
The Relationship between Corporate Reputation and Different Types of Earnings Management

Morteza Zakerean

Ph.D. Candidate, Department of Economics and Administrative Sciences, Birjand Branch, Islamic Azad University, Birjand, Iran. (Email: Morteza.Zakerean@gmail.com)

Habibollah Nakhaei *

*Corresponding Author, Assistant Prof., Department of Economics and Administrative Sciences, Birjand Branch, Islamic Azad University, Birjand, Iran. (Email: nakhahabibollah@gmail.com)

Mahdi Salehi

Associate Prof., Department of Economics and Administrative Sciences, Ferdowsi University of Mashhad, Mashhad, Iran. (Email: Mehdi.salehi@um.ac.ir)

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Abstract

The present study's main objective is to assess the relationship between corporate reputation and different types of earnings management (accrual-based, real, and reductive earnings management). In other words, this paper attempts to figure out whether corporate reputation can contribute to the amount of accrual-based, real, and reductive earnings management or not. This paper's method is descriptive-correlational based on published information from listed firms on the Tehran Stock Exchange during 2012-2018 with a selected sample of 187 firms (1309 observations). The method applied for hypothesis testing is linear regression using panel data. The obtained results from hypothesis testing show that corporate reputation has a negative and significant relationship with accrual-based, real, and reductive earnings management, which means highly-reputed firms, are less likely to embark on different earnings management types. Since this paper analyzes the emergent financial markets, like Iran, with extremely competitive audit markets to determine the effect of corporate reputation on different types of earnings management of listed firms on the Tehran Stock Exchange, it can provide useful information in this field.

Keywords: Real Earnings Management, Corporate Reputation, Accrual-based Earnings Management.

Introduction

Today, with the development of commercial markets and their diversity, people are looking for some features to invest in companies that can guarantee their investment's security. Thus, the question that will raise here is what factors can influence investors' decisions and give them relative confidence in their investments' security. According to signaling theory, companies often seek to reduce their risk levels and create and send positive signals to attract investors (Aharony & Swary, 1980). However, this is not proof of their (companies') success in this field because of internal and external reasons such as the presence of inappropriate managers, weak corporate governance, small companies, and consequently, their low market share in the related industry, non-compliance with the principles of internal controls and even external factors such as sanctions, exchange rate changes and many other factors, neutralize the efforts of companies to reduce the risks of investor protection. On the other hand, according to Zhai and Wang's (2016) research, investors are concerned about their investments and seek high assurance of companies' proper return by managers. Therefore, it can be said that investors seek firstly to maintain the initial capital and secondly, to increase the return on their capital, so they will invest in companies that have less risk in maintaining their capital. Investors are often attracted to companies with more competitive power, more market share, and a higher ability to meet their obligations and generate good returns by using investors' capital. Moreover, such companies will reduce the expected earnings level by reducing investment risk and granting credit. As a result, the company's investment, growth, and credit will be more prosperous (Wallace, 1985). Reputation results from a correct and good information signal in a certain period (Dentchev & Hene, 2003). Therefore, this causes investors to impression such signals based on these companies' quality and effective performance and invest in them. Of course, it is also important to note that reputable companies can be a good investment option for individuals. After all, according to Menicucci (2013) and Alkhatib (2014), companies with high profitability, liquidity, and overall credibility are more likely to provide accurate information and signal good performance than to attract investors and gain shareholder's confidence because it increases their competitiveness among other competitors. Besides, in such companies, strong and efficient corporate governance and specialized management teams often prevail. By considering the high competitiveness to obtain limited resources, companies can increase their returns. A strong corporate governance system is one of the available solutions to reduce agency problems as well as reduce information asymmetry between owners and managers in the capital market.

Previous studies have shown that strong corporate governance strategies can influence opportunistic management behaviours. In fact, in reputable companies, by improving corporate governance methods and increasing supervision in companies, managers will act in the company's interests. In the absence of adequate supervision, the path of pursuing personal motivations of management and earnings management will be smoothed (Chung, K.H and Pruitt, 1994). Moreover, according to Doelman et al. (2013), in firms with strong corporate governance, achieving the company's goals takes precedence over opportunistic financial reporting. Therefore, these companies try to attract more investors by observing the rules and standards of accounting and auditing. Thus, to attract more capital, they create signage that causes them to increase their market share and strengthen their reputation by providing quality and accurate information. According to signaling theory, reputable companies are motivated to disclose their information to attract investors because it reduces information asymmetry. As a result, auditors can be more responsible for job security and discover violations of the financial statements' rules and regulations to create more confidence in the financial statements and assure users that the financial statements are reviewed and approved away from intentional manipulation. (Watts & Zimmerman, 1990). Thus, well-known companies signal their competitiveness by providing more and better information to the market than other companies (Dinali et al., 2011; Bazin and Voral, 2011). Therefore, signaling the market to the company's real quality, such as dividends, increasing the company's value, and customer satisfaction, is a reason for more accurate disclosure of information in this type of company. Based on the issues raised so far, this study intends to measure the impact of corporate reputation on different types of earnings management and examine whether earnings management will be affected by reputation or not. Examining this issue helps investors measure companies' reputations in different periods, factors such as earnings management in reputable companies, and, if necessary, at the best time to risk their capital.

Companies are managed by managers who are often not the owners of the company. On the other hand, companies' ownership is those shareholders who do not have a role in companies' management and only influence managers' selection. This situation will eventually lead to the separation of ownership from the management and creates a conflict of interest between managers and owners (Berl & Minz, 1932). Jensen and McClellan (1976) later theorized that the agency relationship refers to a contract whereby one (or more) owners choose a person (or persons) as their representative and delegate decisions to him. By establishing an agency relationship, each party to the relationship

seeks to maximize their interests, and therefore, the agency relationship leads to agency problems and issues. One of the main hypotheses of agency theory is that owners and agents (managers) have conflicts of interest. Also, in financial theories, the basic premise is that companies' primary goal is to increase shareholders' wealth, but in practice, this is not the case; managers may not always be completely in the owners' best interests. The manager may deliver incorrect or incomplete information to shareholders. This happens when the manager tends to enter into a contract with the owner with private information about his best interest. Thus, investors and shareholders alone will not directly monitor managers' activities (Jensen, 1998; Holterm, 1979). It is also clear that shareholders can not directly follow the manager's activities to ensure the manager's decisions, whether the manager's decisions are in line with the shareholder's interests. Therefore, internal and external auditors (independent) have entered this field to monitor managers' activities' correctness and prevent profiteering activities by management and board members such as manipulation and earnings management and ensure the accuracy of internal controls.

Various factors, such as lack of earnings management, can affect the reputation of companies. Of course, since there is a stronger and more stable corporate governance in reputable companies, managers and auditors perform their duties with better quality because improving information transparency can be a good option to increase reputation and credibility. According to Kumaran and Thenmozhi (2016), without proper support from the organization, the company's reputation will not be lasting. This means that if the factors that create a reputation, such as corporate governance, efficient and professional managers, and transparency, are not strengthened and supported, the company's reputation will be eroded and will not be lasting. Also, Wu (2012) states that when a company's governance is strong, the audit risks will be less. Therefore, it is inferred that reputation affects corporate governance, corporate growth, and how the audit process is performed. Also, according to Ahmad and Jagi (2004), it can be expected that corporate governance methods can reduce earnings management opportunities and thus increase the quality of earnings and information provided.

Therefore, it is important to note that earnings management can significantly impact companies' reputation and credibility by influencing corporate governance. Moreover, the company's performance is affected by management actions and decisions, so the lack of strong and skilled internal control can ignore the impact of management decisions on company performance and correctly evaluate managers' decisions and plans and the

resulting outcomes. Therefore, it can be expected that this issue will affect companies' reputation; thus, this study seeks to investigate the relationship between corporate reputations as one of the factors affecting earnings management. The question that arises in this regard is: Do companies have an impact on earnings management? Also, which of the above factors is most relevant? The present study can play a significant role in companies' reputation and the role of earnings management. By answering these questions, more appropriate measures can be taken to improve the company's performance and lead investors to invest in more reliable companies.

Theoretical Foundations and Hypotheses Development

One of the effective factors influencing the quality of financial statements is the concentration of investors on the earnings management because profit is one of the most important criteria for evaluating the performance of companies, so any interference that impairs the accuracy of financial statements can affect the decisions of users of financial reporting (Zengin and Ozkan, 2010). Earnings management refers to purposeful and biased interference in financial reporting processes. Managers intentionally and with the prior decision, intervene in the financial decision-making process to define specific interests as they wish. In such cases, the financial situation and results are not presented fairly (Shaper 1989). Additionally, according to Ronen and Yaari (2007), earnings management is a group of decisions that lead to non-reporting of real short-term earnings and an increase in the business unit's value. However, its impact can be neutral or dangerous. Managed earnings result from investment activities, before the realization of earnings or the result of choosing accounting methods after realizing earnings. Haley and Wallen (1999) also state that "earnings management occurs when managers use their judgments for financial reporting, resulting in changes in the financial structure. "These changes in financial reporting mislead stakeholders about the firm's performance and affect the consequences of the business unit's contracts that depend on the accounting figures." In general, two primary motivations for earnings management can be stated: first, encouraging investors to buy stocks and second, increasing the market value of the company.

Revenue smoothing can be one of the management goals so that when the management earns high revenue, it reports less profit. When revenue decreases, it reports more earnings (Zandraski, 2005) because, in this way, it can consider its performance in the market as good and useful (Bortolazo et al. 2016), and managers can maintain their rewards that they earn if they manage efficiently and make earnings (El Sood 2012). According to Ross (1977), some market

players have private and special information that can be used to increase their benefits. Jen Sen and McLean (1976) also state that agency theory refers to a contract by which one (or more) owners choose a person (or persons) as his representative and delegates decisions to him. By establishing an agency relationship, each party to the relationship seeks to maximize their interests. Therefore, the agency relationship leads to problems and issues of agency, which according to agency theory, is expensive (according to agency theory, management may deviate from its position to increase its interests and increase its interests by carrying out activities in the opposite direction of the shareholders' interests and at their expense). Also, investors and shareholders alone will not directly supervise managers' activities (Jensen: 1998; Helmstrom: 1979). Thus, conflict of interests between the agents (manager) and owners and direct supervision over managers' activities and decisions allow managers to use their personal information for personal gain and revise financial statements in the same way.

In reputable companies, due to their large size and more owners whose loyalty to the company and its brand has led to the company's reputation, managers try to maintain the company's reputation by providing accurate information and reducing information asymmetry between owners and managers. It can also be inferred that companies with a reputation and credibility due to being prominent in the market and society are more in the attention of their shareholders and customers, and this attention causes managers cannot manage earnings and biased actions at the macro level and for a long time.

Shubita (2015) concluded a negative and significant relationship between earnings management and earnings quality. Shawn et al. (2016) also stated that managers' real earnings management increases with comparing companies' accounting with other companies. Vidari and Stando (2019) also examined the relationship between differentiation strategy and market competition on earnings management. They found that differentiation strategy has a significant relationship in determining management decisions on real earnings management.

Real earnings management occurs when managers deliberately and intentionally manipulate the company's actual activities to achieve their goals. Kaur and Singh (2019) also showed that the company's reputation is a means to gain investors' and shareholders' trust. Accordingly, shareholders and investors trust companies that have a high reputation. Asghar et al. (2020) also showed that strong corporate governance prevents earnings management.

H1. There is a significant relationship between corporate reputation and real earnings management.

The accrual assumption is one of the main assumptions of financial accounting and reporting and states that revenues must be recorded as soon as they are realized. Expenses must be registered as soon as they are incurred without any obligation to exchange cash, which is ultimately juxtaposed in the current period's profit and loss. Finally, the profit of the period is obtained. (Nakashima and Zeburt, 2016). In most studies that have been done so far, it has been assumed that earnings management is done through management manipulation in accruals. Therefore, managers can control the profit and loss statement and balance sheet items, which can affect the company's reputation. Earnings management is a way to manipulate reported earnings for business unit managers. It is one of the agency's inherent problems that lower the quality of reported earnings and leads to asymmetric information between owner and agent. Managers' motivation for earnings management has been reported in positive accounting theories. According to accounting theories, the conflict of interests between the owner and the agent, as proposed in the agency theory, forces the agent to perform opportunistic behavior in earnings management to increase his/her personal interests due to information asymmetry.

There are several ways to manage earnings, and the purpose of management is to manipulate earnings to promote personal goals. Hence, Sitiawan and Hermawan (2017) stated that managers who over-manage earnings are not honest in their annual reports and have a direct negative impact on the company's reputation. Hence, it is not important what kind of earnings management this is. What matters is that, according to this research, earnings management hurts the reputation of businesses.

Earnings management is a practice that uses flexibility in accounting rules to improve the apparent profitability of businesses. GAAP also gives companies significant authority over earnings management. Earnings management is defined as choosing policies adopted by the manager or actual actions to influence earnings to achieve specific company goals.

Managers can manage earnings through actual actions or the choice of accounting policies. Business units' credibility and reputation as an understandable representation of the company's history and vision depends on the information received by the public. The general public uses this information to understand companies' behavior and determine business units' reputation (Bodie, 2009). Research has shown that earnings management has a negative impact on corporate credibility (Roychowdhury, 2006). also

(Martínez-Ferrero et al., 2016) showed that different Earnings management methods have a negative impact on companies' reputations. Therefore, earnings management can be mentioned as a factor in reducing the reputation and credibility of companies. According to this logic, there is a negative relationship between different earnings management methods and corporate reputation, which manipulates earnings and damages the companies' reputation (Sitiavan and Hermavan, 2017).

Sohn (2016) found a significant relationship between financial statements' comparability with accrual and actual earnings management. Increasing comparability reduces accrual earnings management and consequently increases real earnings management. Yang et al. (2016) also showed a significant relationship between earnings management and accounting comparability. Salehi et al. (2018) found a significant relationship between management and innovation and corporate reputation.

Ajina and Habib (2017) showed a negative and significant relationship between earnings management and companies' market value.

Martínez-Ferrero et al. (2015) showed a negative and significant relationship between earnings management and corporate reputation. This means that earnings management of any kind destroys the reputation of companies. Salehi et al. (2018) found a negative and significant relationship between managerial entrenchment and accrual-based earnings management; moreover, the entrenched managers are less likely to engage in manipulating the real activities accruals in the Iran context.

Narteh and Braimah (2019) and Wang (2019) showed a significant relationship between corporate reputation and customer loyalty. Darmawan et al. (2019) showed no significant relationship between accrual earnings management and company value, but there is a negative and significant relationship between real earnings management and company value. Abbas et al. (2019) also showed a negative and significant relationship between accrual earnings management and company value.

Salehi et al. (2019) found a negative and significant relationship between discretionary accrual management and family firms' reputation. They also release a meaningful and negative relationship between real accrual management and the reputation of family firms. Subsequently, there is a significant and negative relationship between DA management and non-family firms. There is a meaningful and negative relationship between real earnings and the reputation of non-family firms.

H2. There is a significant relationship between corporate reputation and accrual-based earnings management.

H3. There is a significant relationship between corporate reputation and deductive earnings management.

Methodology

This paper is causal-correlational, and in terms of methodology, it is quasi-experimental, and retrospective in the realm of positive accounting studies carried out with real information. This paper is practical in terms of nature and objectives. Practical studies aim to develop knowledge within a certain field. In terms of data collection and analysis, however, this paper is causal-correlational.

Population under study

This paper's statistical population includes all listed firms on the Tehran Stock Exchange during 2012-2018.

Sampling method

The systematic elimination method is used for sampling, and the statistical sample is selected after applying the following conditions:

- 1- Firms should be listed on the Tehran Stock Exchange until the end of 2011;
- 2- Firms should be active consistently during the period of study, and their stocks should be transacted (no more than 6 months transaction halt);
- 3- Firms should fully present the required information for this study; and,
- 4- Firms should not be affiliated with investment firms, banks, insurance, and financial intermediaries.

Regarding the information gathered at the end of 2018, the final sample is obtained and depicted in Table 1.

Table 1. the number of statistical population firms after imposing the conditions for sample selection

Description	Eliminated firms in total periods	Total number of firms
Total listed firms in Tehran Stock Exchange		395
Eliminating financial intermediaries, financial supply, insurance, and investment	88	
Eliminating firms entered the Securities and Exchange during the period of study	24	
Elimination due to lack of access to information	96	
Statistical population		187

Data collection tools and method

The required data of the study are collected based on their types from different resources. The information related to the study's literature and theoretical facts were gathered from library resources, including Persian and Latin books and journals, and Internet websites. The information related to firms (balance sheets and profit and loss statements) is used as the research tool.

The primary and raw information and data for hypothesis testing were collected using the information bank of Tehran Stock Exchange, including Tadbir Pardaz and Rah Avard-e Novin, and also the published reports of Tehran Stock Exchange via direct access (by analyzing the released reports in Codal Website and manually collected data) to CDs and also by referring to rdis.ir website and other necessary resources.

Data analysis method

The data analysis method is cross-sectional and year-by-year (panel data). In this paper, the multivariate linear regression model is used for hypothesis testing. Descriptive and inferential statistical methods are used for analyzing the obtained data. Hence, the frequency distribution table is used for describing data. At the inferential level, the F-Limer, Hausman test, normality test, and multivariate linear regression model are used for hypothesis testing.

Research model

Model (1) is used to test the first hypothesis as follows:

$$REM_{it} = a_0 + a_1CR_{it} + a_2BIG1_{it} + a_3Atenure_{it} + a_4achange_{it} + a_5rest_{it} + a_6lnafee_{it} + a_7HHI_{it} + a_8AIS_{it} + a_9MTB_{it} + a_{10}BUSY_{it} + a_{11}BIND_{it} + a_{12}Mchange_{it} + a_{13}mtenure_{it} + a_{14}boardreward_{it} + a_{15}duality_{it} + a_{16}mowan_{it} + a_{17}BEF_{it} + a_{18}industry_{it} + a_{19}year_{it} + \varepsilon_{it} \quad (1)$$

Model (2) is used to test the first hypothesis as follows:

$$AEM_{it} = a_0 + a_1CR_{it} + a_2BIG1_{it} + a_3Atenure_{it} + a_4achange_{it} + a_5rest_{it} + a_6lnafee_{it} + a_7HHI_{it} + a_8AIS_{it} + a_9MTB_{it} + a_{10}BUSY_{it} + a_{11}BIND_{it} + a_{12}Mchange_{it} + a_{13}mtenure_{it} + a_{14}boardreward_{it} + a_{15}duality_{it} + a_{16}mowan_{it} + a_{17}BEF_{it} + a_{18}industry_{it} + a_{19}year_{it} + \varepsilon_{it} \quad (2)$$

Model (3) is used to test the first hypothesis as follows:

$$DEM_{it} = a_0 + a_1CR_{it} + a_2BIG1_{it} + a_3Atenure_{it} + a_4achange_{it} + a_5rest_{it} + a_6lnafee_{it} + a_7HHI_{it} + a_8AIS_{it} + a_9MTB_{it} + a_{10}BUSY_{it} + a_{11}BIND_{it} + a_{12}Mchange_{it} + a_{13}mtenure_{it} + a_{14}boardreward_{it} + a_{15}duality_{it} + a_{16}mowan_{it} + a_{17}BEF_{it} + a_{18}industry_{it} + a_{19}year_{it} + \varepsilon_{it} \quad (3)$$

Where

Dependent variables:

1. REM: real earnings management. Abnormal cash flow (EM_CFO), abnormal cost (EM_PROD), and abnormal discretionary costs (EM_DISX) are used for measuring sales firm control, production control, and discretionary cost control. Equation (4) is used for estimating abnormal cash flow of the firm (EM_CFO), equation (5) for estimating abnormal production cost of the firm (EM_PROD), and formula (4) is used for estimating the abnormal discretionary cost of the firm (EM_DISX) (Cohen and Zarowin, 2010; Zang, 2012). In this paper, eq. (6) is used for estimating real earnings management.

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{S_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta S_{i,t}}{A_{i,t-1}} + \delta_{i,t} \quad (4)$$

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{S_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta S_{i,t}}{A_{i,t-1}} + \beta_4 \frac{\Delta S_{i,t-1}}{A_{i,t-1}} + \delta_{i,t} \quad (5)$$

$$\frac{DISX_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{S_{i,t-1}}{A_{i,t-1}} + \delta_{i,t} \quad (6)$$

Si,t: eq. (6) is about the sales income of the firm *i* in the year *t*. **PRODit** in eq. (3) is the total costs of the firm *i* from the product of year *t* that is equal to the total costs of products and changes in the inventory.

DISXit: eq. (6) is about total office costs and sales costs of the firm *i* in the year *t*. For a similar industry and year, given the equations (4), (5), and (6) to regression residuals (EM_CFO), abnormal cash flow of the firm (EM_PROD), abnormal production cost, and (EM_DISX) abnormal discretionary costs. Since the firms are likely to select a combination of these three ways, we employ the Cohen and Zarowin (2010) and Zang (2012) for making general real earnings management index:

$$EM\ PROXY = EM\ PROD - EM\ CFO - EM\ DISX$$

2. AEM: accrual-based management. The adjusted model of Jones (1991) is used to calculate discretionary accruals. First, the coefficients are estimated using the eq. (2):

$$\frac{TA_{i,t}}{Assets_{i,t-1}} = \alpha_1 \left(\frac{1}{Assets_{i,t-1}} \right) + \alpha_2 \left(\frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} \right) + \alpha_3 \left(\frac{PPE_{i,t}}{Assets_{i,t-1}} \right) + \varepsilon_{i,t} \quad (7)$$

After coefficient estimation, non-discretionary accruals are computed using Eq. (9)

$$\frac{NDA_{i,t}}{Assets_{i,t-1}} = \alpha_1 \left(\frac{1}{Assets_{i,t-1}} \right) + \alpha_2 \left(\frac{\Delta Sales_{i,t} - \Delta AR_{i,t}}{Assets_{i,t-1}} \right) + \alpha_3 \left(\frac{PPE_{i,t}}{Assets_{i,t-1}} \right) \quad (8)$$

And finally, for the calculation of discretionary accruals, we have:

$$\frac{DA_{i,t}}{Assets_{i,t-1}} = \frac{TA_{i,t}}{Assets_{i,t-1}} - \frac{NDA_{i,t}}{Assets_{i,t-1}} \quad (9)$$

In the above equations, TA is accruals, Assets is total assets, Sales is income, AR is accounts receivable, and PPE is gross properties, machinery, and instrument, NDA is non-discretionary accruals, and DA is discretionary accruals. In this paper, the following formula is used for computing accruals, which is referred to as profit and loss:

Accruals = earnings before unpredicted items – operational cash flow

Most of the previous studies utilized DA for measuring earnings and audit quality. Using the DA this paper uses a proxy for audit quality because it presents a degree of negotiations related to audit setting decisions. Abnormal accruals of performance setting estimate the size of DA.

Independent variable

1. Corporate reputation.

To assess corporate reputation, the exploratory factor analysis of the following variables is used, based on which the variable of corporate reputation is obtained:

1. Firm age (Age): time passed from the date of establishment to the year under study;
2. Export (Forgin): if the business firm has an export in the year under study 1, otherwise, 0;
3. Marginal unit (SEG): if the firm has a marginal unit 1, otherwise, 0;
4. Type of ownership (INVE): the percentage of share available to institutional owners (percentage of shares available to investors, insurance, financial and credit institutions, state-owned and public institutions);
5. Firm size (SIZE): natural logarithm of total firm assets;
6. Number of marginal units (NUM_SEG): is equal to the number of marginal units of the firm in the year under study;

7. Cost of research, development, and advertisement (R&D): is equal to total costs for research and development in the year under study divided by total assets of the firm;
8. Social responsibility (PHA): if the firm has gained humanitarian aids in the year under study 1, otherwise, 0;
9. Number of personnel (employ): natural logarithm of the number of staffs of the business firm in the year under study;
10. Board degree (Degry): if the educational degree of the board members is bachelor's or master's or higher 1, otherwise, 0;
11. Sales price (Sales): sales price of the firm divided by total assets of the firm in the year under study;
12. Board financial expertise (BFI): if one of the board members has accounting, finance, and economics degree or one of the financial principles 1, otherwise, 0;
13. International certificate (SIN): if the firm has gained an international certificate in the year under study 1, otherwise, 0;
14. Profitability (PROF): if the firm is profitable in the year under study 1, otherwise, 0;
15. ROA: Return on equity equal to net profit ration divided by the book value of equity in the year under study;
16. LEV: financial leverage equal to total liabilities to total assets of a firm in the year understudy
17. Sales back reverse (SBR): the reverse sum of sales back of the firm under study;
18. Operational costs growth (EX): is equal to operational costs of the current year minus that of the previous year divided by the operational costs of the previous year;
19. Intangible assets (INT): total intangible assets of the firm divided by total assets of the firm;
20. Industry share of the firm (FCON): Herfindahl Harrisman Index, which is equal to the following:

$$HHI_{it} = \sum_{i=1}^k \left(\frac{Sales_{it}}{Sales_{jt}} \right)^2 \quad (10)$$

Sales_{it}: firm sales in the year understudy

Sales_{jt}: industry sales in the year under study;

21. Firm risk (RISK): standard deviation of profit or loss of the current year with that of the 3 years ago;
22. The amount of information technology usage (IT): if the firm has used IT in the year under study 1, otherwise, 0;
23. Internet sales of the firm (ISALES): if the firm has had internet sales in the year under study 1, otherwise, 0; and,
24. Firm brand value (BV).

Control variables

BIG1: audit firm largeness, if the audit firm is Audit Organization or Mofid Rahbar Institution 1, otherwise, 0.

Atenure: auditor tenure, the duration the auditor has been in charge of firm auditing, consistently;

Achange: auditor change, if the auditor has changed in the year under study 1, otherwise, 0;

Rest: financial restatement, if financial statements of the business firm are restated in the year under study 1, otherwise, 0.

Hhi: auditor's concentration: Similar to the previous studies (Eshleman & Lawson, 2016; Huang et al., 2015; Newton et al., 2016; Newton et al., 2013; Kallapur et al., 2010), this paper has used the index of auditor concentration. The lower the value of this index, the higher the concentration and competition in the market would be. Bon et al. (2012) and Kallapur et al. (2010) states that this index's results can be considered for audit market competition, inversely. Choi and Zaqaal (1999) conclude a negative and significant relationship between concentration and competition in the audit market. In this paper, similar to the study of (Marquez & Steven, 1997), this index is used in the industry section. Moreover, similar to the study of Kallapur et al. (2010), this index is multiplied by (-1) to be used as an index for audit market competition, not concentration. This index is computed as follows:

$$HHI = \left(\sum_{i=1}^k \left(\frac{s_{it}}{S_{jt}} \right)^2 \right) * (-1) \quad (11)$$

K: the number of auditors in the related industry

s: total audit fee received by the auditor in the related industry

S: total audit fee received by auditors in related industry

AIS: auditor specialization in the industry i in the year t that in this paper, the market share is used as an index for auditor industry specialization because it

shows the priority for industry to other auditors. The more the share from the auditor's market, the more industry specialization and auditor experience than other rivals. Auditor market share is computed as follows:

$$\frac{\text{total assets of all employers of each special audit firm in special industry}}{\text{total assets of all employers in the special industry}}$$

In this paper, those firms are considered industry specialized that their market share, namely the so-called ratio, is more than [(total existing firms/1)*1.2]. After calculating an audit firm's market share, should the obtained values be more than the above equation's value, the audit firm is specialized in that industry. Hence, an audit firm is industry specialized 1; otherwise, 0 will be assigned (Habib & Bihavian, 2011).

MTB: market value to book value of equity

BUSY: if the end of the fiscal year is January 20, 1 will be assigned; otherwise, 0;

BIND: board independence that is equal to unbounded members to total board members;

Mchange: CEO change, if the CEO has changed in the year under study 1, otherwise, 0;

Mtenure: CEO tenure, the duration the CEO has been in charge of firm auditing, consistently;

Boardreward: cash reward of the board that is equal to the board reward divided by payment;

Duality: CEO duality, if the CEO is both in the position of chairman or vice-chairman and executive manager 1, otherwise, 0;

Own: institutional ownership is equal to the percentage of share hold by the shareholders of public/state-owned shareholders, banks, financial/credit institutions, and insurance divided by total published shares in that year

Industry: dummy variable of industry

Year: dummy variable of the year;

Data analysis

In this paper, 4 models are used to assess the effect of corporate reputation on different types of earnings management. Further, the present study has inserted the panel data method, including 187 Iranian firms, from 2012-2018 in its database. In order to estimate the models, the variables of corporate reputation,

real, accrual-based, and increasing/decreasing earnings management are used.

Table 2. The descriptive statistics of the variables

Variable	obs	Mean	Std. dev	Min	Max
AEM	1309	0.105	0.119	0.000	1.116
REM	1309	0.023	0.049	0.000	1.158
FEM	1309	0.489	0.500	0.000	1.000
CR	1301	21.018	7.535	5.622	80.698
BIG1	1308	0.246	0.431	0.000	1.000
Atenure	1309	3.593	3.823	1.000	17.000
REST	1309	0.747	0.435	0.000	1.000
Lnafee	1073	7.338	1.638	2.303	14.390
HHI	1147	0.232	0.219	0.019	1.000
AIS	1309	0.434	0.496	0.000	1.000
MTB	1301	4.315	6.281	-59.595	65.541
Busy	1309	0.684	0.465	0.000	1.000
Bind	1306	0.693	0.199	0.000	1.000
Mchange	1307	0.283	0.451	0.000	1.000
Mtenure	1309	3.609	2.946	1.000	15.000
Boardreward	1309	0.001	0.002	0.000	0.016
Duality	1299	0.259	0.438	0.000	1.000
Manown	1264	0.188	0.274	0.000	0.954
Bef	1253	14.730	5.424	1.000	60.000

Unit Root

By assessing all variables' unit root, all are at the unit root (stationary) level. The obtained LM statistic for each variable is reported in Table 3.

Table 3. The results of the Hadri test

Variable	Level	Variable	Level
AEM	0.2019	REM1	0.3215
REM2	0.4090	CR	0.5518
Big1	0.2154	Atenure	0.4781
Rest	0.8053	Lnafee	0.8029
HHI	0.2283	AIS	0.2158
MTB	0.2547	Busy	0.1528
Blnd	1.0000	Mchange	1.0000
Mtenure	0.2694	BoardReward	0.4038
Duality	0.2239	Manown	0.1982
Bef	0.9248		

	00 1	01 1	06 6	1	9														
REST	0. 03 4	0. 00 4	- 0. 02 2	0. 00 4	0. 09 9	- 0.0 68	1. 00 0												
Lnaf e	- 0. 02 4	- 0. 01 0	0. 03 5	0. 07 1	0. 04 3	0.0 61	0. 05 9	1.0 00											
HHI	0. 06 3	0. 04 0	- 0. 02 8	0. 14 1	0. 22 2	0.1 74	- 0. 04 4	0.1 04	1. 00 0										
AIS	- 0. 04 8	0. 02 0	- 0. 01 8	0. 02 2	0. 43 3	0.2 85	0. 04 4	0.0 65	0. 09 9	1. 00 0									
MTB	0. 00 8	0. 07 9	0. 06 5	0. 07 0	0. 03 5	- 0.0 32	0. 08 1	- 0.0 21	0. 09 3	- 0. 02 4	1. 00 0								
Busy	0. 01 8	0. 07 0	0. 06 6	0. 06 5	0. 13 0	0.0 50	0. 02 3	0.2 29	- 0. 07 0	0. 09 2	0. 02 3	1.0 00							
Bind	- 0. 02 0	- 0. 09 2	- 0. 08 1	- 0. 02 6	- 0. 12 3	- 0. 12 3	0. 01 8	0.0 23	0. 05 8	0. 00 1	- 0. 02 6	0.0 58	1. 00 0						
Mcha nge	- 0. 00 1	0. 04 9	0. 03 6	0. 02 4	0. 08 3	0.0 19	0. 03 4	0.0 06	- 0. 02 8	0. 00 9	- 0. 05 9	0.0 48	0. 05 8	1.00 0					
Mtenu re	0. 01 8	- 0. 07 1	0. 00 1	- 0. 05 6	0. 16 6	- 0.0 64	0. 05 6	- 0.0 24	- 0. 01 5	0. 01 6	- 0. 02 1	- 0.0 98	0. 05 6	- 0.49 2	1.00 0				
Board rewar d	0. 04 5	- 0. 02 7	- 0. 05 1	0. 01 9	0. 10 3	- 0.0 92	0. 10 4	- 0.0 07	- 0. 02 4	0. 14 8	0. 05 9	0.0 02	0. 15 4	- 0.10 4	0.10 4	1.000			
Dualit y	- 0. 02 5	0. 06 1	0. 03 1	0. 00 9	0. 03 4	0.0 92	0. 01 9	0.0 28	0. 08 8	- 0. 00 2	0. 01 0	0.0 39	0. 12 7	0.01 7	- 0.02 3	-0.056	1.0 00		
Mano wn	0. 00 7	- 0. 06 9	0. 05 7	- 0. 03 4	0. 15 1	0.1 28	0. 10 6	0.0 68	0. 10 9	0. 12 5	0. 01 9	0.1 45	- 0. 08 2	0.04 7	- 0.16 6	-0.006	0.1 08	1.00 0	
Bef	0. 00 5	0. 02 8	0. 00 9	- 0. 05 7	0. 14 3	0.1 44	0. 03 8	0.0 42	0. 16 1	0. 13 4	- 0. 01 8	- 0. 00 5	0. 00 3	0.04 5	- 0.04 1	-0.055	0.1 09	- 0.03 9	1. 00 0

This test, referred to as sensitivity analysis, assesses the relationship between used variables in the model two-by-two, the above matrix's output. This matrix's diameter, since it analyzes the correlation between the variable and itself, is always 1. This means complete correlation, and the more the figures closer to 1, the higher the correlation, and the closer the figures to 0, the lower the correlation. The correlation interval is between -1 and +1, where negative figures show inverse correlation, and positive figures indicate a direct correlation.

Research model estimation

Table 6. The results of the first model

AEM	Coef	Std.Err	z	p-value
CR	-0.0004	0.0001	-2.27	0.023
BIG1	0.012	0.004	2.58	0.010
Atenure	-0.010	0.004	-2.75	0.006
REST	-0.004	0.001	-2.89	0.004
Lnafee	-0.002	0.001	-2.85	0.004
HHI	-0.010	0.005	-1.90	0.057
AIS	-0.019	0.004	-5.01	0.000
MTB	-0.003	0.001	-2.85	0.004
Busy	-0.069	0.055	-1.26	0.209
Bind	0.059	0.029	2.05	0.041
Mchange	-0.021	0.009	-2.25	0.027
Mtenure	-0.0002	0.0001	-1.89	0.059
Boardreward	2.063	1.061	1.94	0.054
Duality	-0.007	0.002	-2.93	0.004
Manown	0.038	0.022	1.72	0.086
Bef	0.007	0.003	2.48	0.013
-con	0.117	0.059	1.98	0.049
R-sq	0.8562			
R ² -sq	0.3783			
p-value model	F(16,803)=0.89			
p-value model	Prob>F=0.5843			
F-Limer	F(172,803)=2.30			
F-Limer	Prob>F=0.0000			
Hausman	CHI2(15)=22.54			
Hausman	Prob>Chi2=0.0944			

To estimate the model, we should first determine whether the data are pooled or panel by the F test. This test's null hypothesis is that the data are pooled, and hypothesis 1 claims that data are panel. In case H0 is rejected after performing the F test, the question here is that based on which models of fixed effects or random effects does the model is analyzable, which is determined by the Hausman test. Regarding the pooled test results reported in Table 6, the null hypothesis concerning the pooled data is rejected for the first model at 99%. Hence, the model with panel data should be used for estimating the coefficients of the models. According to Table 6, the Hausman test statistic, based on estimation for the models, is equal to 22.54, with a probability level of 0.094, which is smaller than χ^2 the Table's value, so the null hypothesis is rejected. Hence, the model with fixed effects is more appropriate for the model (1).

The results show a significant relationship between corporate reputation and accrual-based earnings management. Its p-value is 0.094 lower than the 5% significance level with negative coefficients of 0.0004, showing that such a negative relationship exists between these two variables.

Table 7. The results of the second model

rem	Coef	Std.Err	z	p-value
CR	-0.001	0.0004	-2.10	0.035
BIG1	0.016	0.008	1.93	0.056
Atenure	-0.005	0.002	-2.05	0.041
REST	-0.006	0.002	-3.09	0.002
Lnafee	-0.005	0.002	-2.05	0.041
HHI	-0.002	0.001	-3.71	0.000
AIS	-0.004	0.002	-1.91	0.057
MTB	0.001	0.0002	3.11	0.002
Busy	0.007	0.003	2.16	0.031
Bind	-0.009	0.004	2.25	0.025
Mchange	-0.018	0.007	-2.53	0.011
Mtenure	-0.001	0.0003	-2.79	0.005
Boardreward	-0.369	0.158	-2.33	0.021
Duality	0.008	0.006	1.33	0.183
Manown	-0.013	0.005	-2.52	0.012
Bef	-0.005	0.003	-1.67	0.095
-con	0.026	0.015	1.75	0.080
R-sq	0.7114			
R ² -sq	0.5542			
p-value model	Wald chi2(16)=36.41			
	Prob>chi2=0.0025			
F-Limer	F(172,803)=3.40			
	Prob>F=0.000			
Hausman	Chi2(15)=21.82			
	Prob>chi2=0.1125			

Given the pooled test results presented in Table (7), the null hypothesis concerning pooled data is rejected for the second model at 99% confidence, so the pooled panel model should be used for estimating the model coefficients. Moreover, according to Table 7, the Hausman test statistic, based on estimation for the models, is equal to 21.82, with a probability level of 0.1125, which is higher than χ^2 the table's value, so the null hypothesis is not rejected. Hence, the model with random effects is more appropriate for the model (2).

Table (7) shows a negative and significant relationship between corporate reputation and real earnings management because its p-value is 0.035, lower than 5% significance level with negative coefficients of 0.0004, showing that such a negative relationship exists between these two variables.

Table 8. The results of the third model

FEM	Coef	Std.Err	z	p-value
CR	-0.001	0.001	-2.35	0.019
BIG1	0.003	0.0004	9.62	0.000
Atenure	-0.013	0.005	-2.40	0.017
REST	-0.019	0.009	-2.24	0.027
Lnafee	0.106	0.028	3.76	0.000
HHI	-0.005	0.003	-1.67	0.095
AIS	-0.014	0.005	-2.72	0.007
MTB	0.005	0.003	1.82	0.070
Busy	0.070	0.038	1.86	0.064
Bind	-0.222	0.089	-2.49	0.013
Mchange	0.046	0.018	2.50	0.012
Mtenure	0.007	0.006	1.15	0.252
Boardreward	-17.752	10.703	-1.66	0.098
Duality	0.027	0.008	3.54	0.000
Manown	0.090	0.060	1.51	0.132
Bef	0.006	0.002	2.46	0.014
-con	0.476	0.121	3.92	0.000
R-sq	0.7556			
R ² -sq	0.7338			
p-value model	F(16,975)=2.04			
	Prob>F=0.0088			
F-Limer	F(172,803)=0.83			
	Prob>F=0.9375			

Given the pooled test results presented in Table (8), the null hypothesis concerning pooled data is not rejected for the third model at 99% confidence, so the pooled data model should be used for estimating the model coefficients.

Table 8 shows a negative and significant relationship between corporate reputation and decreasing earnings management because its p-value is 0.019 lower than a 5% significance level with a negative coefficient of 0.001, showing that a negative relationship exists between corporate reputation and decreasing earnings management.

Robustness test

In this paper, to yield better results and confirm the results of the study, research hypotheses were examined using generalizable least squares, random-effects model, and t+1, the results of which are as follows:

Table 9. The results of additional analyses of the first model

variable	Research model		Research model		Research model	
	Fixed effect		FGLS		T+1	
CR	-0.006	0.047	-0.014	0.018	-0.0004	0.000
BIG1	0.069	0.008	0.015	0.000	0.004	0.000
Atenure	-0.068	0.050	-0.007	0.044	-0.049	0.017
REST	-0.007	0.000	0.013	0.142	-0.009	0.025
Lnafee	-0.003	0.057	-0.033	0.000	-0.003	0.054
HHI	0.027	0.131	0.032	0.064	-0.005	0.041
AIS	-0.002	0.071	-0.015	0.073	0.015	0.177
MTB	-0.004	0.003	-0.0001	0.018	-0.002	0.079
Busy	-0.001	0.025	0.007	0.428	-0.010	0.368
Bind	0.053	0.072	-0.014	0.005	0.022	0.000
Mchange	-0.001	0.000	-0.003	0.054	-0.003	0.071
Mtenure	-0.003	0.000	-0.013	0.050	-0.005	0.000
Boardreward	2.047	0.000	3.211	0.189	1.790	0.000
Duality	-0.011	0.231	-0.009	0.293	-0.004	0.000
Manown	0.051	0.078	0.002	0.057	0.040	0.000
Bef	0.002	0.057	0.007	0.023	0.005	0.002
-con	0.066	0.033	0.069	0.012	-0.047	0.216
R-sq	0.0043		-		-	
R-sq2	0.1171		-		-	
p-value model	Wald chi2(16)=13.12		Wald chi2(16)=25.48		Wald chi2(16)=9.71	
	Prob>chi2=0.6643		Prob>chi2=0.0617		Prob>chi2=0.8811	

Moreover, to confirm the results of the model (1), the model is assessed using three methods of fixed effect t+1, random effects, and FGLS. According to Table 9, a negative and significant relationship is observable between corporate reputation and accrual-based earnings management, and this in line with the results of the study's main results. We can claim with more confidence that there is a negative and significant relationship between Iraqi firms' reputation and accrual-based earnings management.

Table 10. The results of additional analyses of the second model

variable	Research model		Research model		Research model	
	Fixed effect		FGLS		T+1	
CR	-0.0002	0.059	-0.003	0.002	-0.001	0.044
BIG1	0.013	0.103	0.021	0.000	0.007	0.008
Atenure	-0.0004	0.023	-0.002	0.002	-0.009	0.045
REST	-0.014	0.040	-0.034	0.038	-0.074	0.010
Lnafee	-0.002	0.004	-0.036	0.068	-0.007	0.004
HHI	-0.088	0.061	-0.014	0.005	-0.037	0.024
AIS	-0.077	0.066	-0.058	0.005	-0.003	0.028
MTB	0.001	0.001	0.001	0.015	0.001	0.004
Busy	0.0004	0.042	0.008	0.036	-0.004	0.046
Bind	0.014	0.271	-0.026	0.005	-0.013	0.101
Mchange	-0.037	0.024	-0.010	0.000	-0.009	0.091
Mtenure	-0.001	0.178	-0.001	0.174	-0.0004	0.185

Boardreward	-0.129	0.023	-0.071	0.059	-1.029	0.029
Duality	0.008	0.134	0.007	0.055	0.0002	0.042
Manown	-0.014	0.005	-0.021	0.001	-0.738	0.030
Bef	-0.033	0.000	0.0001	0.655	-0.001	0.153
-con	0.025	0.324	0.037	0.004	0.019	0.088
Number of obs	992		992		840	
R-sq	0.5038		-		0.7217	
R-sq2	0.3325		-		0.4511	
p-value model	F(16,803)=1.16		Wald chi2(16)=0.5951		Wald chi2(16)=29.05	
	Prob>F=0.2985		Prob>chi2=0.0000		Prob>chi2=0.0236	

Moreover, to confirm the results of the model (2), the model is assessed using three methods of random effects t+1, fixed effect, and FGLS. According to Table 10, a negative and significant relationship is observable between corporate reputation and real earnings management based on all three methods, with a difference that based on the fixed effects method, the relationship between corporate reputation and earnings management is not acceptable at 95% confidence level and it is significant at 90% confidence. However, the coefficients of variables in all three methods are negative and significant. These results confirm the results of the main results of the study.

Table 11. The results of additional analyses of the third model

variable	Research model		Research model	
	Fixed effect		T+1	
CR	-0.007	0.004	-0.058	0.005
BIG1	0.004	0.057	0.004	0.057
Atenure	-0.033	0.000	-0.014	0.005
REST	-0.027	0.020	-0.085	0.043
Lnafee	0.078	0.000	0.001	0.025
HHI	-0.002	0.065	-0.010	0.000
AIS	-0.049	0.017	-0.059	0.083
MTB	0.003	0.043	0.001	0.003
Busy	0.499	0.063	-0.083	0.127
Bind	-0.266	0.061	0.040	0.059
Mchange	0.057	0.209	0.065	0.259
Mtenure	0.054	0.076	0.025	0.014
Boardreward	-31.410	0.063	-2.472	0.002
Duality	0.127	0.039	0.077	0.152
Manown	0.118	0.278	0.009	0.094
Bef	0.056	0.027	0.099	0.098
-con	0.259	0.370	0.110	0.535
Number of obs	992		840	
R-sq	0.6381		-	
R-sq2	0.5837		-	
p-value model	F(16,803)=3.14		Wald chi2(16)=9.31	
	Prob>F=0.0000		Prob>chi2=0.8999	

Moreover, to confirm the results of the model (3), the model is assessed using two methods of fixed effects and PNG. According to Table 11, a negative and significant relationship is reported in line with the study's main method results. Hence, the study's main method results are more trustworthy because they are obtained using the other two methods.

Conclusion and discussion

The present study attempts to assess the relationship between corporate reputation and different types of earnings management. The study results show a negative and significant relationship between corporate reputation and different types of earnings management. This means that the business firms' managers are less likely to do earnings management actions by increasing corporate reputation. These findings are in line with that of the Sitiavan and Hermavan (2017), Habib and Ajina (2017), Martinez Ferrero et al. (2015), who declares that managers of highly-reputed firms try to enhance the value and credit of a firm and are less likely to embark on earnings management actions.

Hence, we can claim that in firms with reputation, due to the largeness and presence of more customers, the loyalty of whom has made credit for the firm, managers attempt to maintain their reputation by presenting accurate information and declining the information asymmetry between owners and firm managers. Moreover, we can conclude that reputed firms, due to their fame in the market and society, are under the supervision of shareholders and customers. Their managers cannot carry out the earnings management and biased measures for a long time. Therefore, we can generally say that earnings management is a factor for declining reputation and business firms' credit. According to the findings of the present study and previously conducted articles on firms' reputation and different types of earnings management, we can posit that corporate reputation has a negative impact on earnings management and reduces that. Firms with high reputation are less likely to embark on such actions. Those business firms that perform the earnings management by manipulating the profit will hurt firms' credit and reputation (Sitiavan & Hermavan, 2017).

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