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Reviewing the Relation Between Capital Cost and Financial Structure in Tehran's Share Stock

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ABSTRACT

Having information about capital cost has always a major role in company's decisions. Access to affordable rates in determining the optimal combination of financial structure, especially in the best result of operations to increase probability and stock price, has a special importance. This study aims to find out the relation between capital cost and financial structure. It means to find out how different financings in management of capital cost are. In previous studies, most of capital costs were investigated with some components, and also it did not give the possibility of using the best method of financing to users. But, in this study we use the components of total debt to total assets, the ratio of short-term debt to total assets, rate of long-term debt to total assets and ratio of common stock to total assets in relation to capital cost. The applied method of research was logically inductive, its method was correlational and linear Regreesion was used to test the hypothesis. Thus, 67 companies were chosen from 466 accepted companies in Tehran Stock exchange from 2009 to end of 2012, and their relation between capital cost and their effects on financial structure were investigated. The findings show that capital cost has meaningful and reverse relation with financial structure and it's components (ratio of total debt to total assets, ratio of short-term debt to total assets, ratio of long -term debt to total debt, ratio of common share to total assets). The results of this research can help managers to appropriately face to different manners of financing at the time of decrease of liquidity or financial distress. Using the results suggested in order to maintain financial flexibility.

Keyword: Capital cost, Financial structure, Short-term debt, Long-term debt, Shareholders' equity.

1. INTRODUCTION

An important issue in the field of financial management is decision making and judgment on adopting the most appropriate investment method to maximize shareholders' wealth. Two suitable approaches for

achieving this goal include increasing the incomes resulting from investment and minimizing investment cost. In this regard, information on investment cost always plays critical role in firm decisions. Achieving suitable cost rate is of great importance in determining optimal financial structure of firms and especially in obtaining the best outputs of operations in the form of profitability and increased stock price. Many investigations have been carried out to elucidate the role of adopting appropriate policies to minimize investment cost for gaining the best operational outputs. The results of such investigations have indicated that if the risk is fixed and investment return is more than investment cost, shareholders' wealth will be enhanced extra return will result in gaining additional revenue which will be devoted to ordinary shareholders if some types of special shareholders don't exist. Simply speaking, investment cost rate is the minimal return rate by obtaining of which, firm's value won't be altered. As the representatives of shareholders, managers should regulate firm financial structure in such a way that firm investment cost is minimized and consequently, firm value and shareholders' wealth is maximized. Managers use investment cost for: (1) decision making on capital budgeting, (2) establishment of optimal structure, (3) decision making on long term hiring, (4) bond replacement, (5) managing working capital, (6) similar cases (Myers, 2002).

2. PROBLEM STATEMENT

Since the ultimate goal of firm management is to maximize stock market value or shareholders' wealth in corporations, financial management duties have a special position. These duties are classified in three categories as: investment decisions, financing decisions, and dividend decisions. Financing decision that finally determines financial structure of the firm is of great importance because these decisions determine success or failure to achieve optimal financial structure. Optimal financial structure minimizes investment cost or financing cost and thus, increases firm stock value. Regarding importance of optimal financial structure, it should be found out how the companies achieve this Myers (2002) proposed capital structure puzzle for determining firms' financial structure because he believed that understanding behavior and decisions of firms' financing is very complicated and difficult as these decisions are influenced by many factors and variables. Since these factors are diverse and their interaction is complicated and sometimes unpredictable, financing decisions of financial structure of a firm resembles a puzzle. To avoid this bottleneck, understanding and investigating about the factors that determine and affect firms financial structure is necessary, so that by understanding dimensions and interactions of these factors, companies' ways to achieve optimal financial structure is to some extent clarified. Factors affecting and determining financial structure of companies are divided in to two groups: internal factors, and external ones. Internal factors refer to factors determined by nature and properties of company's activities. In the other words, they are caused by operational properties originating within the companies. External factors are those coming from out of the firms which are caused by the properties of environment surrounding the company. The environment in which our firms currently work is a highly competitive and growing medium, so that for survival, companies have to compete with many factors at national and international levels and extend their activities via new investment which requires financial resources. However, financial resources and applications should be well determined to make a firm profitable, and this is the duty of financial manager to determine financing resources and their use. If financing decision making is related to risk, decision makers of various industrial groups identify this factor and adopt suitable financial structure based on commercial risk special for their own industry (Myers, 2002).

3. IMPORTANCE OF THE ISSUE

One important issue all financial experts and managers agree on is the problem of financial structure. A firm with no debt is a fully investment firm, however there is no example of such firm in real world and all companies use leverage; the question is how much should a company use this debt? Are there certain rates for application of debt in financial structure? In most developed countries possessing efficient capital market, leverage ratios are prepared for various industries and these leverages are used by firms to determine their financial structure or by investors, banks and credit institutes in the time of investment or giving loan to a firm. It should be noted that companies must reduce investment risk in order to mitigate investment cost and enhance shareholders' wealth. Investment cost should be considered from two internal and external perspectives. From external viewpoint, investment cost is used in evaluation of bonds and firm performance from perspective of investors and those who give a loan to the company; while from internal perspective, investment cost plays critical role in decisions related to investment and investment priorities, optimal capital structure and performance appraisal of various organizational units. (Norifard, Aghamohammadi and Khajavi 2011)

4. LITERATURE REVIEW

(Namazi and Shirzadeh, 2005) investigated the relationship between capital structure and profitability of firms accepted in Tehran stock exchange. Their results showed that there is a positive relationship between capital structure and profitability of firms; however the relation was statistically weak (Koresetani and Majdi, 2007) investigated the relations among five properties including stability of profits, predictability, proportion, timeliness and conservativeness of profit and investment cost of ordinary stocks and showed that there is a significant inverse relationship between the first four properties and investment cost of ordinary stocks, while no significant relation was observed between conservativeness of profit and investment cost of ordinary stocks. (Resayian and Hosseini, 2008) studied the relation between accruals and investment cost and debt and revealed that firms' investment cost is not affected by accruals' quality and its components. (Nikbakht and Peikani, 2009) investigated the relationship between capital structure and accounting criterion of performance appraisal and reported a significant relationship between capital structure and accounting criterion of performance appraisal. (Khajavi and Hosseini,2010) investigated the relationship between political support of government and firms' capital structure and find out a positive and significant relationship. Moreover, they showed that capital structure of public firms is not efficient. Investigation carried out by (Solieimani and Ram, 2012) indicated an inverse relation between cash variables and growth opportunities with financial structure of short and medium firms; moreover, other variables including systematic risk, stock rice and profit fluctuations had no significant relation with financial structure of such firms. (Roden and Lewellen, 1995) investigated capital structure decisions in firms that had used financial loan and reported that due to tax advantages of loan and also due to fact that loan cost creates motivation and discipline among the managers, borrowing is a suitable method for financing. (Fama and French, 1998) studied the relations between tax, financing decisions and firm value and concluded that debt never results in tax advantages. Moreover, higher borrowing causes some problems between shareholders and credit providers which finally results in a negative relation between profitability and short term debt ratio. (Hadlock and James, 2002) investigated financing procedure in 500 American firms. The authors concluded that selection of financing method (debt or investment) is determined according to valuation of their stocks in the market. Furthermore, they found out that more profitable firms use debt as the main

resource for financing meaning that more profitable firms make more borrowing. (Lara and Mesquita, 2003) investigated the relationships between capital structure criteria including short term debt ratio, long term debt ratio and shareholders' salary with profitability. Using multivariate regression model, the authors found out a positive correlation between profitability and short term debt and shareholders' salary and a negative relation between profitability and long term debt. (Barth, Konchitchki and Landsman 2011) investigated influence of transparency of accounting information on investment cost and concluded that increased transparency of accounting information results in reduction of investment cost. In an article entitled effect of properties of profit prediction by managers on investment cost by selecting 102 firms of Tehran stock exchange in a period spanning five periods from 2006 to 2010. (Salehi, Abedini and Shahmoradzadeh, 2012) studied influence of properties of profit prediction by managers on investment cost including debt costs and shareholders' salary and weighted average of investment cost. Their results indicated that information content of profit prediction is significantly related to investment cost but time horizon and prediction reviewing is not significantly correlated and has no significant effect on investors' decisions.

5. GOALS

The main goal of the present study was to investigate the relationship between investment cost and financial structure meaning that how are various methods of financing implemented in managing investment cost. In most of previous studies the relation between investment cost and some components had been investigated which didn't reveal the best way of financing; however, we used components including total debt to total capital ratio, short term debt to total capital ratio, long term debt to total capital ratio and ordinary stocks to total capital ratio in relation to investment cost. Since the investigation topic was to evaluate the relationship between investment cost and financial structure and the required data were extracted from firms accepted in Tehran stock exchange, so the results of the present study can be used by capital market experts, firms' managers, investigators and academic people.

6. HYPOTHESES

Hypothesis 1: There is significant relationship between capital cost and financial structure.

Hypothesis 2: There is significant relationship between capital cost and total debt ratio.

Hypothesis 3: There is significant relationship between capital cost and short term debt ratio.

Hypothesis 4: There is significant relationship between capital cost and long term debt ratio.

Hypothesis 5: There is significant relationship between capital cost and ordinary stock ratio.

7. METHODOLOGY

Data and information of the present study were collected from various resources. Information for literature review was gathered from library and scientific data bases. Data were mainly collected using Avard Novin software and informing website of Tehran stock exchange and financial statements of firms. The logic used in the investigation was inductive reasoning which is based on test observation and extrapolation of the results. Regarding its logic, the methodology of the present study was inductive; its conducting procedure was of correlation type and can be classified within periodic investigations. Linear regression model was used for hypothesis test. Statistical population was firms accepted in Tehran stock exchange from 2009

to 2012. Based on investigation period sample should be selected in such a way that they were active in market during this period so that the hypotheses can be tested. Therefore, the following design was used for sample selection:

1. End of financial period of the firms should be (the last day of the year)
2. Firms should be among active firms of stock exchange or at least be active during investigation time
3. Firms should not increase their capital during investigation period
4. Firms should not be investment or financial mediator companies
5. Firms should have been accepted in Tehran stock exchange before the end of december 2008
6. Transaction gap of the firms should not be higher than six months

According to above mentioned conditions, 67 out of 466 firms met the requirements in time period spanning from beginning of 2009 to the end of 2012. So, statistical population includes 67 firms. Sample was selected by elimination method. Data were tested using SPSS software for data processing and achieving the results of hypothesis by statistical methods.

8. RESULTS

8.1. Dependent Variable (Capital Cost)

Debt cost and cost of stockholders' salary were considered as dependent variables. Debt cost was estimated by dividing interest cost in the year $t + 1$ by average debts of beneficiary during the years t and $t + 1$; shareholders' salary cost was calculated by dividing net benefit by market value of shareholders' salary.

$$\text{1-Cost of debt} = \frac{\text{Interest expense in year } 1 + t}{\text{Average interest} - \text{bearing liabilities } t, t + 1}$$

$$\text{2-Cost of equity} = \frac{\text{Net profit}}{\text{Market value of shareholders}}$$

8.2. Independent Variable: Financial Structure

Total debt ratio: The ratio of total debts to total capital of the firm

$$\text{3-TDEBT} = \frac{\text{Total liabilities}}{\text{Total Assets}}$$

Short term debt ratio: The ratio of short term debts to total capital of the firm

$$\text{4-SDEBT} = \frac{\text{Short-term debt}}{\text{Total Assets}}$$

Long term debt ratio: The ratio of long term debts to total capital of the firm

$$\text{5-LDEBT} = \frac{\text{Long-term debt}}{\text{Total Assets}}$$

Total stock ratio: Ratio of total ordinary stock to total capital of the firm

$$6\text{-TCS} = \frac{\text{Total Common stock}}{\text{Total Assets}}$$

9. HYPOTHESIS TEST MODEL

Based on data type and existing analytical methods, combinatory data method was used in this investigation. To evaluate the relation between capital and financial structure of firms, dependent and independent variables were investigated from two different aspects; meaning that these variables were investigated among various firms on one hand, and on the other hand, they were tested during 2009-2012.

Hypothesis 1: There is significant relationship between capital cost and financial structure.

$$\text{Financial Structure} = f(CE_{j,t}) + \varepsilon\iota\tau$$

$CE_{j,t}$ = capital cost of the firm *j* in the year *t*

Financial structure = Financial structure of the firm *j* in the year *t*

Hypothesis 2: there is significant relationship between capital cost and total debt ratio.

$$\text{TDEBT} = f(CE_{j,t}) + \varepsilon\iota\tau$$

$CE_{j,t}$ = capital cost of the firm j in the year t

TDEBT = the ratio of total debt to capital

Hypothesis 3: There is significant relationship between capital cost and short term debts

$$\text{SDEBT} = f(CE_{j,t}) + \varepsilon\iota\tau$$

$CE_{j,t}$ = capital cost of the firm *j* in the year *t*

TDEBT = the ratio of short term debt to capital

Hypothesis 4: There is significant relationship between capital cost and long term debts

$$\text{LDEBT} = f(CE_{j,t}) + \varepsilon\iota\tau$$

$CE_{j,t}$ = capital cost of the firm *j* in the year *t*

TDEBT = the ratio of long term debt to capital

Hypothesis 5: There is significant relationship between capital cost and ordinary stock ratio

$$\text{SDEBT} = f(CE_{j,t}) + \varepsilon\iota\tau$$

$CE_{j,t}$ = capital cost of the firm *j* in the year *t*

TDEBT = the ratio of ordinary stock ratio to capital

Table 1 presents descriptive statistics of the variables used in the investigated models. In this table, standard deviation shows sum of deviations of all observation. Standard deviation is a kind of dispersion measurements for a probability distribution or a random variable that represents value dispersion around the mean value.

Table 1
Descriptive statistics of the data

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Cost of Capital	201	.0932	.9679	.608705	.1627733
Total liabilities	201	.2932	.7730	.482921	.0841094
Short-term debt	201	.0901	.2426	.161171	.0299142
Long-term debt	201	.1274	.6254	.321751	.0857489
Common stock	201	.3572	.9624	.616991	.1379269
Financial structure	201	.9497	2.4481	1.582834	.2693945
Valid N (listwise)	201				

10. DATA NORMALITY TEST

Kolmogorov-Smirnov test was used to evaluate normality of the variables. SPSS software was used for presenting this section.

Table 2
Kolmogorov-Smirnov test

Variable	*The test statistic*	*Significance level*
Ratio of total debt	1.014	0.256
The ratio of short-term debt	1.121	0.162
The ratio of long-term debt	1.288	0.072
The ratio of common stock	1.099	0.178
Financial structure	0.958	0.218

Significance level of Kolmogorov-Smirnov test in Table 2 indicates that all the data were normal. Then parametric tests and regression were used to test the hypotheses.

Table 3
Fitness of regression model

Assumptions	*Variables*	*The coefficient of determination.R2*	*Significance level*	*Intercept Significanoe level*	*Slope line*	*Statistics Watson camera*
Hypothesis 1	Financial structure	0.474 0.452	7.544 0.007	1.086 1.001	–0.198 0.007	1.853
Hypothesis 2	Ratio of total debt	0.328 0.311	7.653 0.012	0.543 0.001	–0.099 0.012	1.742
Hypothesis 3	The ratio of short-term debt	0.320 0.312	0.867 0.023	0.169 0.001	–0.012 0.023	1.949
Hypothesis 4	The ratio of long-term debt	0.215 0.210	0.532 0.020	0.374 0.001	–0.087 0.020	1.733
Hypothesis 5	The ratio of total common stock	0.413 0.398	4.145 0.043	0.691 0.001	–0.121 0.043	2.107

11. DISCUSSION AND CONCLUSION

Hypothesis 1: There is significant relationship between capital cost and financial structure

As can be seen from Table 3, Durbin-Watson statistic value was 1.853 which is close to 2, so it can be concluded that there is no self-correlation among the data. Adjusted coefficient of determination of the model was 0.452 which explains about 45% of variations in dependent variable. F value was lower than 5%; therefore H0 hypothesis expressing lack of significant relationship between the two variables is rejected and regarding negative nature of significance level, H1 hypothesis claiming existence of significant and inverse relationship between capital cost and financial structure is accepted. (Namazi and Shirzadeh,2005) investigated the relation between capital structure and profitability of firms accepted in Tehran stock exchange. Their investigation revealed that in general, there is positive relation between capital structure and firm profitability; however the relation was statistically weak.

Hypothesis 2: There is significant relationship between capital cost and total debt ratio.

Durbin-Watson statistic value was 1.742 which is close to 2, so it can be concluded that there is no self-correlation among the data. Adjusted coefficient of determination of the model was 0.311 suggesting that about 31% of variations in dependent variable can be explained. F value was lower than 5%; therefore H0 hypothesis denoting lack of relation between the two variables is rejected and regarding negative nature of significance level, H1 hypothesis claiming existence of significant and inverse relationship between capital cost and total debt ratio is accepted. (Roden and lewellen,1995) investigated decisions of financial structure of firms that had been financed via borrowing and concluded that borrowing is an appropriate method for financing because it possesses tax advantages and loan makes the managers take motivation and discipline. This is in contrast to the results of hypothesis 2.

Hypothesis 3: There is significant relationship between capital cost and short term debt ratio.

Durbin-Watson statistic value was 1.949 which is close to 2, so it can be concluded that there is no self-correlation among the data. Adjusted coefficient of determination of the model was 0.312 suggesting that about 31% of variations in dependent variable can be explained. F value was lower than 5%; therefore H0 hypothesis denoting lack of relation between the two variables is rejected and regarding negative nature of significance level, H1 hypothesis claiming existence of significant and inverse relationship between capital cost and short term debt ratio is accepted.

(Fama and French,1998) studied the relations between tax, financing decisions and firm value and concluded that debt never results in tax advantages. Moreover, higher borrowing causes some problems between shareholders and credit providers which finally results in a negative relation between profitability and short term debt ratio.This conclusion is not in contrast to the results of hypothesis 3.

Hypothesis 4: There is significant relationship between capital cost and long term debt ratio.

Durbin-Watson statistic value was 1.733 which is close to 2, so it can be concluded that there is no self-correlation among the data. Adjusted coefficient of determination of the model was 0.210 suggesting that about 21% of variations in dependent variable can be explained. F value was lower than 5%; therefore H0 hypothesis denoting lack of relation between the two variables is rejected and regarding negative nature of significance level, H1 hypothesis claiming existence of significant and inverse relationship between capital cost and long term debt ratio is accepted.

(Hadlock and James, 2002) investigated financing pattern in 500 American firms. The authors concluded that selection of financing method (debt or investment) is determined according to valuation of their stocks in the market. Furthermore, they found out that more profitable firms use debt as the main resource for financing meaning that more profitable firms make more borrowing. This is in contrast to the results of our hypothesis.

Hypothesis 5: There is significant relationship between capital cost and total value of ordinary stock ratio.

Durbin-Watson statistic value was 2.107 which is close to 2, so it can be concluded that there is no self-correlation among the data. Adjusted coefficient of determination of the model was 0.398 suggesting that about 39% of variations in dependent variable can be explained. F value was lower than 5%; therefore H0 hypothesis denoting lack of relation between the two variables is rejected and regarding negative nature of significance level, H1 hypothesis claiming existence of significant and inverse relationship between capital cost and ordinary stock ratio is accepted.

(Lara and Mesquita,2003) investigated the relationships between capital structure criteria including short term debt ratio, long term debt ratio and shareholders' salary with profitability. Using multivariate regression model, the authors found out a positive correlation between profitability and short term debt and shareholders' salary and a negative relation between profitability and long term debt.The results reported by Lara and Mesquita reject our hypotheses 3 and 5 and confirm hypothesis 4.

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