Original Article

Relationship between Return on stocks and Asset Values in Dual Portfolio Consisting of Stock of Companies Listed on Tehran Stock Exchange

Fatemeh Rostami[1], Mohammad Mahmoodi[2]

[1]Department of Financial Management, Firoozkooh Branch, Islamic Azad University, Firoozkooh, Iran, [2]Assistant Professor, Department of Management, Firoozkooh Branch, Islamic Azad University, Firoozkooh, Iran

Abstract

The main objective of this study was to investigate the relationship between return on stocks and asset values in dual portfolio consisting of stock of companies listed on Tehran Stock Exchange. The Statistical population of this study is the companies listed on Tehran Stock Exchange during 2008 to 2015. The sample size is equal to 110 companies according to the method of screening and after the removal of outlier observations. In this study, the firm value is considered as the independent variables to investigate its impact on the dependent variables (financing from the issued equity, financing through retained earnings and financing through bank debt).In this study, the panel data with constant effects was used and the analysis results of the companies' data using multivariate regression in confidence level of 95% represented the direct impact of firm value on financing from the issued equity and bank debt. The results showed that firm value has no effect on financing from retained earnings.

Key words: Value, Method of financing, Retained earnings, Common equity, Banking debt

INTRODUCTION

Each financial or real asset has value. The key factor for success in the investment and asset management is to understand the value and resources affecting the asset value. One of the most important assets is the transaction stock in Listed Companies in Tehran Stock Exchange. In financial theory, the economic value of each asset can be determined by discounting of interests or the expected cash flows using the rate of capital opportunity cost during storage. In other words, the value of any asset is a function of the cash flows that created the assets. The present value rule may have a history of more than a thousand years. But the first table of interest rates, according to Parker (1968), was prepared of Florentine's businessmen and politicians for the first time by Francesco Balducci Pegolotti. Simon Stevin wrote the first financial mathematics in 1825 and presented the present value tables in attachment. The present value rule owes everything to mathematicians and businessmen of that time. Development of railway in the United States during the second half of the nineteenth century led to the long-term analysis of meaningful investments (Mehrani, 2010). When this method of defining the value is applied to the company as a whole, cash flow may be defined in different ways, which causes a different evaluation models such as dividend discount model, Olson model, remained profit model and.

Short, medium and long-term investment plan is necessary to progress the industry and to grow the productions of each country, and by which we can achieve the great support in the economy of each country. There are different methods to finance these plans, which includes use of debt, use of the investments' capital as equity, use of the retained earnings, a combination of these and possibly other methods. Financing resources are divided from different perspectives. In Iran, two source of financing are divided into the financial resources without the expense and the financial resources with the expense. The financial resources without the expense are pre-received from customers, trade creditors, dividends payable and cost payable. The financial resources with expense is divided into internal resources

Corresponding Author: Fatemeh Rostami, Department of Financial Management, Firoozkooh Branch, Islamic Azad University, Firoozkooh, Iran. E-mail: F_rostami1983@yahoo.com

(such as: retained earnings, depreciation reserves, prudential and legal reserves, reduction of current assets and sales of stagnant fixed assets) and external resources (such as short-term and long-term loans, bonds and issuing new stocks) (Abzari and Dastgir, 2007). In internal financial resources, the company finances from the profits, i.e. instead of dividend to the stockholders, it uses the profit in operating activities to achieve greater efficiency, and finance from the debt and equity in the external financial resources (Titman & Grinblatt, 1998).

To determine the optimal combination of capital, financing of the companies is one of the key issues which have the importance in decisions-making on the financing of current actions and investment projects. The expected return of creditors is lesser than stockholder's due to the lower risk financing from debt (participation securities, bank debt). Therefore, whatever the usage level of debt to finance will be higher up to a specific level, the company's overall cost of capital is lower and more profitability. However, the financial risk increases by increased debt, so the creditors demand higher interest rate. In this case, the total capital cost increases. As a result, the optimal capital structure must be between two finance limit (equity and debt) (Moradoglov and Syvap RASD, 2012).

Capital theories on capital structure scope propose different views on finance policies in companies (equity, retained earnings or bank loans), and in this regard, the determination of factors affecting the firm value and rationalizing the decision-making is very important in determining the capital structure (Lin et al., 2013). In general, the financing sources include debt and equity of stockholders. The use of any of these resources on the company's capital structure has special features due to the circumstances of each company. In the perspective of creditors, debts have lesser risk rather capital due to the priority of repayment and given value, date of maturity and interest rate risk. Stockholders expect higher returns by risk-taking, on this basis, it is expected that the more the institute uses the further borrowing; the capital cost will be decreased. However, the increase of debt and the risk of bankruptcy increase the stockholders expectance to capital and may be offset by the cost savings. Different theories have been presented. Some of them consider no differentiate between sources of financing and believe in the properly use of resources, and some have gone as far as suggesting that the company can maximize its value using one hundred percent of debt.

In this regard, with respect to companies listed in the exchange, according to the type of activity and financing methods, three methods of financing: equity issue, retained earnings and bank debt are as dependent variables and the

firm value is an independent variable to investigate firm value on the amount of financing from three mentioned sources. Some control variables such as company size, return on assets ratio, the ownership percentage of institutional investors and financial leverage are used to better clarify this model.

HISTORY OF RESEARCH

Lin et al (2014) investigated the effects of ownership structure and its relation to the methods of financing from banks or participation securities. This study was conducted for 9831 companies in 20 countries from the beginning of 2001 to the end of 2010. Results indicated that the variation in securing and controlling rights in companies with less institutional ownership structure is progressing toward the financing via bank debt. Other results indicate that the variation in ownership structure will be effective on other aspects of the company's debt structure including the date of maturity and/or required collaterals. In other words, companies with institutional ownership structure tend more to the funding from the public debt (bonds).

Huangwei and Ritter (2013) investigated the market timing theory. They had strong evidence to support the market timing theory as an explanation for the time series volatility of important decisions in institutions financing.

Frank and Goyal (2012) also examined the preferential theory in a wide cross-section. Like Shyam-Sunder and Myers (2001), the fiscal deficit is one of the main factors in this test. They believe that the internal finance on average is not sufficient to cover investment and they suggest that external financing is heavily used according to the results of their study, and net issuance of stocks is associated closely with the fiscal deficit. These results are inconsistent with the preferential theory and indicate serious problems.

Kaiser (2005) investigated the relationship between the amount and type of financing, and past and future profitability of companies listed on New York Exchange. The results showed that the changes in profitability are regularly associated with the amount and type of financing.

Hoon and Lee (2004) investigated the effect of different methods of equity for financing, such as initial and secondary offering and stock rights offering on operational performance. Overall, this study shows that operational performance is largely linked with the type of financing.

Shyam-Sunder and Myers (2001) concluded in their analysis of parallelism and preferential models of capital structure that preferential model is a privileged and first-

rate descriptive for financing conduct of corporations. Their results show that firms plan to finance their projected deficits through debt.

Pecking Order Theory of Finance was proposed by Myers (1984) for the first time as following:
- Companies prefer the internal financing resources (retained earnings).
- One targeted-dividend was selected regard to investment opportunities, and sudden changes in dividends are avoided.
- The establishment of the constant dividend policy consistent with unexpected changes in the profitability and investment opportunities, it means that sometimes the generated internal cash flows are more and sometimes less than the capital cost. If cash flows are greater than the capital cost, the company will pay back its debts. If cash flows are less than the capital cost, the company uses its bank account balance or sale its marketable securities (short-term).

If you require external financing, companies, first, issue the most important securities. On this basis, the companies finance firstly by debt, then if possible, by convertible bonds or equity (Brealey and Myers, 2000).

Mousavi and Daroughe Hazrati (2013) investigated the relationship between free cash flow and firm company of companies listed on Tehran Stock Exchange during 2003 to 2011. The results of this study showed that companies with high free cash flow have more right to firm company.

Shahbazi, Mansoureh (2012) investigated the impact of corporate governance on firm company. The results showed that two factors, the percentage of governmental and non-governmental ownership and auditor type, of ten considered factors (board size, proportion of nonexecutive managers, percentage of governmental and non-governmental ownership, Free Float Stock, ownership percentage of main stockholder, debt from banks, independent auditor's report, auditor type, disclosure of related party transactions, timely payment of dividends) have a significant relationship with firm value.

Pourheydari and Imani (2010) investigated the effect of different methods of equity for financing, such as initial and secondary offering and stock rights offering on firm company. Overall, this study showed that firm value is highly correlated with financing type.

RESEARCH HYPOTHESIS

The first hypothesis: firm value affects on the value of financing through the stock issue.

The second hypothesis: firm value affects on financing through retained earnings.

The third hypothesis: firm value affects on financing through bank debt.

METHODOLOGY

The research method is correlational in terms of nature and content, and it is in functional terms of purpose. Research is conducted in the deductive- inductive reasoning framework, and it is in the form of post-event information in terms of data. The correlation method is used to discover the correlations between variables. The correlation research is one of the descriptive researches. This study is an applied research. On the other hand, this study is post event (semi-emperical), which is performed based on the analysis of the past and historical information (financial statements). This study is based on literature review and analytical-causative. In the present study, we examined the correlation between variables, and if there is a correlation between them, we will estimate multiple regression models.

Research Model and the Operational Definition of Variables
Research model
- The first hypothesis
  $$\text{Stock Issue}_{it} = \beta_0 + \beta_1 \text{Firm Value}_{it} + \beta_2 \text{INST}_{it} + \beta_3 \text{ROA}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \varepsilon_{it}$$
- The second hypothesis
  $$\text{Retained Earnings}_{it} = \beta_0 + \beta_1 \text{Firm Value}_{it} + \beta_2 \text{INST}_{it} + \beta_3 \text{ROA}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \varepsilon_{it}$$
- The third hypothesis
  $$\text{Bank Debt}_{it} = \beta_0 + \beta_1 \text{Firm Value}_{it} + \beta_2 \text{INST}_{it} + \beta_3 \text{ROA}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{LEV}_{it} + \varepsilon_{it}$$

The operational definition of variables
Dependent variables
Stock Issue: represents the issued equity (capital increase) during the period divided by total assets of company calculated as follows:

$$\text{Stock Issue}_{it} = \frac{\text{The amount of issued equity (capital increase) during the period}}{\text{Book value of total assets}}$$

Retained Earnings: represents the increase in capital from retained earnings issue during the period divided by total assets calculated as follows:

$$\text{Retained Earnings}_{it} = \frac{\text{Increase capital through retained earnings issue during the period}}{\text{Book value of total assets}}$$

Bank Debt: represents the amount of bank debt during the period divided by total assets calculated as follows:

$$\text{Bank Debt}_{it} = \frac{\text{The amount of bank debt during the period}}{\text{Book value of total assets}}$$

Independent variable
Firm Value: Firm Value is equal to the natural logarithm of the market value of equity plus book value of corporate debt.

Control variables
INST: institutional stockholders ownership percentage that is equal to the percentage of stocks of companies that owned by banks, insurances, financial institutions, holding companies, organizations, institutions and governmental enterprises (Noravesh et al., 2005).

ROA: it is return on equity to capital ratio calculated as follows:

$$\text{ROA}_{it} = \frac{\text{Net profit}}{\text{Book value of total assets}}$$

SIZE: firm size which is calculated by the natural logarithm of the book value of total assets.

LEV: financial leverage is obtained by the ratio of book value of debt to book value of total assets. It is calculated as follows:

$$\text{LEV}_{it} = \frac{\text{book value of debt}}{\text{Book value of total assets}}$$

Statistical Population and Sample
Time span of the study is from the beginning of 2008 to the end of 2013; therefore, the statistical population includes all companies listed on Tehran Stock Exchange. Systematic removed sampling method was used by applying the following conditions:
1. The information required to calculate the operational variables should be available for them.
2. They are listed on the stock exchange at least from 1989 and they should be active to the end of the study.
3. The end of their fiscal year is March 29 and they have not changed their fiscal year during the study period.
4. They are not part of financial, investment institutions and banks.
5. They don't have trading halt more than three months during the study period.

The final sample size is 110 companies according to the screening method (according to the Table 1).

Data Collection Methods and Tools
The literature method is used to gather information about the literature and history of the research and also the formulas deriving the variables. The Information needed to test the hypothesis is the secondary information of the sample firms which is extracted from different sources, including Rahavard Novin software, prospectus and financial statements. The information related to the variables was inserted into the Excel software and then were analyzed using SPSS and E-Views software.

RESULTS

Descriptive Statistics
The descriptive statistics of the dependent, independent and control variables were measured using data from 110 companies during the test period (between 2008-2013), including mean, median, standard deviation, minimum and maximum which are presented in Table 2.

Determine the Appropriate Model to Estimate the Regression Model
According to available research literature as well as the nature of the research hypothesis, panel data is used in this study. Chow and Hausman tests have been used to test the hypotheses in order to determine the appropriate model (panel with constant or random effects).

Chow test
The results of test for regression model are shown in Table 3.

In the first three models, according to significance level, the Chow test results showed that H_0 (panel model) is not

Table 1: The number of companies after screening

description	Number
The number of companies listed on Tehran Stock Exchange by the end of 2013	480
The number of companies that have been got out of stock in the study time	(106)
The number of companies that have been got into in the stock at the time of study	(38)
The number of companies which their fiscal year doesn't end at 29/12 at the time of study	(81)
The number of companies that have changed their fiscal year at the time of study	(40)
The number of companies that involved in the investment and financial intermediation	(35)
The number of companies that have had trading halt more than 3 months at the time of study	(70)
Total number of surveyed companies	770

Table 2: Descriptive statistics of variables

Variables description		Median	Mean	Standard deviation	Minimum	Maximum
Financing from stock issue	Stock issue	0.3679	0.2897	0.7174	0.1941	0.8438
Financing from retained earnings	Retained earnings	0.4218	0.3681	0.1850	0.1559	0.6753
Financing from bank debt	Bank debt	0.3011	0.2766	1.6432	0.08543	0.5435
The value of company	Firm value	20.3231	19.1786	1.0342	17.8972	27.8321
Institutional ownership	INST	0.5048	0.5463	0.9943	0.3469	0.8864
Return on assets	ROA	0.2145	0.19786	1.4267	0.06342	0.48675
The size of company	Size	17.4531	18.9021	1.9098	13.6732	24.7861
Financial leverage	Lev	0.6321	0.6879	1.6785	0.2801	1.5210

Table 3: Chow test

Regression model	Statistic F	Probability	Test results
First	65/342	0/258	Rejection the Null hypothesis-panel model
Second	45/909	0/328	Rejection the Null hypothesis-panel model
Third	45/909	0/328	Rejection the Null hypothesis-panel model

Table 4: Hausman test

Regression model	Statistic χ^2	Probability	Result	
First	33/765	0/0046	Panel with constant effects	Reject the null hypothesis
Second	29/811	0/0059	Panel with constant effects	Reject the null hypothesis
Third	3/121	0/016	Panel with constant effects	Reject the null hypothesis

confirmed. In other words, there are individual or collective works and panel data shall be the used.

Hausman test

After determining that vertical intercept is not uniform for different years, the method of model estimation (constant and random effects) should be determined, thus the Hausman test is used for this purpose.

In Hausman test, the hypothesis based on the compatibility of random effect estimations is tested against the hypothesis based on the incompatibility of the random effect estimations.

The results of Hausman test for regression model are shown in Table 4. The results show that statistics of Hausman test is significant for the first to third models at a confidence level of 99%, which shows the confirmation of the hypothesis, therefore, according to Hausman test, the fitness of first three models would be appropriate using panel data with constant effects.

Regression Test of Classic Assumptions

As mentioned in Chapter 3, before fitness of the regression methods, the linear regression assumptions are needed to be tested.

Normal test of the dependent variable distribution

Kolmogorov-Smirnov test is used to investigate the normal distribution of the dependent variables. The results of K-S test in the SPSS software are shown in Table 5. According to the above Tables and statistic Z of Kolmogorov-Smirnov, since the significance level is more than 0.05 for all the dependent variables in all models, H_0 hypothesis

is confirmed, so we can say that the mentioned variable distribution is normal with 95% confidence variable in the above models.

Independence errors test

Durbin-Watson tests the serial correlation between the regression residuals (errors) based on the null hypothesis statistical test:

H_0: There is no autocorrelation between errors.

H_1: There is an autocorrelation between errors.

If the Durbin-Watson statistic is between 1.5 and 2.5, H_0 hypothesis test (no correlation between errors) is confirmed and otherwise H_1 is confirmed.

Durbin-Watson statistic with a coefficient of determination, adjusted determination coefficient and standard errors are shown in Table 6:

According to the Table, Durbin-Watson statistic value is between 1.5 and 2.5 for all regression models. So H_0 hypothesis is confirmed which shows there is no autocorrelation between errors and regression can be used.

The results of regression models fitness and subsequently the hypotheses are examined in next chapter.

TEST OF HYPOTHESES

The First Hypothesis Test

"The firm value affects on the company's financing through stock issue."

Table 5: Kolmogorov-Smirnov test

Variable name		Z of Kolmogorov-Smirnov	Significance level	Result
Financing from stock Issue	Stock Issue	1/453	0/298	Normal distribution
Financing from retained earnings	Retained earnings	0/876	0/423	Normal distribution
Financing from Bank bebt	Bank debt	1/097	0/325	Normal distribution

Table 6: Errors independence tests

Regression model	Determination coefficient	Adjusted determination coefficient	Durbin-Watson statistic
First	0/632	0/588	1/678
Second	0/498	0/465	2/012
Third	0/598	0/553	1/954

After the regression assumptions test and ensuring of them, the results of the first fitted regression model are presented in Table 7. The statistic F (10.543) also indicates that the regression model is significant. As specified in the lower part of Table 7, the coefficient of determination and adjusted coefficient of determination of the model are 63.2 and 85.8 percent, respectively. Thus, we can conclude that in the mentioned regression equation only about 58.8 percent of the financing changes are explained from equity by the independent and control variables.

In this Table, the positive (negative) numbers in coefficient column represents the value of the direct (reverse) impact of each variable on the financing from the equity of mentioned companies.

How to arbitration: If the value of software-calculated sig is less than assumed confidence level (equivalent to 5% in this study), the variable is significant and its related hypothesis is confirmed. Also according to the statistic t, if this statistic is more than the Student t test with the same level of confidence (5%), the related hypothesis is confirmed.

The result of first hypothesis test: according to the Table 5, the level of significance (sig) of firm value is equal to 0.032 which is lesser than the considered significance level (5%); and the absolute value of the t-statistic related to this variable (2.543) is more than t-statistics obtained from the statistical table with the same degrees of freedom. So, at the significance level of 95%, the coefficient obtained for the above variables in the regression model is significant. So, the first hypothesis is confirmed which indicates that the firm value affects on financing through the issued equity. On the other hand, due to the positive sign of variable coefficient of firm value (0.412), it can be said that firm value affects directly on financing through the issued equity. So that, for each unit increase of firm value, the financing from stock issue is increased 0.412 units.

The Second Hypothesis Test

"Firm value affects on the financing through retained earnings."

After the regression assumptions test and ensuring of them, the results of the first fitted regression model are presented in Table 8. The statistic F (11.909) also indicated that the regression model is significant. As specified in the lower part of Table 8, the coefficient of determination and the adjusted coefficient of determination of the model are 49.8 and 46.5 percent, respectively. Thus, we can conclude that, in the regression equation, only about 46.5 percent of financing changes from retained earnings are explained by the independent and control variables.

In this Table, the positive (negative) numbers of the coefficient column represents the direct (reverse) impact of each variable on the amount of financing from retained earnings of mentioned companies.

The result of second hypothesis test: according to Table 8, the significance level (sig) of firm value is equal to 0.289 which is more than the considered significant values of this study (5%); and the absolute value of the t-statistic of this variable (1.154) is less than t-statistic obtained from the statistical table with the same degrees of freedom. So, at the significant level of 95%, the coefficient obtained for the above variables in the regression model is not significant. So, the second hypothesis which indicates that the firm value affects on financing from retained earnings is rejected.

The Third Hypothesis Test

"Firm value affects on the amount of financing through bank debt."

After the regression assumptions test and ensuring of them, the results of the first fitted regression model are presented in Table 9. The statistic F (8.121) also shows the regression model significance. As specified in the lower part of Table 9, coefficient of determination and the adjusted coefficient of determination of the model are 59.8 and 55.3 percent, respectively. Thus, we can conclude that, in the regression equation, only about 55.3 percent of the financing changes from bank debt are explained by the independent and control variables.

In this Table, the positive (negative) numbers of coefficient column represents the direct (reverse) impact

Table:7: The results of the fitted regression equation

Stock issue$_{it}$=β$_0$+β$_1$Firm value$_{it}$+β$_2$INST$_{it}$+β$_3$ROA$_{it}$+β$_4$SIZE$_{it}$+β$_5$LEV$_{it}$+ε$_{it}$				
Variable name	Variable coefficient	Coefficient value	Statistic t	Significant level
Constant figure	β$_0$	1/522	2/873	0/004
Firm value	β$_1$	0/412	2/543	0/032
INST	β$_2$	− 1/156	−3/111	0/028
ROA	β$_3$	0/843	2/909	0/031
Size	β$_4$	0/743	0/921	0/016
Lev	β$_5$	0/911	2/129	0/041
The coefficient of determination	0/632	Statistic F		10/543
Adjusted coefficient of determination	0/588	Significant (*P*-value)		0/001
		Durbin-Watson statistic		1/678

Table 8: The results of the fitted regression equation

Retained earnings$_{it}$=β$_0$+ β$_1$Firm value$_{it}$ + β$_2$INST$_{it}$ +β$_3$ROA$_{it}$+β$_4$SIZE$_{it}$+β$_5$LEV$_{it}$+ε$_{it}$				
Variable name	Variable coefficient	Coefficient value	Statistic t	Significant level
Constant figure	β$_0$	1/121	3/273	0/0027
Firm Value	β$_1$	0/561	1/154	0/289
INST	β$_2$	1/421	2/381	0/018
ROA	β$_3$	1/527	2/619	0/009
Size	β$_4$	1/121	3/273	0/0027
Lev	β$_5$	−0/922	−3/711	0/001
The coefficient of determination	0/498	Statistic F		11/909
Adjusted coefficient of determination	0/465	Significant (*P*-value)		0/0087
		Durbin-Watson statistic		2/012

Table 9: The results of the fitted regression equation

Bank Debt$_{it}$=β$_0$+β$_1$ Firm value$_{it}$+β$_2$INST$_{it}$+β$_3$ROA$_{it}$+β$_4$SIZE$_{it}$+β$_5$LEV$_{it}$+ε$_{it}$				
Variable name	Variable coefficient	Coefficient value	Statistic t	Significant level
Constant figure	β$_0$	1/231	2/564	0/032
Firm Value	β$_1$	0/763	2/711	0/028
INST	β$_2$	0/923	2/534	0/031
ROA	β$_3$	1/451	6/1032	0/000
Size	β$_4$	3/712	2/871	0/004
Lev	β$_5$	0/268	2/342	0/0075
The coefficient of determination	0/598	Statistic F		8/121
Adjusted coefficient of determination	0/553	Significant (*P*-value)		0/000
		Durbin-Watson statistic		1/954

of each of the variables on the amount of financing from bank debt.

The results of the third hypothesis test: according to Table 9, the level of significance (sig) value is equal to 0.028, which is lesser than the considered significant level in this study (5%); and the absolute value of t-statistic of this variable (2.711) is more than t-statistics obtained from the statistical table with the same degrees of freedom. So, at significant level of 95%, the obtained coefficient for the above variables in the regression model is significant. So, the third hypothesis is confirmed that indicates the impact of firm value on the financing from bank debt. On the other hand, according to the positive sign of variable coefficient of firm value (0.763), it can be said that firm value affects on the financing from bank debt. So that, for each unit increase of firm value, the financing from bank debt is increased 0.763.

CONCLUSIONS

In this study, the effect of the firm value was investigated on financing policies including financing from stock issue, retained earnings and bank debt. The results of the statistical analysis of data using multiple regressions represent the direct impact of firm value on the financing from stock issue and bank debt. The impact of the firm value on the amount of financing from bank debt (0.763) is more rather financing from stock issue (0.412). So that, for each unit increase of firm value, the financing from bank

debt and from stock issue are increased 0.763 and 0.412 units, respectively. On the other hand, the results showed no significant impact of firm value on the financing from retained earnings.

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