



The Relationship between Capital Structure and Return on Assets 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 Assets, but there is no statistically significant relation with the size of banks.

Keywords: Capital Structure, Bank, Return On Total Assets.

INTRODUCTION

Deciding on the capital structure that means financing of banks, like other decisions made by directors influences the value of the banks (Antoniou, Guney, & Paudyal, 2008; Burgstaller & Wagner, 2015). Directors as representatives of the shareholders, formulate the bank's capital structure in a manner to leave a positive impression (Tricker & Tricker, 2015) on the increasing procedure of the bank value, which is increasing shareholders' wealth (Aryani, 2016; Dickson, 2016). Determination of an optimal structure of capital and financing of financial resources in the banks is very important (Alipour, Mohammadi, & Derakhshan, 2015; Allen, Carletti, & Marquez, 2015; DeAngelo & Stulz, 2015; Gropp & Heider, 2010). Banks are one of the capital foundations in Iran (Mahdi Salehi & Alipour, 2010; Mandi Salehi & Mansouri, 2016). Particularly with respect to proving that the capital system of Iran is the base bank, it has created an opportunity for profitability in this sector of the economy (Fazlzadeh, 2017; Karami, Karimiyan, & Ghaznavi, 2016; Mehralian, Rajabzadeh, Reza Sadeh, & Reza Rasekh, 2012).

The correlation between capital structure and profitability in different industries has been proven repeatedly (Enqvist, Graham, & Nikkinen, 2014; Gill, Biger, & Mathur, 2011; Shubita &

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To cite this article: Abedini, B., Imani, Z., Baranzadeh, O. (2017). The Relationship between Capital Structure and Return on Assets in the Banks Accepted in Tehran Stock Exchange. *Academic Journal of Accounting and Economic Researches*, 6 (3), 93-99.

Alsawalhah, 2012; Xu, 2012). For this reason, managers must know well the influence of the variables that can affect the capital structure of banks in order to take an action with awareness and arising from scientific theories, with the correct attitude, to achieve an optimal capital structure. On the other hand, generally the main focus of the issues raised in each of the approaches and theories of capital structure is on the variables and internal factors of the companies such as the variables of accounting, how to manage, the shareholders combination and the issues like this. In these approaches, less attention has been paid to external affecting factors of the banks. Among the most important of these factors the type of activity, social and political issues, and some macroeconomic variables can be noted.

A REVIEW ON RESEARCH LITERATURE

Heikal, Khaddafi, and Ummah (2014) there is an inverse relationship between the ratio of debt, especially the ratio of long-term debt, and income after tax reduction. In vehicles industry there is an inverse relationship between debt ratio and measures of financial performance, particularly the average return on assets. In machinery and equipment industry there is an inverse relationship between debt ratio and income after tax reduction, especially the average return on assets. Finally, in the rubber and plastics industry there is a weak relationship between debt ratio and income after tax reduction and there is an inverse and weak relationship between debt ratio and the average return on assets.

Cai and Zhang (2006) and Welch (2004) 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.

Yahyazadeh Far and Abonoori (2005) studied the effect of publishing priority on stock returns of companies listed on the Tehran Stock Exchange and the following results have been analyzed:

A) Publishing priority has no positive and significant effect on stock returns of the companies.

B) There is no significant difference between the average stock returns of the companies that have made an effort to increase the capital through priority and the average stock returns of the companies that have not issued priority (Publication of priority have no effect on 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 2015.
3. Company is not in financial intermediary groups (Banks, investments and ...).

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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 total assets of banks accepted in Tehran Stock Exchange.
2. There is a significant relationship between the ratio of debt to total capital and return on total assets of banks accepted in Tehran Stock Exchange.
3. There is a significant relationship between the bank size and return on total assets of banks accepted in Tehran Stock Exchange.
4. There is a significant relationship between the percentage of change in net income and return on total assets 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:

$$Y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_p x_{pi} + e_i$$

Y_i = the predicted value of the dependent variable.

β_0 = constant or intercept of the regression line intersection point with Y axis

β_i = regression coefficient or slope

x = the independent variables values

e_i = the error value

Dependent variable:

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

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 | Normal Statistics | Significance Level |
|-------------------------------|-------------------|--------------------|
| Return on Assets | -0.02328 | 0.2855 |
| Debt to Assets | -0.7491 | 0.2269 |
| Debt to Equity | -0.43411 | 0.3321 |
| Size | -3.03505 | 0.0012 |
| Net Income Changes Percentage | -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.

Accordingly, all variables are static except the size that its statistic value is at a critical level, and regard to this, it's being static assumption is rejected at 95% level.

According to the test results the following data are normal:

Return on assets with normal statistics is equal to -.02328, 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 total assets 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 total assets of banks accepted in Tehran Stock Exchange.

Table 2. Regression results

| Variable | Determination Coefficient | Diagnosis Coefficient | Durbin-Watson | Fisher Statistic | T Student Statistic | Coefficient | significance level |
|----------|---------------------------|-----------------------|---------------|------------------|---------------------|-------------|--------------------|
| DA | 0.84403 | 0.7123 | 2.35359 | 178.5811 | -13.3634 | 1.02623 | 0.001 |

Given the above table and due to the fact that the significance level is less than 0.05, t Student - statistic is equal to -13.3634 and Fisher statistic is equal to 178.5811. Therefore, it can be concluded that there is a significant relationship between the ratio of debt to total assets and return on total assets in banks.

Based on the obtained significance level which is equal to 0, it can be said that the significance of both variables is accepted and H0 is rejected and at confidence level of 95% the relationship between the two variables is accepted.

Hypothesis 2:

Contradictory of claim (H0): There is no significant relationship between the ratio of debt to total capital and return on total assets 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 total assets 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 | 0.87305 | 0.76221 | 2.22789 | 226.9478 | -15.0648 | -1.065 | 0.001 |

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Given the above table and due to the fact that the significance level is less than 0.05, t Student - statistic is equal to -15.0648 and Fisher statistic is equal to 226.9478. Therefore, it can be concluded that there is a significant relationship between the ratio of debt to total capital and return on total assets in 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 total assets of banks accepted in Tehran Stock Exchange.

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

Table 4. Regression

| Variable | R | R ² | Durbin-Watson | Fisher Statistic | T Value | Coefficient | Sig. |
|----------|---------|----------------|---------------|------------------|---------|-------------|--------|
| SIZE | 0.03671 | 0.00134 | 2.21526 | 1.25791 | 1.1215 | 0.028 | 0.2701 |

Given the above table and due to the fact that the significance level is less than 0.05, t Student - statistic is equal to 1.12156 and Fisher statistic is equal to 1.25791. Therefore, it can be concluded that there is no significant relationship between the bank size and return on total assets 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 total assets 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 total assets of banks accepted in Tehran Stock Exchange.

Table 5. Regression

| R | R ² | Durbin-Watson | Fisher Statistic | Sig. | Variable | T value | Coefficient | Sig. |
|---------|----------------|---------------|------------------|-------|----------|---------|-------------|-------|
| 0.03671 | 0.001 | 2.53 | 4.35 | 0.004 | EP | 3.20 | 3.137 | 0.004 |
| | | | | | ROA(1) | -1.819 | -.173 | 0.08 |

Given the above table and due to the fact that the significance level is less than 0.05, t Student - statistic is equal to 3.20767 and Fisher statistic is equal to 4.35299. Therefore, it can be concluded that there is a significant relationship between percentage of change in net income and return on total assets in banks.

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

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. |
|-------|----------------|---------------|------------------|-------|----------|----------|-------------|-------|
| 0.932 | 0.87 | 2.32 | 110.51 | 0.001 | DE | -5.06 | - 6.4030 | 0.000 |
| | | | | | DA | 3.7465 | 2.99431 | 0.07 |
| | | | | | SIZE | -0.51098 | 0.0041 | 0.61 |
| | | | | | EP | 6.040 | 3.86 | 0.000 |

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

$$ROA = 4.63121114191 - 6.40304844786*DE + 2.99431634051*DA - 0.00414327146588*SIZE + 3.8697869736*EP$$

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. Regression

| Total Model | Fisher Statistic | Sig. | Coefficient | Variable | T Value | Sig. | Variance Inflation | Tolerance |
|-------------|------------------|-------|-------------|----------|----------|--------|--------------------|-----------|
| | 110.51 | 0.001 | | DE | -5.06345 | 0.000 | .846 | 1.182409 |
| | | | | DA | 3.746565 | 0.0007 | .788 | 1.269036 |
| | | | | SIZE | -0.51098 | 0.613 | .783 | 1.276419 |
| | | | | EP | 6.040905 | 0.000 | 0.921 | 1.085776 |

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 total assets 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 fourth hypotheses have significant relationship with return on total assets and they are accepted. But the third hypothesis does not have any significant relationship with return on total assets, 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 total assets of banks accepted in Tehran Stock Exchange. |
| Accepted | There is a significant relationship between the ratio of debt to total capital and return on total assets of banks accepted in Tehran Stock Exchange. |
| Not Accepted | There is a significant relationship between the bank size and return on total assets of banks accepted in Tehran Stock Exchange. |
| Accepted | There is a significant relationship between the percentage of change in net income and return on total assets 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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