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Original Research

Investigating the Effect of Tax Avoidance on Investment Efficiency: Interactive Effect of Ownership Structure

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ABSTRACT

The purpose of this research is to investigate the impact of tax avoidance on investment efficiency with emphasis on the role of institutional ownership and managerial ownership. Tax avoidance can be used as internal source of financing to enable financially distressed companies to access valuable investments with savings from tax avoidance. For this, a sample of 152 companies was selected from the companies listed in the Tehran Stock Exchange and by collecting data related to the research during the years of 2015 to 2022. The data related to the research variables for a period of 8 years were collected from reliable statistical databases. The hypotheses inspired by the title of the research were estimated according to the Chow test and the Hausman test using related statistical methods. The result of the first hypothesis indicates the existence of a significant and positive relationship between tax avoidance and investment efficiency. Also, the result of the second hypothesis showed that there is a direct and significant relationship between tax avoidance in companies with institutional ownership and investment efficiency. While the result of the third hypothesis showed that there is no significant relationship between tax avoidance in companies with managerial ownership and investment efficiency.

1 Introduction

In today's commercial and economic environments where the wheel of competition has accelerated, effective investment can lead to the growth and development of economic stability. Managers with an optimal level of investment can create maximum returns and provide the interests of shareholders by covering profitable opportunities. The investment of companies in various fields has always been considered as one of the important ways of developing companies and preventing stagnation and backwardness. In the meantime, the limitation in resources has caused that, in addition to the development of investment, increasing the efficiency of investment is of great importance.

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Theoretically, companies will continuously invest in projects with positive net present value until the marginal benefits of this investment are equal to its marginal costs. Previous research shows that in semi-perfect markets, factors such as information asymmetry and agency problems may force managers to make inefficient investment decisions that lead to over-investment and under-investment [1]. Under-investment theory states that managers may forego low-risk projects with a positive present value when the investment is financed by shareholders. They tend to make such investments; because stockholders bear the cost of investment, but the benefits of such investments are transferred to bondholders and banks. Therefore, company managers may choose risky projects that can bring more benefits to shareholders, and when large losses occur, these losses can be passed on to bondholders and banks. On the other hand, overinvestment is caused by the lack of alignment between the interests of managers and shareholders. In the presence of free cash flows from tax avoidance, corporate managers tend to expand their firm, even if projects with negative net present value reduce shareholder value [2].While tax avoidance has been seen as a value for shareholders in the past, the agency cost perspective states that tax avoidance is not always in the interest of shareholders, rather it causes shareholders to pay additional costs. Because there is a risk that these cases will be discovered by the government and the company will be fined, and that the managers will incur a lot of expenses to do this, which sometimes endangers their own interests, and none of these expenses benefit the shareholders. is not. The agency problem refers to the fact that companies hide their information from tax authorities in order to increase their level of tax avoidance [3]. The agency problem confirms the concepts of tax avoidance and shows that tax avoidance is not always possible to increase the wealth of external shareholders and may contribute to the diversion of benefits to the managers themselves, which range from manipulation and theft of profits. The company varies from excessive remuneration of managers in different forms [4]. Tax avoidance strategies involve hiding information, which aims to reduce taxes by hiding facts from tax auditors, thereby having a negative effect on the company's information environment and allowing managers to extract benefits from the company. Therefore, keeping information secret in order to increase tax avoidance increases information asymmetry and provides an opportunity for self-interested managers to use company resources and may lead company managers to invest in inefficient projects [5]. Therefore, investigating the relationship between tax avoidance and investment efficiency is inevitable. Based on agency theory, many studies show that managers are associated with tax avoidance because they always have incentives to minimize tax costs and help increase the value of firms. Managers are responsible for shaping, approving and monitoring the tax planning strategies of their companies [6]. And based on popular literature, the board of directors and CEOs are responsible for the overall tax strategies of the company, including determining the degree of tax avoidance [7]. Therefore, the ownership or non-ownership of managers can play a large role in tax avoidance or non-avoidance as well as the investment efficiency of companies. Therefore, in the second and third hypotheses, we examine the impact of ownership structure (institutional and managerial) on the relationship between tax avoidance and investment efficiency.

2 Theoretical Framework and Research Background

Previous research has examined corporate tax avoidance from a cost-benefit perspective, where the returns from reduced taxes are weighed against the costs associated with ambiguous financial reporting, penalties, corporate reputation, and laws and regulations [8- 9-10]. For every dollar spent on tax planning, the company reserves approximately four dollars in tax liabilities [11]. This finding suggests that tax avoidance is a firm value-enhancing activity due to its ability to increase cash flows by reducing statutory taxes. Since tax expense is usually a major expense on a company's profit and loss statement,

it makes sense that the benefits of planning for tax avoidance would be significant, to the extent that many companies treat their tax unit as a profit center [5]. There is no optimal level of cash and cash only acts as a link between retained earnings and investment requirements. Hence, firms may avoid taxes even if they have sufficient internal resources to finance their investments. In case of information asymmetry, the cost of external financing is higher than the cost of internal financing. Therefore, companies tend to use internally generated funds before seeking external financing. Tax avoidance can be used as an internal source of financing to enable financially distressed companies to access valuable investments with savings from tax avoidance [12]. Therefore, avoiding paying taxes can be an important measure to increase the value of the company. Companies use tax avoidance to grow their internal resources and reduce capital rationing. As the cost of external financing increases, or its availability becomes less, assuming information asymmetry, the incremental return from cash tax avoidance savings as domestic production funds becomes more important [12-13]. Previous research shows that tax avoidance can be considered together with other investment opportunities available to management [14-15-16]. Therefore, as far as the benefits of creating tax savings when cash from tax avoidance activities exceeds related costs, profit-maximizing firms consider an opportunity to reduce the tax burden [10, 17]. One of the most important determinants of a company's value is the managers' investment decisions, because such decisions can significantly affect shareholder returns [18]. Therefore, shareholders usually expect a company's management to invest wisely, to increase its value and lead to higher returns. In frictionless capital markets, firms invest if the marginal return on investment is greater than its marginal cost, that is, they invest in investment projects that generate a positive net present value (NPV). In the capital market, there are problems such as "representation problems" and "information asymmetry" that hinder investment efficiency and thus lead to over-investment or under-investment [19]. Firms that have cash flows resulting from tax avoidance may face an agency problem by investing in projects that do not increase the firm's value [20]. If there is no proper supervision, managers use their freedom of choice in making decisions that are in line with their own interests [21]. Hence, managers with excess cash savings from tax avoidance can potentially invest in projects with negative NPV, leading to overinvestment. Overinvestment occurs in companies facing large available cash flow. Moral hazard occurs when corporate managers make overinvestment choices for personal gain or "empire building," that is, they expand their firms beyond the optimal size to gain more power and benefits for themselves [22].

Firms with cash savings from tax avoidance are prone to underinvest when their managers forgo investing in projects with positive NPV [23]. Previous literature on underinvestment suggests that risk-averse managers who are concerned about their careers may avoid risky but optimal investment projects if they conclude that such projects endanger their personal well-being. Managers avoid high-risk investment projects because they fear losing control of the company [24]. Managers who receive cash bonuses may refrain from investing in investment projects with positive NPV but high risk in order to maintain their current bonus. On the other hand, companies with less investment may abandon positive NPV projects because their management may prefer to pursue a "quiet life [25]. Slemrod, Crocker and Slemrod are among the first to examine corporate tax avoidance in the framework of agency problem [26-27]. Under the agency problem perspective, when potential projects are invested with cash tax savings resulting from tax avoidance activities, managers can potentially forgo investing in projects with positive NPV. While Blaylock does not find a relationship between tax avoidance and investment efficiency in his research [28], Khurana, Moser and Raman document a significant positive relationship between tax avoidance and overinvestment [29]. Khurana et al also investigated the role of managerial ability and corporate governance on the relationship between tax avoidance and investment efficiency. They found

that in firms with high (low) managerial ability, or firms with strong (weak) corporate governance, the direct relationship between tax avoidance and investment efficiency is strengthened (weakened [30]. Also, Asiri et al showed that there is an inverse and significant relationship between tax avoidance and investment efficiency [19]. In Iran, Sarraf et al showed that tax avoidance has an inverse and significant relationship with investment efficiency [31]. While Madani et al showed that there is a direct and significant relationship between tax avoidance and investment efficiency [32]. According to the contradictory results that have been obtained in various domestic and foreign researches, we can conclude that because paying taxes is expensive for the company, therefore, tax avoidance can increase the available resources and can also cause an increase in costs. Therefore, based on the above discussions, our guess is that increasing tax savings through tax avoidance activities may both lead managers to efficient investment and prevent them from efficient investment. Therefore, our first hypothesis is expressed as follows:

First hypothesis: There is a significant relationship between corporate tax avoidance and investment efficiency.

The formation of an agency relationship creates a conflict of interest between managers and shareholders and other stakeholders (including the government) and it is potentially possible for managers to take actions that are not in the interests of the stakeholders [33]. The extent to which investors understand tax avoidance behavior has become part of the growing interest of researchers and researchers. For example, Hanlon and Slemrod investigated how investors react to tax shelter activities and found that when there is new news about a company's involvement in tax shelter activities, the company's stock price declines; [34]. In contrast, Edwards et al. find that companies with tax shelters are associated with higher stock returns when the company has strong corporate governance [12]. Therefore, it is necessary to investigate the impact of corporate governance mechanisms on the relationship between tax avoidance and investment efficiency. In this research of corporate governance mechanisms, we examine the effect of ownership structure (institutional ownership and managerial ownership) on the relationship between tax avoidance and investment efficiency. Institutional ownership is defined as the percentage of shares brought by legal investors, which plays an important role in managing the activities of managers. Due to long-term investment, institutional shareholders in the company have a great tendency to spend resources to influence and monitor the management field. The existence of institutional ownership forces the company's management to focus on economic performance and avoid opportunistic behaviors [35]. It is generally believed that the presence of institutional investors may lead to a change in the behavior of companies. This comes from the monitoring activities that these investors do. In general, when the percentage of institutional ownership is high enough, the supervision of institutional owners will prevent the poor performance of managers. Institutional owners in countries with strong governance and legal mechanisms have higher control ability than company managers. Institutional ownership is expected to reduce information asymmetry and, hence, agency problems, because institutional ownership can effectively control management's efforts to manipulate accounts. Institutional owners do their best to perform their duties in the best possible way and create reasonable confidence in the quality of financial reporting, protect the interests of shareholders and increase the benefits of investment in investors. Therefore, the probability of opportunistic behavior decreases for companies whose shares are held by institutional owners. With the increase of institutional ownership, the management decisions of the company are properly guided and measures are taken to ensure the efficiency and effectiveness of the use of free cash flows, as well as the institutional owners using their expertise and knowledge in the field of production technologies to the companies. They help to achieve maximum efficiency. Therefore, the second hypothesis will be as follows:

Second hypothesis: Institutional ownership affects the relationship between tax avoidance and investment efficiency. Another effective ownership structure is managerial ownership, which is defined as the percentage of shares held by the company's internal managers.

The level of managerial ownership varies. This level difference can be considered as a measure to measure the conflict of interests between the manager and the owner. As the ownership level of internal managers increases, the possibility of agency costs decreases [36]. Companies with higher managerial ownership use their assets more efficiently in order to maximize shareholder value. Managerial ownership reduces the motivation of managers to increase their personal interests and ignore the interests of shareholders, because these managers are stimulated to work harder and more efficiently, and as a result, with the correct use of assets, productivity and related interests also increase. Managerial ownership causes the active participation of managers in managing the company's free cash flows to ensure investment in projects with added value [37]. The results of another research show that there a reverse (negative) relationship between institutional ownership level, managerial ownership level, and ownership concentration level with liquidity. Also, there is a direct (positive) relationship between corporative ownership level and liquidity [44]. Managerial ownership plays an important role in ensuring the correct use of free cash flows in long-term profitable projects and maximizing the interests of shareholders and correct financing decisions. Managers who also own company shares have the ability to influence the company's decisions in order to invest cash flows in projects with positive current value. These managers implement free cash flows only in order to secure the interests of shareholders. In other words, the goal of managers is to maximize shareholder returns through the correct use of free cash flows [38]. It can be said that by increasing the ownership percentage of the managers, their interests are aligned with the shareholders, the conflict is minimized and the managers start accepting investment projects with a positive net present value in order to maximize the value of the company. Therefore, the third hypothesis will be as follows:

The third hypothesis: managerial ownership has an effect on the relationship between tax avoidance and investment efficiency.

Although a lot of research has been done on the effect of tax avoidance on investment efficiency, in this research we intend to measure the effect of ownership structure, including institutional ownership and managerial ownership, on the relationship between tax avoidance and investment efficiency. Ownership structure is one of the key factors of corporate management, and with tax issues becoming more prominent and the government's annual budget being more dependent on taxes, it is expected that the type of ownership of companies will affect their tax avoidance. In this research, we intend to measure the impact of ownership structure and tax avoidance on investment efficiency.

3 Methodology

The statistical population of the research includes all the companies admitted to the Tehran Stock Exchange in the period of 8 years (2015 to 2022). The statistical sample is determined by the systematic elimination method with the following restrictions:

1) To increase comparability, their financial year should end at the end of March.
2) The companies have been admitted to the stock market since 2014 or before.
3) It should not be a part of financial and investment companies such as insurance and banks.
4) Data of the variables should be available.

Table 1: How to Select the Sample

Description	Number
The entire company in the year 2022	608
Financial institutions and mediation, holding, investment and leasing	(115)
Accepted companies during the research period	(105)
Companies whose financial year is not 29 March or have changed their financial year during the research period	(99)
Companies that have stopped trading for more than 3 months	(104)
Companies whose information is not available	(33)
Sample	152

Regression models for hypothesis testing:

$$IE_{it} = \beta_0 + \beta_1 TA_{it} + \beta_2 SIZE_{it} + \beta_3 CFO_{it} + \beta_4 LEV_{it} + \beta_5 DIV_{it} + \beta_6 SG_{it} + \beta_7 ROA_{it} + \sum_{t=1}^{8} \mathbf{Yearit} + + \sum_{i=1}^{19} \mathbf{Industryit} + v_{it} \quad (1)$$

$$IEit = \beta 0 + \beta 1 TAit + \beta 2 IOit + \beta 3 (TAit \times IOit) + \beta 4 SIZEit + \beta 5 CFOit + \beta 6 LEVit + \beta 7 DIVit + \beta 8 SGit + \beta 9 ROAit + \sum_{t=1}^{8} \mathbf{Yearit} + + \sum_{i=1}^{19} \mathbf{Industryit} + v_{it} \quad (2)$$

$$IE_{it} = \beta_0 + \beta_1 TA_{it} + \beta_2 MO_{it} + \beta_3 (TA_{it} \times MO_{it}) + \beta_4 SIZE_{it} + \beta_5 CFO_{it} + \beta_6 LEV_{it} + \beta_7 DIV_{it} + \beta_8 SG_{it} + \beta_9 ROA_{it} + \sum_{t=1}^{8} \mathbf{Yearit} + + \sum_{i=1}^{19} \mathbf{Industryit} + v_{it} \quad (3)$$

3.1 Investment Efficiency

Investment efficiency is a measure of deviation from expected investment. Because the smaller the deviation, the more efficient the investment. Investment is less than the amount of negative deviation from the expected investment. In other words, investing less than the expected investment is called underinvestment. Excess investment is the positive deviation from the expected investment. In other words, investing more than the expected investment is called overinvestment. Investment inefficiency includes underinvestment and overinvestment [39].

3.2 Operational Definition of Investment Efficiency

Investment efficiency refers to companies whose projects are all implemented with a positive net present value. To measure investment efficiency, the following regression model, which was also used in Chen et al.'s research, is used; [39]. The residuals of the regression model are used as investment inefficiency. Negative residuals are considered underinvestment and positive residuals are considered overinvestment.

$$Investment_{it} = \beta_0 + \beta_1 Growth_{it-1} + \beta_2 Leverage_{it-1} + \beta_3 Cash_{it-1} + \beta_4 Size_{it-1} + \beta_5 Return_{it-1} + \beta_6 Age_{it-1} + \beta_7 Investment_{it-1} + \varepsilon_{it} \quad (4)$$

In order to equalize the investment variable, its values are divided by the average total assets. Also, in order to estimate the size and age of the company, the natural logarithm of their total at the end of the company's financial year is used. The inverse of the absolute magnitude of the error of this model is considered as an index of investment efficiency.

3.3 Tax Avoidance

Avoiding paying taxes, in such a way that the taxpayer obtains the real ways with the help of tax advisors, or sometimes by studying the tax laws, to use the legal provisions and regulations to avoid paying

real taxes, in the case of tax avoidance, one cannot be accused. It became Modi, because what he provides is in accordance with the law, and it is often not possible for the officers to discover the violation of the law [40].

3.4 Operational Definition of Tax Avoidance

According to the Iranian Trade Law, the tax rate in joint-stock companies is 22.5%, which is applied to the net profit before tax. But there may be incomes and expenses in the tax declaration that are not included in the financial statements and vice versa. Therefore, there is a possibility that the taxable profit of the company in the tax return differs from the pre-tax profit in the profit and loss statement, and therefore the company pays a tax different from the product of the tax rate in the pre-tax profit to the government. We consider the tax difference calculated based on the pre-tax profit in the profit and loss statement with the actual tax paid by the company (book tax difference) as the Rial amount of tax avoidance and divide it by the total assets for standardization [41].

BTD= (Pre-tax profit minus taxable profit) divided by total assets (5)

3.5 Modifier Variables

Institutional Ownership (IO): To measure institutional ownership, the percentage of shares owned by institutions such as banks, insurance companies, investment companies and other institutions of each company is collected from the financial statements and the average is calculated. . Companies that are above the median are assigned a code of 1, and those below the median are assigned a code of zero.
Managerial Ownership (MO): To measure managerial ownership, the percentage of shares owned by company managers is collected from the financial statements and their average is calculated. . Companies that are above the median are assigned a code of 1, and those below the median are assigned a code of zero.

3.6 Control variables

Return on assets (ROA): It is equal to the operating profit divided by the assets at the end of the period.
Company size (SIZE): the logarithm of total assets at the end of the financial year.
Financial leverage (LEV): In this research, financial leverage refers to the ratio of total liabilities to total assets.
Dividend per paid share (DIV): In this research, dividend per paid share means the logarithm of paid dividends per share.
Operating cash flows (CFO): It is obtained from the difference between incoming cash flows and outgoing cash flows of the company and is divided by total assets for standardization.
Sales growth percentage (SG): It is obtained from the difference between the sales of each year and the sales of the previous year divided by the sales of the previous year
. In the first model, the β1 coefficient and in the second and third models, the β3 coefficient will indicate the confirmation or rejection of each hypothesis.

4 Findings

In order to examine the general and basic characteristics of the variables in order to estimate the model, their precise analysis and to know the statistical population of the research, it is necessary to be familiar with the descriptive statistics related to the variables. The summary of the characteristics of the descrip-

tive statistics related to the variables used in this research is summarized in Table 2. The reported statistics include central indicators and criteria including mean, median and dispersion indicators including standard deviation and skewness and elongation of the variables used in this research.

Table 2: Descriptive Statistics of Research Variables

variables	Mean	Median	Std. Dev	Minimum	maximum	Skewness	Kurtosis
CFO	0.11	0.10	0.13	-0.18	0.49	0.58	3.66
TA	0.05	0.023	0.09	-0.09	0.329	1.56	5.52
DIV	2.02	2.39	1.15	0.00	3.81	-0.79	2.28
IO	0.504	1.00	0.500	0.00	1.00	-1.58	3.50
MO	0.501	1.000	0.500	0.00	1.00	-0.006	1.00
LEV	0.62	0.60	0.22	0.22	1.10	0.30	2.49
IE	8.33	6.25	0.12	1.20	33.01	0.83	2.51
ROA	0.10	0.08	0.13	-0.25	0.49	0.40	3.99
SG	0.14	0.12	0.31	-0.39	0.84	0.42	2.85
size	5.72	5.62	0.81	4.01	8.19	0.73	3.46

Table shows that whenever the distance of the data from the mean is large, its variance increases, and naturally, the standard deviation, which is the square root of the variance and shows the amount of data dispersion, increases. If the skewness is positive, it means that the dispersion of the data is high on the right side, and if it is negative, it means that the dispersion of the data is high on the left side. In all the variables where the skewness coefficient is positive, it indicates that the dispersion of those variables is to the right and vice versa. For example, regarding the company's average, median, standard deviation, minimum and maximum sales growth percentage, the skewness is 0.1, 0.12, 0.31, -0.39, 0.80, 0.42 and 2.85, respectively. Due to the fact that the average percentage of sales growth is higher than the median percentage of sales growth, the percentage distribution of sales growth among the statistical sample of Skewness is to the right. In the same way, the descriptive statistics of the rest of the variables can be extracted from Table 2.

4.1 Test of the first hypothesis

To investigate the effect of tax avoidance on investment efficiency, the first model was estimated in a combined manner, and the summary of the results of this model is given in Table 3:

Table 3: The Results of Fitting the Regression Equation of the First Hypothesis

Variable name		Coefficient	t Statistics	p-value	VIF
constant number		-0.16	-6.38	0.00	-
Corporate tax avoidance	TA	0.73	49.92	0.00	1.18
Operating cash flows	CFO	0.00	0.21	0.83	1.32
Dividend paid	DIV	0.00	0.26	0.79	1.51
Financial Leverage	LEV	-0.02	-2.60	0.00	1.32
Return on assets	ROA	0.9	4.59	0.00	1.26
Sales growth	SG	-0.01	-0.46	0.64	1.01
size of the company	SIZE	-0.01	3. 16-0.01	0.00	2.17
R-Squared 0.824		F Statistic		228.42	Chow test 0.314(0.00)
Adjusted R-Squared 0.821		P-value		0.000	Haussmann's test 31.24(0.00)
		Durbin-Watson statistics		1.973	White's test 9.99(0.00)
The effects of years and industries were considered					

The value of F statistic (228.42) indicates the significance of the whole regression model. The variance

inflation factor of all variables is very close to 1 (it is much less than 5), as a result, the hypothesis of non-collinearity between independent variables is confirmed in all models. According to the result of White's test, the statistic of this regression model was not significant at the error level of 0.05, as a result, the hypothesis of non-homogeneity of variance among the data of the model is not confirmed at the error level of 0.05. In other words, the error of the models has the heterogeneity of the model error and we must use the GLS method for the final estimation of this model. In the case of Chow's test, the significance level is less than 5%, so the panel model is approved and we should use the Hausman test to determine the fixed or random effects in the panel. The results showed that the Hausman test statistic for the regression model of the research is less than 0.05, which is significant at the 95% confidence level, which indicates that the H1 hypothesis is not rejected, therefore, according to the Hausman test, the fit of these regression models using The panel data model will be suitable using the fixed effects method. Durbin-Watson's statistic is between 1.5 and 2.5, which indicates the absence of serial correlation of the model error, and the absence of serial or serial correlation of the residuals in the regression model is confirmed at a significance level of 0.05. As indicated in the lower part of the Table, the coefficient of determination and the adjusted coefficient of determination of the above model are 82.4% and 82.1%, respectively; therefore, it can be concluded that in the mentioned regression equation, only about 82% of the investment efficiency changes of the investigated companies are explained by the mentioned independent and control variables. In this picture, the positive (negative) numbers in the coefficient value column indicate the direct (inverse) effect of each variable on investment efficiency.
According to Table 3, the significance level (P-value) of the tax avoidance variable (0.00) is lower than the significance level considered in the current research (5%); also, the absolute value of the t statistic related to this variable (49.92) is greater than the t statistic obtained from the graph with the same degree of freedom. Therefore, the H0 hypothesis is rejected at the 95% confidence level, and the H1 hypothesis states that "there is a significant relationship between tax avoidance and investment efficiency." This effect is positive and direct.

4.2 Test of the Second Hypothesis

To investigate the effect of institutional ownership on the relationship between tax avoidance and investment efficiency, the second model was estimated, the summary of the results of this model is shown in Table 4.
According to Table 4, the value of the F statistic (197.26) indicates the significance of the entire regression model. As indicated in the lower part of the table, the coefficient of determination and the adjusted coefficient of determination of the above model are 82.5% and 82.1%, respectively. Therefore, it can be concluded that in the mentioned regression equation, only about 82% of the investment efficiency of the investigated companies is explained by the mentioned independent and control variables. In this table, the positive (negative) numbers in the coefficient value column indicate the amount of direct (inverse) influence. Each of the variables is on the efficiency of investment.
According to Table 4, the significance level (P-value) of the variable of tax avoidance in companies with institutional ownership (0.00) is lower than the significance level considered in the current research (5%); Also, the absolute value of the t statistic related to this variable (3.82) is greater than the t statistic obtained from the table with the same degree of freedom. Therefore, the hypothesis H0 is rejected at the 95% confidence level and the hypothesis H1 that "in companies with institutional ownership, between There is a significant relationship between investment efficiency and corporate tax avoidance (TA) is confirmed.

Table 4: The Results of Fitting the Regression Equation of the Second Hypothesis

Variable name		Coefficient	Statistics t	The significance level	VIF
constant number		-0.17	-6.11	0.00	-
Corporate tax avoidance	TA	0.75	23.77	0.00	3.43
Institutional ownership	IO	0.02	3.00	0.00	3.00
Tax avoidance in high IO companies	TA*IO	0.03	3.82	0.00	3.71
Operating cash flows	CFO	0.00	0.22	0.82	1.33
Dividend paid	DIV	0.00	0.30	0.76	1.51
Financial Leverage	LEV	-0.03	2.69	0.00	1.32
size of the company	SIZE	0.09	4.56	0.00	2.18
Sales growth	SG	-0.01	-0.45	0.64	2.02
size of the company	SIZE	-0.01	3.27	0.00	1.30
R-Squared : 0.824		F Statistic		197.26	Chow test 0.318(0.00)
Adjusted R-Squared 0.821		P - value		0.000	Haussmann's test 14.55(0.00)
		Durbin-Watson statistics		1.974	White's test 7.53(0.00)
The effects of years and industries were considered					

4.3 Test of the Third Hypothesis

To investigate the effect of managerial ownership on the relationship between tax avoidance and investment efficiency, the third model was estimated, the summary of the results of this model is shown in Table 5:

Table 5: The Results of Fitting the Regression Equation of the Third Hypothesis

Variable name		Coefficient	t - Statistics	P - value	VIF
constant number		0.38	0.78	0.43	-
Corporate tax avoidance	TA	0.78	23.98	0.00	3.58
Managerial Ownership	MO	0.10	0.64	0.52	3.48
Tax avoidance in high MO companies	TA*MO	1.26	1.40	0.16	3.96
Operating cash flows	CFO	2.60	4.03	0.00	2.41
Dividend paid	DIV	-0.43	-2.00	0.03	1.08
Financial Leverage	LEV	0.00	0.06	0.94	1.45
size of the company	SIZE	-0.33	-1.99	0.04	1.02
Sales growth	SGT	0.19	2.45	0.01	1.02
Return on assets	ROA	-0.01	3.27	0.00	1.24
R-Squared : 0.824		F Statistic		187.25	Chow test 0.314(0.00)
Adjusted R-Squared : 0.821		P - value		0.000	Haussmann's test 31.24(0.00)
		Durbin-Watson statistics		1.921	White's test 9.99(0.00)
The effects of years and industries were considered					

According to Table 5, the value of the F statistic (187.25) indicates the significance of the entire regression model. As indicated in the lower part of the table, the coefficient of determination and the adjusted

coefficient of determination of the above model are 75% and 74%, respectively. , it can be concluded that in the mentioned regression equation, only about 74% of the investment efficiency of the investigated companies is explained by the mentioned independent and control variables. In this table, the positive (negative) numbers in the coefficient value column indicate the direct (inverse) impact of each One of the variables is the efficiency of investment.

According to Table 5, the significance level (P-value) of the tax avoidance variable in companies with managerial ownership (0.16) is higher than the significance level considered in the current research (5%); Also, the absolute value of the t statistic related to this variable (1.40) is smaller than the t statistic obtained from the table with the same degree of freedom. Therefore, the H0 hypothesis is confirmed at the 95% confidence level and the H1 hypothesis that "in companies with managerial ownership, between There is a significant relationship between investment efficiency and corporate tax avoidance (TA) is not confirmed

5 Discussion and Conclusions

Based on the test of the first hypothesis, it can be said that tax avoidance has a direct and meaningful relationship with investment efficiency. This result shows that the presence of tax avoidance indicators in companies has affected the behavior of managers and in accordance with the theoretical foundations of this research that there is a positive relationship between tax avoidance and investment efficiency, it was observed that the higher the tax avoidance of companies, the more the company's management tends to It drives investment efficiency, not waste of capital. In other words, Iran's joint-stock companies consider tax avoidance in terms of interest-free financing and use it in order to increase the efficiency of investment projects. According to the test of the second hypothesis, institutional ownership strengthens the relationship between tax avoidance and investment efficiency. This result shows that the presence of institutional ownership in companies increases the efficiency of investment by them. For this reason, the interaction of institutional ownership with tax avoidance has a positive and significant relationship with investment efficiency. We expected that in companies with high institutional ownership, corporate tax avoidance has a direct relationship with investment efficiency. This result is also in accordance with the theoretical foundations of our research. That is, with the increase of institutional ownership, the management decisions of the company are properly guided and measures are taken to ensure the efficiency and effectiveness of the use of free cash flows, as well as the institutional owners using their expertise and knowledge in the field of financing technologies. Productive companies help to achieve maximum efficiency through tax avoidance. The results of this research are not consistent with the results of Mahloji [42] and Rahimi and Foroughi [43]. As stated in the theoretical foundations, in companies where tax avoidance is high, it is expected that the managers will try to lead the company to increase the efficiency of investment and avoid wasting capital, so that they can reduce the adverse effects of tax avoidance for the society. Neutralize investment through increasing efficiency. The result of the first and second hypothesis of this research was in accordance with these theoretical foundations. That is, tax avoidance and institutional ownership had a direct relationship with investment efficiency. While managerial ownership had no significant effect on the relationship between tax avoidance and investment efficiency. Therefore, potential investors are advised to pay attention to this point in choosing their investment portfolio and to know that companies with higher tax avoidance seek to increase investment efficiency so that they can avoid the adverse effects of investors, auditors and society by increasing investment efficiency divert tax. Therefore, companies that have higher tax avoidance, despite not working in line with the interests of the general society, but they lead the activities related to investment projects in the direction of increasing investment efficiency. Company managers are also

advised to understand the concept of tax avoidance more so that they can meet the needs of investors. At first glance, it may seem desirable to avoid paying taxes and use them to increase the efficiency of investment projects, but in the long run, tax avoidance is harmful to the target company and the society, and may even bring risks of punishment for the company.

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