

Auditors' perception of risk management factors, audit fees, and earnings manipulation opportunities

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Abstract

This study aimed to examine auditors' perceptions of risk management factors, audit fees, and earnings manipulation opportunities. The statistical population comprised companies listed on the Tehran Stock Exchange. The sample consisted of 155 companies listed on this exchange from 2007 to 2019 (1860 firm-year observations). The study followed a correlational causal-comparative research approach, which involved testing a series of hypotheses through correlation and regression analysis. The results showed that the weakness of internal controls has a significant effect on earnings manipulation opportunities and that leading economic indicators have a significant impact on audit fees. Switching auditors and the previous year's audit report showed no significant effect on audit fees or earnings manipulation opportunities.

Keywords: risk management, audit fee, earnings manipulation opportunity, internal controls
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1 Introduction

One of the most shocking revelations of recent financial crises was the extent of failure in risk management. Later investigations showed that in many cases, risks were not being managed based on the firm performance or being adjusted for the firm strategy. Often, risk managers were not isolated from the management process or treated as an essential component of the implementation of the firm strategy, and the auditors' responses were not taken into consideration. Most importantly, many of the boards simply ignored the risks facing their company. Legislators and other people in charge of setting standards must fully understand that effective and efficient risk management does not mean eliminating risk-taking, which is indeed a key driver of business and entrepreneurship. Rather, the main purpose of risk management is to ensure that risks are well understood, managed and, if necessary, reflected in financial reports and documents. Effective and efficient implementation of risk management strategies requires a macro business-wide approach rather than micromanagement of individual business units. This approach needs to include a proper way for the boards to participate in establishing and overseeing the risk management structure of their business. The boards must be able to evaluate and provide guidance on the alignment of the firm strategy with its risk-taking stance and internal risk management structure.

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To assist the board, the management and control departments should be independent of profit centers, and senior risk management should report directly to board members or their designated audit committee based on reporting principles. The risk management process and the results of the risk assessment should be properly disclosed. The board should ensure that the firm discloses market risk factors clearly and comprehensibly without revealing any business secrets. Risk factors should be disclosed in the order of importance or relevance in terms of a set of qualitative criteria, which themselves must be disclosed in the reports.

2 Significance of the study

The pricing of auditing services is a topic of keen interest to many audit researchers and has been the subject of many studies. Also, auditing fees could sum up to considerable amounts for many businesses and although it may be easy for large companies with high revenue and liquidity or state-owned companies to pay such costs, this is not the case for most small businesses or those with poor financial standing. Thus, from the business owner's point of view, it is important to identify the factors that influence audit fees so that they can be reduced or made easier to bear through negotiation and bargaining or by controlling the said factors within the organization.

A good understanding of these factors will also help auditors to price their services appropriately [14]. In Iran, the importance of this issue became more evident after the formation of the Iranian Association of Certified Public Accountants (IACPA), as it broke the monopoly of the auditing labour market and created intense competition among auditors; an event that had happened a long time ago in most developed countries. From the early 1970s to the early 2000s, most auditing firms were focused on their own growth rather than on professional values [33]. During this time, managers of audit firms were under a lot of pressure to find new clients, retain existing clients, and provide consulting services, and failure to achieve such growth objectives had dire consequences, including sacking and layoffs.

The auditing profession has also undergone rapid and significant changes in the last twenty years. Reduced regulation in the auditing profession has allowed auditing firms to focus even more on pursuing economic goals, i.e. increasing their revenue and reducing the costs of audit services. To be successful under such circumstances, auditors need to have an excellent estimate of the fee rates that will allow them to do the job at the lowest possible cost while maintaining the necessary quality considering the characteristics of each line of business. The fee paid to the auditor can affect the quality of the audit in two ways.

Paying higher fees will motivate the auditor to put more effort into the work and improve the quality of the audit. However, this also makes the auditors financially dependent on their clients, because of which they may not follow the auditing procedures properly due to concerns about losing their jobs, and this of course can have disastrous financial consequences. It should be noted that this approach to auditing is consistent with the views of Damsky and Swiringa, which consider independent auditing as a subset of the organization's financial reporting system. In this view, auditing services are an economic commodity that business owners need to the extent that its benefits outweigh the costs. Thus, for clients, auditing fee is a matter of cost-benefit, as it the case for any other commercial commodity. From this viewpoint, while clients do audits because they are legally required to prepare financial statements (for shareholders, creditors, etc.), determining the factors that influence the audit costs will help them better understand the purpose of this expenditure and the benefits of this service. Naturally, this understanding will accelerate and facilitate the audit process and improve its quality by improving the cooperation of the client.

3 Theoretical foundations

3.1 Risk management

Effective risk management does not mean eliminating risk-taking, which is an essential part of business and entrepreneurship. However, one of the main lessons learned from past financial crises is that all companies, both financial and non-financial, need to strengthen their risk management practices and operations. Although this seems to be self-evident, there is not much evidence that listed companies actually pay more attention to risk management in the post-financial crisis periods. For example, in a 2011 survey by McKinsey, 44 percent of respondents said that their boards simply approved the proposed management strategies. The same survey showed that only 41% of the time of the boards is spent on managing business risks, and only 14% of respondents had a thorough knowledge and understanding of the risks facing their company. Half of the board members and directors said that the information they receive is very short-term [17]. An audit's primary purpose in the area of risk management is to focus on key risks. This does not mean that other risks are not important, but it does mean that they are unlikely to be considered as the dominant goal. Risk-based auditing is an evolutionary process. One may question that do businesses always tackle

challenges as they come or whether they plan ahead. The more an organization struggles with current challenges, the less likely it is to focus on key risks. It has been suggested that the best way to make the necessary changes to avoid this problem is to consider different approaches to internal auditing [17].

3.2 Audit fee

Auditors earn income based on the fee that they agree on when signing a contract with business owners. Auditors consider a variety of factors when pricing their services, and many studies have been conducted to identify and evaluate these factors. Descriptive factors considered in most studies include the potential risks and the volume and complexity of the unit operations. Audit fees and the factors that affect them have been the subject of many studies [24].

In a study by Hasas Yeganeh and Alavi Tabari [16], they examined the relationship between the resources spent on internal audits and the independent audit expenses in Iran. The purpose of this study was to identify the determinants of independent and internal audit fees, identify the impact of having internal audits on the audit fees, and evaluate the effect of raising the management levels that internal auditors report to on the quality of internal audits and their usefulness as a substitute for independent audits. The results of this study showed that independent audit fees depend on the complexity of the firm and that increasing the resources spent on internal audits reduces the cost of independent auditing, and this decrease is greater in firms where internal auditors report to positions higher than deputy director of finance & administration. Many similar studies have also been conducted in other countries including the United States, the United Kingdom, Australia, France, New Zealand, Finland, Canada, Japan, India, Bangladesh, Taiwan, Singapore, the United Arab Emirates, and Kuwait. Most of these studies have pursued one main goal, which is to identify the factors affecting the audit fee and have used regression statistical methods.

A good understanding of how audit fees are determined can benefit the client as well as the auditor. As mentioned, the amount of fee paid to the auditor can affect the quality of the audit in two ways. Earning higher fees will motivate the auditor and improve the quality of the audit. However, it also makes the auditor financially dependent on the client, gradually eroding their independence. In such circumstances, it also becomes more likely to have actual audit fees abnormally over or below standard fees (standard fees reflect the costs of the auditors' efforts and litigation risks, and the actual fees are the amounts actually paid to the auditors).

If investors perceive that these abnormal audit fees are being paid because of the auditors' economic dependence on the business owners, the auditor's independence and credibility will be diminished and investors will be reluctant to trust the company's information. As a result, this information will lose its use as a determinant of stock prices in the market. However, if investors think that abnormal audit fees are being paid for reasons other than economic dependence, they will continue to see company information as a good basis for valuing stock prices [32].

3.3 Audit fees and audit quality

Audit fees are typically determined based on the total cost of the services provided in the audit process, plus an estimate of future losses arising from the auditor's liability for the reports issued. The pricing process is done in three steps. In the first step, the auditor assesses the likelihood of incurring losses in the future through the litigation brought by a stakeholder, such as a shareholder. In the second step, the auditor must estimate the resources that will be spent on the audit operations, such as manpower, taking into account the present value of expected future earnings and losses and the costs that may arise from additional audit processes. Finally, the auditor must set a price to cover all of these costs and earn a profit. Naturally, the auditor's judgment plays an important role in determining the price [8].

In the agency theory, auditors are recognized as independent representatives of shareholders and other stakeholders that they employ to verify the accuracy, reliability, and relevance of the information provided by business managers. However, since auditing requires a close relationship with the business managers, this theory assumes that some auditors may not maintain their independence and thus not carry out their duties as intended, or in other words, they may act in the best interests of themselves and managers instead of shareholders [31].

In Iran, there is evidence indicating that the formation of the Iranian Association of Certified Public Accountants (IACPA) and the privatization of auditing have created fierce competition in the auditing market, which has led to an increased rate of auditor switching and also an increased rate of unadjusted (qualified) opinions. This issue has raised the concern that the privatization of the auditing industry is undermining the independence of the auditors and leading to the selection of auditors based on the favorability of their opinions [6].

Since the purpose of audits is to improve the usefulness of financial statements for users who rely on them to make decisions, the selection of auditors based on the favorability of their opinions can severely damage the credibility and

prestige of the auditing profession. When auditors are unable to properly perform their role in accrediting financial statements, it means they fail to perform their duty regarding resolving the conflict between the interests of information providers and information users, especially current and potential investors. The issue of competition in the auditing profession has always been of interest to researchers. Previous evidence and research have shown that there is a direct relationship between the audit fee received and the type of auditor's opinion given [29].

3.4 Economic trend, audit report, and audit fee

One of the strategies that audit firms use to reduce their own risk is to increase the audit fees for risky clients. Overall, the weakness of internal controls in a business is associated with an increase in its expenditure on audit fees [9, 18]. The change in premiums in the years following unfavourable ICFRs regardless of whether or not the deficiencies have been remedied indicates that the premiums are not related to workload but to the higher risk of these customers [21].

In periods when businesses try to cope with a recession, audit firms have to address their need for revenue when considering taking risky clients and changing audit fees [12]. Furthermore, research has shown that increasing audit fees leads to the rejection of the auditor [12]. Since many auditing firms may not be in a good financial position to compensate for the loss of earnings associated with this rejection, they may choose to take clients with weak internal controls to retain them for their future revenue.

Irrespective of the change in the relationship between audit opinions and auditors' resignation during periods of recession, in general, auditing firms tend to resign from clients with unfavourable opinions, as it is a key indicator of high risk. Therefore, firms may build and maintain a customer base with such clients in times of need. Considering the high risk of these clients and the severity of recent recessions, it is worthwhile to assess the extent to which economic pressures affect the risk-adjusted pricing. In cases where pricing is dominated by economic pressures, the risk assessed merely based on the weaknesses of internal controls will be an underestimate. Also, given the level of risk associated with clients with unfavourable audit opinions whose auditors have resigned, the need for risk-adjusted pricing must prevail over economic pressures [21].

4 Research background

In a study by Alastaire, Miguel and Ping [1], where they examined the relationship between the tenure of a CEO and earnings management, it was reported that new CEOs typically try to influence the market perception of their capabilities in their early years, when the market situation is uncertain. They also stated that the exaggeration in earnings reporting occurs much more in the last year of a CEO's tenure, but the difference can only be revealed by examining the exaggeration in earnings reporting in earlier years.

To examine whether there is a positive relationship between audit volume and audit quality and between audit quality and audit fee, Chen and Hsu [10] analyzed audit quality information and human capital data (education, experience, certification, training, effort) with the audit volume divided into three levels (large, medium, small). This study found that there is a positive relationship between audit volume and audit quality of large audit firms compared to small ones, but this difference is not significant when comparing medium firms to small firms. This study also reported a strong positive relationship between audit quality and audit fees of large audit firms compared to small firms, but again this difference was not significant when comparing medium firms to small firms. In any case, their empirical evidence supports the hypothesis that audit volume can serve as a basis for measuring audit quality and shows that large high-quality audit firms charge higher fees.

A study by Huang et al. [18] titled "Evidence on the association between financial restatements and auditor resignations" reported that audit fees and financial statement accreditation fees depend on the concentration of the audit market.

In a study on the effect of audit market concentration on audit fees and audit quality with emphasis on the role of audit market size, Schleman [28] reported that audit market concentration has a significant direct effect on audit fees and quality in the sense that audit fees and audit quality both increase with increasing market concentration.

A study by Atraj et al. [4] titled "Auditor realignments accompanying implementation of SOX 404 ICFO reporting requirements" reported that fee pressure during recessions is associated with a decrease in audit quality. Therefore, reducing the fee under pressure from clients can be associated with reduced audit quality for more risky clients, i.e. the clients for whom high-quality auditing is of even greater importance.

In a study by Bryan and Mason [8] titled "Extreme CEO pay cuts and audit fees", these researchers examined the effects of CEO salary cuts on audit costs and reporting quality. This applied research was conducted by the use of linear regression method on a dataset of 8352 firm-years in Serbia from 2011 to 2016. The results of this study showed that reducing the CEO's salary increases the likelihood of financial reporting manipulation and also increases the audit costs.

Greiner et al. [15] examined the relationship between aggressive real earnings management and current and future audit fees in a sample of 74,630 firm-years from 2011 to 2016. The findings of this study suggest that aggressive earnings management is associated with higher levels of current and future audit fees. Thus, although the generally accepted accounting principles do not prohibit real earnings management, the nature of these activities is such that auditors view them as a sign of risk when determining the audit fee.

A study by Salehi [27] investigated the relationship between the fees of industry and non-industry auditors and the investment opportunities for clients. This study found that company-specific investment opportunities play a key role in the pricing of audit services and that the fee increases when the auditor requests a higher fee for risky audits. Furthermore, in cases where clients have distinct investment opportunities compared to other companies, industry-specific auditors are less able to set the audit fee.

In a study by Mousavi Shiri and Pahlavan [22] titled "Balancing between Marketing and Auditing Responsibility by Members of Iranian Association of Certified Public Accountants", these researchers discussed the role of audit fees and audit quality, loss of auditor independence, and the problems of marketing for audit services. The results of this study showed that the marketing strategy of many auditors involves cutting the audit fees and reducing the audit independence and in situations where it is difficult to find audit jobs, some auditors use unprofessional procedures for marketing. However, this study reported that auditors tend to not make a compromise on the quality of auditing to attract work.

After investigating the relationship between competition in the product market and the fee of independent auditors, Dianati, Dilami, and Bayati [11] concluded that competition reduces information asymmetry and control costs, thereby reducing the audit risks and consequently the audit fees.

In a study by Poor Heidari and Golmohammadi [25] on the competition in the market of auditing services and the stickiness of audit fees, it was concluded that the Iranian auditing market is non-competitive and its fees are not determined based on all available information.

5 Research hypotheses

Hypothesis 1: Independent auditors' perception of risk management factors affect audit fees.

This hypothesis was tested by the following three sub-hypotheses:

- 1-1 Weak internal controls affect the audit fee.
- 1-2 Leading economic indicators have an impact on the audit fee.
- 1-3 Auditor switching affects the audit fee.

Hypothesis 2: Independent auditors' perception of risk management factors affect the earnings manipulation opportunity.

This hypothesis was tested by the following three sub-hypotheses:

- 2-1 Company's financial distress affects the earnings manipulation opportunity.
- 2-2 Weak internal controls affect the earnings manipulation opportunity.
- 2-3 Previous year's report affects the earnings manipulation opportunity.

5.1 Statistical population and sampling method

The statistical population of the study comprised of all companies that have been listed on the Tehran Stock Exchange (TSE) from the beginning of the fiscal year 2008 until at least the end of the fiscal year 2019 and meet the following criteria:

- No delisting or suspension of the stock symbol from 2008 to 2019
- Not being a holding or investment company or a financial intermediary (as they are different from the manufacturing companies in terms of the nature of activities and the composition of financial statements)
- No change in the company's fiscal year or activity from 2008 to 2019 (to ensure homogeneity in terms of these factors)

Once the above limitations were applied, the statistical population narrowed down to 160 companies listed on TSE. After removing 61 outlier firm-year observations, the statistical population consisted of 1860 firm-year observations. Since the research was conducted using the library method and needed the real data of companies, the required information was gathered from multiple sources, including the website of TSE and the Rahavard-Novin software.

6 Research models and variables

Following the approach of Bagley et al. [5], the following regression models were used to test the research hypotheses

$$LN(FEE)_{it} = \beta_0 + \beta_1 ICWEAK_{it} + \beta_2 ENCON_{it} + \beta_3 ENCON * ICWEAK_{it} + \beta_4 RES_{it} + \beta_5 RES_{it} * ICWEAK_{it} + \beta_6 RES * ENCON_{it} + \beta_7 ENCON * ICWEAK * RES_{it} + \beta_8 CSIZE_{it} + \beta_9 BKMK_{it} + \beta_{10} LEV_{it} + \beta_{11} ROA_{it} + \beta_{12} LOSE_{it} + \beta_{13} SPEC_{it} + \beta_{14} CEO_{it} + \beta_{15} ABFEE_{it} + \beta_{16} BIG4_{it} + \beta_{17} RESTATE_{it} + \beta_{18} DISAGEREE_{it} + \beta_{19} REPORTABLE_{it} + \beta_{20} AINDEP_{it} + \beta_{21} INDEP_{it} + \beta_{22} NUMWK_{it} + \beta_{21} ASSET_{it} + \beta_{21} SALEASSET_{it} + \beta_{21} AREC_{it} + \beta_{21} INV_{it} + \beta_{21} GOCN_{it} + \varepsilon_{it}$$

Model of the first hypothesis

$$LN(FEE)_{it} = \beta_0 + \beta_1 ICWEAK_{it} + \beta_8 CSIZE_{it} + \beta_9 BKMK_{it} + \beta_{10} LEV_{it} + \beta_{11} ROA_{it} + \beta_{12} LOSE_{it} + \beta_{13} SPEC_{it} + \beta_{14} CEO_{it} + \beta_{15} ABFEE_{it} + \beta_{16} BIG4_{it} + \beta_{17} RESTATE_{it} + \beta_{18} DISAGEREE_{it} + \beta_{19} REPORTABLE_{it} + \beta_{20} AINDEP_{it} + \beta_{21} INDEP_{it} + \beta_{22} NUMWK_{it} + \beta_{21} ASSET_{it} + \beta_{21} SALEASSET_{it} + \beta_{21} AREC_{it} + \beta_{21} INV_{it} + \beta_{21} GOCN_{it} + \varepsilon_{it}$$

Model of the first sub-hypothesis derived from the first hypothesis

$$LN(FEE)_{it} = \beta_0 + \beta_1 ECON_{it} + \beta_8 CSIZE_{it} + \beta_9 BKMK_{it} + \beta_{10} LEV_{it} + \beta_{11} ROA_{it} + \beta_{12} LOSE_{it} + \beta_{13} SPEC_{it} + \beta_{14} CEO_{it} + \beta_{15} ABFEE_{it} + \beta_{16} BIG4_{it} + \beta_{17} RESTATE_{it} + \beta_{18} DISAGEREE_{it} + \beta_{19} REPORTABLE_{it} + \beta_{20} AINDEP_{it} + \beta_{21} INDEP_{it} + \beta_{22} NUMWK_{it} + \beta_{21} ASSET_{it} + \beta_{21} SALEASSET_{it} + \beta_{21} AREC_{it} + \beta_{21} INV_{it} + \beta_{21} GOCN_{it} + \varepsilon_{it}$$

Model of the second sub-hypothesis derived from the first hypothesis

$$LN(FEE)_{it} = \beta_0 + \beta_1 RES_{it} + \beta_8 CSIZE_{it} + \beta_9 BKMK_{it} + \beta_{10} LEV_{it} + \beta_{11} ROA_{it} + \beta_{12} LOSE_{it} + \beta_{13} SPEC_{it} + \beta_{14} CEO_{it} + \beta_{15} ABFEE_{it} + \beta_{16} BIG4_{it} + \beta_{17} RESTATE_{it} + \beta_{18} DISAGEREE_{it} + \beta_{19} REPORTABLE_{it} + \beta_{20} AINDEP_{it} + \beta_{21} INDEP_{it} + \beta_{22} NUMWK_{it} + \beta_{21} ASSET_{it} + \beta_{21} SALEASSET_{it} + \beta_{21} AREC_{it} + \beta_{21} INV_{it} + \beta_{21} GOCN_{it} + \varepsilon_{it}$$

Model of the third sub-hypothesis derived from the first hypothesis

$$\begin{aligned}
OMP_{it} = & \beta_0 + \beta_1 PFD_{it} + \beta_2 ICWEAK_{it} + \beta_3 LC_{it} + \beta_4 PAR_{it} + \beta_5 CO_{it} + \beta_6 ECON_{it} + \beta_7 ECON * ICWEAK_{it} \\
& + \beta_8 CSIZE_{it} + \beta_9 BKMK_{it} + \beta_{10} LEV_{it} + \beta_{11} ROA_{it} + \beta_{12} LOSE_{it} + \beta_{13} SPEC_{it} + \beta_{14} CEO_{it} + \beta_{15} ABFEE_{it} \\
& + \beta_{16} BIG4_{it} + \beta_{17} RESTATE_{it} + \beta_{18} DISAGEREE_{it} + \beta_{19} REPORTABLE_{it} + \beta_{20} AINDEP_{it} \\
& + \beta_{21} INDEP_{it} + \varepsilon_{it}
\end{aligned}$$

Model of the second hypothesis

$$\begin{aligned}
RES_{it} = & \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X4_{it} + \beta_5 X5_{it} + \beta_6 X6_{it} + \beta_7 X7_{it} + \beta_8 X8_{it} + \beta_9 X9_{it} + \beta_{10} X10_{it} \\
& + \beta_{11} X11_{it} + \beta_{12} X12_{it} + \beta_{13} X13_{it} + \varepsilon_{it}
\end{aligned}$$

Model of the first sub-hypothesis derived from the first hypothesis

$$\begin{aligned}
OMP_{it} = & \beta_0 + \beta_2 ICWEAK_{it} + \beta_8 CSIZE_{it} + \beta_9 BKMK_{it} + \beta_{10} LEV_{it} + \beta_{11} ROA_{it} + \beta_{12} LOSE_{it} + \beta_{13} SPEC_{it} \\
& + \beta_{14} CEO_{it} + \beta_{15} ABFEE_{it} + \beta_{16} BIG4_{it} + \beta_{17} RESTATE_{it} + \beta_{18} DISAGEREE_{it} \\
& + \beta_{19} REPORTABLE_{it} + \beta_{20} AINDEP_{it} + \beta_{21} INDEP_{it} + \varepsilon_{it}
\end{aligned}$$

Model of the second sub-hypothesis derived from the first hypothesis

$$\begin{aligned}
OMP_{it} = & \beta_0 + \beta_3 PAR_{it} + \beta_8 CSIZE_{it} + \beta_9 BKMK_{it} + \beta_{10} LEV_{it} + \beta_{11} ROA_{it} + \beta_{12} LOSE_{it} + \beta_{13} SPEC_{it} + \beta_{14} CEO_{it} \\
& + \beta_{15} ABFEE_{it} + \beta_{16} BIG4_{it} + \beta_{17} RESTATE_{it} + \beta_{18} DISAGEREE_{it} + \beta_{19} REPORTABLE_{it} \\
& + \beta_{20} AINDEP_{it} + \beta_{21} INDEP_{it} + \varepsilon_{it}
\end{aligned}$$

Model of the third sub-hypothesis derived from the first hypothesis

In the above models:

• **Dependent variables**

Audit Fee (ln(FEE)): audit fee was obtained from explanatory notes, financial statements, and performance reports of the boards to the general meeting of shareholders. In the models, the natural logarithm of the fees was used as the measure of audit fees [30].

Earnings manipulation opportunity (OMP): the ratio of short-term liabilities to total assets in the year before the auditor switching was used as the measure of earnings manipulation opportunity [5].

• **Independent variables**

In this study, the weakness of internal controls, the type of audit report in the previous year, and the concentration of ownership were measured as follows [5]:

Probability of financial distress (PFD): This variable was obtained from the formula given in Table 1. This study is focused on financial distress that can be used to predict auditor switching. Since the last stage of distress is bankruptcy, it is reasonable to use bankruptcy prediction variables to measure financial distress. For this purpose, the bankruptcy prediction variables of Altman [3], Chen et al. [10] this study used the thirteen financial distress variables listed in Table 1 to predict auditor switching.

Please note that in this study, auditor switching refers to switching from one audit firm to another not changing the audit partners [5].

- Weakness of internal controls (ICWEAK): The weakness of internal controls was measured as an independent variable using the independent auditor's report on internal controls. According to the checklist of internal controls in financial reporting approved by the Securities and Exchange Commission, auditors are obliged to review the internal controls of companies and disclose any indications of non-compliance or improper implementation of internal controls in their audit report. Therefore, in this study, we checked the relevant sections in corporate audit reports, setting the corresponding variable to 1 or 0 depending on whether the auditor had reported weakness in internal controls in that category [5].

Table 1: Variables for predicting the probability of financial distress and auditor switching

Firm size	x_1
Ratio of total liabilities to total assets	x_2
Ratio of working capital to total assets	x_3
Ratio of total current liabilities to total current assets	x_4
Ratio of net income to total assets	x_5
Ratio of cash flows from operating activities to total liabilities	x_6
Change in the ratio of accounts receivable plus inventory to total assets	x_7
Ratio of accumulated earnings to total assets	x_8
Ratio of earnings before interest and taxes to total assets	x_9
Ratio of market value of equity to book value of total liabilities	x_{10}
Ratio of sales to total assets	x_{11}
Virtual loss variable	x_{12}
Virtual cash income variable	x_{13}

- Previous year's audit report (PAR): this variable was set to 1 if the previous year's independent auditor had issued a qualified opinion, and set to 0 otherwise [5].

• Control variables

- Company size (CSIZE): obtained from the natural logarithm of net sales;
- Growth opportunity (BKMK): obtained from the ratio of book value to stock market value;
- Financial leverage (LEV): obtained by dividing total liabilities by total assets;
- Return on assets (ROA): obtained by dividing the net profit by total assets;
- Loss (LOSS): set to 1 if the company had reported a loss in the current year, and 0 otherwise;
- Auditor industry specialization (SPEC): Recent research indicates that there is a positive relationship between the type of industry in which the auditor specializes and the quality of the audit report. In other words, auditors who specialize in a given industry offer higher quality audits thanks to their greater ability to identify and deal with the specific problems of that industry. Moreover, the more experience an audit firm has in a particular industry, the more interested it will be in providing superior quality audit services in order to gain and maintain a good reputation in that industry (Sajjadi et al., 2018). Industry-specialization of the auditor was defined as the ratio of total assets of all clients of an auditing firm that belong to a particular industry divided by the total assets of all clients of that firm (Etemadi et al., 2019). This variable was set to 1 if the auditor specializes in an industry and 0 otherwise;
- Change of CEO (CEO): set to 1 there had been a change in CEO in the previous year and 0 otherwise;
- Non-audit services (ABFEE): obtained from the residual of the model of the first hypothesis based on non-audit services fees;
- Audit firm size (BIG4): From the auditors' point of view, the size of the audit firm is one of the factors that affect the quality of the audit. argues that larger audit firms can provide higher quality audit services because they are more interested in having a good reputation in the market and are not worried about losing clients as they already have a large number of clients. It is believed that such firms can offer higher quality auditing services because of their better access to resources and facilities that are needed to train and test their auditors. In this study, the size of the audit firm was an imaginary variable that was set to 1 if the firm had been audited by the national audit organization and 0 otherwise [16, 23].
- Restatement of financial statements (RESTATE): set to 1 if the financial statements contained restated items, and 0 otherwise;
- Type of audit report (REPORTABLE): set to 1 if the auditor had issued a qualified opinion, and 0 otherwise;
- Independence of audit committee (AINDEP): set to 1 if the audit committee was independent, and 0 otherwise;
- Audit independence (INDEP): to measure audit independence, earnings management (discretionary accruals) was used as an inverse measure of audit quality. Since discretionary accruals are adjustable by management, it can be used as an indicator to reveal earnings management [19]. In this study, the extent of earnings management was measured using the modified Jones model (1991).

In this method, the first step is to determine the relation of the total accruals for a specific period of time, known as the event period, based on the balance sheet approach. Then, to determine discretionary accruals,

i.e. items on which managers have discretionary authority, non-discretionary accruals are obtained from Equation (6.1).

$$NDA_{it} = \alpha_1(1/A_{it-1}) + \alpha_2(\Delta REV_{it} - \Delta REC_{it}A_{it-1}) + \alpha_3(PPE_{it}/A_{it-1}) \quad (6.1)$$

where NDA_{it} is the non-discretionary accruals of the company i in year t , A_{it-1} is the total assets of the company i in year $t-1$, ΔREV_{it} is the change in the net revenue of the company i between years $t-1$ and t , ΔREC_{it} is the change in the net receivables of the company i between years $t-1$ and t , PPE_{it} is the gross property, plant, and equipment value of the company i in year t , and α_1 , α_2 , and α_3 are company-specific parameters that are obtained from Equation (6.3).

$$TA_{it} = \alpha_1(1/A_{it}) + \alpha_2(\Delta REV_{it}/A_{it-1}) + \alpha_3(PPE_{it}/A_{it-1}) \quad (6.2)$$

Deducting the non-discretionary accruals from the total accruals gives the discretionary accruals. In the modified Jones model, these items are calculated by Equation (6.3):

$$DA = TA - NDA \quad (6.3)$$

- Assets (ASSET): is the natural logarithm of the total assets;

7 Research findings

7.1 Descriptive statistics

The descriptive statistics of the collected data for all companies in the sample are presented in Tables 3 and 4. As can be seen, the mean values of the variables profit manipulation opportunity and audit fee were 11.9 and 42.23 respectively. After comparing the means, minimums, and maximums of the variables during the period of interest and also comparing their differences with the mean and standard deviation of the variables, it was concluded that data has a logical distribution.

Table 2: Descriptive statistics of quantitative variables

Variable	Symbol	Mean	Standard deviation	Min	Max
Logarithm of net sales	CSIZE	5.820	0.689	3.000	8.000
Ratio of book value to market value	BKMK	0.664	0.558	0.008	12.644
Leverage	LEV	0.607	0.178	0.090	0.996
Return on assets	ROA	0.104	0.126	-0.789	0.639
Audit independence	INDEP	-0.094	0.105	-1.668	-0.002
Logarithm of audit fee	ln(FEE)	4.223	3.158	0.000	9.508
Earnings manipulation opportunity	OMP	0.119	0.233	0.000	0.918

7.2 Test of normality of research variables

Before testing the hypotheses, the normality of the dependent variable had to be investigated. In this study, the Jarque-Bera statistic was used for this purpose.

As shown in Table 5, the significance statistic obtained for the dependent variable was less than 0.05, indicating that the null hypothesis is rejected and therefore the data of the dependent variable do not follow a normal distribution. However, for large enough samples (with more than 30 observations according to many sources), even if the error terms of the estimated model do not have a normal distribution, the estimated coefficients will still have acceptable variances for use in the testing of hypotheses. Based on this argument, since the sample of this study was quite large, it was assumed that the dependent variable follows a normal distribution.

Table 3: Descriptive statistics of qualitative variables

Variable	Symbol	Code	Frequency	Percentage
Reported loss	x_{12}	1	227	0.122
		0	1633	0.878
Cash income	x_{13}	1	1479	0.795
		0	381	0.205
Weakness of internal controls	ICWEAK	1	921	0.495
		0	939	0.505
Auditor industry specialization	SPEC	1	1281	0.689
		0	579	0.311
Change of CEO	CEO	1	500	0.269
		0	1360	0.731
Audit firm size	BIG4	1	448	0.241
		0	1412	0.759
Restatement of financial statements	RESTATE	1	1269	0.682
		0	591	0.318
Type of audit report	REPORTABLE	1	807	0.434
		0	1053	0.566
Independence of audit committee	AINDEP	1	688	0.370
		0	1172	0.630

Table 4: Results of the Jarque-Bera test

Variable	Symbol	P-value
Logarithm of audit fee	Ln(FEE)	0.000

Table 5: Results of the Dickey-Fuller unit root test

Variable	Symbol	P-value
Logarithm of audit fee	Ln(FEE)	0.000

7.3 Unit root test (stationarity)

To ensure that the model is not artificial and the results are reliable, first, the stationarity of the dependent variable was tested using the generalized Dickey-Fuller unit root test for panel data.

As shown in Table 5, the null hypothesis that there is a unit root in the data was rejected at the 5% significance level. Thus, the test results showed that the dependent variable is stationary for the data at the 95% confidence level.

Hypothesis 1: Independent auditors’ perception of risk management factors affects audit fees.

As explained earlier, this hypothesis was tested by testing three derivative sub-hypotheses.

- 1-1 Weak internal controls affect the audit fee.
- 1-2 Leading economic indicators have an impact on the audit fee.
- 1-3 Auditor switching affects the audit fee.

Sub-hypothesis 1-1: Weak internal controls affect the audit fee

The first of the aforementioned three sub-hypotheses, sub-hypothesis 1-1, was that weak internal controls affect the audit fee. The results of the test of this sub-hypothesis are presented below.

Checking the significance statistics of the model, it was found that the probability value for F statistic was less than 5%, meaning that the model can be verified at the 95% confidence level. The coefficient of determination of the model also indicated that 10% of the variability of the dependent variable (audit fee) is explained by the variables included in the model.

After examining the significance of the coefficients in the results of Table 6, it was observed that the probability of t-statistic for the independent variable “weakness of internal controls” was greater than 5%. Therefore the hypothesis that weak internal control affects the audit fee was rejected at the 95% confidence level. These results also showed that the variables “net sales”, “leverage”, “auditor industry specialization”, “audit firm size”, “restatement of financial statements”, “type of audit report” and “independence of audit committee” have a significant impact on the audit fees.

Table 6: Results of the test of sub-hypothesis 1-1

Variables		Regression coefficient	t-statistic	t-statistic probability
Constant		6.782	9.283	0.000
Weakness of internal controls		-0.313	-1.221	0.261
Logarithm of net sales		-0.442	-3.768	0.000
Ratio of book value to market value		-0.155	-1.103	0.270
Leverage		-1.260	-2.627	0.008
Return on assets		0.639	0.954	0.340
Loss		0.165	0.481	0.630
Auditor industry specialization		-0.392	-2.281	0.022
Change of CEO		0.018	0.109	0.912
Audit firm size		1.133	6.271	0.000
Restatement of financial statements		0.402	2.610	0.009
Type of audit report		0.510	3.384	0.000
Independence of audit committee		1.593	9.535	0.000
Audit independence		0.570	0.831	0.405
D-W statistic	R^2	R^2 Adj	F-statistic	F-statistic probability
2.345	0.100	0.093	15.212	0.000
F-limer test		Validity	Test statistic	Panel
		13.706	0.000	
Hausman test		Validity	Test statistic	FEM
		39.898	0.000	

Sub-hypothesis 1-2: Leading economic indicators have an impact on the audit fee

The results obtained for sub-hypothesis 1-2 stipulating that leading economic indicators have an impact on the audit fee are presented in Table 7.

Table 7: Results of the test of sub-hypothesis 1-2

Variables		Regression coefficient	t-statistic	t-statistic probability
Constant		-1.052	-0.992	0.321
Leading economic indicators		-9.210	-1.948	0.050
Logarithm of net sales		0.924	4.953	0.000
Ratio of book value to market value		-0.018	-0.145	0.884
Leverage		-1.373	-2.786	0.005
Return on assets		0.628	1.372	0.170
Loss		0.386	1.586	0.112
Auditor industry specialization		-0.217	-1.124	0.261
Change of CEO		0.028	0.205	0.837
Audit firm size		1.113	2.993	0.002
Restatement of financial statements		0.059	0.305	0.759
Type of audit report		0.377	2.266	0.023
Independence of audit committee		1.660	5.299	0.000
Audit independence		0.983	1.938	0.052
D-W statistic	R^2	R^2 Adj	F-statistic	F-statistic probability
1.765	0.319	0.279	15.568	0.000
F-limer test		Validity	Test statistic	Panel
		14.214	0.000	
Hausman test		Validity	Test statistic	FEM
		33.728	0.000	

In the test results for this sub-hypothesis too, the probability value for F statistic was less than 5%, indicating the validity of the model at the 95% confidence level. From the obtained coefficient of determination, it can be concluded that the model variables can explain 31.9% of the variability of the dependent variable (audit fee).

As the results presented in Table 7 show, the probability of t-statistic for the independent variable "leading economic indicators" was less than 5%, confirming the hypothesis that leading economic indicators affect the audit fee at the 95% confidence level. These results also showed that the audit fees is significantly influenced by the variables "net sales", "leverage", "auditor industry specialization", "audit firm size", "restatement of financial statements", "type of audit report" and "independence of audit committee".

Sub-hypothesis 1-3: Auditor switching affects the audit fee

The third sub-hypothesis derived from the first hypothesis was that auditor switching affects the audit fee. The

results obtained for this sub-hypothesis are given in Table 8.

Table 8: Results of the test of sub-hypothesis 1-3

Variables		Regression coefficient	t-statistic	t-statistic probability
Constant		-2.138	-2.289	0.022
Auditor switching		-0.123	-0.981	0.326
Logarithm of net sales		1.057	7.064	0.000
Ratio of book value to market value		0.017	0.148	0.881
Leverage		-0.964	-1.942	0.052
Return on assets		0.642	1.178	0.239
Loss		-0.279	1.388	0.165
Auditor industry specialization		-0.298	-1.404	0.160
Change of CEO		0.067	0.559	0.575
Audit firm size		0.962	4.017	0.000
Restatement of financial statements		0.194	1.562	0.118
Type of audit report		0.322	2.270	0.023
Independence of audit committee		1.236	9.604	0.000
Audit independence		0.849	1.619	0.105
D-W statistic	R^2	R^2 Adj	F-statistic	F-statistic probability
1.759	0.609	0.569	15.141	0.000
F-limer test		Validity	Test statistic	Panel
		729/13	0.000	
Hausman test		Validity	Test statistic	FEM
		39.785	0.000	

The probability value obtained for the F statistic for this sub-hypothesis was also lower than 5%, meaning that the model is valid at the 95% confidence level. The obtained coefficient of determination showed that the model variables can explain 60.9% of the variability of the dependent variable (audit fee).

Since the probability of t-statistic for the independent variable “auditor switching” was greater than 5%, the hypothesis that it affects the audit fee was rejected at the 95% confidence level. However, it was observed that the control variables “net sales”, “leverage”, “audit firm size”, “restatement of financial statements”, “type of audit report”, and “independence of audit committee” had a significant effect on the audit fee.

Hypothesis 2: Independent auditors’ perception of risk management factors affects the earnings manipulation opportunity.

Like the first hypothesis, this hypothesis was also tested by testing three sub-hypotheses.

2-1 Company’s financial distress affects the earnings manipulation opportunity.

2-2 Weak internal controls affect the earnings manipulation opportunity.

2-3 Previous year’s report affects the earnings manipulation opportunity.

Sub-hypothesis 2-1: Company’s financial distress affects the earnings manipulation opportunity

The first sub-hypothesis derived from this hypothesis was that a company’s financial distress affects the earnings manipulation opportunity. The results obtained for this sub-hypothesis are presented in Table 9.

Presented in the above table are the obtained coefficient of determination and the adjusted coefficient of determination along with the statistics computed for the variables. Since the significant statistic of the model is less than 5%, it can be concluded that there is at least one coefficient in this function that takes a non-zero value. The coefficient of determination was computed to 0.036, indicating that only 3.6% of the variability of “earnings manipulation opportunity” is explained by “company’s financial distress” and 96.4% of this variability is related to the variables not considered in this model. The obtained D-W statistic indicates that the variables included in the model do not have any autocorrelation problem.

Considering these results, the hypothesis that financial distress affects the probability of earnings manipulation is rejected.

Sub-hypothesis 2-2: Weak internal controls affect the earnings manipulation opportunity

The second sub-hypothesis of the second hypothesis was that the weakness of internal controls affects the earnings manipulation opportunity. The results obtained for this sub-hypothesis are given in Table 10.

Table 9: Results of the test of sub-hypothesis 2-1

Variables		Regression coefficient	t-statistic	t-statistic probability
Constant		0.200	2.718	0.006
Company size		-0.010	-2.342	0.019
Ratio of total liabilities to total assets		0.224	4.254	0.000
Ratio of working capital to total assets		0.066	1.349	0.177
Ratio of total current liabilities to total current assets		-0.021	-1.668	0.095
Ratio of net income to total assets		0.431	2.067	0.038
Ratio of cash flows from operating activities to total liabilities		-0.003	-0.149	0.880
Change in the ratio of accounts receivable plus inventory to total assets		-0.070	-1.625	0.104
Ratio of accumulated earnings to total assets		-0.067	-0.454	0.649
Ratio of earnings before interest and taxes to total assets		-0.313	-1.732	0.083
Ratio of market value of equity to book value of total liabilities		-0.005	-0.217	0.828
Ratio of sales to total assets		0.013	1.102	0.270
Reported loss		0.003	0.101	0.919
Cash income		-0.054	-2.422	0.015
D-W statistic	R^2	R^2 Adj	F-statistic	F-statistic probability
2.180	0.036	0.029	5.268	0.000
F-limer test		Validity	Test statistic	Panel
		1.252	0.023	
Hausman test		Validity	Test statistic	REM
		21.030	0.073	

Table 10: Results of the test of sub-hypothesis 2-2

Variables		Regression coefficient	t-statistic	t-statistic probability
Constant		0.109	6.551	0.000
Weakness of internal controls		-0.022	-3.041	0.002
Logarithm of net sales		-0.011	-5.953	0.000
Ratio of book value to market value		0.008	1.307	0.191
Leverage		0.097	6.023	0.000
Return on assets		-0.053	2.089	0.036
Loss		-0.020	-1.975	0.048
Auditor industry specialization		0.013	1.890	0.058
Change of CEO		0.005	1.579	0.114
Audit firm size		-0.123	-8.507	0.000
Restatement of financial statements		0.016	5.255	0.000
Type of audit report		0.002	0.417	0.676
Independence of audit committee		0.009	4.352	0.000
Audit independence		011	-0.593	0.552
D-W statistic	R^2	R^2 Adj	F-statistic	F-statistic probability
1.637	0.195	0.188	82.766	0.000
F-limer test		Validity	Test statistic	Pooled
		0.700	0.997	
Hausman test		Validity	Test statistic	-
		-	-	

In the significance statistics obtained for the model of this sub-hypothesis, the probability value for F statistic was less than 5%, validating the model at the 95% confidence level. The obtained coefficient of determination indicated that 19% of the variability of the dependent variable "earnings manipulation opportunity" is explained by the variables included in the model.

As shown in Table 10, since the probability of t-statistic for the independent variable "weakness of internal controls" was lower than 5%, the hypothesis that weak internal control affects the earnings manipulation opportunity was rejected at the 95% confidence level. These results also showed that the control variables "net sales", "return on assets", "auditor industry specialization", "audit firm size", "type of audit report", and "independence of audit committee" have a significant effect on the earnings manipulation opportunity.

Sub-hypothesis 2-3: Previous year's report affects the earnings manipulation opportunity

The results of the test of sub-hypothesis 2-3, which stipulates that the previous year's report affects the earnings manipulation opportunity, are given in Table 11.

In the results obtained for this sub-hypothesis, the probability value for the F statistic was less than 5%, indicating

Table 11: Results of the test of sub-hypothesis 2-3

Variables		Regression coefficient	t-statistic	t-statistic probability
Constant		0.083	5.679	0.000
Previous year's audit report		0.006	0.122	0.903
Logarithm of net sales		-0.010	-5.561	0.000
Ratio of book value to market value		0.009	1.382	0.167
Leverage		-0.104	5.982	0.000
Return on assets		0.053	2.044	0.041
Loss		-0.003	-0.544	0.586
Auditor industry specialization		0.011	1.671	0.094/0
Change of CEO		0.005/0	1.461	0.144/0
Audit firm size		-0.123	-8.572	0.000
Restatement of financial statements		0.016	5.247	0.000
Independence of audit committee		0.011	4.828	0.000
Audit independence		-0.008	-0.416	0.677
D-W statistic	R^2	R^2 Adj	F-statistic	F-statistic probability
2.226	0.186	0.180	33.841	0.000/0
F-limer test		Validity	Test statistic	Pooled
		0.679	0.998	
Hausman test		Validity	Test statistic	-
		-	-	

that the model is valid at the 95% confidence level. From the obtained coefficient of determination, it can be concluded that 18.6% of the variability of the dependent variable “earnings manipulation opportunity” is explained by the model variables.

As the results presented in Table 11 show, since the probability of t-statistic for the independent variable “previous year's audit report” was greater than 5%, the hypothesis that it affects the earnings manipulation opportunity was rejected at the 95% confidence level. In these results, the earnings manipulation opportunity was significantly influenced by the control variables “net sales”, “leverage”, “audit firm size”, “type of audit report”, and “independence of audit committee”.

8 Discussion and conclusion

After testing the first hypothesis of this study, it was found that the weakness of internal controls and the previous year's audit report both have a significant effect on the delay in the audit report. Because of the theories concerning the topic and the results reported by Vaez et al. [7] and Bagley et al. [5], it can be stated that companies that have weak internal controls and therefore receive unqualified audit opinions tend to have more delays in their audit report. Thus, the results of this study indicate that the weakness of internal controls delays the audit process. The results obtained for this hypothesis are consistent with the findings of Bagley et al. [5]. In general, the results regarding the first hypothesis revealed the effect of weak internal controls and the type of audit report received in the previous year on the delay in the audit report, which is in agreement with the theory of the topic. According to the results of this hypothesis, it can be concluded that in the Iranian capital market, delays in the issuance of audit reports are influenced by weak internal controls and consequently unacceptable reporting, which results in statements being rated as unqualified.

The results obtained for the first hypothesis showed that delays in audit reports are affected by the weakness of internal controls and the type of the previous year's audit report. In other words, the weakness of internal controls and the type of audit opinion given in the previous year can predict the prolongation of the auditing process in the current year. Therefore, independent auditors and other stakeholders are advised to pay more attention to the weakness of internal controls and take it into account in their decisions to avoid the consequences of this weakness in their own operations. From the results obtained for this hypothesis, it can be concluded that companies afflicted with weak internal controls tend to experience more delays in their audit reports.

According to the results obtained by testing the second hypothesis, the weakness of internal controls weakens the possibility of a change of auditor. Therefore, officials in charge of the Tehran Stock Exchange are advised to enforce stricter measures to uplift the quality of financial reporting and ensure a transparent information environment for investors, because current audited financial statements are lacking in terms of informative content and do not significantly help reduce the effect of agency conflicts. Also, managers of companies and other relevant groups are advised to take the necessary measures to improve the quality of financial reporting of their organizations so that

these reports can play their intended role in informing investment decisions in a transparent information space.

The results obtained for the second hypothesis showed that the weakness of internal controls affects the probability of change in auditors. Considering the relevant theoretical information and the results of Bagley et al. [5], it can be concluded that companies with weaker internal controls are also less likely to change auditor, which may explain why receiving unqualified opinions and concentration of institutional ownership have no significant impact on the likelihood of switching auditors. Overall, the study's results suggest that the probability of change in auditor is significantly influenced neither by the previous year's audit report nor by ownership concentration. Therefore, the results regarding sub-hypotheses 2-2 and 2-3 of this study are not consistent with the results of Bagley et al. [5], who reported that the type of audit report given in the previous year and the concentration of institutional ownership change the probability of switching auditors.

Overall, the results of the study revealed the effect of leading economic indicators on the audit fee, the effect of auditor switching on the interaction between the weakness of internal controls and the audit fee, and the effect of auditor switching on the interaction between leading economic indicators and the audit fee, which seem to be consistent with theoretical predictions. Therefore, independent auditors, investors, and other stakeholders are advised to pay more attention to the topics of leading economic indicators and auditor switching and to incorporate them into their decision-making models. Also, shareholders are advised not to be indifferent to the fees of independent auditors, switching of auditors, and leading economic indicators, because a change of auditor can affect the relationship between the weakness of internal controls and leading economic indicators and the audit fee.

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