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Capital Structure and Return on Equity in the Banks Accepted in Tehran Stock Exchange

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A B S T R A C T

The present study has investigated the bank's area. A review of the research literature suggests that much research has been done in this area. The study subject is the examination of the relationship between capital structure and profitability of banks accepted in Tehran Stock Exchange. Assumptions were developed using research variables. The statistical population of the study is the banks accepted in Tehran Stock Exchange. Given the smallness of the study population and because the number of observations will become less than acceptable in quantitative research if sampling, the entire population is used as the sample . Library research method is used and in terms the goal it is an applied research. For analysis of the results, Pearson regression and correlation are used. Results indicate that the three leveraged variables influence on the return on equity, but there is no statistically significant relation with the size of banks.

Keywords: Capital Structure, Bank, Return On Equity.

INTRODUCTION

Banks should gain financial resources to be able to invest and prepare their required assets(Diamond & Rajan, 2001; Mishkin, 2007). Financial structure is shown on the left side of the balance sheet, including debt and equity by which the banks proceed to long-term finance their assets(Berger & Udell, 1998). In fact the capital structure is a source of permanent financing of banks that are shown by long-term debt and equity(Gropp & Heider, 2010; Leary, 2009).

Theories of capital structure are closely related to banks' cost of capital (Berger & Di Patti, 2006; Gropp & Heider, 2010; Harris & Raviv, 1991). The main objective of capital structure decisions is maximizing the market value of the bank through an appropriate mix of long term funds sources. This combination which is called the optimal capital structure minimizes the average cost of bank capital(Berger & Di Patti, 2006; Mester, 2005).

Capital structure is one of the topics that will be evaluated in terms of different groups. These groups included from shareholders, creditors and managers of the companies, to monitor devices in the capital markets(Dou, Hope, Thomas, & Zou, 2016). Capital structure ratios of the companies check the relationship between debt and equity(Robb & Robinson, 2014; Schepens, 2016). Two important ratios of capital structure are:

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1. Debt to equity ratio: This ratio is calculated by dividing the sum of debt to the sum of shareholders' equity.
2. Debt to assets ratio: this ratio is calculated by dividing the sum of debt to the sum of assets(Tahir, 2015; Uddin, 2015).

These ratios indicate how much of the bank resources are financing from debt.

A REVIEW ON RESEARCH LITERATURE

Nassirzadeh and Rostami (2010)in a study entitled the influence of capital increase on stock returns of companies listed in Stock Exchange, concluded that the increase in capital of companies listed in Stock Exchange during the periods of 2002 to 2010 do not effect on stock returns.

Afrasiabi and Ahmadinia (2011) studied the impact of capital structure on the systematic risk of common stocks of companies listed in Stock Exchange. Based on this study, it was shown that the average systematic risk of non- leveraged companies is smaller than average systematic risk of leveraged companies. This means that by the increased use of leverage, systemic risk of the company's stock in the market goes up.

Bradshaw, Richardson, and Sloan (2006) in their study entitled the relationship between financing activities, analysts' forecasts and future stock returns in a 30-year period, concluded that there is an inverse relationship between net cash related to each of the classes of financing activities (stock issue and debt) and future stock returns as well as corporate profitability. In addition, the relationship between two independent variables of net changes in capital and net changes in liabilities created for financing and future stock returns is negative.

Zhang (2005) in a study entitled "The dynamics of capital structure and return on equity" using a sample of listed companies on America Stock Exchange, came to the conclusion that the relationship between changes in financial leverage and stock returns is negative. This relationship is greater in more leveraged firms. Long-term debt compared to short-term debt plays an important role in establishing this relationship. Also, the change in financial leverage has no effect on future stock returns.

METHODOLOGY

The present study in terms of the goal is an applied research and in terms of gathering data is a descriptive research from correlation classification. Correlational research is applied when the researcher has two or more different kinds of information (in the form of independent variables) related to a group of two or more groups and the research goal is to study the variations rate of two or more factors because of the variations in one or more other factors. Regression analysis is a kind of correlational research that will be used in this research.

To determine the research sample, companies with the following characteristics are considered:

1. Their fiscal year is ended at March of each year.
2. The company has no fiscal year change from 2010 to 2016.
3. Company is not in financial intermediary groups (Banks, investments and ...).
4. Their financial reports are available.

In order to answer the research questions and based on the available theoretical background, the following hypotheses were formulated:

Research hypothesis:

1 – There is a significant relationship between the ratio of debt to total assets and return on equity of banks accepted in Tehran Stock Exchange.

2 - There is a significant relationship between the ratio of debt to total capital and return on equity of banks accepted in Tehran Stock Exchange.

3 - There is a significant relationship between the bank size and return on equity of banks accepted in Tehran Stock Exchange.

4 - There is a significant relationship between the percentage of change in net income and return on equity of banks accepted in Tehran Stock Exchange.

The research model:

Multiple regression is used to estimate or predict the changes of a variable by the other variables. Regression analysis provides the possibility for researchers to predict changes of the dependent variable by the independent variables and determine the contribution of each independent variable in explaining the dependent variable. The multiple regression equation general formula is as follows:

$$Yi = \beta o + \beta 1 x 1 i + \beta 2 x 2 i + \ldots + \beta p x p i + e\, i$$

Yi = the predicted value of the dependent variable.
βo = constant or intercept of the regression line intersection point with Y axis
βi = regression coefficient or slope
x = the independent variables values
ei = the error value

Dependent variable:

Bank's return on equity: It is achieved by net income divided by total equity.

Independent variables:

Ratio of debt to total assets: It is obtained by the sum of debts divided by total assets.

Ratio of total debt to equity: It is obtained by the sum of debts divided by total equity.

Bank size: It is achieved by multiplying the average stock price by the number of shares.

Percentage of change in net income:

$$\frac{X_2 - X_1}{X_1}$$

RESULT

Time series are one of the most important data used in the empirical analysis. In research it has always been assumed that the time series are static and if this state does not exist, the statistical tests that are based on t, F, chi-square and ... are called into question. However, if time series variables are not static, the problem of spurious regression can occur.

Time series variables are static when the mean, variance and autocorrelation coefficients remain constant over time.

H0: the data have unit roots. (Stationary)

H1: The data do not have a unit root.

Due to the fact that the data used in this study is evaluated in the following table using normal statistics, it can be said that the data are static. Significance level of all variables is higher than 5%.

Table 1. Dickey Fuller generalized test

Variable	Statistics	Significance Level
Return on Equity		
Normal Statistics	-0.56658	0.2855
Debt to Assets		
Normal Statistics	-0.7491	0.2269
Debt to Equity		
Normal Statistics	-0.43411	0.3321
Size		
Normal Statistics	-3.03505	0.0012
Net Income Changes Percentage		
Normal Statistics	-0.3168	0.3757

With regard to the assumptions set forth above and the above table data are static and regression analysis can be used for assumptions. Given the fact that the normal statistics value for the significance level of 95% is between 1.96 to -1.96, without a doubt each of the variables that are not in this range, are not static.

According to the test results the following data are normal:

Return on equity with normal statistics is equal to -.56658, debt to asset with normal statistics is equal to -.7491, debt to equity with normal statistics is equal to -.43411 and the percentage of changes in net income with normal statistics is equal to -.3168. Noticing the fact that the statistic value is not located in critical level, it can be said that the null hypothesis is not rejected and they can be considered static.

The variable of firm size is the only variable that its statistic value is too critical and the null hypothesis based on having a unit root and being static is rejected.

Hypothesis 1:

Contradictory of claim (H0): There is no significant relationship between the ratio of debt to total assets and return on equity of banks accepted in Tehran Stock Exchange.

Claim (H1): There is a significant relationship between the ratio of debt to total assets and return on equity of banks accepted in Tehran Stock Exchange.

Table 2. Regression

Variable	R	R^2	Durbin-Watson	Fisher Statistic	T value	Coefficient	Sig.
DA	0.94	0.88	2.4230	518.79	-22.7	-1.7490	0

Given the above table and due to the fact that the significance level is less than 0.05, t Student - statistic is equal to -22.777 and Fisher statistic is equal to 518.793. Therefore, it can be concluded that there is a significant relationship between the ratio of debt to total assets and return on equity in banks. Based on the obtained PROB which is less than 5%, it can be said that at confidence level of 95%, H0 is rejected and H1 is accepted.

Hypothesis 2:

Contradictory of claim (H0): There is no significant relationship between the ratio of debt to total capital and return on equity of banks accepted in Tehran Stock Exchange.

Claim (H1): There is a significant relationship between the ratio of debt to total capital and return on equity of banks accepted in Tehran Stock Exchange.

Table 3. The regression summary

Variable	R	R^2	Durbin-Watson	Fisher Statistic	T value	Coefficient	Sig.
DE	0.92544	0.85644	2.35122	409.626	-20.239	-1.094209	0

Given the above table and due to the fact that the significance level is less than 0.05, t Student - statistic is equal to -20.239 and Fisher statistic is equal to 409.6269. Therefore, it can be concluded that there is a significant relationship between the rate of published exchange of central Bank and profitability of banks listed in Stock Exchange.

Based on the obtained PROB which is less than 5%, it can be said that at confidence level of 95%, H0 is rejected and H1 is accepted.

Hypothesis 3:

Contradictory of claim (H0): There is no significant relationship between the bank size and return on equity of banks accepted in Tehran Stock Exchange.

Claim (H1): There is a significant relationship between the bank size and return on equity of banks accepted in Tehran Stock Exchange.

Table 4. Regression

Variable	R	R^2	Durbin-Watson	Fisher Statistic	T value	Coefficient	Sig.
SIZE	0.0663	0.0044	2.0298	2.3449	1.5313	0.0414637	0.1352

Given the above table and due to the fact that the significance level is higher than 0.05, t Student - statistic is equal to 1.5313 and Fisher statistic is equal to 2.3449. Therefore, it can be concluded that there is no significant relationship between the bank size and return on equity in banks.

Based on the obtained PROB which is higher than 5%, it can be said that at confidence level of 95%, H0 is not rejected and H1 is rejected.

Hypothesis 4:

Contradictory of claim (H0): There is no significant relationship between the percentage of change in net income and return on equity of banks accepted in Tehran Stock Exchange .

Claim (H1): There is a significant relationship between the percentage of change in net income and return on equity of banks accepted in Tehran Stock Exchange.

Table 5. Regression

Variable	R	R^2	Durbin-Watson	Fisher Statistic	T value	Coefficient	Sig.
EP	0.52512	0.27576	2.182216	36.49253	6.040905	3.8697	0

Given the above table and due to the fact that the significance level is higher than 0.05, t Student - statistic is equal to 6.040905 and Fisher statistic is equal to 36.49253. Therefore, it can be concluded that there is a significant relationship between percentage of change in net income and return on equity in banks.

Based on the obtained PROB which is less than 5%, it can be said that at confidence level of 95%, H0 is rejected and the relationship between the two variables is statistically acceptable.

The main hypothesis investigation

According to the results of other models eventually two models will be estimated as follows, among which both models were significant, and except the firm size variable, other variables are significant at the 95% significance level.

Table 6. Regression

R	R^2	Durbin-Watson	Fisher Statistic	Sig.	Variable	T Value	Coefficient	Sig.
0.93	0.87	2.07	143.42	0.001	DE	-3.808	- 4.524	0.006
					DA	2.293	+ 1.7217	0.028
					SIZE	-0.017	- 0.0001	0.98
					EP	3.442	3.137	0

$$ROE = a + b1*DE + b2*DA + b3*SIZE + b4*EP + \varepsilon$$

*ROE = 3.86730970598 - 4.52410860894*DE + 1.7217592376*DA 0.00013666523195*SIZE+3.137*EP*

Given the above table and due to the fact that the coefficients that their significance level is less than 0.05 are accepted, results are summarized in the following table.

Table 7. Results of the univariate analysis

Total Model	Fisher Statistic	Sig.	Coefficient	Variable	T value	Sig.	Variance Inflation	Tolerance
	143.4232	0.001		DE	-3.80851	0.0006	0.931	1.074
				DA	2.293353	0.0288	0.936	1.068
				SIZE	-0.01794	0.9858	0.992	1.008
				EP	3.44276	0.001	0.863	1.15874

According to the obtained results from the univariate analysis and multivariate analysis, it can be seen that the hypotheses are rejected or accepted.

CONCLUSION

This study examines the relationship between capital structure and return on equity of the companies. In this research, capital structure is measured with variables of debt to total assets ratio, total debt to equity ratio, the size of the bank and the percentage of change in net income. The results of the tests show that the first and second and forth hypotheses have significant relationship with return on equity and they are accepted. But the third hypothesis does not have any significant relationship with return on equity, so the hypothesis is rejected. All the results are summarized in the following table.

Table 8. The results summary

Acceptance	Hypothesis
Accepted	There is a significant relationship between the ratio of debt to total assets and return on equity of banks accepted in Tehran Stock Exchange.
Accepted	There is a significant relationship between the ratio of debt to total capital and return on equity of banks accepted in Tehran Stock Exchange.
Not Accepted	There is a significant relationship between the bank size and return on equity of banks accepted in Tehran Stock Exchange.
Accepted	There is a significant relationship between the percentage of change in net income and return on equity of banks accepted in Tehran Stock Exchange.

Suggestions for Future Research

1. It is recommended banks for their finance use capital resources more.
2. It is suggested the impact of economic variables on banks as a control variable be examined to provide a more complete results.
3. It is suggested the impact of size variable on the banks be studied separately and the results be compared with current results.
4. It is proposed time series and cross section techniques be applied separately and the results be compared with the present results.

Using optimal control can be useful for finding the optimal capital structure.

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