

## **The Effect of Major Stockholders Ownership Concentration on the Firm Value in Tehran Stock Exchange**

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### **Abstract**

The aim of the study is to examine the effect of ownership concentration by sum of major shareholders on the firm value. The sample used for the research included 69 firms listed during the years 2005-2009 in Tehran Stock exchange. The statistical method used for testing the research hypotheses was "Panel Data". To test the relationship between ownership of major stockholders and firm value, multi-linear and nonlinear regression was utilized. The findings are indicative of the existence of a significant and positive linear relationship between ownership concentration of sum of major stockholders and firm value and also of lack of nonlinear relationship between the square sum of ownership by major stockholders and firm value. The results of piecewise test of sum of major stockholders shows that there is no significant relationship between sum of major stockholders and firm value in the break points of 10% and 25% and 50% and 70%.

**Key words:** ownership concentration, major stockholder, firm value

**Classification of JEL:** G3, G32

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## **1. Introduction**

A controversial issue concerning corporate governance is whether or not large owners do a favor to agency problems (Becht et al., 2002; Shleifer and Vishny, 1986). Agency problems occur when managers follow the activities, including maximizing the amount of sales or increasing their assets, that will be to their benefit. Such actions, however, may lead shareholders to make a loss and consequently to have the value of their assets reduced. There are, however, many solutions proposed to reduce the so called agency problems, two of which are the acquisition of property right by managers and supervision by large major shareholders. As discussed above, such solutions can potentially reduce agency problems and accordingly increase the value of firm. The basic property right of managers will have the benefits of

managers to get along with those of shareholders. As a matter of fact, such a right on managers' part will grant them a powerful stimulus to follow value-maximizing activities. The existence of major shareholders or institutional stockholders can also increase the amount of supervision or improve it, hence leading to the better performance of firm (Seifert et al., 2005).

The main intend of the research is to examine the effect that the amount of ownership concentration by major stockholders can have on the value of firms listed in Tehran stock exchange. The research is of great importance because it shows the managers, investors, and other decision-makers that the amount of ownership concentration by major stockholders should be highly taken into account in financial and investing decisions, due to the role the concentration can have on the

supervision and control of management and reduction of agency costs. The study is different from the previous ones with respect to the model, time limits and control variables used. Unlike the previous studies in which the dominant model used was linear, this study has utilized a non-linear and piecewise model in addition to the predominantly used linear model (Morck et al., 1988). The study's structure is as follows: next part deals with theoretical foundations and the research background. In part three the research hypotheses are presented. Part four discusses the research methodology. Part five talks about the research findings; and, eventually conclusions and future recommendations are presented.

## 2. Literature review

Although there is a presumption in the literature that major stockholders

have greater power and stronger incentives to ensure shareholder value maximization (the incentive alignment hypothesis) (Burkart, 1997; Jensen and Meckling, 1976; Zeckhouser and Pound, 1990), the theoretical relationship between large owners and firm value is ambiguous. Blockholder ownership above a certain level may lead to entrenchment of owner-managers that expropriate the wealth of minority stockholders (Fama and Jensen, 1983; Morck et al., 1988; Shleifer and Vishny, 1986). Shleifer and Vishny (1986) argue that getting pleasure from huge economical gains provides major stockholders with enough incentives to exert supervision and control on managers. In their model, the economical benefits of such a shareholder are so large in the firm that the exertion of supervision on managers is economically profitable

for him.

Firm value may also have positive and negative effects on blockholder ownership. Negative blockholder ownership drops following increases in firm value-may occur if blockholders are more inclined to sell shares in a firm when its share price is high (Zeckhouser and Pound, 1990). One reason for this is that the risk and absolute opportunity cost of owning a given stake increases with its value (the opportunity cost hypothesis). A negative effect of firm size on ownership concentration is supported by Demsetz and Lehn (1985) and other studies. Positive effects from firm value on blockholder ownership may occur if blockholders have a strong preference to remain in control (the control preference hypothesis). since a higher market price makes it possible to finance a given level of

investment by issuing a smaller amount of stock to outside owners (La porta et al., 2000).

In a study, Morck et al (1988) dealt with estimating a piecewise linear regression analysis and found that when the ratio of shares belonging to management is between 0 to 5 percent, then there will be a positive relationship between ownership ratio and firm value; however, when the shares ratio is between 5 to 25 percent, the relationship becomes negative. But the relationship will become positive again when the ownership ratio exceeds 25 percent.

McConnell and Servaes (1990) analyzed the relationship between management ownership and firm value. Contrary to Morck et al who utilized a fixed ratio for management ownership, they used the ratio of management ownership and its square root. They found a bell-

shaped relationship existing between firm value and the ratio of management ownership. However, the relationship between the two variables, i.e. firm value and management ownership, was found to be positive but not significant.

To find the relationship between ownership structure and corporate performance, Demsetz and Villalonga (2001) analyzed two aspects of ownership structure: the part related to the shares owned by five large shareholders and the shares being controlled by management (their logistic variables). They considered both as endogenous variables. Their findings show that ownership structure has no effects on corporate performance.

Investigating a sample chosen from four countries of America, England, Germany, and Japan, Seifert et al (2005) did not evidence an equal pattern between their equity

ownership and performance, and concluded that the effects of the ownership of major shareholders highly depends on local rules and the business environment.

Using Granger tests, Thomsen et al (2006) scrutinized the relationship between major ownership and firm value in the Unions of Europe and America. The results showed that in the economies that were based on the market of America there was observed no influence of major ownership on firm value. However, in Europe high major ownership was found to have an important negative effect on firm value and accounting profitability.

Minguez-Vera and Ugedo (2007) analyzed the effect of ownership structure on firm value in the market of Spain. The results of the research indicated that there is no significant relationship between major shareholder's ownership concentration

and firm value. They also found that there is a significant relationship between individual firms and firm value, the effect that does not exist for institutional investors.

Dahya et al (2008) investigated the relation between firm value and the proportion of the board made up of independent directors in 799 firms with a dominant shareholder across 22 countries. They found a positive and significant relation, especially in countries with weak legal protection for shareholders.

Ruiz-Mallorqui and Santana-Martin (2011) analyzed the impact of control by dominant institutional owners (banking institutions and investment funds) on firm value. They consider the level of voting rights in the hands of the dominant institutional owner and other large shareholders. Their results show that when a bank is the dominant shareholder, the voting rights of that

owner are negatively related to firm value and this relation was positive for investment funds. Moreover, the results show that the presence of other large shareholders is effective on firm value when a dominant institutional owner controls the firm.

Mideri (2002) investigated whether different kinds of corporate governance are compatible with Iran's economy. In this research the share of five major shareholders in the firms listed in Tehran stock exchange was by average 74% and the share of ten major shareholders was above 79% and that of twenty major shareholders was 81.9%. The results showed that ownership concentration and the existence of institutional owner lead to the reduction of firms' agency costs, hence having positive effect on their performance.

Mazlumi (2003) studied the interaction between various types of

institutional investors and their effects on the performance of firms. The results showed that ownership concentration of major institutional investors has positive and insignificant relationships with ROE criteria, the ratio of market value of shareholders' equity to book value, P/E and Tobin's Q; however, the results indicated that there is a positive and significant relationship between ownership concentration of major institutional investors and ROA.

Mashayekhi and Mahavarpur (2009) examined the relationship between ownership concentration and performance. The results showed that there is a significant relationship between the ownership percentage of both major and institutional shareholders and the criterion of EPS. However, no significant relationship was found between the ownership percentage of

major shareholders and the efficiency criterion, but there was found a significant relationship between the ownership percentage of institutional shareholders and the efficiency criterion.

Mashki et al (2009) tried to investigate the separate but simultaneous role and effects of concentration and type of ownership on the two factors of firms' efficiency and value in Tehran stock exchange. The research findings indicated that there is a positive and significant linear relationship between the two factors of ownership concentration and firms' efficiency; however, no significant relationship was observed between concentrated ownership and firms' value. On the other hand, the results related to testing the effects of ownership type showed that in contrast to the negative relationship existing between shares' output and

ratio of governmental ownership, the relationship between individual, corporate and private ownerships with shares' output was found to be directional and significant. This is while the variable 'ownership concentration' has still a directional and linear relationship with shares' output. The test that examined the relationship between type of ownership and firm value also led to the results similar to what discussed about output.

### **3. Hypotheses**

1. Sum of ownership of major shareholders is effective on firm value.
2. Square sum of ownership of major shareholders is effective on firm value.
3. Sum of ownership of major shareholders is effective on firm value at the levels between 10 to 25%.

4. Sum of ownership of major shareholders is effective on firm value at the level of 50%.

5. Sum of ownership of major shareholders is effective on firm value at the level of 75%.

### **4. Methodology**

The research's statistical population consisted of all non-financial firms having been listed in Tehran stock exchange during the years 2005-2009. The data for the research was gathered from the firms' audited financial statements along with their attached notes. To gather such data reference was made to the official site of Tehran stock exchange and some other related sites including the site of Research, Development and Islamic Studies<sup>1</sup> and that of Iran's Capital Market<sup>2</sup> and also to two softwares of Rah-Avarde Novin and Tadbir-Pardaz.

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1. <http://www.rdis.ir>

2. <http://www.sena.ir>



To extract and summarize data, at first the research variables were examined using the data gathered for each of the firms studied and also for each of the years under analysis. All the extraction and summarization process was done using the Excel software. Then, making use of Eviews6-7 software, the hypotheses were tested. The research utilized Integrative data method. The reason underlying the use of this method is that the method causes the statistical power of coefficients to increase. It will also reduce co-linearity between variables and eventually due to the enhancement of degree of freedom, the estimates will be done more efficiently.

Five hypotheses were analyzed in this research. In the first hypothesis and in a linear form the effect of major shareholders on firm value was tested. In the second hypothesis, to test the non-linear relationship

between the variables square sum of major shareholders and the model of Minguez-Vera and Ugedo (2007) were used. In the third, fourth and fifth hypotheses to test the piecewise relationship between the variables the methodology of Morck et al (1988) and Minguez-Vera and Ugedo (2007) was used. This way the results for the break points of the relationships between firm's ownership and value would be achieved. To determine the piecewise relationships at levels of 10%, 25%, 50% and 70% between firm value and the percentage of shares owned by major shareholders, Dummy variables were used in hypotheses 3, 4 and 5. At the outset,  $X_1$ ,  $X_2$  and  $X_3$  were measured based on the break points of 10% and 25% of sum of shares owned by major shareholders. Second,  $Y_1$  and  $Y_2$  were calculated to show the highest control, which signified a break

point of 50%. Eventually,  $Z_1$  and  $Z_2$  were determined at a break point of 70%.

69 firms were in total chosen to work as the sample to be analyzed in this research. The sample was selected using the Criteria Filtering Technique based on the following standards.

1. There should be complete information about each of the firms with respect to the variables under analysis.
2. Firms should not have changed their fiscal year during the research period. (Due to the fact that samples are analyzed annually, those firms that have changed their fiscal year will destroy the statistical sample).
3. The type of activity of the firm is manufacturing and related to production; thus, financial and investing institutes and also banks were excluded from the samples. (In fact, this is because the items of financial statements and the nature of activity in such firms are significantly different from manufacturing firms.)
4. Each of the firms under analysis should have had the record of membership in stock exchange for at least five years before the research period commenced.
5. During the research period the firm should not have experienced a transactional break for a period longer than 6 months. (This is because such transactional breaks in shares may not have future recurrence, and thus will decrease the results' validity, hence leading to damage on such numbers as firm's risk.)
6. Shareholders' equity of sample firms should be negative in none of the research periods.
7. The end of the firms' fiscal year should be Esfand 29. (This issue

will, in the first instance, cause seasonal conditions and factors and other events to have no influence on the output. Secondly, the use of the data of the firms having various fiscal years will hinder the true and accurate interpretation of results.)

The research variables are as follows: ownership concentration of sum of major shareholders is considered as the independent variable, firm value is taken into account as the dependent variable, and firm size, financial leverage, systematic risk and specific risk all work as control variables. It is necessary to explain about the variables and the way they are measured.

- **Ownership concentration:** it consists of how shares are distributed among different firms. The fewer are the number of shareholders, the more

concentrated the ownership will be. In order to calculate ownership concentration of sum of major shareholders the following index was used.

The ratio of concentration of major shareholders is a percentage of capital owned by main shareholder and two to five large shareholders of the firm ( $Own_i$ , where  $i: 1, \dots, 5$ ).

$$CON = \sum_{i=1}^n \left( \frac{Own_i}{Own^n} \times 100 \right)$$

In the above equation  $n$  can be representative of the only main shareholder and/or three main shareholders, five main shareholders, and/or a specific number of main shareholders.

- **Major shareholder:** a major shareholder is one who is the owner of at least five percent of firm's shares.
- **Firm value:** Thomsen's Tobin's Q Ratio (2003) (Thomsen and Pedersen, 2003) was used as a criterion to measure the value of

firm. As a matter of fact, the ratio is defined as the proportion of sum of market value of shareholders' equity (Mve) and book value of debts (Bvd) to the book value of assets (Bva). The reason why Tobin's Q was chosen to work as a criterion for the measurement of value was that the criterion provided the capacity to compare the results of present research with the findings of similar studies done by previous research teams (Morck et al, 1988; McConnell and Servaes, 1990; Minguez-Vera and Ugedo, 2007).

$$Q = \frac{Mve+Bvd}{Bva}$$

- **Firm size:** firm size in this research meant natural logarithm of the book value of sum of assets of the firm at the end of its fiscal year. The reason behind use of logarithm was that it causes coefficients of the variables in the model not to be influenced by

large scales.

- **Financial leverage (Lev):** represents that part of assets which is financed by debts. The ratio of debts to assets was used to calculate leverage in this research.
- **Systematic risk (BETA):** Beta represents the sensitivity of output fluctuations of a specific security (share) against output fluctuations of market portfolio. It is calculated by dividing the output covariance of shares (= risky assets) with the output of market portfolio by the variance of market output.
- **Specific risk (SRISK):** firm's nonsystematic or specific risk is calculated by subtracting systematic risk (beta) from total risk (or variance).

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### 5. Testing the Hypotheses

To analyze the information, descriptive statistics were initially

calculated on the data as shown in table 1.

**Table 1:** descriptive statistics of data research

	Mean	Median	Max	Min	Obs
<b>Firm value</b>	1.458	1.215	7.744	0.617	345
<b>Sum of ownership of major shareholders</b>	0.725	0.759	1.000	0.095	345
<b>Firm size</b>	5.627	5.564	7.865	4.655	345
<b>Systematic risk</b>	0.123	0.083	2.132	-0.614	345
<b>Specific risk</b>	0.149	0.109	0.656	0.017	345
<b>Financial leverage</b>	0.622	0.637	0.938	0.168	345

To test the normality of data, at first Jarque-Bera test was used. The result showed that the dependent variable does not have a normal distribution (Prob<0.05). Thus, for the dependent

variable to meet the normality assumption in the regression model,

Johnson Transformation was employed using Minitab software (figure 1). This caused the probability plot to enhance up to 0.587.

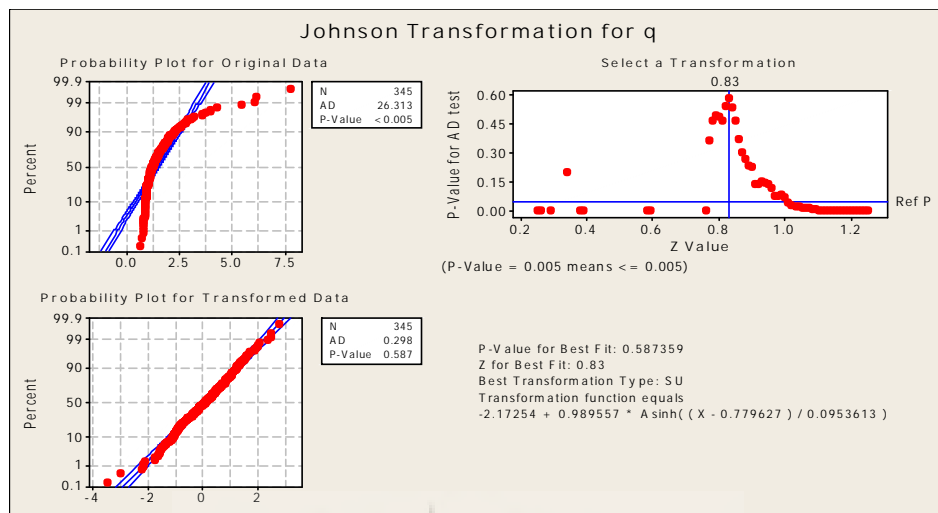


Figure 1: testing the normality assumption of the dependent variable

After the normalization of dependent variable, correlation matrix was used to make sure whether the research variables are independent from each other. The results of such matrices show that the correlation coefficients between each pair of variables are less than 0.50. This indicates that the correlation existing between the research variables will lead to a severe co-linearity between them. Moreover, because all estimated coefficients are significant and separable, thus the co-movement between variables is

not severe.

Then the reliability of the independent, dependent, and control variables were analyzed. For the reliability to be acceptable, the means and variances of the research variables during the time and also the covariance of variables between the years under analysis should be stable. Accordingly, using such variables in the model will not lead to the appearance of false regression. To analyze the reliability, the tests of Levin, Li and Cho (2002), Bruiting, Iem, Pedersen and Shin (2003),

generalized Dickey Fuller, Fischer, and the single root of Fischer-Philips Peron (1999) were used. Based on these tests, and because their probability level is below 5%, all the dependent, independent and control variables were proven to be reliable. To analyze the data integration, F test was used; and to choose a proper model, Hausman and Fixed Effects tests were utilized. To examine the heterogeneity of variances, Laganz Multiplier (LM) test was employed. Moreover, to analyze whether in a regression model error sentences have self-correlation, Durbin Watson test was utilized; and to examine the normality of error sentences Jarque-Bera test was employed.

### 1-5. Testing the first hypothesis

**Hypothesis1:** Sum of ownership of major shareholders is effective on firm value.

**Data integration test, Hausman**

**and Fixed Effects tests:** the first stage to estimate panel data is to make sure of the true estimation method. To do so, F ratio test has been utilized. Because the calculated F statistics was smaller than F statistics of the table,  $H_0$  is approved and thus panel data can be used. In order to estimate the equations, with respect to the characteristics of the pattern, at first it is necessary to specify which of the methods of fixed or random effect is suitable. To do so, Hausman test was used. The rejection of  $H_0$  depends on whether fixed effects method is applied. Then to verify the Hausman test, fixed effects test was utilized.

**$H_0$ :** using random effects model

**$H_1$ :** using fixed effects model

The results obtained from F test ( $2.189 < 3.524$ ), Hausman test ( $0.008 < 0.05$ ) and fixed effects test ( $0.000 < 0.05$ ) for the first hypothesis are presented in table 2.

They are indicative of the use of panel data and fixed effects methods for estimating the models.

**Table 2:** F, Hausman and fixed effects tests

	<b>F test</b> (calculated F statistics)	<b>Hausman test</b> (prob)	<b>Fixed effects test</b> (prob)
<b>Hypothesis 1</b>	2.189	0.008	0.000
<b>Table's F statistics(3.524)</b>			

**Table 3:** regression of sum of ownership of major shareholders (SUM) and firm value (Tobin's Q)

<b>Q<sub>it</sub> =1.167+0.655SUM-0.096SIZE-1.795LEV+0.004BETA+0.282SRISK+ε<sub>it</sub></b>			
<b>C</b>	1.167(0.058)*	<b>R<sup>2</sup></b>	0.41
<b>SUM</b>	0.655(0.020)*	<b>Adj. R<sup>2</sup></b>	0.39
<b>SIZE</b>	-0.096(0.369)*	<b>F-statistic</b>	2.627
<b>LEV</b>	-1.795(0.000)*	<b>Prob (F-statistic)</b>	0.000
<b>BETA</b>	0.004(0.976)*	<b>LM( statistic)</b>	2.45
<b>SRISK</b>	0.282(0.419)*	<b>Durbin-watson</b>	2.17
<b>D.W:</b>		<b>Jarque-Bera</b>	1.090
		<b>Prob( Jarque-Bera)</b>	0.580
<b>Approval (rejection)</b>	Approval		

Durbin-Watson's test the probability of which is between 1.5 and 2.5. **LM:** Laganz Multiplier (LM) statistics whose quantity should be less than the amount of the table's Chi square (K2) statistics (3.84).

**Jarque-Bera:** the normality test of error sentences whose probability statistics should be more than 0.05 (Prob>0.05). The numbers in parentheses are the variables' t-statistics in the regression model.



To test the above hypothesis linear regression and the following model was used:

$$Q_{it} = B_0 + B_1 \text{SUM}_{it} + \sum_{j=2}^n B_j \text{OTHER}_{jit} + \epsilon_{it}$$

In this model the variable SUM analyzes sum of ownership of major shareholders. OTHER indicates the control variables of firm size, financial leverage, systematic risk, and specific risk. Moreover,  $\epsilon_{it}$  is the residual sentence. The results of estimating this regression are presented in table 3.

The F statistics shown in table 3 is indicative of the overall significance of the evaluated regression model at the significance level of 95%. In this hypothesis with respect to  $R^2$  of the evaluated model, it can be claimed that about 41% of the changes in firm value can be explained by the variables sum of ownership of major shareholders and financial leverage.

In line with the prediction, the coefficient (0.655) and the t-statistics (0.020) of the variable sum of ownership of major shareholders informs of the existence of a directional and significant relationship between the level of ownership concentration of sum of major shareholders and firm value at the significance level of 95%.

## 2-5. Testing the second hypothesis

**hypothesis 2:** Square sum of ownership of major shareholders is effective on firm value.

The results obtained from F test ( $2.741 < 3.833$ ), Hausman test ( $0.001 < 0.05$ ) and fixed effects test ( $0.000 < 0.05$ ) for the two hypothesis are presented in table 4. They are indicative of the use of panel data and fixed effects methods for estimating the models.

**Table 4:** F, Hausman and fixed effects tests

$Q_{it} = 1.293 + 0.158SUM + 0.403SUM2 - 0.094SIZE - 1.802LEV + 0.001BETA + 0.280SRISK + \epsilon_{it}$			
<b>C</b>	1.293(0.066)*	<b>R<sup>2</sup></b>	0.41
<b>SUM</b>	0.158(0.907)*	<b>Adj. R<sup>2</sup></b>	0.38
<b>SUM2</b>	0.403(0.709)*	<b>F-statistic</b>	2.585
<b>SIZE</b>	-0.094(0.382)*	<b>Prob (F-statistic)</b>	0.000
<b>LEV</b>	-1.802(0.000)*	<b>LM( statistic)</b>	2.37
<b>BETA</b>	0.001(0.993)*	<b>Durbin-watson</b>	1.98
<b>SRISK</b>	0.280(0.424)*	<b>Jarque-Bera</b>	1.221
		<b>Prob( Jarque-Bera)</b>	0.543
<b>Approval (rejection)</b>	Rejection		

**Table 5:** regression of square sum of ownership of major shareholders (SUM2) and firm value (Tobin's Q)

	<b>F test</b> (calculated F statistics)	<b>Hausman test</b> (prob)	<b>Fixed effects test</b> (prob)
<b>Hypothesis 2</b>	2.741	0.001	0.000
<b>Table's F statistics(3.833)</b>			

**D.W:** Durbin-Watson's test the probability of which is between 1.5 and 2.5. **L.M:** Laganz Multiplier (LM) statistics whose quantity should be less than the amount of the table's Chi square (K2) statistics (3.96).

**Jarque-Bera:** the normality test of error sentences whose probability statistics should be more than 0.05 (Prob>0.05). The numbers in parentheses are the variables' t-statistics in the regression model.

test the above hypothesis non-linear regression and the following model was used:

$$Q_{it} = B_0 + B_1SUM_{it} + B_2SUM2_{it} + \sum_{j=3}^n B_j OTHER_{it} + \epsilon_{it}$$

In this model the variable SUM analyzes sum of ownership of major shareholders and also SUM2 square

sum of ownership of major shareholders. OTHER indicates the control variables of firm size, financial leverage, systematic risk, and specific risk.

Moreover,  $\epsilon_{it}$  is the residual sentence. The results of estimating this regression are presented in table

The F statistics shown in table 5 is indicative of the overall significance of the evaluated regression model at the significance level of 95%. In this hypothesis with respect to  $R^2$  of the evaluated model, it can be claimed that about 41% of the changes in firm value can be explained by the variables financial leverage. In this model the high amount of  $R^2$ , coefficient (0.403) and t-statistics (0.709) of the variable square sum of ownership of major shareholders were indicative of a positive relationship between concentration of this variable and firm value. However, the relationship is not significant.

### 3-5. Testing the third, fourth And fifth hypotheses

**Hypothesis 3:** Sum of ownership of major shareholders is effective on firm value at the levels between 10 to 25%.

**Hypothesis 4:** Sum of ownership of major shareholders is effective on firm value at the level of 50%.

**Hypothesis 5:** Sum of ownership of major shareholders is effective on firm value at the level of 75%.

The results obtained from F test ( $2.587 < 3.875$ ,  $2.468 < 3.833$ ,  $2.832 < 3.833$ ), Hausman test ( $0.002 < 0.05$ ,  $0.008 < 0.05$ ,  $0.006 < 0.05$ ) and fixed effects test ( $0.000 < 0.05$ ) for the third, fourth and fifth hypotheses respectively are presented in table 6. They are indicative of the use of panel data and fixed effects methods for estimating the models.

Table 6: F, Hausman and fixed effects tests

	F test (calculated F statistics)	F test (Table's F statistics)	Hausman test (prob)	Fixed effects test (prob)
Hypothesis 3	2.587	3.875	0.002	0.000
Hypothesis 4	2.468	3.833	0.008	0.000
Hypothesis 5	2.832	3.833	0.006	0.000

To test the above hypotheses, linear regression and the following models were used:

1. When the break points are within 10% and 25% of the ownership of major shareholders.

$$Q_{it} = B_0 + B_1X1_{it} + B_2X2_{it} + B_3X3_{it} + \sum_{j=4}^n B_j OTHER_{jit} + \epsilon_{it}$$

2. When the break points are in 50% of the ownership of major shareholders.

$$Q_{it} = B_0 + B_1Y1_{it} + B_2Y2_{it} + \sum_{j=3}^n B_j OTHER_{jit} + \epsilon_{it}$$

3. When the break points are in 70% of the ownership of major shareholders.

$$Q_{it} = B_0 + B_1Z1_{it} + B_2Z2_{it} + \sum_{j=3}^n B_j OTHER_{jit} + \epsilon_{it}$$

where X, Y, and Z are dummy variables which are indicative of the ownership percentage of major shareholders at

the break points. These variables way can be calculated as follows:

$X_1 =$  ownership of major stockholders if ownership of major stockholders  $< 0.10$

$= 0.10$  if ownership of major stockholders  $\geq 0.10$

$X_2 = 0$  if ownership of major stockholders  $<$

$0.10 =$  ownership of major stockholders  $- 0.10$  if  $0.10$

ownership of major stockholders  $<$

$0.25 = 0.25$  if ownership of major stockholders  $\geq 0.25$

$X_3 = 0$  if ownership of major stockholders  $< 0.25$

$=$  ownership of major stockholders  $- 0.35$  if ownership of

major stockholders  $\geq 0.25$

$Y_1 =$  ownership of major

stockholders if ownership of major stockholders < 0.50

= 0.50 if ownership of major stockholders 0.50

$Y_2 = 0$  if ownership of major stockholders < 0.50

= ownership of major stockholders – 0.50 if ownership of major stockholders 0.50

$Z_1 =$  ownership of major

stockholders if ownership of major stockholders < 0.70

= 0.70 if ownership of major stockholders 0.70

$Z_2 = 0$  if ownership of major stockholders < 0.70

= ownership of major stockholders – 0.70 if ownership of major stockholders 0.70

The results of estimating testing the above hypotheses are presented in table 7.

Table 7: piecewise regression of sum of ownership of major stockholders and firm value (Tobin's Q)

	Model 1	Model 2	Model 3
C	1.584(0.008)*	2.796(0.000)*	2.801(0.000)*
X <sub>1</sub>	-2.112(0.027)*		
X <sub>2</sub>	-0.466(0.595)*		
X <sub>3</sub>	-1.491(0.183)*		
Y <sub>1</sub>		0.024(0.246)*	
Y <sub>2</sub>		0.273(0.445)*	
Z <sub>1</sub>			0.247(0.520)*
Z <sub>2</sub>			0.118(0.299)*
SIZE	-0.087(0.420)*	-0.078(0.387)*	-0.078(0.384)*
LEV	-1.813(0.000)*	-1.535(0.000)*	-1.531(0.000)*
BETA	1.563(0.145)*	-0.237(0.303)*	-0.239(0.369)*
SRISK	-0.352(0.485)*	-0.396(0.247)*	-0.369(0.275)*
R <sup>2</sup>	0.41	0.40	0.42
Adj. R <sup>2</sup>	0.39	0.36	0.38
F-statistic	2.528	2.663	2.659
Prob(f-statistic)	0.000	0.000	0.000
LM(statistic)	3.17	2.43	2.62
Table's K2 statistics	4.12	3.96	3.96
Durbin-watson	2.18	1.98	1.90
Jarque-Bera	0.864	1.083	0.768
Probability	0.649	0.582	0.681
Approval (rejection)	Rejection	Rejection	Rejection

D.W: Durbin-Watson's test the probability of which is between 1.5 and 2.5. L.M: Laganz Multiplier (LM) statistics whose quantity should be less than the amount of the table's Chi square (K2) statistics.

Jarque-Bera: the normality test of error sentences whose probability statistics should be more than 0.05 (Prob>0.05). The numbers in parentheses are the variables' t-statistics in the regression model.

The F statistics shown in table 7 is indicative of the overall significance of the evaluated regression model at the significance level of 95%. In model 1 of table 7, the high amount of  $R^2$  (0.41), probability and coefficient of variables  $X_1$ ,  $X_2$  and  $X_3$  show a negative relationship between these variables and firm value; but, the relationship is not significant. In model 2 of table 7, with respect to the high amount of  $R^2$  (0.40), and also concerning the amount of probability and coefficients of variables  $Y_1$  and  $Y_2$ , the relationship between these variables and firm value is not significant at the break point of 50%. In model 3, with regard to the high amount of  $R^2$  (0.42), and also considering the amount of probability and coefficients of variables  $Z_1$  and  $Z_2$ , the relationship between these variables and firm value is not significant at the

significance level of 70%. Concentrating on control variables of all models shown in table 7 indicates that the variables financial leverage (LEV) and firm size (SIZE) have a negative effect on Tobin's Q. the result is in line with the prediction. Therefore, the firms having less leverage and smaller size will have a higher value.

## 6. Discussion and conclusion

The research wanted to evaluate the effectiveness of ownership concentration of major stockholders as an intrinsic mechanism for controlling firm in the capital market of Iran. This analysis provides some new evidence specifying the effect of ownership concentration of investors and the influences connected with the characteristics of major stockholders on firm value. The results showed that sum of ownership of major stockholders

with  $R^2$  (41%), the coefficient (0.655) and the t-statistics (0.020) have a significant effect on firm value. This finding is consistent with the findings of Ruiz-Mallorqui and Santana-Martin (2011), Thomsen et al in European markets (2006), Dahya et al. (2008), Mideri (2002), Mashayekhi and Mahavarpur (2009). However, it is not consistent with the results of Demsetz and Villalonga (2001), Seifert et al. (2005), Minguez-Vera and Ugedo (2007), Thomsen et al in the markets of America (2006), Meski et al. (2009) and Mazlumi (2003). On the other hand, the research findings show that square sum of ownership of major stockholders with  $R^2$  (41%), the coefficient (0.403) and the t-statistics (0.709) has no effect on firm value. This finding is indicative of a linear relationship between sum of ownership of major stockholders and firm value, which is in agreement with the findings of Minguez-Vera and

Ugedo (2007) but not consistent with those of McConnell and Servaes (1990). Eventually, in the piecewise analysis at the levels of 10%, 25%, 50% and 70% the research findings show that there is no relationship between sum of ownership of major stockholders and firm value at break points. These findings are consistent with those of Minguez-Vera and Ugedo (2007) but inconsistent with the findings of Morck et al. (1988).

## **7. Recommendations for further research**

With respect to the findings of the research, the following topics can be suggested for future studies:

- Separating the role and effect of ownership of financial institutes (banks and insurance companies, ...), investing firms and non-financial firms on the value and performance of firms.
- Investigating the effect of factors

including type of ownership of major stockholders on the amount of concentration or dispersion of ownership.

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## بررسی تاثیر تمرکز مالکیت سهامداران عمده بر ارزش شرکت در بورس تهران

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هدف این مطالعه بررسی تاثیر تمرکز مالکیت مجموع سهامداران عمده بر ارزش شرکت‌ها است. نمونه آماری پژوهش شامل ۶۹ شرکت طی سال‌های ۸۸-۱۳۸۴ بوده است. روش آماری مورد استفاده جهت آزمون فرضیه‌ها «داده‌های پنلی» است. برای آزمون ارتباط بین مالکیت سهامداران عمده و ارزش شرکت از رگرسیون خطی و غیرخطی چندگانه استفاده شده است. یافته‌های پژوهش حاکی از وجود یک رابطه مثبت خطی و معنادار بین تمرکز مالکیت مجموع سهامداران عمده و ارزش شرکت‌ها و عدم هر گونه رابطه غیر خطی بین مربع مجموع مالکیت سهامداران عمده و ارزش شرکت‌ها است. نتایج آزمون تکه‌ای مجموع سهامداران عمده نشان می‌دهد که بین مجموع سهامداران عمده و ارزش شرکت‌ها در نقاط تفکیک ۱۰٪ و ۲۵٪، ۵۰٪ و ۷۰٪ رابطه‌ی معناداری وجود ندارد.

واژگان کلیدی: تمرکز مالکیت، سهامدار عمده، ارزش شرکت

طبقه بندی JEL: G32, G3

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