Nonlinear relationship between ownership structure and agency costs with respect to the moderating role managers' entrenchment

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Abstract: The purpose of this study is to investigate the nonlinear relationship between ownership structure and agency costs with respect to the moderating role of managers' Entrenchment in the companies listed on the Tehran Stock Exchange. In this study, 144 companies in the period 2012 to 2021 have been studied. The initial calculation of the data was performed using Excel software and the final analysis of the data was performed using Eviews and Stata software. In this study, the Q tobin criterion has been used to measure agency costs. To measure managers' Entrenchment, three indicators of CEO duality, managerial ownership and over-investment risk have been used. Findings indicate that there is a negative and linear relationship between institutional ownership and agency costs, there is a positive and non-linear relationship between institutional ownership and agency costs. Findings also showed that managers' Entrenchment had a negative effect on the linear relationship between institutional ownership and agency costs and findings showed that managers' Entrenchment had a negative effect on the non-linear relationship between institutional ownership and agency costs.

Keywords: ownership structure, institutional ownership, managers' Entrenchment and agency costs.

Introduction

For many years economists thought that all groups belonging to a stock corporation worked for a common goal, but in the last 30 years, there have been many instances of conflict of interest between groups. economists have discussed how companies deal with such conflicts (Jensen, 1986). economic growth and development, the rise of stock companies and the separation of management from ownership today have made agency issues one of the most

important concerns of investors. agency issues stem from the fact that investors usually do not have the desire and ability to manage the company affairs, or that it is not economically viable for them due to the diversification of the investment portfolio; therefore, this responsibility is delegated to managers. with the separation of ownership from management in such companies, it is possible that there is an information asymmetry between managers and owners and shareholders can't continuously observe the actions and activities of managers. with the formation of the agency relationship, due to the conflict of interests between the parties, the cost of agency is created (Valipour & Khorram, 2012). in other words, agency costs arise from conflict the interests of owners and managers of companies and the consequent separation of ownership and control (McKnigh & Weir, 2009).

Separation of ownership and management, and information asymmetry and the resulting behaviors hazard, worry owners that management, which has control over their assets, is misallocating resources. They try to control and monitor managers' behaviors by developing appropriate ownership structures to reduce the information asymmetry and behaviors hazard that threatens owners (Jensen & Meckling, 1976). Ownership structure is one of the main and very important factors of corporate governance that is tied to the issue of agency. Optimal ownership structure can reduce agency costs in financial reporting and affect the volume of audit work and its risk and audit fees (Mitra et al., 2007). Ownership structure or composition of shareholders means the distribution of shares and property rights in terms of voting rights and capital plus the nature and existence of shareholders (Rubin, 2007). The ownership structure of a company can be considered from different aspects; First, it can be defined in terms of two variables, including internal shareholders and external shareholders. According to this definition, the main parts of the external ownership of companies are the shares held by the institutions and the government. Internal shareholders represent the portion of company shares held by the company's managers and employees. Shares held by institutional shareholders refers to the percentage of shares owned by institutional and legal investors (Akimova & Schwodiauer, 2004).

The composition of ownership can be considered from other aspects such as managerial or non-managerial or centralization and decentralization of ownership or institutional and real shareholders. In this study, institutional owners are used as a representative of the ownership structure. managers' entrenchment as an issue that can influence managers' decisions means that sometimes managers decide to do things that provide more profit for management and costs others. In fact, it can be said that the manager is looking for his personal benefit and achieving the highest expected desirability. According to agency theory, managers in companies with scattered ownership instead of seeking to maximize shareholder wealth, they tend to pursue their own interests. Conflict of interest between shareholders and managers is greater when managers are more entrenchment, because in this case, shareholders have less power to regulate managers (Abbasi et al., 2017).

Given the need to control agency costs through one of the most important corporate governance mechanisms, namely "ownership structure", This study intends to show empirically to managers and other decision makers that different ownership structures of listed companies affect agency costs. that is, if the owners of companies are made up of different groups of government, financial institutions, banks, and other private companies, their agency costs will be different. measuring management ability based on accounting variables and its impact on firm performance is also a relatively new topic, and we intend to look at this according recent similar research and its impact on agency ownership structure and costs.

Therefore, the result of this research can provide useful information to analysts, investors and company managers; because investors are always worried about their interests in the company and recognizing the inherent abilities and talents of managers and providing quality accounting information in the business environment greatly reduces information asymmetry, investor concern and risk. on the other hand, if managers maintain benefits of equity it will be difficult for foreign owners to control the company, such a entrenchment effect is common for managers with high managerial ownership, in which case, the primary goal of managers is not to maximize shareholder wealth, so because of the importance of this issue, therefore, due to the importance of this issue, we also examine the impact of managers' entrenchment on the ownership structure and agency costs. In view of the above, the fundamental question arises: does the ownership structure affect agency costs? and do managers' entrenchment affect the nonlinear relationship between agency costs and ownership structure?

Literature Review

For many years, economists thought that all the groups in a corporation, such as directors and shareholders, were working for a common goal. but since 1961, many cases of conflict of interest between groups and how companies deal with such conflicts have been raised by economists. these cases are generally known as agency theory in management accounting (Jensen & Meckling, 1976).

Institutional ownership and agency costs

Institutional investors invest their money on behalf of others (Scholtens \& Van Wensveen, 2000) and seek to background the risk-return relationship. Institutional investors, with lower costs for accessing and processing information, avoid companies with information asymmetries and exercise more effective control than other stakeholders (Carney, 1997). Institutional investors prefer to distribute free cash flows in the form of DPS to reduce agency costs related to free cash flows (Stouraitis & Wu, 2004).

(Bhattacharya & Graham, 2007) examined the institutional ownership and performance of the company and concluded that there is a significant reaction between the performance of the company and the institutional ownership of the stock.

(Chen & Yur-Austin, 2007) in their study, Re-Measuring Agency Costs: The Effectiveness of Major Shareholders, concluded that there is a significant relationship between institutional shareholder ownership and agency cost criteria and that external institutional shareholders are more effective in reducing agency costs.

(Chung & Zhang, 2009) concluded in their study that the presence of institutional shareholders increases the quality of the ownership structure and reduces corporate agency costs.

(Nirosha Hewa & Stuart, 2011) examined the relationship between agency costs, ownership structure and corporate governance and stated that the focus of ownership has the greatest effect on the corporate governance system and agency costs.

(Gul et al., 2011) in examining the effectiveness of corporate governance mechanisms in reducing agency costs showed that managerial ownership, institutional ownership, reward structure and board independence reduce agency costs. but the size of the board and the duality of the CEO's responsibilities do not affect agency costs.

(Njah, 2013) examined the relationship between institutional investors and earnings management of 76 French merged companies in 2000-2010 and concluded that institutional investor monitoring limited profit management opportunities.

(Line et al., 2014) in a study found that the more long-term institutional investors invest in a company, the greater the level of corporate conservatism.

(Pirzadaa et al., 2015) examined corporate performance, institutional ownership, and capital structure: A case study of companies listed on the Malaysian Stock Exchange. The purpose of this paper is to investigate the relationship between the performance of stock institutional assets and the performance of companies. The results show that there is a significant relationship between stock institutional assets and the performance of companies operating in stock exchange. in addition, the results showed that there is no significant relationship between stock institutional assets and corporate capital structure.

(McKnigh & Weir, 2009) using two samples consisting of companies with low degree of institutional ownership and high degree of institutional ownership, investigated the role of institutional owners in reducing information asymmetry in the Tehran Stock Exchange. Their results show that firms with more institutional ownership report more information about future profits.

(Namazi et al., 2010) examined the effect of institutional ownership on the past and future financial performance of companies listed on the Tehran Stock Exchange. According to agency theory, institutional owners may reduce agency conflict through monitoring on management and improve company performance. institutional owners have the motivation, expertise, and resources to oversee companies.

(Valipour & Khorram, 2012) in a study examined the effectiveness of the company corporate governance mechanisms to reduce agency costs. They concluded that there was a significant negative relationship between the percentage of ownership of institutional investors, the percentage of ownership of directors' shares, the percentage of non-executive board members, the ratio of short-term debt to total debt, and agency costs.

(Shahikitash et al., 2013) investigated the relationship between ownership structure and company performance based on new criteria of proprietary value added performance and Q tobin. Findings based on both economic value added models and Q tobin showed that there is a significant and positive relationship between institutional ownership and company performance and a significant and negative relationship between real ownership and company performance.

(Osco & Shojaei, 2014) in a study examined the effect of institutional ownership and information asymmetry on capital structure and concluded that active institutional ownership and information asymmetry has a significant positive relationship with capital structure.

(Ebrahimi et al., 2015) in their research examined the effect of ownership structure on audit fees and the opinion of independent auditors in companies listed on the Tehran Stock Exchange. It was found that ownership of shares by institutional investors has a significant positive effect on companies' audit fees. The results also showed that the ownership of shares by institutional investors with the issuance of conditional audit opinion has a significant negative

relationship and no significant relationship was observed between management ownership with the audit fee and conditional opinion of auditors.

(Abbasi et al., 2017) in a study examined the effect of ownership structure on the agency costs in companies listed on the Tehran Stock Exchange. The result of his research indicates the effect of ownership composition variables, competitiveness of control on the agency costs. Meanwhile, the variables of institutional and individual ownership and competitiveness of control led to a reduction in agency costs. While state ownership increases agency costs. Also, the variable of ownership concentration could not have a significant effect on agency costs.

(Mohammadpour & Jangi, 2016) studied the effect of ownership structure on in agency costs in the life cycle of companies. Findings showed the existence of a positive and significant relationship between corporate ownership and agency costs also a negative and significant relationship between institutional, managerial and private ownership with agency costs.

(Damori & Izadi, 2017) in a study entitled The Impact of External Monitoring and Control Mechanisms Corporate governance on agency costs concluded that institutional owners have a positive and significant effect on agency costs. Also, competition and debt ratio have a reducing effect on agency costs, but dividends as a measure of dividend policy do not have a significant effect on agency costs.

(Berkeley et al., 1988) in a study, found that institutional investors oppose proposals that harm the interests of owners. Based on the effective oversight hypothesis, (Pound, 1988) states that institutional shareholders have high resources and expertise and can supervise management at a lower cost. (Bathala et al., 1994) also consider institutional shareholders as a mechanism to control and reduce agency costs.

According to the above, the first and second hypotheses are formulated as follows:

Hypothesis1: There is a linear and significant relationship between institutional ownership and agency costs.
Hypothesis2: There is a significant and non-linear relationship between institutional ownership and agency costs.

The moderating role of managers' Entrenchment and agency costs
(Elyasiani & Zhang, 2015) in a study entitled role Managers' Entrenchment and Corporate Liquidity Management examined the relationship between role managers' entrenchment and banks' liquidity policy. The results of their research showed that managers' entrenchment increases the liquidity of companies, reduces risk and increases financial and job security.

(Di Meo et al., 2017) conducted a study entitled The Impact of Managers' Entrenchment and Profit Management in Spain. For this purpose, 4525 year- company financial information examined the period from 1992 to 2011 and used multivariate regression and composite data to analyze the hypotheses. Their findings show that managers' entrenchment has a negative relationship with accruals and manipulation of real activities. Their findings also showed that managers' entrenchment has a negative effect on the relationship between profit management and company value.

(Abbasi et al., 2017) conducted a study entitled effect of managers' entrenchment on liquidity management. The results showed that managers' entrenchment and evaluation indicators (board composition and CEO share) have a significant effect on the liquidity management of companies and Successful implementation of corporate governance to deal with managers' entrenchment depends on stock value, bankruptcy risk and the existence of favorable investment projects.

(Taghizadeh Khaneghah & Zeinali, 2016) conducted a study entitled effect of board characteristics and managers' entrenchment on company diversification strategy. for this purpose, the financial data of 110 companies for the period 2009-2015 were examined. The results showed that the size and independence of the board have a positive and negative effect on company diversification. This means that in companies with large boards and low board independence, company diversification is at a high level. Also, the results showed that the duality of the CEO and increasing the investment risk have a positive effect on the diversification of the company. While managerial ownership has no effect on the diversification of the company. The results are consistent with the agency theory. According to this theory, increasing the conflict between shareholders and managers causes the company internal managers to be motivated to perform their opportunistic behaviors in order to diversify the company.

Accordingly, the third and fourth hypotheses of the research are as follows:

Hypothesis 3: Managers' entrenchment affects the linear relationship between institutional ownership and agency costs.
Hypothesis 4: Managers' entrenchment affects the nonlinear relationship between institutional ownership and agency costs

Methodology

From the point of view of purpose, this research is applied research, because the purpose of applied research is to develop applied knowledge in a specific field. On the other hand, based on how the data are collected, this research is a descriptive. According to different categories of descriptive research, the present study will be correlational. The statistical population of this research is the companies listed on the Tehran Stock Exchange in the period 2012 to 2021. Companies which the following conditions apply are in the statistical population:

1. Their financial year should end on March 29 of each year.
2. Have not changed their financial year during the research period.
3. Companies must have been listed on the Tehran Stock Exchange from the beginning of 2012 to 2021.
4. The required information is available in the field of research.
5. Not be part of investment and financial intermediation companies (banks and leasing).

After eliminating companies without the above criteria, 144 companies were selected from all companies listed on the Tehran Stock Exchange in the period 2012 to 2021.

Research models

The following multivariate linear regression models are used to test the research hypotheses:
Model 1 relates to the first and second hypotheses

$$AC_{it} = a + \beta_1 INST_{it} + \beta_2 INST_{it}^2 + \beta_3 LEVERAGE_{it} + \beta_4 ROA_{it} + \beta_5 Size_{it} + \beta_6 R\&D\ Intensity_{it} + \beta_7 SG_{it} + \beta_8 Age_{it} + \varepsilon_{it}$$

It is considered to confirm the first hypothesis β_1 and to confirm the second hypothesis β_2.
Model 2 relates to the third and fourth hypotheses

$$AC_{it} = a + \beta_1 INST_{it} + \beta_2 INST_{it}^2 + \beta_3 ENT_{it} + \beta_4 INST * ENT_{it} + \beta_5 INST_{it}^2 * ENT_{it} + \beta_6 LEVERAGE_{it} + \beta_7 ROA_{it} + \beta_8 Size_{it} + \beta_9 R\&D\ Intensity_{it} + \beta_{10} SG_{it} + \beta_{11} Age_{it} + \varepsilon_{it}$$

It is considered to confirm the third hypothesis $\beta 4$ and to confirm the fourth hypothesis $\beta 5$.

where:

AC_{it} : agency costs of company i in period t;
$INST_{it}$: institutional ownership of company i in period t;
ENT_{it} :managers' entrenchment of company i in period t;
$LEVERAGE_{it}$: financial Leverage of company i in period t;
ROA_{it}: Return on assets of company i in period t;
$Size_{it}$: size of company i in period t;
$R\&D\ Intensity_{it}$: research and development costs of company i in period t;
SG_{it}: sales growth of company i in period t;
Age_{it}: age of company i in period t;

Research variables

There are four types of variables used in this study; Dependent variable, independent variable, control variable and moderator variable. A dependent variable is a variable that the researcher aims to describe or predict its variability. The independent variable is a feature that its effect on the dependent variable is examined by the researcher. The control variable is also a variable that is examined in order to distinguish the effect of the independent variable on the dependent variable from the effect of other variables (Khaki, 2012). Based on this, the research variables are as follows.

- The dependent variable
- Agency costs

According to (Rostami et al., 2014), the interaction between growth opportunities and free cash flow is used to measure agency costs.

Tobin Q ratio (growth opportunity): This ratio is generally used as a measure of management performance. it is believed that poor management performance is likely to lead to decisions that will increase agency costs. therefore, a lower Q-Tobin ratio, which indicates poor performance of managers, indicates the presence of agency problems.

Q Tobin = Total market value of stock and book value of total debt over total book value of total assets.

Free cash flows: In this research, the model is used following (Rostami et al., 2014), to measure the free cash flows of the business unit.

According to the model, free cash flows are calculated using the following formula:

Relationship 1

$$FCF_{it} = (INC_{it} - TAX_{it} - INTEP_{it} - PSDIV_{it} - CSDIV_{it})/A_{i,t-1}$$

Where:

FCF_{it} : Free cash flows of company i in period t;

INC_{it} : Operating profit before depreciation of company i in period t;

TAX_{it} : Total tax paid by company i in period t;

$INTEP_{it}$:Interest paid by company i in period t;

$PSDIV_{it}$: Dividends of preferred shareholders paid by company i in period t;

$CSDIV_{it}$: Dividends of common shareholders paid by company i in period t;

A_{it-1}: Total book value of company assets i in period t;

Q*FCF =Interaction between growth opportunities and free cash flow: According to (Jensen, 1986), combining free cash flow with low growth opportunity creates agency costs. Increasing free cash flows reduce the capital market's ability to monitor managers' decisions. Therefore, increasing free cash flows increases resources in control and power of managers, which in turn will increase agency costs (Rostami et al., 2014).

- The independent variable

Institutional ownership: includes large investors such as banks, insurance companies, investment companies, and state companies, equal to the average percentage of institutional ownership of common stock.

- The moderating variables

Managers' Entrenchment: Following (Taghizadeh Khaneghah & Zeinali, 2016) to measure managers' Entrenchment, three indicators of CEO duality, managerial ownership and over-investment risk (internal articles) have been used.

1) Duality CEO: If in the company of the CEO, the chairman or vice-chairman of the board of directors, the dummy variable of 1 is used otherwise 0.
2) Managerial ownership: Percentage of shares held by board members.
3) Over-investment risk: In this study, (Chen et al., 2011) model is used to measure over-investment risk.

Model 3

$$INVESTMENT_{i,t} = \alpha_0 + \beta_1 NEG_{i,t-1} + \alpha_2 REVGRW_{i,t-1} + \alpha_3 NEG * REVGRW_{i,t-1} + \varepsilon_{i,t}$$

$INVESTMENT_{it}$: Investment (net ratio of increase in tangible and intangible assets to total assets).

$REVGRW_{it-1}$: Sales growth of the previous year.

NEG_{it-1} : The dummy variable is considered 1 if sales growth is negative, otherwise 0.

Finally, the numbers 0 and 1 are considered for each of the criteria based on the median (greater than the median of the number 1 and smaller than the median of the number 0), and the numbers are added together and considered as the managers' entrenchment.

-The control variables

Financial Leverage: It is obtained by dividing the total debts of company on the total assets of company.

Return on Assets: Return on assets is obtained by dividing the net profit by the total assets.

Firm size: The logarithm of total assets is used to calculate the size of the firm.

R&D cost: is obtained by dividing R&D cost on total sales.

Sales growth: To calculate sales growth, the difference between the total sales of the company this year compared to the total sales of the company last year is divided on the sales of the company last year.

Company age: Company age is measured based on the current year minus the first year that the company had an asset database. (Logarithm of the number of years of activity of the company since its establishment).

Findings

After collecting the required data for the research, Office 2010 software is used to calculate and prepare the variables and Eviews and Stata software are used to test the hypotheses.

Descriptive statistics

(Table 1) shows the descriptive statistics of research variables. 1440 company-year were examined.

Table 1. Descriptive statistics of research variables

variables	Kurtosis	Skewness	Std. Dev.	Median	Minimum	Maximum	Mean
AC	31.7362	3.9981	0.7095	-3.5564	8.3719	0.1025	0.3079
INST	1.5224	0.0254	0.3315	0.000	0.9901	0.4679	0.4619
ENT	2.5745	-0.3309	0.8280	0.000	3.000	2.000	1.8347
LEV	33.8447	3.0645	0.2492	0.0314	3.8517	0.5686	0.5761
ROA	4.4018	0.3666	0.1551	-0.5811	0.682	0.1105	0.1328
SIZE	4.0905	0.8109	1.6390	10.3521	20.7678	14.3261	14.5294
R&D	29.0562	4.4903	0.0031	0.000	0.0303	0.0000	0.0013
SG	35.5373	3.8398	0.5352	-0.9092	6.5947	0.2352	0.3174
AGE	2.5917	-0.6249	0.3709	2.3026	4.2485	3.7256	3.6313

As can be seen in the table above, descriptive statistics include mean, maximum, minimum and standard deviation, which are the most famous and at the same time the most widely used descriptive statistics. According to the above and looking at the table above, it can be seen that among the variables, the size of the company with 14.5294 has the highest mean and the intensity of research and development with 0.0013 has the lowest mean.

Classic assumptions

Due to the fact that the data used in this study are combined (year-company) and the combined data are both panel and pool, so in order to choose between panel and pool data method in estimating the model, the F-Limer test was used.

Table 2. Classical assumptions

Result	Prob	statistics	Model	Classical assumptions
Panel method	0.0000	2.3820	Model 1	F-Limer test
Panel method	0.0000	0.3936	Model 2	
Fixed effects	0.0000	95.2012	Model 1	Hausman test
Fixed effects	0.0000	99.0571	Model 2	
Autocorrelation	0.0281	4.920	Model 1	Autocorrelation test
Autocorrelation	0.0292	4.854	Model 2	
heteroscedasticity	0.0000	61032.45	Model 1	heteroscedasticity test
heteroscedasticity	0.0000	58486.57	Model 2	

According to (Table 2), the statistical probability for research models is less than 0.05, so the panel data method is accepted. Therefore, Hausman test should be used to choose between random or fixed effects method. If the probability of chi-square statistic is more than 0.05, the random effects method should be used. Otherwise, the fixed effects method is used. A summary of the results of Hausman test for research models is presented in Table 2. Also, according to the above table, the probability of the obtained statistics for the autocorrelation test for all research models is less than of 0.05. autoregressive process AR (1) method has been used to eliminate autocorrelation. Also, the heteroscedasticity test for research models is less than of 0.05. The generalized least squares (GLS) method has been used to eliminate the variance heterogeneity.

VIF test

(Table 3) shows the vif test between the research variables.

Table 3. Vif test results

Result	Tolerance	VIF	variables
None VIF	0.5419	1.85	ROA
None VIF	0.5852	1.71	LEV

Result	Tolerance	VIF	variables
None VIF	0.8308	1.20	SIZE
None VIF	0.8903	1.12	INST
None VIF	0.9173	1.09	SG
None VIF	0.9213	1.09	R&D
None VIF	9839	1.02	AGE
VIF: 1.30			

Table 4. Vif test results

Result	Tolerance	VIF	variables
None VIF	0.5365	1.86	ROA
None VIF	0.5640	1.77	LEV
None VIF	0.8308	1.20	SIZE
None VIF	0.8815	1.13	INST
None VIF	0.9154	1.09	SG
None VIF	0.9213	1.09	R&D
	0.9434	1.06	ENT
None VIF	0.9832	1.02	AGE
VIF: 1.285			

According to the results in (Table 3) and (Table 4), it was found that the VIF statistic for all research variables in the model is less than 5 and the tolerance is less than 1; Therefore, there is no problem of VIF between variables.

Hypotheses test
(Table 5) shows the findings of the test of research hypotheses.

Table 5. Results of data analysis to test the first and second models of the research

Variable	Prob	t-Statistic	Std. Error	Coefficient
C	0.0000	-4.0743	0.6349	-2.5868
INST	0.0635	-1.8576	0.1243	-0.2310
INST2	0.0401	2.0549	0.0993	0.2042
LEV	0.1093	-1.6027	0.0932	-0.1494
ROA	0.0000	5.9480	0.3637	2.1636
Variable	0.0000	7.3742	0.0284	0.2097
R&D	0.9795	-0.0257	2.3456	-0.0602
SG	0.0038	2.8962	0.0253	0.0732
AGE	0.5647	-0.5760	0.1579	-0.0909
AR(1)	0.0001	4.0510	0.0776	0.3144
R-squared	0.7180	Adjusted R-squared		0.7511
F-statistic	0.0000	Prob (F-statistic)		22.6978
D-W	1.7156			

Table 6. Results of data analysis to test the third and fourth research models

Variable	Prob	t-Statistic	Std. Error	Coefficient
C	0.0000	-4.2334	0.6563	-2.7787
INST	0.1664	1.3847	0.3358	0.4650
INST2	0.2146	-1.2418	0.3336	-0.4143
ENT	0.0152	2.4317	0.0258	0.0627
INST* ENT	0.0205	-2.3200	0.1430	-0.3318

INST2* ENT	0.0389	2.0680	0.1405	0.2905
LEV	0.1228	-1.5443	0.0960	-0.1483
ROA	0.0000	5.8724	0.3709	2.1786
SIZE	0.0000	7.5886	0.0270	0.2055
R&D	0.953	0.0589	2.2303	0.1314
SG	0.004	2.8832	0.0255	0.0735
AGE	0.7243	-0.3528	0.1616	-0.0570
AR(1)	0.0001	3.9318	0.0802	0.3157
R-squared	0.7186	Adjusted R-squared		0.7533
F-statistic	0.000	Prob (F-statistic)		22.3441
			D-W	1.7177

According to (Table 5), the coefficient of the institutional ownership variable is -0.2310, which is negative, and the probability of t-statistic for the institutional ownership variable is 0.0635. This value is more than the error level of 0.10. Therefore, the researcher's assumption is rejected and there is a linear relationship between institutional ownership and agency costs. As a result, the first hypothesis of the research is confirmed at the 90% confidence level.

According to Table 5, the coefficient of the square variable Institutional ownership is equal to 0.2042 which is positive and the probability of t-statistic for the variable of square variable Institutional ownership is 0.0401. This value is less than the error level of 0.05. Therefore, there is a positive and non-linear relationship between institutional ownership and agency costs. As a result, the second hypothesis of the research is accepted at the 95% confidence level.

The D-W test was used to test the autocorrelation between the residues. If the probability of the statistic is between 1.5 and 2.5, there is no autocorrelation between the residues, which is confirmed in this study in the range. Also, considering the probability value obtained for F statistic which is less than 0.05, the hypothesis H_0 is rejected and this shows that not all regression coefficients are zero at the same time. Therefore, at the 95% confidence level, this pattern is significant. R-squared is equal to 0.7523, which indicates 75.23% of the changes of the dependent variable (agency costs) by descriptive variables.

According to Table 6, the coefficient of the variable of the interactive effect of institutional ownership and managers' entrenchment is -0.3318, which is negative, and the probability of t-statistic for the interactive effect of institutional ownership and managers' entrenchment is 0.0205. This value is less than the error level of 0.05. Therefore, the researcher's assumption is not rejected. Therefore, managers' entrenchment affects the linear relationship between institutional ownership and agency costs. As a result, the third hypothesis of the research is accepted at the 95% confidence level.

According to Table 6, the coefficient of interaction effect of the square institutional ownership and managers' entrenchment is 0.2905, which is positive, and the probability of t-statistic for the interactive effect of the square of institutional ownership and managers' entrenchment is 0.0399. This value is less than the error level of 0.05. Therefore, the researcher's assumption is not rejected. Therefore, managers' entrenchment affects the nonlinear relationship between institutional ownership and agency costs. As a result, the fourth research hypothesis is accepted at the 95% confidence level.

Discussion & Conclusion

The purpose of this study is to investigate the "non-linear relationship between ownership structure and agency costs with respect to the moderating role of managers' entrenchment in companies listed on the Tehran Stock Exchange." The statistical population of this study is the companies listed on the Tehran Stock Exchange in the period 2012 to 2021. The hypotheses of the present study have been examined by 144 companies active in the Tehran Stock Exchange. In this study, 4 research hypotheses were tested at the level of composite data. Before estimating the model using composite data, the selection of an appropriate method for using this data in estimation was examined.

The result of the first hypothesis of the research indicates that there is a negative and significant relationship between institutional ownership and agency costs at the level of 90%. The result of the first hypothesis is consistent with the results of (Chen & Yur-Austin, 2007), (Valipour & Khorram, 2012), (Abbasi et al., 2017) and (Mohammadpour & Jangi, 2016) and does not correspond to the results of (Damori & Izadi, 2017).

The result of the second hypothesis indicates that there is a positive and non-linear relationship between institutional ownership and agency costs. The result of the second hypothesis is consistent with the result of (Damori

& Izadi, 2017) research. It does not correspond to the results of (Chen & Yur-Austin, 2007), (Valipour & Khorram, 2012), (Abbasi et al., 2017) and (Mohammadpour & Jangi, 2016).

The result of the third hypothesis showed that managers' entrenchment has a negative effect on the linear relationship between institutional ownership and agency costs. The result of the fourth hypothesis showed that managers' entrenchment negates the nonlinear relationship between institutional ownership and agency costs. The result of the fourth hypothesis showed that managers' bias has a positive effect on the nonlinear relationship between institutional ownership and agency costs.

In today's world, the functions of business units have changed and their goal is to meet the needs of stakeholders, investors and owners are an important part of stakeholders, but models of agency theory show that managers and shareholders have different interests, so personal interests of managers allow them to pursue their business strategies at the expense of shareholder wealth. Shareholders believe that the presence of institutional owners eliminates the conflict of interest between the manager and the owners and improves the company's performance and reduces agency costs, but this is only one of the three possible roles of institutional owners. Institutional owners may collude with managers, pursue their own interests, and ignore the interests of micro-shareholders, in which case institutional owners not only do not eliminate conflicts of interest but also increase agency costs. Their profitability can be in the form of profit management, information asymmetry, reduction of information transparency, reduction of division Profit, reduction of social responsibility, etc, so the impact of institutional owners on agency costs depends on the behavior of institutional owners. On the other hand, according to agency theory, managers' entrenchment allows managers to separate personal interests from owners, as stated by (Di Meo et al., 2017), managers' entrenchment reduces profit management. Therefore, it seems that the managers' entrenchment prevents collusion between institutional owners and managers. Given that in the present study it was found that institutional ownership may increase agency costs and micro-shareholders suffer, so it is suggested that investors pay more attention to the situation of institutional owners of companies and behavior Consider them and do not suffer losses by trusting them. In addition, it is suggested that independent auditors use the Criteria managers' entrenchment to examine their owners and consider the performance and interests of institutional owners and the interests of micro-shareholders in their decisions.

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