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Investigating the Impact of Ownership Structure and Tax Rate on Capital Structure of the listed Companies in Tehran Stock Exchange

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ABSTRACT

The main purpose of the current study is to examine the impact of ownership structure and tax rate on capital structure of the listed companies in Tehran stock exchange. All listed companies in Tehran stock exchange were selected as statistical population during 2008 to 2012 which 74 firms are selected as samples. Managerial ownership, debt ratio and tax rate are considered as independent, dependent and moderating variables, respectively. Ordinary Least Squares (OLS) is used for testing hypotheses. The results indicated that managerial ownership has significant impact on long-term debt ratio of the listed companies in Tehran stock exchange. And tax ratio has no significant influence on relation among managerial ownership and long-term debt ratio of those companies.

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INTRODUCTION

Capital structure includes a combination of financial resources by debts, common stocks, preferred stock and retained earnings. Determination of a suitable and desirable ratio for debts and stock is the most important issue, because it directly impacts on firms' stock price in stock exchange. After determining required capital for a company, there is a question which asks what and how resources are financed. Selection of debt amount and or capital of companies are depended on various factors such as internal factors effecting on capital structure which generally is aimed to increase firm value.

In this regard, Ben Saeid (2013) examined the role of intra and extra organizational ownership on debt payment ratio. The findings demonstrated that there is a non-linear relation between managerial ownership and capital structure, but extra-organizational shareholders cannot play an efficient role in controlling managers' behaviors. Najjar & Tylor [15] examined the relation between ownership structure and capital structure for some samples of the listed companies in Jordan stock exchange. Their results showed that there is a significant positive association between capital structure and institutional investors. Hassan *et al.*, [12] demonstrated that board size and institutional shareholders has considerable negative relationship with debt-equity ratio. The findings of Namazi & Kermani (2008) proved that there is a significant negative relationship among institutional ownership and firm performance.

Leo *et al.*, [14] investigated the role of governmental control and ownership structure and the findings indicated that the firms controlled by state organizations have higher debt ratio and major institutional shareholders has inverse percent with debt ratio, but there is a non-linear relationship between institutional shareholders and debt ratio in other organizations. On the other hand, Nilsen (2006) indicated that there is an alternative relation among capital structure and ownership. The results of Howang & Sang [13] demonstrated that debt ratio decreases with increased profitability and management ownership portion and increases with increased firm size, as well as tangible assets has positive impacts on debt ratio. As well, their research indicated that governmental and institutional ownership has not considerable impact on firms' capital structure policies.

Generally, what we want in this research is to examine the impact of ownership structure and tax rate on capital structure of the listed companies in Tehran stock exchange. It seems that an answer to the question can be effective for executive and non-executive managers, real, potential and institutional investors as well as independent accountants.

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*Research methodology:**Research hypotheses:*

- Managerial ownership has significant impact on debt ratio of the listed companies in Tehran stock exchange.
- Tax rate has significant impact on the relation between managerial ownership and long-term debt ratio of the listed companies in Tehran stock exchange

Statistical population of the research:

The statistical population of the current research includes all listed companies in Tehran stock exchange which have been listed during 2008 to 2012. The standard of sample selection is ommissive and is done based on the following condition:

- 1- They should be manufacturing firms; they should have not been related to banks and financial institutions (investment companies, intermediary companies, holding companies, banks and leasing).
- 2- Their financial year ends in 19/3/...
- 3- Their stock should be traded in stock exchange.
- 4- They should not have been changed their activities or fiscal year during the studied years.
- 5- Their financial information should be available.

Regarding restrictions, 331 firms have been selected between 421 listed companies in Tehran stock exchange using systematic ommissive method and 74 firms have been finally selected base on Cochran method as ultimate sample. The Cochran method is as follows:

$$n = \frac{(331)(1.96)^2 \times (0.5)(0.5)}{(331)(0.1)^2 + (1.96)^2(0.5)(0.5)} \cong 74$$

Where, maximum permissible error (d) is 0/1, confidence coefficient is 0/95, t= 1/96, p and q are 0/5 and population volume is N. "n" would find his maximum amount and it causes the sample to be big enough.

*Research's variables:***Table 1:** Operational definition of the research's variables.

Row	Variable's name	Measuring method
1	Long-term debt ratio	Long-term debt ratio divided into total assets
2	Managerial ownership	Percent of held shares by managers and board
3	Tax rate	Tax rate average during 2008 to 2012
4	Return on assets	Net income dividend into total assets
5	Firm size	Natural logarithm of book value to total assets
6	Risk	To calculate β coefficient (market systematic risk), sample firms' stock return RI and market portfolio retun RM is used (Ahmadpour & Gholami, 2005). $\beta = \frac{Cov(R_i, R_m)}{\sigma^2 R_m}$
7	Firm growth	(previous year sale – current year)/previous year sale

Research model:

- First hypothesis regression model

$$\begin{aligned} \text{Debt Ratios}_{it} &= \delta_0 + \delta_1 \text{Management Ownership}_{it} + \delta_2 \text{ROA}_{it} + \delta_3 \text{Size}_{it} \\ &+ \delta_4 \text{Risk}_{it} + \delta_5 \text{Growth}_{it} + \varepsilon_{it} \end{aligned}$$

- Second hypothesis regression model

$$\begin{aligned} \text{Debt Ratios}_{it} &= \delta_0 + \delta_1 (\text{Management Ownership}_{it} \times \text{Tax}_{it}) + \delta_2 \text{ROA}_{it} \\ &+ \delta_3 \text{Size}_{it} + \delta_4 \text{Risk}_{it} + \delta_5 \text{Growth}_{it} + \varepsilon_{it} \end{aligned}$$

Data analysis method:

In this research, ADF test is used to determine whether xt time series has static process (zero accumulation order) or divergent (one accumulation order). Applying a suitable method for panel data is necessary like examination of the variables' staticness. We use modified Wald test to examine group wise heteroskedasticity among surpluses of regression fixed effects model. Also, F and Hausman test is used to determine either fixed effects method or random effect. To describe the explanatory power of explanatory variables, adjusted coefficient of determination (Adjusted R2) is used, and F-fisher test is applied in order to examine the significance of variables and overall adequacy of the model. Statistical analyses are also made using EXCEL and EVIEWS software.

*Research's results:**ADF method:***Table 2:** ADF unit root test on variables

Variables	Probability	Statistics
Debt ratio	0.0015*	-4.412389
Managerial ownership	0.0011*	-4.502388
Tax rate	0.0019*	-4.012269
ROA	0.0006*	-5.162595
Firm size	0.0002*	-5.341725
Risk	0.0014*	-4.103227
Firm growth	0.0003*	-6.032422

* 5% error level

Regarding table 2, examination of calculated statistics values and their acceptance probability indicates H_0 (non-durability) is rejected for all variables and all studied variables are durable.

Determination of model estimation method- Significance test of fixed effects method:

F statistics test:

Table 3: Results of F statistics test

Description	Statistics value	Freedom degree	probability
Cross-section F	1.905418	73	* 0.004
Cross-section Chi-square	139.336254	73	* 0.002

Hausman test:

Table 4: Results of Hausman test

Description	Statistics value	Freedom degree	probability
Cross-section F	7.023726	9	* 0.006

Regarding table 3 and 4, the results of both F and Hausman test is less than 5% in both probability tests, so fixed effects method should be used in related regression model.

The first hypothesis test:

Table 5: The first hypothesis of regression model.

Variable name	Impact factor	Estimation deviation	t-statistics	Significance level
Fixed	0.514	0.623	2.013	*0.011
Managerial ownership	0.662	0.145	2.425	* 0.009
ROA	-0.341	0.552	-1.623	* 0.047
Firm size	0.196	0.621	1.721	* 0.035
Risk	0.522	0.502	2.221	* 0.006
Firm growth	-0.362	0.413	-1.936	*0.013

* 5% error level

Table 6: Explanation and significance ability of whole model

R		Durbin-Watson	ANOVA	
Coefficient of determination	Adjusted coefficient of determination		F	Sig.
0.638	0.624	1.756	14.111	** 0.000

** 1% error level

Regarding the table 5, since Durbin-Watson statistic test value is determined among 1.5 to 2.5, lack of correlation between errors is not rejected and regression can be used. . Due to F value test is significant (14.111) in error level less than 0.01, it can be concluded that panel research regression model which composed of independent, control and dependent variables is a suitable model and independent and control changes can describe debt ratio changes. The adjusted coefficient of determination is equaled with 0.624 and indicating that 62.4% of all firm value changes are depended on independent and control variables of this model. As well, impact factor of managerial ownership variable on debt ratio is 0.662, and indicating the variables has positive and direct impact on debt ratio. On the other hand, regarding significance level of t-statistics of managerial ownership on debt ratio is (0.009), H_0 is not rejected with 95% confidence due to error level is less than 5%, and it can be stated that managerial ownership has significant impact on debt ratio of the listed companies in Tehran stock exchange. The empirical model of the research is as follows:

$$\begin{aligned} \text{Debt Ratios}_{it} &= 0.514 + 0.662 \text{ Management Ownership}_{it} - 0.341 \text{ ROA}_{it} \\ &+ 0.196 \text{ Size}_{it} + 0.522 \text{ Risk}_{it} - 0.362 \text{ Growth}_{it} + \varepsilon_{it} \end{aligned}$$

The second hypothesis test:

Table 7: The first hypothesis of regression model

Variable name	Impact factor	Estimation deviation	t-statistics	Significance level
Fixed	0.151	0.315	1.962	*0.015

Managerial ownership* tax rate	0.296	0.613	1.336	0.073
ROA	-0.447	0.496	2.141	* 0.007
Firm size	0.374	0.341	1.973	* 0.011
Risk	0.066	0.596	1.745	*0.031
Firm growth	-0.219	0.334	2.018	*0.008

* 5% error level

Table 8: Explanation and significance ability of whole model.

R		Durbin-Watson	ANOVA	
Coefficient of determination	Adjusted coefficient of determination		F	Sig.
0.496	0.485	1.645	14.075	** 0.000

** 1% error level

Regarding the table 7, since Durbin-Watson statistic test value is determined among 1.5 to 2.5, lack of correlation between errors is not rejected and regression can be used. . Due to F value test is significant (14.075) in error level less than 0.01, it can be concluded that panel research regression model which composed of independent, control and dependent variables is a suitable model and independent and control changes can describe long-term debt ratio changes. The adjusted coefficient of determination is equaled with 0.485 and indicating that 48.5% of all firm value changes are depended on independent and control variables of this model. As well, impact factor of managerial ownership* tax rate variable on long-term debt ratio is 0.296, and indicating the variables has positive and direct impact on long-term debt ratio. On the other hand, regarding significance level of t-statistics of managerial ownership*tax rate on long-term debt ratio is (0.073), H_0 is not rejected with 95% confidence due to error level is less than 5%, and it can be stated that tax rate has not significant impact on the relation between managerial ownership and long-term debt ratio of the listed companies in Tehran stock exchange.

Conclusion and suggestions:

The main purpose of the study is to examine the impact of ownership structure and tax rate on capital structure of the listed companies in Tehran stock exchange. There are 74 firms as samples of the study. As well, there has been provided two hypotheses for examining the relation between the variables. The results indicate that managerial ownership has significant impact on long-term debt ratio of the listed companies in Tehran stock exchange. Also, tax rate has no significant influence managerial ownership and long-term debt ratio of those companies. Regarding to the obtained results, it can be concluded that managerial ownership has positive and significant impact on firms' long-term debt ratio which tendency of managers for financing through external debt resources is one of the reason. Therefore, it is suggested to actual and potential investors, accountants, auditors, agents and other stakeholders to focus more on managers' ownership when they want to make their decisions, because it has relationship with long-term debt ratio. The results have also indicated that tax rate has no impact on the relation among these two variables and firms' managers would not focus on it.

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