitative and ex-post and the sample of this research is related to 153 companies on the TSE. The results of research regression analysis showed that there is a negative and significant relationship between firms' board gender diversity and their financial statements fraud. The results also showed that in the group of non-state firms, there is a negative and significant relationship between firms' board gender diversity and their financial statements fraud, but this relationship is not significant in the group of state-owned firms. According to the research findings, legislators and corporate supervisors should pass laws to encourages corporate gender diversity or requires the minimum number of female directors. Policymakers must also consider the nature of companies' ultimate controllers; because state control over companies has conflicting effects on the regulatory effectiveness of board gender diversity.
Keywords: *Gender diversity, financial statement fraud, State ownership, Woman managers.*

Introduction

Financial statement fraud has received wide attention from the public, the press and regulators. The high-profile scandals, such as Enron, Qwest and Lehman Brothers, triggered a decline in public trust in capital markets (Throckmorton et al., 2015; Keshtkar et al., 2024). Being a large and developing economy in the world, Iran also had a series of financial statement fraud cases during the last decade, resulting in an unparalleled crisis of investors' confidence. Now, financial statement fraud is a major concern for investors in Iran and the Iranian regulators face the severe challenge of addressing this misconduct (Wang et al., 2022). According to US Statement No. 99, fraudulent financial reporting refers to intentional misrepresentation in financial reports to mislead users of financial reports. This issue leads to a situation where financial reporting is not presented in all important aspects in accordance with accepted accounting principles (Zhu & Gao, 2011). Prior studies on fraud focus extensively on the factors contributing to fraud commission or detection. For example, a smaller board is more effective in monitoring managers (Sun et al., 2010). Companies with CEO duality increase the tendency to cheat (Chen et al., 2006). Also, if the company's financial reports are reviewed by major auditing firms, the possibility of fraudulent financial reporting decreases (Lennox & Pittman, 2010). In addition, as the increases of independent directors' networking, the probability of fraud detection decreases (Kuang & Lee, 2017). Since the board of

1*. Assistant Professor of Accounting, Department of Accounting, Faculty of Management and Economics, University of Sistan and Baluchestan, Iran. (Corresponding Author: ramin@acc.usb.ac.ir)
2. Ph.D Student, Department of Accounting, Sari Branch, Islamic Azad University, Sari, Iran
3. Department of Accounting, Sari Branch, Islamic Azad University, Sari, Iran

directors is responsible for corporate governance and supervision, researchers investigate and study the characteristics of the firms' board of directors; Among these characteristics is the gender diversity of the board of directors, whose effects on the behavior and performance of companies have been studied. Previous literature suggests that companies with female leaders have better corporate performance and higher governance quality (Adams & Ferreira, 2009; Liu et al., 2014; Francis et al., 2015; Low et al., 2015; Adhikari et al., 2019; Liu & Zho, 2024). Based on this, legislators want more women in leadership roles in companies (Liu, 2018; Martinez-Garcia et al., 2024). These suggestions create the need to better understand the benefits of board gender diversity regarding corporate governance and oversight, including dealing with corporate fraud. However, very few studies have focused on the effects of female corporate leaders on financial statement fraud, especially in emerging economies where little information on fraud is publicly available. The findings of this research are expected to provide practical and policy implications for the country and other emerging economies. Because it is very important to study the role and function of the presence of women in the board of directors of companies.

In fact, women play an important role in modern society, labor market and economy (NazemiBigoli et al., 2024). Compared to men, working women usually bear the double burden of running the home and workplace (Wang et al., 2022). Due to cultural norms, this burden is doubly heavy for women (Low et al., 2015). As a result, promotion systems are biased towards men and there is a lack of women in senior management teams and boards of directors. The research field of this article is the Tehran Stock Exchange as the country's capital market, which has been developing rapidly, but due to the speed of development, the presence of women is relatively less. Although Iran's economy is one of the most important economies in the world, the participation of women in the board of directors of companies is not very significant; Many companies either do not have a female board of directors or only have one female board of directors. This issue raises the question whether the presence of women in the board of directors can play a beneficial role in corporate supervision and management. To be more precise, the problem of this research is whether the gender diversity of the board of directors has an effect on the amount of fraud in financial statements.

This paper provides an important contribution to the literature. First, it determines the effects of the presence of women in the board of directors on the amount of fraud in financial statements. Second, the current study reduces the ambiguity of the supervisory role of women leaders in companies. Although the presence of women in top management positions is often considered to increase board independence, monitoring, advisory capacity and resource allocation, empirical evidence is mixed and sometimes contradictory (Zalata et al., 2018). According to the differences between the studies, this paper shows that women in the board of directors have a greater ability to prevent and detect possible frauds. Third, this is the first study that examines the relationship between the gender diversity of the board of directors and fraud in financial statements, taking into account the role of state ownership in Iran; Most of the companies active on Tehran Stock Exchange are characterized by centralized ownership structures, and the controlling shareholders are mostly governmental or quasi-governmental institutions. Finally, this paper contributes to the literature on the leadership role of women on the board of directors. The findings of this research support the gender diversity of the board of directors and show that female directors have a more beneficial role, especially in non-governmental companies.

The study is organized as follows: Section 2 discusses the theoretical basis and its hypotheses. Section 3 presents the research methodology. After that, Section 4 provides

major results for our paper. finally, Section 5 is devoted to concluding the paper and describing suggestions for the study.

Literature Review and Hypotheses Development

Upper echelons theory provides insights into women's leadership. This theory states that organizational results are partially determined by the characteristics of top managers (Hambrick & Mason, 1984). Gender diversity can improve board governance decisions and create a beneficial change in board group dynamics; The first section states that by placing managers with diverse skills that may differ between genders, the board is equipped with a broader skill set to deal with different governance challenges (Robinson & Dechant, 1997). The second part also shows that heterogeneous groups with different demographic characteristics behave differently compared to homogeneous groups. In particular, gender diversity has the potential to change group dynamics by influencing cognitive conflicts and cohesion and causing beneficial changes in group thinking and better decision making (Wahid, 2019).

Agency theory also supports the benefits of women's leadership. The board of directors supervise the performance of the managers and reduces the conflict of interests between the manager and the owner in a company. Female managers are better at monitoring activities (Zeraatgari, 2023; Shafiei et al., 2023). There are two main factors that drive different business behaviors resulting from gender diversity: ethical standards and risk preferences (Croson & Gneezy, 2009). From an ethical point of view, previous research shows that women are more morally sensitive than men and are more likely to speak out against unethical behavior and become internal whistleblowers. The reason for this is that men focus on personal success, while women focus on interpersonal relationships and collective goals (Ho et al., 2015). Studies supporting this view show that women are more sensitive to ethical issues in accounting decisions (Cohen et al., 1998; Firoozi nia et al., 2023). Stronger ethical standards of female leaders are expected to translate into stronger ethical leadership that prohibits profit management (Ho et al., 2015).

Another stream of studies focuses on the effect of gender on risk aversion and shows that female leaders in companies are more risk averse than male managers in financial decisions (Croson & Gneezy, 2009; Hanousek et al., 2019; Sayyari et al., 2023). A risk-averse person is less likely to commit financial fraud (Wang et al., 2022). Women are more conservative and usually adopt strategies that avoid the worst consequences (Byrnes et al., 1999). In general, a company's risk level decreases significantly after appointing a female CEO (Martin et al., 2009). In addition, female managers in companies are ready to receive advice from experts, which leads to a reduction in the risks of violating laws and regulations (Wang et al., 2022). Accordingly, with the presence of women on the board of directors, companies are less likely to underestimate the risks of fraud and lawsuits; Therefore, they engage in activities that are aligned with social responsibility and lead to higher financial reporting quality (Liu, 2018; Wahid, 2019).

A growing number of studies have shown that women are more moral and less involved in crime and litigation than men (Adhikari et al., 2019). Female leaders in companies are generally more conservative in financial reporting (Ho et al., 2015) and when female managers are responsible for overseeing financial reporting policies, they are more sensitive to potential lawsuits and default risks (Francis et al., 2015; Liu & Zho, 2024). In addition, managers are more reliable and compliant with rules and regulations when making financial decisions (Beu et al., 2003). Based on this, the first hypothesis of the research can be stated as follows:

H1: The board gender diversity has negative and significant effects on fraudulent financial reporting.

If a state firm has a gender-balanced board of directors, it brings credibility to the

company and reflects the government's efforts for gender equality (Saeed et al., 2016). Female managers in companies may be less likely to break the rules and report accounting irregularities due to their ethically sensitive and risk-taking characteristics (Cumming et al., 2015). However, the regulatory effects of female leaders in companies may be less obvious for the following reasons (Wang et al., 2022):

First, compared to non-state-owned enterprises, the operating objectives of state-owned enterprises (SOE) are to maximize shareholder wealth as well as bear the burden of policymaking. This time politics may negatively affect firm value (Wu et al., 2012a&b). Female leaders in companies may be reluctant to challenge business decisions that have political considerations.

Second, the regulatory effects of female corporate leaders may be weakened in state-owned firms to account for future political promotion. Successful leaders in state-owned enterprises can be rewarded with a promotion to a prestigious job in the government. However, when fraud is detected, senior managers and boards of SOEs may be more likely to be removed, as news of fraud damages the government's image (Wang et al., 2019). This dismissal means the suicide of the political career of the company's leaders.

Some studies have shown that gender diversity is greater in non-SOEs than in the SOEs (Sun & Zhang, 2021). Since the skills and business backgrounds of women leaders in companies are different, NGOs must operate under the strategic leadership of managers with different backgrounds in order to compete with SOEs in a competitive environment. A market-oriented approach in NGOs enables female managers to play a more active role in monitoring. Some studies have also shown that companies with female board of directors are better able to prevent fraud in financial statements, and this case is more evident in non-SOEs (Wang et al., 2022). Therefore, the second hypothesis of the research is presented as follows:

H2: The board gender diversity has a weaker negative and significant effects on fraudulent financial reporting for state-owned firms compared to non-state firms.

Methods

The nature of the current research is in a way that seeks theory testing and intends to provide evidence for strengthening, confirming or improving the shortcomings of a theoretical framework that has already been tested elsewhere, in a new field or geography. Also, this research is among applied researches in terms of its purpose. In this research, the library method is used to collect data and information. To be more precise, the data of this research is based on the financial statements of all companies active on Tehran Stock Exchange. In this regard, the data of all the active companies whose financial year ended at the end of Esfand and which are not classified as financial and investment companies were used. According to the results of searches and surveys, 153 companies were selected as research samples and the data collected through Rahavard Novin software and the official website of Stock Exchange Organization in the period between 2013 and 2022 were used for analysis. became; It should be noted that according to the method of measuring some variables, the data of the year before the investigated period were also used. Research analyzes were also done using SPSS-24 and Eviews-9 software.

Fraud in financial reporting is the dependent variable of this research. In this article, similar to Khajavi and Ebrahimi (2016) and in accordance with Iran's Auditing Standard No. 240 as "Auditor's responsibility in connection with fraud and error in financial statements", signs indicating the possibility of distortions caused by fraud in financial statements are used as follows:

1) Overstatement of inventory, 2) Overstatement of accounts and receivables, 3) Overstatement of fixed assets, 4) Overstatement of investments, 5) Deficit of reserve for doubtful receivables, 6) Deficit of

depreciation, 7) Overstatement of income, 8) Overstatement of profit, 9) Overstatement retained earnings, 10) understatement of accounts and payables, 11) tax reserve deficit, 12) contingent liabilities, 13) employee severance benefit reserve deficit, 14) understatement of expenses, 15) overdue accounts and payables, 16) stagnant inventory, 17) stagnant assets, 18) going concern problems and 19) errors in applying accounting standards related to measurement, recognition, classification, presentation or disclosure.

If any of these signs are present in the adjustment clauses of the annual audit reports of the companies, its value will be equal to one, indicating the possibility of fraudulent reporting, and otherwise, its value will be zero. It should be noted that the audit report of the companies admitted to the Tehran Stock Exchange can be accessed through the Codal website (comprehensive information system for issuers of the Securities and Exchange Organization). In the following, the k-means clustering method is used to separate the sample companies into fraudulent and non-fraudulent companies. Clustering is the assignment of objects to groups (clusters) in such a way that the objects of one cluster are more similar to each other than the objects of different clusters.

The independent variable of this article is the presence of women in the board of directors. Our measure of board gender diversity is similar to previous studies, it is measured through a dummy variable if there are female managers on the board (Sun & Zhang, 2021; Wang et al., 2022); Thus, if female executives are on the board, this variable takes the number one, otherwise, the number zero.

Also, according to the objectives of the study and the proposed literature, the state ownership (SO) variable plays a role as a moderating variable in this article. A dummy variable was used to measure the state ownership variable; So that if the major shareholder is a company, the government or government-affiliated institutions, the number is one and otherwise, the number is zero. Also, in this study, similar to other studies, some factors affecting the possibility of fraudulent financial reporting have been controlled (Wang et al., 2019). The size of the board of directors (Bsize) (the number of board members) affects the effectiveness of monitoring the quality of financial reporting. Larger audit firms can better prevent fraud and increase the quality of financial reporting (Lennox & Pittman, 2010); Based on this, the size of the auditor (Big_Audit) (it is a dummy variable that takes the number one if the auditor of the company is performed by the audit organization or the audit institutions of class A and zero otherwise) as a variable. control is used. In addition, the independence of the board of directors (Busy Board) (the ratio of non-executive board members to the total board members of the company) has been used to measure intra-organizational monitoring. Also, based on previous literature (Donelson et al., 2017; Wang et al., 2019 & 2022), the variables of market value to book value of equity (MTBV), company size (Size), return on total assets (ROA) and financial leverage ratio (Lev) are also controlled.

Considering that in this paper the dependent variable (fraud in financial statements) is not continuous and has only one of two values zero and one, multivariable logistic regression model has been used to test the research hypotheses. The most important feature of the logistic regression model is that it does not need to establish the assumptions of normality and homogeneity of the covariance matrices. In the logistic regression model, chi-square statistic is used to check the overall significance of the regression model. The goodness of fit of the logistic regression model is also checked using Hosmer and Lemshow tests. Also, regarding the significance test of each of the logistic regression coefficients, the Wald statistic is used, which is a chi-square distribution. Finally, in logistic regression, indicators such as Cox-Snell's R2 and Neglekirk's R2 are used to examine the changes in the dependent variable for the change in the independent variables (Peng et

al., 2002). In this regard, the logistic regression model to test of the H1 is as follows:

$$Fraud_{it} = \alpha_0 + \beta_1 Gender_{i,t} + \beta_2 Bsize_{it} + \beta_3 Big\_Audit_{it} + \beta_4 Busy\ Board_{it} + \beta_5 MTBV_{it} + \beta_6 Size_{it} + \beta_7 ROA_{it} + \beta_8 Lev_{it} + \sum Industry + \sum Year + \varepsilon_{it} \quad (1)$$

where Fraud and Gender are financial statement fraud and board gender diversity measures, as defined above.

The rest of the variables of the model are the control variables, the way of their measurement is explained above. If the β1 coefficient is significant, we can talk about not rejecting the H1. Similar to previous studies, the subgroup method was used to test the H2 (Wang et al., 2022). In this way, to test this hypothesis, first, the companies are divided into two groups of state and non-state ownership, and the above regression model is implemented in both groups independently. Then, according to the results obtained from the tested patterns in each of the subgroups, it is discussed whether or not to reject the second hypothesis; If the coefficient of the independent variable is significant in both groups to be compared, the Paternoster's test is used to compare the strength of the coefficient of this variable in the two groups (Paternoster et al., 1998).

Results

In this section, the findings obtained from the analysis of the paper are presented. Table 1 shows the descriptive statistics of all variables used. According to the information in this Table, the average variable of fraud in financial statements (Fruad) shows that about half of the studied cases (50.7%) had the possibility of fraudulent financial reporting, which is relatively significant. The amount of statistics related to the variables of board gender diversity (Gender) and state ownership (SO) also indicate that in the studied companies, about 24.7 percent of the cases have a female board of directors and 36.5 percent of them had a state ownership structure. The information related to other features of the board of directors (the size of the board of directors (Bsize) and the board independence (Busy Board)) also show that on average there were usually about 5 members of the board of directors of the companies and in about 60% of they have no executive responsibility in the company. The information related to the control variables of the ratio of market value to the book value of equity (MTBV) and the ratio of return on total assets (ROA) indicate that on average the market value of the studied companies was 2.957 times their book value and they have a profitability of about 19.3% of their total assets. Finally, based on the information related to the financial leverage ratio (Lev) variable, it can be said that more than half of the assets of the studied companies (69.7 percent) are financed from debt.

Table 1.
Descriptive statistics of research variables

Variables	Min	Max	Mean	S.D.
Fraud	0	1	0.507	0.500
Gender	0	1	0.247	0.374
SO	0	1	0.365	0.473
Bsize	3	9	5.423	0.947
Big_Audit	0	1	0.419	0.437
Busy Board	0.111	0.857	0.606	0.244
MTBV	-1.743	9.793	2.957	1.184
Size	10.756	15.236	12.839	1.839
ROA	-0.259	0.583	0.193	0.119
Lev	0.074	1.148	0.697	0.189

In the continuation of this section, the results related to the reliability check of the research variables in order to ensure the non-falsity of the regression model and the

regression findings related to the testing of the hypotheses are presented. The results of the reliability of the research variables using Levin, Lin and Chu, Im, Pesaran and Shin, Dickey Fuller adjusted and Phillips Perron unit root tests are presented in Table No. 2. According to the information in this Table, in all independent, dependent, moderating and control variables, the level of significance in the unit root tests of Levin, Lin and Chu, Im, Sons and Shin, Dickey Fuller adjusted and Phillips Perron is smaller than 0.05. It indicates that the variables are stable.

Table 2.
The results of the reliability test of research variables

	Levin, Lin and Chu test		**Im, Pesaran and Shin test**		**Dickey Fuller adjusted test**		**Phillips Perron test**	
Variables	**Amount**	**Sig.**	**Amount**	**Sig.**	**Amount**	**Sig.**	**Amount**	**Sig.**
Fraud	-36.973	0.000	-22.111	0.000	1115.35	0.000	1455.49	0.000
Gender	-37.353	0.000	-17.602	0.000	962.027	0.000	1161.64	0.000
SO	-58.301	0.000	-21.999	0.000	1039.33	0.000	1215.64	0.000
Bsize	-54.062	0.000	-23.652	0.000	1089.75	0.000	1416.45	0.000
Big_Audit	-29.802	0.000	-9.044	0.000	640.506	0.000	673.026	0.000
Busy Board	-59.383	0.000	-18.358	0.000	588.318	0.000	677.438	0.000
MTBV	-43.238	0.000	-22.361	0.000	2550.62	0.000	2573.94	0.000
Size	-30.215	0.000	-17.358	0.000	923.749	0.000	1215.01	0.000
ROA	-362.438	0.000	-23.204	0.000	478.122	0.000	566.279	0.000
Lev	-65.678	0.000	-13.177	0.000	427.538	0.000	502.871	0.000

Table 3 shows the results related to the test of the H1 to investigate the effects of board gender diversity on fraud in financial statements. As the above Table shows, the amount of chi-square statistic and the level of significance related to this statistic indicate the significance of the whole model. The significance level related to Hosmer and Lemshow's statistic indicates the appropriate fit of the model with the actual observations (goodness of model fit). Cox-Snell's R^2 and Neglekirk's R^2 indices in the model are 32.8% and 48.3%, respectively, which indicate the appropriate predictive power of the model; This means that the independent and control variables are able to predict the dependent variable of this research well. Also, according to the value of the parent statistic and the level of significance listed in Table 3, it can be seen that there is a significant negative relationship between the board gender diversity and fraud in the financial statements. Hence, the H1 is accepted. Also, the results of the control variables show that there is a significant negative relationship between the board size, board independence, the auditor size and the firm size with fraud in financial statements. In addition, the relationship between financial leverage ratio and fraud in financial statements is positive and significant. While there is no significant relationship between the ratio of market value to book value of equity and fraud in financial statements.

Table 3.
Regression results related to the H1

Variables	**β**	**Wald**	**Sig.**
Gender	-0.456	14.836	0.000*
Bsize	-0.361	16/424	0.000*
Big_Audit	-0.197	10.966	0.000*
Busy Board	-0.410	15.007	0.000*
MTBV	-0.087	0.736	0.587
Size	-0.112	14.578	0.000*
ROA	-0.207	11.947	0.000*

Variables	**β**	**Wald**	**Sig.**
Lev	0.121	19.088	0.000*
C	-7.436	16.258	0.000*
Chi- square	Sig.	Hosmer and Lemshow	Sig.
347.528	0.000*	6.472	0.119
R^2- Neglekirk	R^2-Cox-Snell	Year fixed effects	Industry fixed effects
0.483	0.328	Yes	Yes
Note: * indicate statistical significance at the 0.01.			

Tables 4 and 5 show the results related to the test of the H2 to investigate the effects of board gender diversity on fraud in financial statements, taking into account the role of state ownership. In Table 4, the results of the regression model of the research in the group of state ownership are presented. According to the information in this Table, the amount of chi-square statistic and the level of significance related to this statistic indicate the significance of the whole model. The significance level related to Hosmer and Lemshow's statistic indicates the appropriate fit of the model with the actual observations (goodness of model fit). Cox-Snell's R^2 and Neglekirk's R^2 indices in the model are 29.4% and 37.9%, respectively, which indicate the appropriate predictive power of the model; This means that the independent and control variables are able to predict the dependent variable of this research well. Also, according to the value of the parent statistic and the level of significance reported in Table 4, there is no significant relationship between the board gender diversity and fraud in financial statements in the group of state-owned companies. Also, the results of the control variables in the group of state-owned companies show that there is a significant negative relationship between the board size, board independence, auditor size and the firm size with fraud in financial statements. In addition, the relationship between financial leverage ratio and fraud in financial statements is positive and significant. While there is no significant relationship between the ratio of market value to the book value of equity and the ratio of return on total assets with fraud in financial statements.

Table 4.
Regression results related to the H2: SEOs group

Variables	β	Wald	Sig.
Gender	-0.025	0.328	0.846
Bsize	-0.263	11.435	0.000*
Big_Audit	-0.205	8.596	0.000*
Busy Board	-0.359	15.382	0.000*
MTBV	-0.063	0.594	0.647
Size	-0.249	17.048	0.000*
ROA	-0.097	1.864	0.375
Lev	0.407	27.246	0.000*
C	-13.048	14.642	0.000*
Chi- square	Sig.	Hosmer and Lemshow	Sig.
76.847	0.000*	7.958	0.208
R^2- Neglekirk	R^2-Cox-Snell	Year fixed effects	Industry fixed effects
0.379	0.294	Yes	Yes
Note: * indicate statistical significance at the 0.01.			

In Table 5, the results of the regression model for testing the H2 in the group of non-state companies are presented. According to the information in this Table, the amount of chi-square statistic and the level of significance related to this statistic indicate the significance of the whole model. The significance level related to Hosmer and Lemshow's statistic indicates the appropriate fit of the model with the actual observations

(goodness of model fit). The values of Cox-Snell's R^2 and Neglekirk's R^2 indices in the model are 31.8% and 44.7%, respectively, which indicate the appropriate predictive power of the model; This means that the independent and control variables are able to predict the dependent variable of this research well. Also, according to the value of the parent statistic and the level of significance shown in Table 5, it can be seen that there is a significant negative relationship between the board gender diversity and fraud in financial statements in the group of non-state companies. Comparing the results of Tables 4 and 5 shows that the board gender diversity has significant negative effects on fraud in financial statements only in the group of state-owned companies. Therefore, it can be said that the H2 is also accepted. It should be noted that due to the non-significance of the negative coefficient of the board gender diversity variable in the group of state companies, there was no need to compare the coefficient of this variable in two groups of government and non-state companies (Tables 4 and 5) using the Paternoster's test. Also, the results of the control variables show that there is a significant negative relationship between the board size, board independence, auditor size and firm size with fraud in financial statements. In addition, the relationship between financial leverage ratio and fraud in financial statements is positive and significant. While there is no significant relationship between the ratio of market value to book value of equity and fraud in financial statements.

Table 5.
Regression results related to the H2: Non-SOEs group

Variables	B	Wald	Sig.
Gender	-0.508	15.948	0.000*
Bsize	-0.492	12.543	0.000*
Big_Audit	-0.418	8.357	0.000*
Busy Board	-0.296	17.118	0.000*
MTBV	-0.094	0.692	0.326
Size	-0.320	17.504	0.000*
ROA	-0.238	13.947	0.000*
Lev	0.184	14.528	0.000*
C	-3.584	15.738	0.000*
Chi- square	Sig.	Hosmer and Lemshow	Sig.
153.372	0.000*	9.183	0.246
R^2- Neglekirk	R^2-Cox-Snell	Year fixed effects	Industry fixed effects
0.447	0.318	Yes	Yes

Note: * indicate statistical significance at the 0.01.

Discussion and Conclusion

The topic of gender diversity has gained much popularity over the past decade. Women are more risk averse and ethically sensitive than men. This study examines the relationship between gender diversity and financial statement fraud in Iranian listed companies between 2013 and 2022. In addition, the role of the state ownership structure has also been analyzed. The results show that female managers are associated with a higher ability of fraud detection, reducing firms' propensity to engage in fraud. Hence, gender diversity improves financial reporting quality. This finding is in accordance with the theory of upper echelons, agency theory and research background (Croson & Gneezy, 2009; Liu et al., 2014; Hanousek et al., 2019; Wang et al., 2022). However, among firms with a state-owned background, the monitoring ability of female corporate leaders is significantly reduced. To be more precise, the results of He showed that there is a negative and significant relationship between the board gender diversity and the possibility of fraud in the financial statements in the group of non-SEOs, but this relationship is not

significant in the group of SEOs. This indicates that female managers cannot effectively monitor or detect managers' opportunistic behaviors in the state-owned firms, where political connections between firms and governments are prevalent.

The results of this paper's hypotheses provide important implications for policymakers. First, the findings show that female board members increase the board's monitoring ability and reduce the incidence of financial statement fraud. Therefore, it is important to add women's voices to the management teams of companies, as it reduces the risk of fraud. However, compared to developed countries, the participation rate of women as board members is still low in Iran, and there is a legal weakness in this regard. Based on this, it is suggested that the law-making and supervisory bodies of the companies should encourage and oblige the companies to use the minimum number of female managers by passing laws. Also, Tehran Stock Exchange and Securities Organization can oblige companies to use a certain minimum number of female managers in its corporate governance regulations. Second, based on the results of the second hypothesis of the research, it is suggested that policy makers consider the nature of the final controllers of companies; Because government control in companies has opposite effects on the supervisory effectiveness of the gender diversity of the board of directors. More precisely, reducing government influence and political interference in companies can strengthen the supervisory performance of female board members, and this is an issue that legislators should pay attention to.

This study offers several avenues for future research. First, while female managers can detect fraud more effectively, the channels through which they carry out monitoring activities are not considered. For instance, female managers may become internal whistle-blowers and report fraudulent activities to auditors or regulators (Rothschild & Miethe, 1999). Female managers may utilize meetings with supervisors or internal audit committee members who have expertise in financial reporting to affect other managers' behaviors. It would be interesting to identify the monitoring channels of female corporate leaders for future research. Second, it would be interesting to identify whether there will be different fraud behaviors when female managers actually hold the top positions of listed firms as in power hierarchy plays an overriding role in corporate decision-making.

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