Article

The Effect of Corporate Governance Structure on Fraud and Money Laundering

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Abstract: This paper aims to assess the effect of corporate governance mechanisms, including board members' and audit committee members' characteristics, particularly their independence, expertise in terms of finance and industry and efforts on the level of fraud and money laundering (ML) in financial statements of the listed firm on the Tehran Stock Exchange. The procedure of the study is descriptive correlation based on published information from firms listed on the Tehran Stock Exchange from 2014 to 2020, using a sample of 154 firms with 1071 observations. The method used for hypothesis testing is linear regression using panel data. The Benish model is used measure the level of fraud in financial statements, and for ML, the auditors' opinion are used. The results show that board characteristics, including independence, financial expertise, industry expertise and board effort, as well as audit committee features, such as independence, financial expertise, industry expertise and audit committee effort, have a significant and negative impact on the fraudulent financial reporting and ML. Moreover, since this paper was carried out in an emerging financial market, particularly in Iran, to figure out the effect of corporate governance structures on financial statement fraud and ML, it can provide helpful information for investors and policymakers in this regard.

Keywords: corporate governance mechanisms; fraudulent financial reporting; money laundering; board of directors; audit committee

1. Introduction

Corporate governance is a set of mechanisms for protecting investors outside the organization against inside (Shleifer and Vishny 1997). Among the favorable properties of a powerful corporate governance mechanism to ensure the financial reporting quality is the firm's economic growth (Habib and Jiang 2015). Financial reporting is among the topics that report the management of an operation's financial status to the shareholders. Beneficiaries collect confidential information about the firm, but what is apparent is that if no intervention takes place, managers—especially the CEO—are not motivated enough to present the facts of financial statements, and this is indicative of the personal interests of the management (Caprio et al. 2012). Several firms became bankrupt due to fraud in financial statements, which causes the trustfulness of auditing to be faced with considerable doubt; in these cases, the effect of corporate governance, the honesty of managers and auditors, the impact of internal control, reliability of financial reports and audit quality provide cause for doubt (Rezaee 2005).

In recent violations in large corporations, the structure of corporate governance has been identified as powerful monitoring equipment to preclude dishonest financial reporting

and ML (Law 2011). More than half of the people involved commit fraud, which is more common in financial reporting. Research has shown that corporate governance and its components have the most significant impact when it comes to reducing the level of fraud, which can be explained by the efficiency of corporate governance mechanisms in reducing the possibility of dishonest financial reporting and ML, which improves the reliability of accounting figures (Razali and Arshad 2014). There are several articles related to suspicious ML transactions (Levi et al. 2018; Gilmour 2020; He 2010; Achim et al. 2018; Achim et al. 2021; Cotoc et al. 2021). Today, however, as we face an economic crisis all over the world, this problem needs to be investigated through the lens of corporate governance effectiveness.

Board members have always been proposed as a key element of corporate governance mechanisms. Additionally, the audit committee must also be considered organizational safeguards in this research. This committee assures the honesty of the company's financial situation and can have a tremendous impact on fraud and ML.

Previous studies have shown that the audit committee and the characteristics of the board influence the financial statements. Research has shown that audit committees can reduce the risk of fraud and ML by limiting the inconsistency between financial and non-financial measures (Brazel 2018). If audit quality increases, fraud and ML risks will be reduced; the audit committee will increase the audit quality. Of course, it should be noted that auditors must have specific characteristics, and the auditor's tenure can have a direct impact on fraud and the detection of fraud and ML (Patterson et al. 2019).

The characteristics of the board of directors and their impact on fraud and ML have also been studied in previous studies, including the effect of board members' age on financial fraud in various countries (Xu et al. 2018) and the effect of board members' gender on fraud (Luo et al. 2020).

Fraud and ML are common phenomena in business and, according to Section 24 of the Iranian Auditing Standards, the deceptive act of one or more managers, employees or third parties to enjoy an unfair advantage is an intentional or illegal action. Therefore, the prevention and detection of significant fraud in financial statements have always focused on investors, legislators, standardized managers and auditors. In addition to negatively affecting a country's trade, fraud is one of the most critical obstacles for economic development. It weakens the law, reduces trust in government institutions and challenges democratic principles. Fraud in financial reporting reduces the quality of the data, which reduces the company's profitability and costs its major shareholders. A characteristic of corporate governance is ensuring the quality of financial reporting (Habib and Jiang 2015). Fraud in financial statements is one of the agency's primary and essential issues. Managers, especially those who look at the market with a short-term view, try to improve their personal interests during their tenure. Corporate governance has presented solutions examined in this research as the issue of the audit committee and the board of directors' issue.

In this study, the impact of corporate governance on fraud and ML is examined from two perspectives: the board of directors and the audit committee, each of which will be studied in three dimensions: independence, financial expertise and industry expertise. Past research has shown that the audit committee and the characteristics of the board influence the financial statements. Research has shown that audit committees can reduce the risk of fraud by limiting the inconsistency between financial and non-financial measures (Brazel 2018). In that case, the risk of fraud will be reduced, and the audit committee will enhance the quality of auditing, especially in small companies (Luo et al. 2020); indeed, it should be noted that auditors must have specific characteristics, and the auditor's tenure can have a direct impact on fraud and detection of fraud (Patterson et al. 2019).

Corresponding to the provided definitions, ML remarkably occurs around the national borders through the banks' and large companies' financial activities, because of legitimate, widespread and large amounts of financial transactions, in which these sectors are engaged daily (Johnston and Abbott 2005; Chaikin 2006, 2011, 2017; Tsingou 2010; Zucman 2014). Primarily, ML is defined as the action of turning dirty money, as a result of criminal

activities, into supposedly clean money generated by legitimized resources. The dirty money is mostly made from illegitimate, criminal and illegal actions consisting of trading among insiders, extorting third parties' wealth, gambling, drug and human trafficking, fraudulent financial activities, tax evasion, payola, abuse of public recourses and robbery, all of which are required to be "cleaned" for use in legal and legitimate transactions and financial activities (Van Fossen 2003). Financial related fields of researchers have proposed the banks' and firms' boards of directors and audit committees, as the authorized bodies that monitor the activities of business units under their direction, to be most compatible with anti-ML regulations and programs, resulting in safer and more appropriate financial markets and business environments in general. The board of directors and audit committees are empowered to be notified of complete, accurate and timely information, respecting the transactions or financial activities that are necessary for the daily operation of the business unit. The board of directors are also authorized to dismiss CEOs and appoint others regarding the policy compliance of their horizons to guarantee that the key risk elements are rectified, and designed objectives of profitability and social responsibility are reached. Considering the great financial and economic costs affiliated with ML (for instance, in December 2015, financial crime costs in Australia were valued at about USD 27.40 billion (AUD 36 billion) per year), it is worth investigating the potentialities of corporate governance mechanisms such as the characteristics of the board of directors and audit committees on the anti-ML compliance of companies. In this regard, it is highly recommended that these monitoring and advisory bodies must not only emphasize encouraging their companies to comply with anti-ML programs and regulations, and to preclude heavy fines and reputational loss, but they must also emphasize corporate social responsibility as the secondary responsibility of their corporation, since it is a citizen of the financial community in which they direct businesses and make a profit (Ojah 2014). Therefore, corresponding to the importance of illegal actions contained in ML, a key question that the current paper is seeking to answer might be: may effective corporate governance mechanisms established in listed companies, particularly board of directors' and audit committees' characteristics, possibly reduce or stop illegal money turning into supposedly clean money?

The characteristics of the board and its effect on fraud, including the effect of the age of board members on financial fraud in countries (Xu et al. 2018) and the effect of board gender on fraud (Luo et al. 2020), have also been studied in previous research. However, so far, the research has not examined the impact of corporate governance on fraud and ML of Iranian companies; in this regard, the present study will be significant because the current research can close the research gap in this field and lead to the development of science and related knowledge.

Since ML is an unhealthy economic activity that is self-generated and simultaneously complements other criminal activities, such activity affects not only countries' economies through accounting details (Salehi et al. 2021; Daemigah 2020a), but also has a significant impact on their social and political communications. For this reason, the study of adverse effects and how to resolve them has been on the agenda of economic policy makers and countries' judiciaries. For example, the findings of this study, which documents a positive impact of corporate governance mechanisms pertaining to boards' and audit committees' characteristics on the practiced level of fraud and anti-ML activities, may benefit the macroeconomic policy makers and practitioners to some extent. Although prior researchers have made some efforts to explain the potential impact of financial crime and ML activities on economic and financial variables (Rahmdel 2018; Salehi and Molla Imeny 2019; Molla Imeny et al. 2021; Saeidi 2022), they particularly identified the extent of their detrimental economic and social effects and negative consequences. However, determining the potential role of governing factors such as board and audit committee characteristics has never been previously investigated. Corporate fraud can also shape companies' futures differently, and shareholders can lose out in different ways. In large corporations, financial and reporting fraud may cause stock prices to fall in the long run

or sharply at the end of their CEO's tenure; thus, it may encourage the current CEOs to prevent disclosing the truth of fraudulent accounting. However, large companies are less likely to go bankrupt because of the many corporate and compensating mechanisms they employ. Such a phenomenon is more pronounced in small and medium-sized firms, as the fraudulent financial statements can cause them to go bankrupt, which is very dangerous for shareholders due to their weaker corporate governance and lower ranks in the market. Therefore, it is highly expected that the shareholders of companies seek to improve their corporate governance mechanisms, including employment of board of directors and audit committees with specific characteristics, to prevent fraudulent and ML activities. Considering the above discussions, this study is willing to examine corporate governance mechanisms in several channels. In this regard, it is noticeable that the primary purpose of this study is to answer the question of whether there is a significant relationship between corporate governance and fraud and ML, as well as whether an increase or decrease in corporate governance can reduce or increase fraud and ML in financial statements.

The institutional settings of the Tehran Stock Exchange discriminate this financial market from the other markets developed in the middle east. The most important factors in this regard are Iranian national reporting and accounting standards. While most countries located in the middle east have adopted the IFRS, Iran's business environment must use the reporting standards set by the Iran National Audit Organization. Additionally, the only body authorized to develop accounting, financial reporting and auditing is the Iran National Audit Organization, which is established by domestic laws. Therefore, the different accounting and reporting standards that are accepted by international bodies may provide a different picture of Iranian companies. In this sense, the corporate governance mechanisms established in Iranian companies are probably much weaker compared to other middle eastern countries, because the underlying frameworks and justifications for the IFRS' obligations are designed to improve the reporting quality and fairness, while such frameworks and justifications may be missed or designed at a weaker level in Iranian domestic standards. In addition, due to using English as a common language in reporting systems of middle eastern countries (except for Iran), they have the opportunity to be audited by Big N auditors, whereas Iranian firms are obliged to use only the Persian langue in their reporting and accounting systems, which prevents Big N auditors having Iranian clients. Additionally, the adoption of domestic accounting and reporting standards by Iranian companies strengthens such discrimination, since international auditors are not familiar with the settings of Iran's domestic standards. Collectively, the outcome of this study may significantly benefit Iranian companies, allowing them to overcome the potential detriments of fraud and ML in financial reporting, because these companies are more expected to suffer from weaker corporate governance mechanisms due to using internationally unaccepted accounting and reporting standards.

The remainder of the study is organized as follows. The Section 2 explores the previous literature and discusses the relevant findings, and the hypotheses are developed. In the Section 3, the employed methodology is presented and the process of determining statistical population is elaborated. The descriptive statistics and empirical findings are reported in the Section 4. Finally, the paper is discussed and concluded in the Section 5.

2. Theoretical Principles and Hypothesis Development

According to the findings of prior studies, there are several advantages of an effective corporate governance structure. For example, encouraging the firms to use recognized standards of direction, explaining the requirements of government to the equity owners and improving the capital market efficiency as a more general objective are among the advantages of corporate governance mechanisms (Popescu et al. 2015). Corporate governance mechanisms such as the auditor role were reported to be affected during a crisis (Salehi et al. 2019a). Corporate governance instructions in the context of COVID-19 have been theoretically investigated, mostly in developed countries (Koutoupis et al. 2021). The review of Jebran and Chen (2021) articulates several governance mechanisms helping com-

panies to overcome the COVID-19 crisis. These governance mechanisms are board diversity, risk management committees, foreign investors, independent directors, ownership concentration, institutional ownership, block ownership, CEO's dual roles and family ownership. In addition, Tsagkanos et al. (2022) show that in contrast with financial stress theory, there is a causal relationship between green bonds and financial stress. They recommend green bonds as a corporate governance mechanism. Salehi et al. (2018) also argue that cost stickiness may improve the financial reporting quality.

Because of the board's role, especially in overseeing management, the board's structure is one of the most critical factors determining the efficiency of corporate governance. The board's independence is considered the primary determinant of the board's efficiency. Therefore, a company intending to have good corporate governance plans must ensure its board has this feature. In order to maintain their reputation in the human capital market, independent board members are motivated to monitor the behavior of managers on disclosure manipulation. This, in turn, improves disclosure quality and reduces fraud and ML. Given the particular importance of the independence of board members, the following hypotheses can be considered:

Hypothesis 1. *Board member independence has a negative impact on fraudulent financial reporting.*

Hypothesis 2. *Board member independence has a positive impact on the compliance of anti-ML programs.*

The board needs various skills to oversee management and decision making to increase the company's value. The underlying assumption is that members with no experience in financial or accounting knowledge are less capable of detecting problems in financial reporting. Additionally, having someone with financial experience and expertise can make other members more sensitive and alert (Kaplan and Minton 1994). Managers with more financial expertise may resort to management techniques in financial reporting to improve the company in the long run. Luo et al. (2020) showed that based on psychological and sociological findings, women are more risk averse and ethical than men. We hypothesize that companies with a female CFO are likelier to commit dangerous and immoral fraud than those with male CFOs. Our results support our forecast based on a sample of listed Chinese companies from 2004 to 2014. In addition, we find that the negative association is more pronounced when female CFOs have a higher level of education or foreign employment opportunities. Given the unique impact of the financial expertise of the board members, the following hypotheses can be imagined.

Hypothesis 3. *Having financially expert board members has a negative impact on fraudulent financial reporting.*

Hypothesis 4. *Having financially expert board members has a positive impact on the compliance of anti-ML programs.*

Sun et al. (2012) stated that the board of directors must have various skills and sufficient expertise in accounting, banking, rules and regulations to supervise the company's managers and decisions. In corporate governance, the goal is pursued as an effective and efficient board with the appropriate characteristics and features. Xu et al. (2018) found that CEOs evaluate financial fraud opportunities based on their situational motivations and personal characteristics. Because older managers are usually more experienced and have more to lose if they fail in their supervisory duties, we expect them to be more capable and have a stronger motivation to monitor CEOs closely. Similarly, we suggest that a CEO becomes less prone to corporate financial fraud as the average age of the board members increases (e.g., board age). However, when the CEO is older than the board, the CEO may downplay the age of the board when deciding whether to commit fraud. Salehi et al. (2020) reveal that managerial ability is likely to play a corporate governance role in improving the firm perfor-

mance in terms of investment efficiency in competitive environments. Therefore, we further suggest that the age difference between the CEO and the board can weaken the effect of board age. Thus, the quality of financial information and its transparency are essential for allocating resources efficiently and are considered requirements for economic growth, development and, above all, for financial security (Zimon et al. 2022; Corten et al. 2021; Cherian et al. 2020; Chłodnicka and Zimon 2020). Today, financial statement fraud seriously threatens the transparency and quality of financial information. Corporate governance is the prescription to increase transparency and accountability in the company. Effective corporate governance is expected to prevent and detect fraudulent property. In this regard, the present study intends to review the theoretical concepts and studies conducted in the field of corporate governance as an appropriate model to prevent the risk of fraud in companies, add to the richness of the existing literature in this field and examine the interaction of corporate governance mechanisms, and the possibility of fraud. One of these characteristics is the board having industry expertise, which can affect financial statements and ML, which can be hypothesized as follows:

Hypothesis 5. *Having industry expert board members has a negative impact on fraudulent financial reporting.*

Hypothesis 6. *Having industry expert board members has a positive impact on the compliance of anti-ML programs.*

The efforts of the board members can be attributed to the amount of work and effort, as well as the number of meetings, voluntary disclosure of information and the like, according to which the board's efforts can be measured. These efforts can be effective in financial reporting and the prevention of fraudulent financial statements and ML so that the following hypothesis can be considered:

Hypothesis 7. *Board member efforts have a negative impact on fraudulent financial reporting.*

Hypothesis 8. *Board member efforts have a positive impact on the compliance of anti-ML programs.*

Another issue that has been studied in the field of fraud and corporate governance this study is the issue of the audit committee Takhtani et al. (2011) have considered several characteristics of the audit committee such as independence, effort, expertise, size, tenure and the effectiveness with which all of these can improve financial reporting.

One of the most important features of audit committees that are highly emphasized is the independence of the audit committee. In previous research, the independence of the audit committee was studied as one of the main features related to the audit committee's effectiveness. The independence of the audit committee is often seen as an essential feature influencing the audit committee's effectiveness in the financial reporting oversight process. One of the vital effective features in overseeing financial reporting is the audit committee's independence. It is stated that there is a positive relationship between independence and financial reporting, which is likely to be negative in the case of fraud and ML.

Hypothesis 9. *Audit committee independence has a negative impact on fraudulent financial reporting.*

Hypothesis 10. *Audit committee independence has a positive impact on the compliance of anti-ML programs.*

The professionalism and financial skills of the audit committee members are considered for the audit committee closely related to the audit committee's effectiveness. Studies have shown that audit committee members' skills and professional experience in financial reporting are apparent factors related to the audit committee's effectiveness. Abernathy et al. (2014) considered financial expertise to improve reporting and prevent

fraud. Miko and Kamardin (2015) showed that the independence and financial expertise of the audit committee reduce the manipulation and fraud of financial statements through accruals. Patterson et al. (2019) found that more extended periods improve the quality of audit services. The meta-analysis of Salehi et al. (2019b) shows that specialized auditors are more likely to provide high-quality services, which may also impact their fees (Daemigah 2020b). Advocates of limiting audit tenure discuss that prolonging auditors' independence will undermine the "new look" of the new auditor, leading to increased audit quality. However, figuring out the validity of such an argument demands further investigation into whether the documented variations of the quality of audit services provided by an unswitched auditor and a switched auditor are lower than the required level proposed by theoretical arguments in audit quality literature. Our findings guide the development of such experiments. The obtained results show that the risk of audit (possibility of undetected fraud) in the continuing auditor in both periods is less than the change in auditors. Most importantly, we show that the undetectable fraud predicted for the unchanging auditor is less than the switch in auditors in both periods.

Hypothesis 11. *Having financially expert audit committee members has a negative impact on fraudulent financial reporting.*

Hypothesis 12. *Having financially expert audit committee members has a positive impact on the compliance of anti-ML programs.*

Without a certain degree of expertise, it will be difficult for members of audit committees to understand the financial information required to be evaluated adequately. In addition, managers with a legal profession tend to be more aware of their duties and legal requirements regarding financial reporting. This issue is so important in the world that following the recommendations of the Bolivar bon Committee of the New York Stock Exchange and the National Association of Securities, traders amended their regulations to require the audit committee members to have a certain level of financial literacy and accounting or financial management expertise. Given these issues, the importance of expertise in the industry of the audit committee is evident, and its relationship with financial statements and ML is emphasized; the following hypotheses can be expressed:

Hypothesis 13. *Having industry expert audit committee members has a negative impact on fraudulent financial reporting.*

Hypothesis 14. *Having industry expert audit committee members has a positive impact on the compliance of anti-ML programs.*

In the audit committee literature, several different indicators have been used for the audit committee's efforts, including the number of audit committee meetings, voluntary disclosure of audit committee information, and the like. Various articles and books have examined the relationship between the audit committee's efforts and fraudulent financial reporting, which improves the audit committee's work quality. Brazel (2018) showed that audit committees with industry expert chairs are more likely to be associated with more inconsistencies than audit committees without industry expert chairs. Brazel (2018) concluded that the audit process can limit the risk of fraud, but that all types of audit committee expertise may not be helpful. Financial reporting fraud and preventing it are essential issues many researchers have considered in recent years. Many regulatory factors can affect the prevention and detection of fraud in financial statements, including the board's role, the audit committee and the internal auditor. The audit committee reduces the likelihood of fraud and risks in the organization by determining the company's strategic goals by monitoring the quality and desirability of financial statements, internal control and financial reporting process, and internal audit by reviewing and evaluating the adequacy and effectiveness of internal control systems. This article also defines fraud in financial

statements. It then examines the roles of the board of directors, the audit committee, and the internal auditor in preventing fraudulent financial statements and concludes the relevant discussions. As a result, it can be argued that the audit committee's efforts may affect fraudulent financial statements and ML, which can lead to the following hypotheses:

Hypothesis 15. *Audit committee effort has a negative impact on fraudulent financial reporting.*

Hypothesis 16. *Audit committee effort has a positive impact on the compliance of anti-ML programs.*

3. Research Methodology

3.1. Research Population

This paper considers all companies listed in the Tehran Stock Exchange from 2013 to 2019 as its statistical population. The systematic exclusion process is applied for sampling, in which the final sample is determined, having applied the following factors:

1. Companies must have been registered on the Tehran Stock Exchange since the end of 2011.
2. Companies should constantly be active, and their shares should be transacted during the period of the study (less than 6 months of transaction stopped).
3. Companies must have completely reported the financial figures demanded to develop the current study for the mentioned period.
4. Companies must not be affiliated with investment firms, insurance companies, banks, and other financial intermediaries.

Regarding the data gathered at the end of 2019, the sample is ultimately determined and reported in Table 1.

Table 1. Number of companies in the statistical community and application of conditions for sample selection.

Description	Companies Eliminated in Total Periods	Total Number of Companies
All companies registered on the Tehran Stock Exchange		395
Elimination of financial intermediation, financing, insurance and investment companies	88	
Elimination of companies that have been listed on the stock exchange for the research period	24	
Deleted for lacking access to data (information on the characteristics of the audit committee and board members)	129	
Statistical Society		154

3.2. Data Collection Method

Raw data and materials required to examine the hypotheses are gathered from the database of the official website for the Tehran Stock Exchange, such as Tadbir Pardaz and Rahvard Novin. Additionally, some data are collected through direct referring to the published reports by the Tehran Stock Exchange Organization.

3.3. Data Analysis

The collected data were analyzed through year-by-year and cross-sectional methods (panel data). The current investigation uses the multivariate linear regression model to examine the hypotheses. Primarily, descriptive statistical—and secondarily, inferential statistical—approaches are applied to analyze the observed data. Hence, Table 1 of repetition distribution describes data at the inferential level. Finally, the test of normality, F-Limer

and Hausman tests, and a multivariate linear regression approach are applied to examine the hypotheses of this paper.

3.4. Research Model

Model (1) is developed to examine hypotheses 1, 3, 5, 7, 9, 11, 13 and 16 as follows:
Model (1)

$$\text{FRAUD} = \beta_0 \quad +\text{BT} + \text{BFE} + \text{BTE} + \text{BEF} + \text{ACI} + \text{ACFE} + \text{ACIE} + \text{ACE} \\ +\text{SIZE} + \text{GROWTH} + \text{LEV} + \text{ROA} + \text{INDUSTRY} + \text{YEAR}$$

Model (2) is developed to examine hypotheses 2, 4, 6, 8, 10, 12, 14 and 16 as follows:
Model (2)

$$\text{ML} = \beta_0 + \text{BT} \quad +\text{BFE} + \text{BTE} + \text{BEF} + \text{ACI} + \text{ACFE} + \text{ACIE} + \text{ACE} + \text{SIZE} \\ +\text{GROWTH} + \text{LEV} + \text{ROA} + \text{INDUSTRY} + \text{YEAR}$$

3.5. Research Variables

Research variables are presented in Table 2.

Table 2. The research variables.

Name	Symbol	Types	Definition
Board Independence	BI	Independent	It is equal to independent members of the board of directors to all board members ratio
Board financial expertise	BFE	Independent	If in the year under study, at the minimum one board member has a degree pertained to financial disciplines, 1; otherwise, 0
Board industry expertise	BIE	Independent	If in the year under study, at minimum, one board member has a degree pertaining to the desired industry, 1; otherwise, 0
Board effort	BE	Independent	It is measured by the frequency of board sessions that the board attended in the period under study
Audit committee independence	ACI	Independent	It is measured by independent audit committee members to all audit committee members' ratio
Audit committee financial expertise	ACFE	Independent	If in the year under study, at least one audit committee member has a degree pertaining to finance disciplines, 1; otherwise, 0
Audit committee industry expertise	ACIE	Independent	If in the year under study, at least one audit committee member has a degree pertaining to the desired industry, 1; otherwise, 0
Audit committee effort	ACE	Independent	It is measured by the frequency of sessions that the audit committee attained in the period under study

Table 2. *Cont.*

Name	Symbol	Types	Definition
Fraudulent reporting index	FRAUD	Dependent	Fraud detection is measured using the Beneish (1999) model as follows: Fraud detection is the study's dependent variable measured using the Beneish fraud detection model. Most studies on fraud detection in financial reporting show that financial proportions are the most beneficial and simplest tools for estimating the fraud possibility in financial reports. The coefficients of the model predicted in the economic setting of America and applying the same model in Iran, due to differences in criteria for selecting sample firms and U.S. regulations, can yield incorrect predictions. Hence, the present study utilizes the adjusted Beneish model proportionate to the Iran setting. Following Razali and Arshad (2014), fraudulent financial reporting is measured according to Equation (1).

$$\mathrm{Adj - Mscore} = 0.002 + 0.665(\mathrm{TATA}) + 0.257(\mathrm{LVGI}) + 0.024(\mathrm{SGAI}) - 0.641(\mathrm{DEPI}) + 0.19(\mathrm{SGI}) + 0.004(\mathrm{AQI}) - 0.032(\mathrm{GMI}) + 0.061(\mathrm{DSRI}) \tag{1}$$

In this model, a practical explanation of all variables is provided below:
DSRI: The indicator of sales in accounts receivable is calculated by Equation (2). In this Equation, REC is accounts receivable, and SALES is sales.

$$\mathrm{DSRI} = \frac{\mathrm{REC}_t / \mathrm{SALES}_t}{\mathrm{REC}_{t-1} / \mathrm{SALES}_{t-1}} \tag{2}$$

GMI: Gross margin indicator calculated by Equation (3). In this Equation, SALES is sales and COG represents the sold good costs.

$$\mathrm{GMI} = \frac{[\mathrm{SALES}_{t-1} - \mathrm{COG}_{t-1}] / \mathrm{SALES}_{t-1}}{[\mathrm{SALES}_t - \mathrm{COG}_t] / \mathrm{SALES}_t} \tag{3}$$

AQI: Asset quality indicator, calculated by Equation (4). In this Equation, CA represents the total of current assets, PPE represents the total of equipment and machinery, assets and ASSETS

$$\mathrm{AQI} = \frac{1 - [(\mathrm{CA}_t + \mathrm{PPE}_t) / \mathrm{ASSETS}_t]}{1 - [(\mathrm{CA}_{t-1} + \mathrm{PPE}_{t-1}) / \mathrm{ASSETS}_{t-1}]} \tag{4}$$

SGI: Sales growth indicator, calculated by Equation (5).

$$\mathrm{SGI} = \frac{\mathrm{SALES}_t}{\mathrm{SALES}_{t-1}} \tag{5}$$

Table 2. *Cont.*

Name	Symbol	Types	Definition
			DEPI: Depreciation cost indicator, calculated by Equation (6). In this regard, DEP is the cost of depreciation for fixed assets and gross PPE of plant, property and equipment. $$\mathrm{DEPI} = \frac{\mathrm{DEP}_{t-1}/\mathrm{PPE}_{t-1}}{\mathrm{DEP}_t/\mathrm{PPE}_t} \qquad (6)$$ SGAI: General, administrative and sales cost indicator calculated by Equation (7). In this relationship, SGA.EXP include general, sales and office expenses, and SALES are defined earlier. $$\mathrm{SGAI} = \frac{\mathrm{SGA.EXP}_t/\mathrm{SALES}_t}{\mathrm{SGA.EXP}_{t-1}/\mathrm{SALES}_{t-1}} \qquad (7)$$ LVGI: Financial leverage indicator, calculated by Equation (8). In this Equation, LTD is the total of long-term debts, CL is the current debts and ASSETS represents the total of assets (Beneish 1999). $$\mathrm{LVGI} = \frac{\mathrm{LTD}_t + \mathrm{CL}_t/\mathrm{ASSETS}_t}{\mathrm{LTD}_{t-1} + \mathrm{CL}_{t-1}/\mathrm{ASSETS}_{t-1}} \qquad (8)$$ TATA: The total accruals to total assets indicator is calculated by Equation (9). In this Equation, the ACC represents the discretionary accrual items (as the deviation of operating cash flow from operating profit) and the ASSETS represents the total of assets. $$\mathrm{TATA} = \frac{\mathrm{ACC}_t}{\mathrm{ASSETS}_t} \qquad (9)$$
ML index	ML	Dependent	It takes 1 if the audit reports of the firm i contains the paragraph of the incompliance of anti-ML programs and regulations[1] in the year under study, and 0 otherwise.
Firm size	SIZE	Control	Natural logarithm of firm assets in the year under study.
Sales growth	SALESGROWTH	Control	It is measured by the changes in the current year's sales to the previous year's sales divided by sales of the previous year.
Leverage	LEV	Control	It is measured by the total debts divided by total assets in the period under study.
Return on assets	ROA	Control	It is measured by the net income divided by total assets in the period under study.
Industry fixed effect	INDUSTRY	Control	It is the industry fixed effect.
Year fixed effect	YEAR	Control	It is the year fixed effect.

4. Research Methodology

4.1. Descriptive Statistics

This empirical attempt has employed the multivariate regression approach to assess the impact of corporate governance mechanisms on the quality of financial statements. The study data consist of all firms listed in the Tehran Stock Exchange from 2013 to 2019, involving 154 firms in 27 industries. Tables 3 and 4 indicate the information about the variables of the study, comprising the observation numbers, standard deviation, mean, maximum and minimum.

Table 3. Descriptive statistics of quantitative variables of the study.

Symbol	Variable	Mean	Std. Dev	Min	Max
ROA	Return on assets	0.126	0.146	−0.404	0.626
LEV	Financial leverage	0.566	0.208	0.036	1.342
SIZE	Size of the company	14.434	1.483	10.532	20.183
BT	Independence of board members	0.702	0.182	0.2	1
SALESGROWTH	Sales growth	0.259	0.557	−0.845	4.651
ACI	Independence of the audit committee	0.584	0.308	0	1
ACFE	Financial expertise of the audit committee	0.598	0.383	0	1
ACIE	Industry specialization of the audit committee	0.598	0.383	0	1
BEF	Board effort	14.709	5.349	5	60

Table 4. The descriptive statistics of qualitative variables zero and one research.

Symbol	Variable	Mean	Std. Dev	Frequency of Zero	Frequency of One
ML	ML	0.138	0.345	882	142
FRAUD	Fraud in financial statements	0.169	0.374	890	181
BFE	Financial specialization of the board	0.948	0.221	54	994
ACE	The efforts of the audit committee	0.589	0.492	440	631
BTE	Board specialization in the industry	0.903	0.295	95	891

As shown in Table 3 the lowest mean (0.126) is for the variable of return on assets, and the highest mean (14.709) is for the board effort. Moreover, the variable of return on assets is 0.146, which has the lowest standard deviation, and the variable of board effort (5.349) has the highest value. Among the variables, the lowest value is for sales growth (−0.845), and the highest is for the board effort (60). Among the variables, ML, fraud, the financial expertise of the board, audit committee effort and board industry expertise have 0 and 1 qualitative natures. Table 4 displays the information related to the variables.

4.2. Normality Test of Variables

The following Table 5 displays the information related to the normality test of model variables.

Regarding the normality test result, most of the research variables, except SALES-GROWTH, LEV, and ROA at 99% level, the variable of SIZE at 95% level and the variable of ACIE at 90% level of confidence have a normal distribution. Different methods can be used to normalize the variable, but applying these methods would lead to the failure of relationships between analyzable variables and, finally, the insignificance of the coefficients. Moreover, the low number of observation years is a reason not to use other normality tests. Further, according to the Central Limit Theorem, either we select the sample under study from a normal community or an abnormal one. Considering the number of observations of

more than 30 in the sample, the selected sample has a normal distribution, so t, Z and F parametric tests can be used.

Table 5. Test results for normality of variables.

Variable	Level	Variable	Level
SIZE	0.038	ACE	0.135
ACI	0.673	ACFE	0.912
LEV	0.000	ROA	0.000
FRAUD	0.972	ML	1.000
BT	0.241	BFE	1.000
SALESGROWTH	0.987	BEF	0.996

4.3. Collinearity

The Tables 6 and 7 below demonstrate the collinearity test's results. Since descriptive variables of the two regression models are similar and the collinearity test measures the meaningful association between these variables, the outcome of the test for the two models is the same.

Table 6. The alignment test of the first model.

Variable	VIF	1/VIF	Variable	VIF	1/VIF
ROA	2.07	0.496	ACI	1.86	0.538
LEV	1.87	0.538	ACFE	1.84	0.544
SIZE	1.37	0.728	IND8	1.11	0.903
BEF	1.20	0.835	Y17	2.00	0.500
IND19	1.17	0.856	BT	1.12	0.893
Y14	1.93	0.518	BFE	1.04	0.958
Y15	2.03	0.492	Y19	2.01	0.497
Y16	1.85	0.540	Y20	1.68	0.593
BTE	1.06	0.943	ACE	1.03	0.969
ACIE	1.03	0.970	SALESGROWTH	1.21	0.828

Table 7. The alignment test of the second model.

Variable	VIF	1/VIF	Variable	VIF	1/VIF
ROA	2.01	0.496	ACI	1.98	0.504
LEV	1.91	0.523	ACFE	1.84	0.544
SIZE	1.35	0.742	IND13	1.20	0.831
BEF	1.19	0.842	Y	1.18	0.849
IND19	1.16	0.859	BT	1.10	0.910
Y14	1.07	0.935	BFE	1.04	0.959
BTE	1.03	0.967	ACE	1.03	0.969
ACIE	1.03	0.970	SALESGROWTH	1.12	0.890

Considering the obtained variable in the above tables, VIF for all variables of the two models is less than 10, and there is no collinearity among the variables, so there is no problem with collinearity in these two regressions.

4.4. Results of Integration Test

Regarding the integration test results reported in the following Table 8, the calculated F statistic for research models is 1.86 and 3.48. Hence, the null hypothesis indicating the data integration seems to be rejected for two models at 99%. Consequently, the preferred method for estimating the coefficients' model is panel data.

Table 8. The integration test results.

	Calculated Statistics	Probability Level
First model	1.86	0.000
Second model	3.48	0.000

4.5. Results of the Determination Test of Random or Fixed Effects

Table 9 illustrates the outcomes of the test. In Tables 9 and 10 Hausman's results for the two models are, respectively, 18.65 and 32.28. Considering the χ^2 statistic for model one, the null hypothesis concerning the appropriateness of random effects is accepted; thus, regression with random effects will be applied as the main method for model one. On the other hand, the null hypothesis at 99% is rejected for model two; thus, the model with fixed effects is more appropriate for the estimation of the second model.

Table 9. Hausman test results.

	Calculated Statistics	Probability Level
First model	18.65	0.544
Second model	32.28	0.009

Table 10. Results of the correlation matrix of research variables.

	FRAUD	ML	BT	BFE	BTE	BEF	ACI	ACFE	ACIE	ACE	SIZE	SA~H	LEV	ROA
FRAUD	1.000													
ML	0.022	1.000												
BT	0.101	0.099	1.000											
BFE	0.013	0.045	−0.001	1.000										
BTE	−0.005	−0.058	−0.058	0.002	1.000									
BEF	0.011	0.058	0.035	−0.106	−0.033	1.000								
ACI	−0.022	−0.112	−0.016	−0.024	0.063	−0.043	1.000							
ACFE	−0.026	−0.119	0.006	−0.013	−0.046	0.664	1.000	1.000						
ACIE	0.052	−0.053	0.036	−0.001	−0.007	0.003	0.007	0.067	1.000					
ACE	−0.064	0.002	−0.003	0.041	0.011	0.064	0.072	0.025	0.038	1.000				
SIZE	0.054	−0.071	−0.071	−0.045	0.008	0.334	0.118	0.087	0.074	−0.009	1.000			
SA~H	0.015	0.007	−0.033	−0.091	0.050	−0.017	0.015	−0.008	−0.004	0.005	−0.021	1.000		
LEV	0.005	−0.002	−0.213	−0.003	0.081	−0.047	−0.021	−0.061	−0.052	−0.048	0.074	−0.103	1.000	
ROA	0.065	−0.053	0.131	−0.002	−0.013	0.105	0.049	0.058	0.012	0.032	0.135	0.241	−0.610	1.000

The correlation test is known as the sensitivity analysis estimating the association between applied variables in the model mutually, the outcome of which is the above matrix. Since it analyzes the correlation between the variable and itself, the diameter of this matrix results in one. Denoting a full correlation between a given variable and itself, consequently, the closest number to one represents the stronger correlation. In contrast, the closest number to zero suggests the weaker correlation. Therefore, the correlations of variables vary between −1 and +1, in which the negative sign means inverse correlation.

4.6. Models' Estimation and Results from the Interpretation

According to the developed facts in the theoretical segment, the observed models are developed according to random and fixed effects methods of panel data.

4.6.1. Model One Estimation

Model one should be estimated using the panel data method regarding the integration test results. Moreover, the random effects method should be used to achieve the best first regression estimation by performing the Hausman test. The Table 11 below exhibits the estimation's results.

Table 11. The empirical findings pertaining first model considering the random effects.

Variable	Coefficient	Std. Dev	Statistics of Z	*p*-Value
BT	−0.145	0.071	−2.04	0.041
BFE	−0.054	0.029	−1.87	0.062
BTE	−0.001	0.000	−2.10	0.036
BEF	−0.048	0.014	−3.33	0.001
ACI	−0.022	0.008	−2.69	0.007
ACFE	−0.001	0.000	−2.36	0.018
ACIE	−0.072	0.018	−3.88	0.000
ACE	−0.035	0.024	−1.44	0.149
SIZE	0.023	0.012	1.89	0.058
SALESGROWTH	0.007	0.020	0.38	0.703
LEV	0.081	0.099	0.81	0.417
ROA	0.268	0.124	2.16	0.030
Y14	0.205	0.047	4.37	0.000
Y15	0.159	0.044	3.58	0.000
Y16	0.173	0.042	4.06	0.000
Y17	0.155	0.042	3.68	0.000
Y19	0.149	0.040	3.66	0.000
Y20	0.190	0.046	4.14	0.000
IND8	−0.061	0.032	−1.88	0.059
IND19	−0.124	0.049	−2.51	0.012
CONS	−0.505	0.176	−2.86	0.004
R2	0.770			
Wald Test	68.35			0.000
Normality of Resid				0.243

The dependent variable of model one is financial statement fraud. The model's intercept is −0.505, which is significant at the 99% level. The coefficient of board member independence is −0.145, so with a 1% increase in the variable of BT, fraud in financial statements at a 95% confidence level will decrease by −0.145%. Moreover, board members' financial expertise is negative. Following a 1% increase in the variable of BFE, fraud in financial statements at a 90% confidence level will decrease by −0.054%. The coefficients of BTE and ACFE (at 95% level) are −0.0015 and −0.0016, respectively, and audit committee industry expertise, audit committee independence and board member effort (at 99% level) have the values of −0.048, −0.022, −0.072, respectively.

After estimating the model using the random effects method, we assessed the normality of disruptive components. According to the obtained results, the probability level for the test is 0.243, so the model one residuals have normal distribution. Hence, we can use common F, t, and Z tests.

After estimating the first model, the heterogeneity of disruptive components is assessed. Given the obtained results in Table 12 the chi-square is 79.47, so model one has heterogeneous variance. Moreover, the serial correlation of disruptive components is examined. As can be seen in Table 13 the F statistic of serial correlation is 0.369, so the model has no disruptive component in serial correlation.

Table 12. The results of the variance heterogeneity test of the first model.

Title of Test	Statistics of χ^2	*p*-Value
Breusch–Pagan	79.47	0.000

Note: the null hypothesis is homogeneity variance.

Table 13. The results of the serial correlation test of the first model.

Title of Test	Statistics of F	*p*-Value
Wald	0.369	0.544

Note: the null hypothesis lacks serial correlation.

Model one is estimated using the robust random effects, so the obtained results consider three classic regression assumptions: collinearity and exogeneity issues, as well as serial correlation and autocorrelation, have no problematic impact on the model estimation. Additional regressions of model one, including fixed effects panel data regression, logit regression, and T + 1 model, have also been assessed as confident.

As shown in Table 14, the intercept of the model is insignificant, with a value of −0.594. The coefficient of board member independence is −0.335, so following a 1% increase in the variable of BT, fraud in financial statements at a 95% confidence level will decrease by −0.335%. Moreover, board member financial expertise, industry expertise and board member effort at a 90% level are negative, so following a 1% increase in these variables, fraud in financial statements will decrease by −0.054, −0.068 and −0.011, respectively. Moreover, the coefficients of ACI, ACFE and ACIE (at 99% level) are the factors of fraud drop in a financial statement by −0.046 and −0.073%.

Table 14. The results of estimating the first model by the method of fixed effects.

Variable	Coefficient	Std. Dev	Statistics of T	*p*-Value
BT	−0.335	0.139	−2.40	0.017
BFE	−0.054	0.027	−1.95	0.051
BTE	−0.068	0.036	−1.87	0.063
BEF	−0.011	0.006	−1.68	0.094
ACI	−0.046	0.015	−3.08	0.002
ACFE	−0.035	0.011	−3.10	0.002
ACIE	−0.073	0.020	−3.51	0.000
ACE	−0.026	0.026	−0.99	0.321
SIZE	0.042	0.046	0.90	0.368
SALESGROWTH	−0.004	0.025	−0.19	0.847
LEV	0.209	0.123	1.69	0.091
ROA	0.430	0.175	2.46	0.014
Y13	0.226	0.066	3.43	0.001
Y14	0.177	0.060	2.95	0.003
Y15	0.193	0.057	3.35	0.001
Y16	0.174	0.054	3.18	0.002
Y17	0.166	0.052	3.14	0.002
Y18	0.206	0.049	4.21	0.000
IND8	−0.824	0.379	−2.17	0.030
IND19	−1.009	0.380	−2.65	0.008
CONS	−0.594			
R2	0.702			
Wald Test	2.65			0.000

After that, the T + 1 model of the first regression is used to assess the delayed effect of board member independence and fraud in financial statements. The results are reported in the following Table 15.

Table 15. The results of the T + 1 regression estimation of model one by the fixed effects approach.

Variable	Coefficient	Std. Dev	Statistics of Z	*p*-Value
BT	−0.006	0.001	−5.81	0.000
BFE	−0.021	0.030	−0.72	0.471
BTE	0.027	0.040	0.68	0.497
BEF	−0.002	0.001	−1.68	0.096
ACI	−0.007	0.050	−0.14	0.886
ACFE	−0.008	0.035	−0.23	0.815
ACIE	−0.008	0.066	−0.013	0.899
ACE	−0.019	0.005	−3.84	0.000
SIZE	−0.007	0.007	−0.93	0.351
SALESGROWTH	−0.031	0.028	−1.09	0.275
LEV	0.027	0.076	0.36	0.716
ROA	−0.034	0.114	−0.31	0.760
Y13	0.024	0.011	2.17	0.030
Y14	0.096	0.064	1.48	0.139
Y15	0.150	0.063	2.37	0.018
Y16	0.136	0.058	2.34	0.019
Y17	0.138	0.062	2.24	0.025
Y18	0.280	0.081	3.46	0.001
IND8	0.008	0.034	0.25	0.805
IND19	−0.008	0.034	−0.24	0.807
CONS	−0.128	0.120	−1.07	0.285
R2	0.027			
Wald Test	27.91			0.085

The model's intercept is insignificant, with a value of −0.128. The coefficient of board member independence is −0.006, so following a 1% increase in the variable of BT, fraud in financial statements at a 99% confidence level will decrease by −0.006%. Board member effort (at 90% level) is negative, and with a 1% increase in BEF, fraudulent reporting in the upcoming period will decrease by −0.002. Moreover, audit committee effort (at 99% level) led to a −0.019% decrease in fraud in financial statements in the upcoming period.

After that, by considering the selected variables, a model specification test is used to assess the presence of an omitted variable in the model, which results in bias. The test's outcomes are reported in the following Table 16.

Table 16. The Specification test outcomes of the first model.

Title of Test	Statistics of F	*p*-Value
Ramsey Reset	1.51	0.209

Note: null hypothesis, model has no omitted variable.

According to the results of Table 16 the F statistic of the Ramsey Reset test is 1.51, which is smaller than the F in Table 16, so the null hypothesis concerning the lack of omitted variables in the model is rejected.

4.6.2. Model Two Estimation

Model two should be estimated using the panel data method regarding the integration test results. Moreover, the fixed effects method should be used to achieve the best second regression estimation by performing the Hausman test. The following Table 17 exhibits the estimation's results.

Table 17. The results of estimation of the second model by the method of fixed effects.

Variable	Coefficient	Std. Dev	Statistics of T	*p*-Value
BT	−0.206	0.086	−2.39	0.018
BFE	−0.072	0.018	−3.88	0.000
BTE	−0.064	0.049	−1.31	0.190
BEF	−0.015	0.005	−2.64	0.008
ACI	−0.098	0.038	−2.55	0.011
ACFE	−0.088	0.510	−1.73	0.083
ACIE	−0.037	0.042	−0.89	0.374
ACE	−0.027	0.003	−7.49	0.000
SIZE	−0.022	0.005	4.31	0.000
SALESGROWTH	−0.023	0.020	−1.18	0.239
LEV	0.179	0.103	−1.73	0.083
ROA	−0.087	0.143	−0.61	0.539
Y14	0.091	0.036	2.52	0.012
Y15	0.103	0.031	3.32	0.001
IND13	−1.007	0.315	−3.19	0.001
IND19	−0.669	0.313	2.13	0.533
CONS	−0.174	0.489	−0.36	0.721
R2	0.532			
Wald Test	3.81			0.000
Normality of Resid				0.770

The dependent variable of model two is ML. The intercept of the model is −0.174, which is insignificant. The coefficient of board member independence is −0.206, so following a 1% increase in the variable of BT, ML at a 95% confidence level will decrease by −0.206%. Moreover, the variables of board member financial expertise, audit committee effort, and board member effort (at 99% level) are negative. Following a 1% increase in these variables, ML will decrease by −0.072, −0.027, and −0.015%, respectively. The coefficients of ACI (at 95% level) and ACFE (at 90% level) are −0.098 and −0.088%, the factor for the decline of ML.

After estimating the model using the fixed effects method, we assessed the normality of disruptive components. According to the obtained results, model two residuals have a normal distribution. Hence, we can use common F, t, and Z tests.

After estimating the second model, the heterogeneity of the disruptive component is first assessed. Given the obtained results in Table 18 the chi-square shows an 81.79 value, so the test's null hypothesis is not accepted at 99% confidence. Thus, model two has a heterogeneous variance. Moreover, the serial correlation of disruptive components is

examined. As seen in Table 19, the F statistic of serial correlation is 36.064, so the model at the 99% level has a disruptive component in serial correlation.

Table 18. The outcomes of the variance heterogeneity test of model two.

Title of Test	Statistics of χ^2	*p*-Value
Brush–Pagan	81.79	0.000

Note: the null hypothesis is homogeneity variance.

Table 19. The outcomes of the second model serial correlation test.

Title of Test	Statistics of F	*p*-Value
Wald	36.064	0.000

Note: the null hypothesis lacks serial correlation.

About the presence of heterogeneous variance and serial correlation in the second regression, the additional regression of the model is evaluated through the application of the robust random effects approach. Besides, additional regressions of model one, including fixed effects panel data regression, logit regression, and T + 1 model, have also been assessed to be confident.

The intercept of the model in Table 20 is insignificant with the 0.136 value. The coefficient of board member independence is −0.304, so following a 1% increase in the variable of BT, ML at a 99% confidence level will decrease by −0.304%. The variable of audit committee financial expertise at the 90% level is a factor in the decline of ML. Additionally, the coefficients of BFE, BEF, ACI and ACE at the 99% level are negative, and following a 1% increase in these variables, ML will decrease by −0.019, −0.085, −0.036 and −0.048, respectively.

Table 20. The outcomes of evaluating model two by the random effects method.

Variable	Coefficient	Std. Dev	Statistics of Z	*p*-Value
BT	−0.304	0.057	−5.33	0.000
BFE	−0.019	0.005	−3.84	0.000
BTE	−0.058	0.042	−1.38	0.169
BEF	−0.085	0.014	−5.76	0.000
ACI	−0.036	0.008	−4.34	0.000
ACFE	−0.074	0.043	−1.70	0.089
ACIE	−0.059	0.038	−1.54	0.124
ACE	−0.048	0.016	−2.89	0.004
SIZE	−0.038	0.019	−0.47	0.000
SALESGROWTH	−0.009	0.019	−0.47	0.640
LEV	−0.620	0.227	−2.73	0.006
ROA	−0.139	0.121	−1.15	0.251
Y13	0.071	0.031	2.26	0.024
Y14	0.092	0.029	3.16	0.002
IND13	−0.046	0.015	−3.08	0.002
IND19	0.055	0.004	2.19	0.000
CONS	0.136	0.201	0.68	0.499
R2	0.515			
Wald Test	47.8			0.000

After that, the T + 1 model of the first regression is used to assess the delayed effect of board member independence on ML. The results are reported in the following Table 21.

Table 21. The outcome of the T + 1 regression estimation of model two by the fixed-effects approach.

Variable	Coefficient	Std.	T-Test	*p*-Value
BT	0.098	0.107	0.91	0.362
BFE	−0.121	0.053	−2.29	0.024
BTE	0.014	0.054	0.27	0.791
BEF	−0.001	0.002	−0.74	0.460
ACI	−0.018	0.005	−3.59	0.000
ACFE	−0.086	0.014	−5.87	0.000
ACIE	−0.006	0.056	−0.11	0.912
ACE	−0.032	0.031	−1.00	0.317
SIZE	0.065	0.034	1.89	0.061
SALESGROWTH	−0.014	0.021	−0.65	0.518
LEV	0.015	0.131	0.12	0.906
ROA	0.119	0.152	0.78	0.435
Y13	0.116	0.021	5.45	0.000
Y14	0.039	0.044	0.89	0.375
IND13	−1.166	0.045	−25.47	0.000
IND19	1.372	0.035	39.19	0.000
CONS	−1.181	0.560	−2.11	0.037
R2	0.000			
Wald Test	0			0

The model's intercept is insignificant with a value of −1.181. The coefficient of board member independence is 0.098, which is not significant. The variable of audit committee financial expertise at 95% level is −0.121, a factor for the decline of ML in the next period and also audit committee independence at the 95% level is negative, and following a 1% increase in the variable, the ML will decline by −0.018% in the next period. Moreover, among the control variables of the model, SIZE (at 90% level) is a factor for the increase in ML in the upcoming period.

After that, by considering the selected variables, a model specification test is used to assess the presence of an omitted variable in the model and results in bias. The results of the test are presented in the following Table 22.

Table 22. Test results specify the second model.

Title of Test	Statistics of F	*p*-Value
Ramsey Reset	1.35	0.256

Note: null hypothesis, model has no omitted variable.

According to Table 22 the F statistic of the Ramsey Reset test is 1.35, smaller than the F statistic in the above-mentioned table, so the null hypothesis implying the lack of omitted variables in the model is rejected.

5. Conclusions and Discussion

The main objective of this paper is to assess the impact of corporate governance mechanisms on fraudulent reporting and ML engagement. The independent variables

employed in this paper consist of board independence, board expertise in financial-related fields, board expertise in industry-related fields, audit committee independence, audit committee expertise in financial-related fields, audit committee expertise in industry-related fields and audit committee attempts, in which their influence on dependent variables such as fraudulent reporting and ML are estimated.

The results of hypothesis testing show that board member independence has a negative impact on fraud in financial statements. Such results are in line with the findings of Khodami pour and Bazraie (2013), who reveals that board independence has a positive impact on disclosure quality and fraud prevention. Firms willing to have appropriate corporate governance should keep their board independent to motivate their managers and board members to combat fraud, which could elevate the quality of information disclosure. So, we can declare that board independence is negatively incorporated with fraud in the financial statement. Additionally, according to the outcomes of hypothesis testing, board members' expertise in financial fields has also a negative effect on the level of fraud in financial reports. In this regard, the findings of Luo et al. (2020) and Hatefi Barforoushi and Dadashi (2018), show that corporate governance and board member financial expertise have a negative effect on financial statement fraud, which supports our evidence. These findings denote that having managers with expertise might be considered one of the major principles in firms, and having board members with different fields of expertise, especially in financial-related fields, may improve the firm reporting environment substantially. In other words, it is revealed that financial expert managers may comprehend financial reports and potential frauds within them more efficiently, which in turn helps them to identify these frauds and consequently preclude these illegal activities. Moreover, the results indicate that board members with industry-related expertise are more successful at reducing fraudulent financial reporting. Such findings are also in the line with the findings of Sun et al. (2012), Shahnavazi (2019), and Bahri et al. (2013), who claim that industry experts can have a positive and significant effect on disclosure quality.

As mentioned previously, having skills and specializations for board members is an advantage, as is industry expertise. Industry expertise in corporate governance will cause the firm managers to be fully aware of what is reported, and such information will reduce the chance of fraud in financial reporting.

The results of the hypothesis reveal that there is a significant and negative association between board member efforts and fraudulent financial reporting. The results align with Hatefi Barforoushi and Dadashi (2018) and Jamali and Barzegari Khaneghah (2017), who observed that corporate governance elements can affect information disclosure quality and fraud decline.

One of the features that can contribute to the fraud decline is the board's effort during the term of service. This can be explained as the members of a board that pay more attention to financial reporting and assess them meticulously can better understand the problems and fraudulent activity. This leads to a negative correlation between the efforts of board members and fraudulent financial reporting. Additionally, the results of the study articulate that audit committee independence has have a negative impact on fraudulent financial reporting. In this sense, Takhtani et al. (2011) claim that a negative correlation exists between the independence of audit committees and fraud. Therefore, their findings are consistent with our documents pointing out that audit committee independence improves the disclosure quality and lowers errors. It is expected that since the audit committee is among the key elements of corporate governance mechanisms, its independence may contribute substantially to the reduction in fraud in financial reporting. Further analysis also reveals that there is a negative relationship between the financial expertise of the audit committee and fraudulent financial reporting. These findings are in line with those of Abernathy et al. (2014) and Miko and Kamardin (2015), who document that audit committee financial expertise may result in declining the manipulation and fraud in financial statements through discretionary accruals. If audit committee members specialize in financial-related fields, it may play a significant role in improving financial reporting

and fraud prevention. Moreover, according to the obtained results, there is a negative and meaningful correlation between the expertise of audit committees in industry-related fields and fraudulent financial reporting. Accordingly, Takhtani et al. (2011) argue that the audit committee can dominate financial reporting and the related industry based on their effective working experience. Such dominance in financial reporting can alleviate the detrimental impacts of fraudulent financial reports. In addition, the results related to audit committee efforts show that this variable has no significant impact on fraudulent accounting. This means that holding a greater number of audit committee sessions is not likely to improve the quality of provided reports in terms of fraud.

Among the variables in this paper is ML, which is converting or transferring money while knowing that the money is made by committing fraud to conceal the illegal nature. ML is typically a secondary fraudulent action, hiding the money made from the main fraudulent activity. ML means any action that involves obscuring or apparent changing of illegitimate income identity due to fraudulent activity to pretend that the earnings originate from legal sources. The following hypotheses were assessed according to this fact, and the firm's governance was analyzed in this paper.

The findings show that there is a significant and negative association between the independence of board members and ML regarding the hypothesis testing. Board members are different people. They will combat fraudulent financial reporting if they have the required independence. They will not be silent against the transfer of capital that resulted from a crime, which lowers the ML in the firm. Moreover, the results demonstrate a negative correlation between board financial expertise and ML. We can declare that the board, as one of the main resources of corporate governance with specialization in different majors, especially financial expertise, can detect and eliminate abnormal transfers in financial statements, in which case ML in financial statements reach a minimum.

On the other hand, results indicate no meaningful association between board member industry expertise and ML. In general, ML is a process through which illegal, illegitimate and dirty money is in the transaction cycle, such that it seems clear and legal after exiting the cycle. The board's specialization in the industry will prevent such illegitimate money and destroy the path for ML. However, this does not mean a negative correlation between these two variables, since industry specialization may not lead to the decline of the ML.

Based on the findings, it is specified that a negative correlation exists between board member effort and ML. The exploration of dirty money, which later will be considered precise money, requires a lot of time, and this period causes the managers to make more effort and lower the ML.

The results show a negative corporation between the independence of the audit committee and ML. Audit committee independence is one factor that has a significant and positive influence on fraudulent factors and plays a leading role in reducing that. ML is one of the fraudulent factors. If the audit committee has sufficient independence, it can realize and report those errors in financial reporting that lead to the ML.

The study results show a negative relationship between the financial expertise of the audit committee and ML, confirming the hypothesis. Audit committee financial expertise shows the specialization in activity which can detect the problems. One of them exists in ML financial reporting, which is much heavier than fraud in accounting. The larger the audit committee's financial expertise, the more negative its relationship with the ML. According to the results, there exists a significant and negative correlation between audit committee industry expertise and ML. Thus, we can argue that if the audit committee specializes in a profession, it dominates the micro factors and can easily detect financial reporting problems. Based on the results, it is specified that there is a negative and significant relationship between audit committee effort and the ML. The greater the efforts of the audit committee, the less ML occurs. Due to excessive sessions, the audit committee can realize the hidden angles and ML attempts accurately.

The outcomes of this paper suggest several implications for equity owners, boards, auditors and policy makers. Equity owners are benefited by the establishment of high-

quality corporate governance mechanisms, such as expert and independent board members and the formation of effective audit committees, which are likely to improve the accounting figures as the main underlying measures for financial statements, particularly in terms of fraud. Thus, they can ameliorate the decision-making process as well as the firm's performance through the improvement of corporate governance mechanisms inside the companies. In addition, the board of directors are aware that increasing their expertise and knowledge in terms of financial-related fields and industry that they are working in might significantly benefit them, allowing them to perform their duty as the board's members in a more favorable way. Moreover, the auditors are highly recommended to use and consider the reports and results of audit committees of clients, because these committees are more engaged with the daily operation of the clients and have a deeper understanding of their weaknesses and strengths, particularly those in finance and specialized industries. Finally, the policy makers may benefit from the findings of our empirical attempts by designing and enacting regulations, which, for instance, require companies to appoint at least one financially expert board or audit committee member in order to achieve national objectives, such as reducing ML activities.

The main limitation of current research is data unavailability. There are many firms listed on the Tehran Stock Exchange competing in Iran's business environment, all of which might be engaged in ML activities, but as a result of their financial statement and audit reports' unavailability, we exclude them from the investigated sample. The inclusion of these companies might lead to the varied conclusion. Additionally, the lack of data pertaining to the amount of abnormal financial transactions of companies has precluded us to alternate our main measure for ML for performing robustness checks.

Our suggestion for future researchers is to explore the role of other factors such as CEOs' characteristics on ML activities. In addition, future research may highlight the intensity of ML activities among companies enforcing and non-enforcing FATF obligations to measure the effectiveness of such obligations.

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Notes

[1] Corresponding to the Iranian business environment, auditors are required to report their opinion about the compliance of their clients regarding the ML programs and regulations. Iran possesses its domestic ML regulation, which is named "the law of encountering ML". This law is designed and passed in the Islamic Parliament of Iran (https://rc.majlis.ir/en) (accessed on 20 July 2022).

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