

---

## Investment Efficiency and Audit Fee from the Perspective of the Role of Financial Distress

---

Submitted 30/11/19, 1st revision 18/12/19, 2nd revision 11/01/20, accepted 09/02/20

Amir Ghafourian Shagerdi<sup>1</sup>, Ali Mahdavi pour<sup>2</sup>, Reza Jahanshiri<sup>3</sup>  
Ariyan Tashakori Baghdar<sup>4</sup>, Mohammad Sajjad Ghafourian Shagerdi<sup>5</sup>

**Abstract:**

**Purpose:** The aim of the article is to present the author's methodological proposal in the field of management and development planning, taking the opinions of the commune inhabitants.

**Design/Methodology/Approach:** The statistical population of the study has included all listed companies in Tehran Stock Exchange. After sampling 141 companies were studied using data from 2011 to 2018 using the multiple regression method.

**Findings:** The results show that there was a significant relationship between investment efficiency and audit fee, and financial distress had a significant effect on the relationship between investment efficiency and audit fee.

**Practical Implications:** The managers working in Iran have greater confidence than firms to use auditors who receives less audit fee and the companies in a climate of financial distress have overconfident managers.

**Originality/Value:** Since no empirical research has been conducted to study the aforementioned variables in Iran, the present study is innovative in this respect. Also the results are also applicable to other underdeveloped countries in the Middle East.

**Keywords:** Investment efficiency, audit fee, financial distress, Tehran Stock Exchange.

**JEL codes:** M40, M41.

**Paper type:** Research article.

**Conflict of interest:** The authors declare that there is no conflict of interests regarding the publication of this manuscript.

---

<sup>1</sup>Corresponding author, Department of Accounting, Imam Reza International University, Mashhad, Iran, 0000-0001-9780-2971, [ghafourian@imamreza.ac.ir](mailto:ghafourian@imamreza.ac.ir)

<sup>2</sup>Department of Accounting, Imam Reza International University, Mashhad, Iran, 0000-0002-7002-0248, [mahdavi pour@imamreza.ac.ir](mailto:mahdavi pour@imamreza.ac.ir)

<sup>3</sup>Department of Accounting, Imam Reza International University, Mashhad, Iran, 0000-0002-9450-8475, [rezajahanshiri1372@gmail.com](mailto:rezajahanshiri1372@gmail.com)

<sup>4</sup>Department of Accounting, Imam Reza International University, Mashhad, Iran, 0000-0002-1666-6929, [ariyan.tashakori@yahoo.com](mailto:ariyan.tashakori@yahoo.com)

<sup>5</sup>Department of Management, Imam Reza International University, Mashhad, Iran, 0000-0003-3939-1056, [sajjad.ghafourian@imamreza.ac.ir](mailto:sajjad.ghafourian@imamreza.ac.ir)

## **1. Introduction**

Pricing audit services is one of the subjects of interest to many audit scholars; so far, many studies have been done in this area, some of which are mentioned in the research background. Although the research methodologies used in these studies are somewhat different, most of them pursue a major goal, which is to identify the factors affecting audit fee. Knowing these factors is beneficial for both the client and the auditor. For many clients, the cost of auditing is noteworthy. Although it may be easy for large corporations with high sales volume and liquidity or some government companies to pay this fee, the cost digit can be very significant for most small businesses or those with poor financial standing. Consequently, from the perspective of the client, knowing the factors affecting the audit fee, both negotiating and bargaining over them and controlling these factors within the organization can reduce such costs and make it easier to bear (Nikbakht and Tanani, 2010).

By knowing these factors, auditors can price their services properly. The importance of this issue is especially evident in the recent years after the formation of the Iranian Society of Official Accountants in our country because after the formation of the society, the monopoly of the audit labor market has been broken and fierce competition has arisen between auditors, an event that long ago has happened in most developed countries. From the early 1970s to the early 2000s, most audit firms have focused on their growth rather than on professional values (Zef, 2003).

Audit firm partners have been under tremendous pressure to find new clients, retain existing clients, and consulting services. Failing to meet these types of development goals in audit firms has had bad consequences, including dismissal. In other words, the auditing profession has undergone rapid and significant changes over the last twenty years. Declining regulations in the audit labor market allowed audit firms to pursue rather economic goals and seek to grow their income and reduce costs in each audit job (Healy and Palpo, 2003). On the other hand, investing in different things has always been considered as one of the most important ways of developing companies and preventing recession and backwardness. In the meantime, resource constraints and the rapid growth and transformation of economic relations have led to fierce competition in trade, industry, and investment.

Therefore, companies need to make timely investments in order to survive and expand their activities or, put it better, to increase their investment efficiency. Because capital budgeting decisions determine the strategic direction of the company and its long-term effects have undeniable impacts on the financial flexibility and market share of the company (Saghafi and Motamedi, 2011; Khodayi and Yahyayi, 2010). In general, investment efficiency means accepting projects with a positive present net value, and inefficient investment refers to choosing projects with a negative present net value (overinvestment) or not choosing investment opportunities (insufficient capital) (Saghafi and Motamedi, 2011). Financial distress, on the other hand, is a situation where the company is unable to obtain sufficient

funding to continue its operations. In the financial literature, it is emphasized that companies enter the cycle of financial distress a year prior to bankruptcy and various economic events occur in the pre-bankruptcy period (Etemadi *et al.*, 2010).

Financial distress refers to the situation in which companies face difficulties in fulfilling their obligations (Baldwin and Mason, 1983), where they are likely to go bankrupt (Ohlson, 1980; Shumway, 2001). Previous studies have described financial distress as an incentive for managers to engage in profiteering behavior and attempt an inappropriate financial report (Hogan *et al.*, 2008). Auditors have access to internal information within the company that they use them to assess audit risk that is not generally available to the persons outside the organization. Likewise, the auditor's fee can be an indicator of the management activities and internal information of companies, including financial reporting like voluntary accruals. Therefore, in the present research, we try to answer the question that whether there is a significant relationship between investment efficiency and audit fees. Does financial distress have a significant effect on the relationship between investment efficiency and audit fee?

## **2. Literature Review**

### **2.1 Efficiency of Investment**

Investing in different things by companies has always been one of the most important ways to develop companies and prevent stagnation and backwardness. In the meantime, resource constraints have made it important to increase investment efficiency in addition to developing investment. There are at least two theoretical criteria for determining investment efficiency.

The first criterion states that there is a need for gathering resources in order to finance investment opportunities. In an efficient market, all projects with a positive present net value should be financed, although a great deal of researches in the area of finance has shown that financial constraints limit managers' ability to finance (Hubbard, 1998). One of the things we can infer is that companies facing financing constraints may be reluctant to accept and carry out positive present net value projects due to the high cost of financing; this leads to reduced investment.

The second criterion also states that if a company decides to finance, there is no guarantee that it will make the right investment. For example, by choosing inappropriate projects, the managers may invest in inefficient investments for their own benefit or even misusing existing resources. Most articles in the field predict that poor project selection will increase investment (Stein, 2003). Conceptually, investment efficiency is achieved when the company invests only in all projects with positive current net value. Of course, this scenario only works if the market is complete and there are no flawed market issues, including incorrect selection and agency costs (Biddle *et al.*, 2009).

In addition, the optimal investment or investment efficiency requires on the one hand to prevent the consumption of resources in activities where the investment is over-optimized, and on the other, resources are directed to the activities that need more investment (Modares and Hesarzadeh, 2008).

## 2.2 Audit Fee

The auditor's economic interests are provided through fee. Audit fee includes any fees paid to the auditor or audit firm on a contractual basis for the provision of audit services (by agreement) (Mehrani and Jamshidi, 2011). According to Amani and Dawani (2009), *"If users of audit reports want to meet their realistic expectations of these reports, one of the factors that meet these expectations is the payment of audit fee commensurate with the audit services provided. The main dispute of the audit profession is to determine the minimum fee for auditing and to break down some of the institutions."* In fact, the price of any service or commodity is that which consumer is willing to pay for it. But in practice, this formula does not work in countries without a competitive economy; the monopolies or at least a living wage set prices. The existence of low audit fees and, consequently, the poor quality of audit services jeopardize the auditing role, resulting in a bias in the presentation of contaminated, distorted and inaccurate information that is directly and closely associated with the audit fee. However, a comparison of audit fee in different countries shows that the audit fee in Iran is much lower than in other countries, especially advanced countries. Because in Iran, companies and institutions that use audit services are seeking tender for audit fee (Amani and Davani, 2009).

## 2.3 Financial Distress

Nowadays, one of the most significant risks to many businesses is their inability to pay obligations, regardless of the size and nature of their business. The available evidence shows that in the last three decades, the bankruptcy rate of firms has grown significantly compared to previous decades (Shumway, 2001). An overview of the financial situation of Iranian companies also reveals that among the companies listed in the Tehran Stock Exchange, there are companies that suffer from many financial and operational problems and are in distress in terms of operation, liquidity and working capital. Notwithstanding, they continue to operate and consume resources that could be invested in profitable and value-creating opportunities. These resources are wasted by these companies and reduce the benefits of society (Safarzadeh, 2009).

Financial distress, as stated above, is a situation in which a company is unable to obtain sufficient funding to continue its operations. Researches on the prediction of financial distress show that most researchers have considered bankruptcy criteria as distress and have predicted it by showing different models. In the financial literature, however, it is emphasized that companies enter into a cycle of financial distress years before bankruptcy; various economic events occur in the pre-bankruptcy

---

period (Etemadi *et al.*, 2010). Lee and Cheng (2009) believe that companies may experience losses and bonds depreciation a year or years before the bankruptcy.

## **2.4 Research Hypotheses**

Karim (2010) examines the pricing of audit services and the type of audit in Bangladesh. According to the results of the research, firm size, audit risk and type of audit are effective in pricing audit services. Morgan and Stacken (1998) also found evidence based on which audit fee increases in parallel with business risk. Simunic (1980) also found that audit fee reflects the cost of resources invested in auditing as well as the potential losses of future litigation or loss of auditor reputation (audit risk) in the future. Dunn and Bradstreet (1998) consider the main cause of bankruptcy to be financial and economic problems. Whereas Gitman (1998) believes that first and the most important reason for the failure of organizations is their mismanagement.

Although the factors of bankruptcy vary from one company to another, several common factors can be identified as bankruptcy factors among all bankrupt companies. These factors are management incompetence, high cost of production, poor financial performance, inactive board (Gerald, 1998). On the other hand, according to Fazari *et al.* (2018) and Althi (2003), investment decisions are largely dependent on information asymmetry and agency problems. Information asymmetry coupled with market fluctuations, through an impact on external financing, simply leads to insufficient investment in companies facing financial constraints.

In this regard, we mention some researches conducted on the relationship between the variables of investment efficiency and audit fee and financial distress in the following: Gaul *et al.* (2018) concluded that high managerial ability increased audit fee in companies with financial distress as well as reduced audit fee in companies without financial distress. Ullah *et al.* (2018) concluded that there is a negative and significant relationship between financial distress and efficiency Investment. Vosoughi *et al.* (2016) concluded that there is a significant relationship between financial distress and investment efficiency. Gutierrez *et al.* (2015) concluded that the impact of financial distress on corporate investment varies depending on their investment opportunities. Alikhani and Jaberzadeh (2015) concluded that there is a positive and significant relationship between financial distress and investment efficiency. Salehi *et al.* (2016) conducted that the companies suffered from financial distress with investment opportunities increased their investments in line with existing opportunities. Also the findings show that after dividing companies into two classes of companies with high and low investment opportunity, it was found that, in the sample of stock exchange companies in Iran during the years 2011 to 2018, the financially distressed companies increased the level of investment regardless of the investment opportunity.

According to the above researches, the hypotheses of this study are as follows:

**Hypothesis 1:** *There is a significant relationship between investment efficiency and audit fee.*

**Hypothesis 2:** *Financial distress has a significant effect on the relationship between investment efficiency and audit fee.*

### 3. Research Methodology

In this research, we will collect empirical data from the financial statements of the sample companies, announcements published by the Stock Exchange, by referring to Comprehensive Database of Companies on the official website of the Stock Exchange using the Rahavard Novin Software. The statistical population of this research is the companies listed in Tehran Stock Exchange and all industries active during 2011-2018. The sample of this study, with respect to its subject matter, is the elimination sampling method, in which the selected companies are subject to the following limitations and requirements:

- The company should not be a financial intermediary company.
- Company shares must be traded during each year of the research period.
- In terms of comparability, the company's end of the financial year must be the end of March.
- Not any change in their financial performance or operating activity during the study period.
- The company should be listed in the Stock Exchange from the beginning to the end of the research period.
- All the data required must be available during the period 2011-2018.

Taking into account the above conditions, there are 141 companies that represent the actual statistical population under consideration. Therefore, using the multivariate regression statistical method, the research hypotheses presented in the previous section have been investigated. The research hypotheses were also tested using software R as presented in the following sections.

#### 3.1 Research Variables and their Measurement

##### A. Independent variable:

INV\_EFF: Richardson pattern (2006) has been used in this model to calculate corporate investment efficiency. The Richardson pattern is as follows:

$$\text{Inv}_{i,t} = \beta_0 + \beta_1 \text{Grow}_{i,t-1} + \sum \Phi_j \text{Control}_{j,t,t-1} + v_{i,t}$$

Where:

$\text{Inv}_{i,t}$ : is a change in net fixed assets and is calculated as Long-term investments and intangible assets divided by the average total of the assets of the company  $i$  in year  $t$ ;

$\text{Grow}_{i,t-1}$ : Growth rate of annual sales revenue of company  $i$  in year  $t-1$ ;

$\text{Control}_{j,t,t-1}$ : is a control dummy variable of  $j$  in  $t$  and  $t-1$ ;

Lev<sub>i, t-1</sub>: Financial leverage of Company i in year t-1 (ratio of total debts to total assets);

Age<sub>i, t-1</sub>: Age of company i in year t-1;

Cash<sub>i, t-1</sub>: Cash ratio (cash plus short-term investments divided by average assets in year t-1);

Size<sub>i, t-1</sub>: Company size (natural logarithm of total assets of year t-1);

Ret<sub>i, t-1</sub>: The annual return on shares of company i in year t-1;

Lag (Inv<sub>i, t-1</sub>): Investment time interval.

According to Richardson's research (2006), sales are used as a variable to estimate expected investment opportunities. According to this approach, investment is a function of the growth opportunities measured by sales. The model argues that the firm's sales volume reflects the expectation of a firm's investment in an efficient market. By placing the calculated digit for the total investment in the above regression equation, the residuals of this equation are calculated. Positive residuals (positive deviation from expected investment) represent projects with a negative net present value or overinvestment, and negative residuals (negative deviation from expected investment) indicate the passage of investment opportunities with the net positive current value, or indeed the insufficient investment. The absolute value of the residuals is the regression equation as an inverse indicator of investment efficiency i.e investment inefficiency.

#### B. Dependent variable:

Ln\_AF: The natural logarithm of the audit fee.

#### C. Adjusting variable:

DISTRs: a two-part variable that is used to identify distressed companies based on the Altman Z' model. In this research, the Z' Altman model, which, according to the research of Haji *et al.* (2010), is calculated by the following relation:

$$Z' = 3/20784 K_1 + 1/80384 K_2 + 1/61363 K_3 + 0/50094 K_4 + 0/16903 K_5 - 0/39709 K_6 - 0/12505 K_7 + 0/33849 K_8 + 1/42363 K_9:$$

Where:

Z': Financial crisis in the company;

K<sub>1</sub>: Profit ratio before interest and tax on assets;

K<sub>2</sub>: Ratio of Accumulated Earning to Assets;

K<sub>3</sub>: Ratio of working capital to assets;

K<sub>4</sub>: Ratio of Equity to Debts;

K<sub>5</sub>: Ratio of Profit before interest and tax on sales;

K<sub>6</sub>: Ratio of Current assets-to-debt;

K<sub>7</sub>: Ratio of net profit to sales;

K<sub>8</sub>: Ratio of Debts to Assets;

K<sub>9</sub>: Company size;

Cutoff = 15.8907;

If  $P < 15.8907$ , then the company is in a financial crisis;  
If  $P \geq 15.8907$ , then the company is without a financial crisis.

The cut-off point of the companies with the financial crisis from those without it in the model is 15.8907; it has been calculated using linear discriminant analysis. This point is calculated to provide the best classification for firms with and without a financial crisis. If  $P$  of the company is less than 15.8907, it is coded as a company with financial crisis and code 1 and if  $P$  is greater than or equal to 15.8907, it is coded as a company without financial crisis and code 0.

*D. Control variables:*

Ln\_SIZE: the natural logarithm of total asset.

FOREIGN: the ratio of export to total sales.

INVREC: the ratio of total inventory and accounts receivable to total assets.

LOSS: a two-part variable that is coded as one if the company has had a loss in one of the past 3 years.

LEV: financial leverage that is calculated through the ratio of total debts to total assets.

ROA: the rate of return on assets and is calculated as the ratio of net profit to total assets.

QUICK: The ratio of total current assets minus inventories to total current debts.

SGROWTH: growth rate; change of annual percentage in sales.

EQ: The accruals quality based on the Dichev & Dichoo (2002) model as modified by Nicholas (2002) and is calculated as the residual 5-year standard deviation of the company's accruals regression.

The Dichev and Dichoo Model (2002):

$$\Delta WC_t = b_0 + b_1 \times CFO_{t-1} + b_2 \times CFO_t + b_3 \times CFO_{t+1} + \varepsilon_t$$

In the model above:

$\Delta WC_t$ : Working capital changes;

$CFO_{t-1}$ : Operating Cash for the year before;

$CFO_t$ : Current year operating cash flow;

$CFO_{t+1}$ : Operating Cash of Next Year;

$\varepsilon_t$ : Model residuals or error;

A\_SIZE: a two-part variable that is coded 1 if the company is handled by the audit organization.

SPECIALIST: auditor's industry expertise is equal to one when the auditor is an industry specialist; otherwise, it is zero. In this research, we use a market share approach to measure the expertise of auditors in the relevant industry. The greater the market share of the auditor, the greater the expertise and experience of the auditor than other competitors. Having a dominant market share indicates that the auditor has successfully distinguished itself from other competitors in terms of audit quality. Auditors' market share is calculated as follows (Palmer, 1986):



Total assets of all the owners of any particular audit firm in a particular industry/  
total assets of all owners in this industry;

Institutions in this research are considered to be industry experts whose market share (i.e. the above equation) is greater than  $[1.x \text{ (available firms in an industry / 1)}]$ . Therefore, in the present research, if the auditor is an industry expert, 1 is used as code otherwise zero;

Ln\_ATENURE: the natural logarithm of the auditor's tenure.

AOPINION: a two-part variable that is coded with 1 if the auditor's comment is acceptable, otherwise is zero.

INSTO: The total percentage of shares held by companies (banks, insurance, retirement and investment) owned by institutional shareholders.

IND\_EFFECT: the constant influence of the industry.

YEAR\_EFFECT: fixed effects of the year.

To test the first and second hypotheses of the research, the following model derived from the researches done by Gaul *et al.* (2018) is used:

$$\begin{aligned} \text{Ln\_AF}_{i,t} = & \alpha + \beta_1 \text{INV\_EFF}_{i,t} + \beta_2 \text{DISTR}_{i,t} + \beta_3 \text{INV\_EFF} \times \text{DISTR}_{i,t} + \beta_4 \text{Ln\_SIZE}_{i,t} + \\ & \beta_5 \text{FOREIGN}_{i,t} \\ & + \beta_6 \text{INVREC}_{i,t} + \beta_7 \text{ROA}_{i,t} + \beta_8 \text{LOSS}_{i,t} + \beta_9 \text{LEV}_{i,t} + \beta_{10} \text{QUICK}_{i,t} + \beta_{11} \text{SGROWTH}_{i,t} + \beta_{12} \text{EQ}_{i,t} \\ & + \beta_{13} \text{A\_SIZE}_{i,t} + \beta_{14} \text{SPECIALIST}_{i,t} + \beta_{15} \text{Ln\_ATENURE}_{i,t} + \beta_{16} \text{AOPINION}_{i,t} + \\ & \beta_{17} \text{INSTO}_{i,t} + \text{IND\_EFFECT} + \text{YEAR\_EFFECT} + \varepsilon \end{aligned}$$

(Regression model of the first and second hypotheses)

#### 4. Findings

This section deals with descriptive and inferential statistics related to the analysis of research data.

##### 4.1 Descriptive statistics

Summary of the descriptive statistics for the model variables is as described in Table (1):

**Table 1.** Descriptive statistics of research variables

Research continuous variables						
Variable	Symbol	Mean	Median	Maximum	Minimum	Standard deviation
Auditor's fee	AF	6.689	6.649	8.641	5.162	0.744
Investment efficiency	INV_EFF	-0.001	-0.025	0.344	-0.112	0.086
Company size	SIZE	13.854	13.723	18.389	10.977	1.354
Exports	FOREIGN	0.128	0.015	1.000	0.000	0.239
Inventory of goods and accounts	INVREC	0.529	0/537	0/889	0.099	0.194

receivable						
Return on assets	ROA	0.120	0.106	0.555	-0.242	0.141
Lever	LEV	0.604	0.614	1/229	0.140	0.205
Fast ratio	QUICK	0.896	0.793	3/655	0.139	0.566
Sales growth	SGROWTH	0.199	1.152	2.230	-0.487	0.388
Quality of benefit	EQ	0.086	0/065	0/420	0.001	0.081
CEO tenure Logarithm	Ln_ATENURE	0.367	0.000	1/609	0.000	0.482
Institutional owners	INSTO	0.604	0.704	0.981	0.000	0.316
Research artificial variables						
Variable	Symbol	Mean	Standard deviation	Number 1	Frequency percentage number 1	Number 0
Auditor Size	A_SIZE	0.236	0.425	146	23%	473
Financial Distress	DISTRS	0.034	0.181	21	3%	598
Loss	LOSS	0.187	0/391	116	18%	503
Auditor's comment	AOPINION	0.496	0/500	307	49%	312
Expertise in the auditor industry	SPECIALIST	0.394	0.489	244	39%	375

*Source: Research findings.*

The main central index is the mean, which represents the equilibrium point and the center of gravity of the distribution, and is a good index to indicate the centrality of the data; the standard deviation also is one of the most important parameters of the dispersion and a criterion for the dispersion of the observations of the mean. According to the results of the table above, the mean variable of auditor's fee is 6.689; it indicates that most of the data is concentrated around this point, and its standard deviation is 0.744. In other words, the standard deviation shows that the average dispersion of the auditor's fees is around 0.744.

#### 4.2 Testing Classical Regression Assumptions

In order to estimate the parameters of regression models, the test of the classical regression assumption is of great importance. The most important of these assumptions are the assumptions about the normality of the model residuals, the lack of self-correlation, the lack of collinearity and the lack of heterogeneity of variance between the model residuals. The Jarque-Bra test was used to check the normality of residuals. The results of this test show that the residual of the models under study has a normal distribution. The Durbin-Watson statistic was used to detect the self-correlation between residuals. The results show that the Durbin-Watson statistic for the first hypothesis is 1.963 and for the second hypothesis is 1.978; they are in the range of 1.5 to 2.5 and confirm the absence of first-order self-correlation. The test of

the variance inflation factor was used to evaluate the collinearity. The results of this test show that the variance inflation of the independent and control variables of the research models is appropriate and therefore, there is no problem in this regard. In order to investigate the presence of homogeneity variance among the residuals, the White test was used. The results of this test showed that the null hypothesis is accepted, based on which there is a homogeneity of variance in the research model.

### 4.3 Chow (F Limer) Test, Hausman Test

The nature of the model data for the first hypothesis of the research is of a combinatorial data type; so to determine whether the panel data method would be efficient in estimating the model in question, we use the F-Limer test. Now, for determining which method (fixed effects or random effects) is more appropriate to estimate, we use the Hausman test. The results of these tests have been presented in Table (2).

**Table 2.** Results of the F-Limer, Hausman test

Hypothesis	Test name	Statistic $\chi^2$	Significance level	Result
First	Chow	034/748	0/000	Panel Preference
	Hausman	907/99	0/000	Fixed effects preference
Second	Chow	324/758	0/000	Panel Preference
	Hausman	783/111	0/000	Fixed effects preference

*Source:* Research findings.

According to the results of Table (2) and since the significance level of the chow test is less than 0.05, the panel estimation model is, therefore, more preferable to the combinatorial model estimation. Also, according to the Hausman test, which has a significance level less than 0.05, fixed effects are preferred over random effects. Consequently, the panel method with fixed effects is used to estimate this model.

## 4.4 Inferential Statistics

### 4.4.1 Testing the first hypothesis

Since all classical regression assumptions are the case, we can rely on the results. The results of the estimation of the research model have been presented in Table (3). According to the results of Table (3), we can see that the F statistic has a value of 19.837 and its significance is less than 0.05. As a result, the whole regression model is accepted; this means that there is a significant relationship between the independent variables and the dependent variable and at least one independent variable has a significant relationship with the dependent variable.

**Table 3.** The results of the first hypothesis test

Title	Symbol	Coefficient	Standard deviation	Statistic t	Significance	VIF
y-intercept	B <sub>0</sub>	2.927	0.881	3.321	0.001	
Investment efficiency	INVEFF	-1.789	0.627	-2.853	0.005	1.828
size of the company	SIZE	0.253	0.062	4.057	0.000	1.454
Exports	FOREIGN	0.064	0.096	0.668	0.505	1.169
Inventory of goods and accounts receivable	INVREC	-0.045	0.107	-0.416	0.678	1.193
Return on assets	ROA	0.009	0.213	0.040	0.968	2.389
Loss	LOSS	-0.056	0.050	-1.140	0.255	1.340
Lever	LEV	0.064	0.176	0.367	0.714	2.116
Fast ratio	QUICK	-0.144	0.046	-3.123	0.002	1.390
Sales growth	SGROWTH	0.118	0.040	2.990	0.003	1.628
Quality of benefit	EQ	0.062	0.204	0.305	0.760	1.239
Auditor Size	ASIZE	0.403	0.105	3.856	0.000	1.124
Expertise in the auditor industry	SPEC	0.119	0.049	2.427	0.016	1.265
CEO tenure Logarithm	LNTENURE	0.031	0.029	1.077	0.282	1.249
Auditor's comment	OPINION	0.089	0.041	2.194	0.029	1.107
Institutional owners	INSTO	0.030	0.151	0.199	0.842	1.400
<b>F statistic</b>	<b>F signif</b>	<b>Model R<sup>2</sup></b>	<b>Adjusted R<sup>2</sup></b>		<b>Durbin-Watson</b>	
19.837	0.000	0.874	0.830		1.963	

*Source:* Research findings.

According to the results of Table (3), the coefficient of investment efficiency variable has a negative value of -1.789 and the t-statistic for it is -2.853. Since the significance level of this statistic is less than 0.05, there can be a significant relationship between investment efficiency and audit fee. In other words, there is a significant relationship between investment efficiency and audit fee. As a result, the first hypothesis of the research is accepted.

#### 4.4.2 Testing the second hypothesis

Since all classical regression assumptions are the case here, we can rely upon the results. The results of the estimation of the research model have been presented in Table 4. According to the results of Table (4), we can see that the F statistic has a

value of 19.827 and its significance is less than 0.05. As a result, the whole regression model is accepted; this means that there is a significant relationship between the independent variables and the dependent variable and at least one independent variable has a significant relationship with the dependent variable.

**Table 4.** Results of the test of research second hypothesis

Title	Symbol	Coefficient	Standard deviation	Statistic t	Significance	VIF
y-intercept	B <sub>0</sub>	3.037	0.863	3.521	0.001	
Investment efficiency	INVEFF	-1.944	0.639	-3.041	0.003	2.160
Financial distress	DIST	-0.174	0.118	-1.476	0.141	1.489
Investment performance × distress	INVEFF×DIST	3.710	1.303	2.848	0.005	1.403
Size of the company	SIZE	0.250	0.061	4.106	0.000	1.236
Exports	FOREIGN	0.062	0.097	0.641	0.522	1.166
Inventory of goods and accounts receivable	INVREC	-0.065	0.106	-0.609	0.543	1.344
Return on assets	ROA	-0.102	0.214	-0.477	0.633	2.248
Loss	LOSS	-0.050	0.050	-0.006	0.315	1.311
Lever	LEV	0.002	0.171	0.009	0.993	2.321
Fast ratio	QUICK	-0.146	0.044	-3.293	0.001	1.627
Sales growth	SGROWTH	0.121	0.041	2.979	0.003	1.414
Quality of benefit	EQ	0.056	0.200	0.282	0.778	1.377
Auditor Size	ASIZE	0.402	0.104	3.869	0.000	1.134
Expertise in the auditor industry	SPEC	0.121	0.049	2.447	0.015	1.223
CEO tenure Logarithm	LNTENURE	0.035	0.029	1.205	0.229	1.262
Auditor's comment	OPINION	0.089	0.041	2.202	0.028	1.102
Institutional owners	INSTO	0.034	0.149	0.226	0.821	1.389
<b>F statistic</b>	<b>F signif</b>	<b>Model R<sup>2</sup></b>	<b>Adjusted R<sup>2</sup></b>		<b>Durbin-Watson</b>	
19.827	0.000	0.876	0.832		1.978	

**Source:** Research findings.

According to the results of Table (4), the coefficient of interaction between investment efficiency and distress has a positive value of 3.710 and the t-statistic is 2.848. Since the significance level of this statistic is less than 0.05, there can be a

positive and significant effect of distress on the relationship between investment efficiency and audit fee. In other words, financial distress has a significant positive effect on the relationship between investment efficiency and auditor's fee. As a result, the second hypothesis of the research is accepted.

## 5. Discussion and Conclusion

Based on the first hypothesis, we expected that there would be a significant relationship between investment efficiency and audit fee. The results of this hypothesis are that managers working in Iran have greater confidence than the firms that use auditor in their companies who receives less audit fee. In general, the results show that the investment efficiency coefficient is negative, indicating a negative impact of investment efficiency on audit fee, which is significant. In view of the above, the first hypothesis of the research is confirmed. So, there is an inverse relationship between investment efficiency and audit fee. The test results of this hypothesis are in accordance with the results of the research of Gaul *et al.* (2018).

Based on the second hypothesis, we expected that financial distress has a significant effect on the relationship between investment efficiency and audit fee. Companies in a climate of financial distress have overconfident managers. In general, the results show that the interactive effect coefficient is positive; this indicates a positive effect of financial distress on the relationship between investment efficiency and audit fee, which is significant at the significant level. In view of the above, the second hypothesis of the research is confirmed. Thus, when there is a variable of financial distress, the relationship between investment efficiency and auditor's fee is strengthened. The test results of this hypothesis are in accordance with the results of the research of Gaul *et al.* (2018), Ulah *et al.* (2018), Vosoughi *et al.* (2016), Gutiérrez *et al.* (2015).

## References:

- Alikhani, M., Jabarzadeh, F. 2015. Impact of Financial Distress on Investment Efficiency in Tehran Stock Exchange Companies. First Conference on Applied Researches in Accounting and Management, Natanz, Islamic Azad University of Natanz. (In Persian).
- Alti, A. 2003. How sensitive is the investment to cash flow when financing is frictionless? *The Journal of Finance*, 58(2), 707-722.
- Amani, A., Davani, G. 2009. Audit services, audit fee, and auditors rating. *Journal of Official Accountant*, No. 42. (In Persian)
- Baldwin, C.Y., Mason, S.P. 1983. The resolution of claims in financial distress: The case of Massey Ferguson. *The Journal of Finance*, 38(2), 505-516.  
<https://doi.org/10.1111/j.1540-6261.1983.tb02258.x>
- Biddle, G., Hilary, G., Verdi, R. 2009. How does Financial Reporting Quality Relate to Investment Efficiency? *Journal of Accounting & Economics*, Vol. 48, 112-131.
- Dichev, I., Skinner, D. 2002. Large sample evidence on the debt covenant hypothesis. *Journal of Accounting Research*, 40(4), 1091-1123.

- Dun & Bradstreet. 1998. *Bankruptcy Insolvency Accounting Practice and Procedure*. Wiley, 21-41.
- Etemadi, H., Adel, A., Nazemi, A., Mehdi. 2010. Investigating the role of auditor allocation in the industry on actual earnings management and future critical performance. *Journal of Accounting Knowledge*, No. 1, 9-28. (In Persian).
- Fazzari, S.R., Glenn, H., Bruce, P. 1988. Financing constraints and corporate investment. *Brookings Papers on Economic Activities*, (1), 141-195.
- Ferdinand, A.G., Mehdi, K., Edwin, K., Yang, L., Farshid, N. 2018. Managerial Ability, Financial Distress, and Audit Fees. *Accounting Horizons*, Vol. 32, No. 1, 29-51.
- Gerald, E.A. 1998. *The Analysis and Use of Financial Statements*. Opcit, 983-1037.
- Gitman, L.J. 1998. *Principle of Managerial Finance*. Working paper. New York. Harper Collins College.
- Lopez-Gutiérrez, C., Sanfilippo-Azofra, S., Torre-Olmo, B. 2015. Investment decisions of companies in financial distress. *BRQ Business Research Quarterly*, 18(3), 174-187. <https://doi.org/10.1016/j.brq.2014.09.001>
- Healy, P.M., Palepu, G.K. 2003. How the Quest for efficiency corroded the market. *Harvard Business Review*, (July), 76-85.
- Hogan, C., Wilkins, M. 2008. Evidence on the audit risk model: Do auditors increase audit fees in the presence of internal control deficiencies?, *Contemporary Accounting Research*,. 25(1), 219-242. <https://doi.org/10.1506/car.25.1.9>
- Hubbard, R. 1998. Capital-Market Imperfections and Investment. *Journal of Economic Literature*, 36, 193-225.
- Karim, W.A. 2010. *Audit Pricing, Audit Concentration and BiG4 Premium in Bangladesh*. Working Paper, Saint Marys College of California, Available on [www.ssrn.com](http://www.ssrn.com).
- Khodayi, M., Yahyayi, M. 2010. Investigating the Relationship between Financial Reporting Quality and Investment Efficiency in Tehran Stock Exchange. *Journal of Management Accounting*, 5, 1-15. (In Persian).
- Lee-Cheng, F. 2009. Cash Holdings, Corporate Governance Structure and Firm Valuation. *Review of Pacific basin financial markets and politics*, 12(3), 475-508.
- Mehrani, S., Jamshidi Aavanaki, K. 2011. Factors Influencing Audit Fee. *Journal of Official Accountant*, 13, 60-78. (In Persian)
- Modares, A., Hesarzadeh, R. 2008. Relationship between Financial Reporting Quality and Investment Efficiency in the Stock Exchange. *Journal of Quarterly of the Stock Exchange*, 1(2). (In Persian)
- Morgan, J., Stocken, P. 1998. The Effects of Business Risk on Audit Pricing. *Review of Accounting Studies*, 3, (December), 365-385.
- Nikbakht, M.R., Mohsen, T. 2010. Testing the Factors Affecting the Audit Fee of Financial Statements. *Journal of Financial Accounting Researches*, 2(2), Successive 4, 111-132. (In Persian)
- Ohlson, J.A. 1980. Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*. 18(1), 109-131. <https://doi.org/10.2307/2490395>
- Palmrose, Z. 1986. Audit fees and auditor size: further evidence. *Journal of Accounting Research*, 24(1), 97-110.
- Pourheidari, O., Koupai, H.M. 2009. Predicting corporate financial crisis using a model based on linear discriminant function. *Journal of Financial Accounting Researches*, 2(1), 33-46. (In Persian)
- Richardson, S. 2006. Over-Investment of Free Cash Flow. *Review of Accounting Studies*, Vol. 11, 159-89.

- 
- Safarzadeh, M.H., Arab Mazar Yazdi, M. 2009. Investigating Financial Ratios' Ability to Predict Financial Crisis: A Logit Analysis. *Journal of Quarterly of Stock Exchange*, No. 8, 7-37. (In Persian)
- Saghafi, A., Majid Motamedi, F. 2011. Relationship between Audit Quality and Investment Efficiency in Firms with High Investment Opportunities. *Journal of Financial Accounting Researches*, 4, 1-14. (In Persian)
- Salehi, A.K., Elahi, S., Mehdi, Savari, A. 2016. Investigating Investment Decisions of Companies under Financial Distress. *Perspective of financial management*, Vol. 6, No. 16, 31-49. (In Persian)
- Shumway, T. 2001. Forecasting bankruptcy more accurately: A simple hazard model. *Journal of Business*. 74(1), 101-124. <https://doi.org/10.1086/209665>
- Simunic, D. 1980. The Pricing of Audit Services: Theory and Evidence. *Journal of Accounting Research*, Vol. 18, 161-190.
- Stein, J. 2003. Agency, Information and Corporate Investment. In *Handbook of the Economics of Finance*, Edited by George Constantinides, Milt Harris and Rene Stulz, Elsevier, 111-165.
- Ullah, Z., Taj, M., Ur Rahman, S.H., Ali, J. 2018. Investigating the effect of financial distress on investement efficiency of the companies listed on Pakistan Stock Exchange. *Journal of Management Research, (JMR)*, Vol 4, Issue 1.
- Vosoughi, M., Derakhshan, H., Alipour, M. 2016. Investigating the relationship between financial distress and investment efficiency of companies listed on the Tehran Stock Exchange. *Journal of Accounting*, 2(4), 167-176.
- Zeff, S. 2003. How the U.S. accountancy profession got where it is today: part II. *Accounting Horizons*, 17(4), 267-286.