

Research Article

THE INVESTIGATION OF RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND LIFE CYCLE OF THE FIRMS LISTED IN TEHRAN STOCK EXCHANGE

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ABSTRACT

The presented research analyzes the relationship between capital structure and life cycle of the firms listed in Tehran stock exchange. 81 firms with the use of systematic deletion as samples were chosen in a six year period from 2008 till 2013. The method of reasoning of data is from correlation and multiple regression methods. The result showed that the relationship between capital structure and net debt in the firms that are in the mature and decline stage are so much stronger in the relationship of capital structure and net debt compared to the firms that are in the mature stage. Also the relationship between capital structure and equity issue in firms that are in the growth stage, are so much stronger than the firms that are in the mature and decline stage. And finally the relationship between capital structure and retained earnings in the firms that are in the mature and decline stage are stronger than the relationship between capital structure and retained earnings in the firms that are in the growth stage.

Keywords: *Capital Structure, Life Cycle, Net Debt, Equity Issue, Retained Earning*

INTRODUCTION

The argument of the capital structure refers to the combination of financial sources of the firm such as bond, short term debt, long term debt, preferred and common stock. A firm should plan its capital structure in a way that to be able to increase the result and adapt its position in accordance with the conditional variation as easily as possible (Vakili, 2010).

The choices related to provide financial resources and choosing the proper combination of Capital Structure is in one side considering the risk taking of the firm, especially the risk related to the ability to repay and on the other hand, is one of the important issues that is effective in the choice of management (Jola and Islami, 2011). One of the most important parts of economic activities is providing financial resources. This amount can be achieved by the payment of the shareholders' equity or debts (Mousavi and Keshavarz, 2013). In the following research we are supposed to answer this question that in selecting the Capital Structure how much should we follow the pecking order theory?

Review of Literature

Utami and Inanga (2012) did a research with the title of Capital Structure and organizational life cycle among the productive factories in Indonesia that the firms were divided into two categories of growth and mature. The result of this research shows that the pecking order theory explains the financial models of the growth firms in a better way compared to the mature firms. Also the result showed that the mature firms tend to solve the problem providing their financial resources through the payments of the shareholders' equity, while the growth firms solve the problem by debt.

Allameh and Azizi (2013) did a research about Theoretical methods of financing, cost of capital and capital structure. In this research we analyze the methods of financing, cost of capital and the methods related to it, also the necessity of the relationship between cost of capital, Capital Structure and the total value of the firm is discussed, because it is possible to certify the capital of a firm with the help of Capital Structure influence the value of the firm and considering special samples and choosing the way of expanding the financiers, their ideologies and their reaction to the degree of the financial risk variation. But it is not possible to solve the distinction between the owners of debts and normal liquidate of a firm completely.

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Research Hypotheses

Main Hypotheses

There is a relationship between Capital Structure and the life cycle of the firms listed in Tehran stock exchange.

Secondary Hypotheses

1. The Capital Structure of firms that are in the growth stage; has a positive and significant relationship with net debt variable.
2. The Capital Structure of firms that are in the mature stage; has a positive and significant relationship with net debt variable.
3. The Capital Structure of firms that are in the decline stage; has a positive and significant relationship with net debt variable.
4. The Capital Structure of firms that are in the growth stage; has a positive and significant relationship with equity issue variable.
5. The Capital Structure of firms that are in the mature stage; has a positive and significant relationship with equity issue variable.
6. The Capital Structure of firms that are in the decline stage; has a positive and significant relationship with equity issue variable.
7. The Capital Structure of firms that are in the growth stage; has a positive and significant relationship with retained earning variable.
8. The Capital Structure of firms that are in the mature stage; has a positive and significant relationship with retained earning variable.
9. The Capital Structure of firms that are in the decline stage; has a positive and significant relationship with retained earning variable.

MATERIALS AND METHODS

This research is a correlation-descriptive study. It is done with the aim of utilizing the results in the market of capital. In this research the separation of these firms are divided to growth, mature and decline and the mentioned variables are based on the Park and Chen (2006) methodology.

Research Variables

In this research the variables such as: retained earnings, net debt and equity issue are as dependent variables. The variable of financial deficit is independent and the variable of the size of the firm are as controlling variables.

Independent Variable

Financial Deficit

This variable is calculated using the following relation:

$$\text{Financing Deficit} = \text{DIV} + \text{CAPEX} + \text{LTD payment} + \Delta \text{WC} - \text{CF} \text{ (Utami and Inanga, 2012)}$$

DIV = dividend payments

CAPEX = capital expenses

LTD payment = the long term paid debt

ΔWC = the net change in working capital

CF = the cash flow operation = cash flow after interest and tax

Dependent Variables

1. Net Debt Issue

This variable is calculated using the following relation:

$$\text{Net debt issue} = (\text{dTA}/\text{TA}) - (\text{Net equity issue}) - (\text{dRE}/\text{TA}) \text{ (Utami and Inanga, 2012)}$$

dTA= change in total asset

TA= total asset

dRE= change in retained earnings

2. Net Equity Issue

This is achieved through the following relation

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$NRE = dRE/TA$

where: dEq= change in book equity

TA = total asset

dRE = change in retained earnings.

3. New Retained Earning

This variable is calculated using the following relation:

New Retained Earning = (dRE/TA) (Utami and Inanga, 2012)

TA= total asset

dRE= change in retained earnings

Controlling Variable

Size of the firm (the Nepri logarithm of the whole fund)

Models used for Testing Hypotheses

According to the researches that Utami did in the 2012, and the analyses of these questions in Malaysia, the following models are suggested:

Number 1 : Net Debt Issue = $a + b1 * Deficit + b2 * Size + e$

Number 2 : Net Equity Issue = $a + b1 * Deficit + b2 * Size + e$

Number 3 : New Retained Earning = $a + b1 * Deficit + b2 * Size + e$

RESULTS AND DISCUSSION

In the first table the descriptive variables of firms are shown.

Table 1: The descriptive variations of firms

Model variables	D	ND	NEI	NRE	SIZE
Number of samples	486	486	486	486	486
Mean	0.193	0.079	0.147	0.213	13.129
Middle	0.179	0.070	0.125	0.191	12.989
Mode	0.000	0.000	0.000	0.000	9.800
Standard deviation	0.122	0.049	0.106	0.156	1.357
Coefficient of skewness	0.615	0.609	1.192	1.053	0.743
Coefficient of kurtosis	0.041	0.395	1.658	1.317	0.882
Range	0.540	0.210	0.580	0.850	8.050
Minimum range	0.000	0.000	0.000	0.000	9.800
Maximum range	0.540	0.210	0.580	0.850	17.850
Quarter	0.25	0.098	0.039	0.070	12.235
	0.5	0.179	0.070	0.125	12.989
	0.75	0.266	0.110	0.208	13.823

The results related to correlation coefficient are shown in table number 2.

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Table 2: Matrix of correlation coefficient of the research variables

Variable	D	ND	NEI	NRE	SIZE
D	1	0.86	** -0.148	-0.054	** -0.162
		0.058	0.001	0.231	0.000
	486	486	486	486	486
ND	0.086	1	-0.067	-0.024	0.012
	0.058		0.0137	0.592	0.785
	486	486	486	486	486
NEI	** -0.148	-0.067	1	** 0.151	0.049
	0.001	0.137		0.001	0.282
	486	486	486	486	486
NRE	-0.054	-0.024	** 0.151	1	0.031
	0.231	0.592	0.001		0.498
	486	486	486	486	486
SIZE	** -0.162	0.012	0.049	0.031	1
	0.000	0.785	0.282	0.498	
	486	486	486	486	486

The significant level correlation of coefficient between variables is shown in the second line. If the significant level is less than 0.05, the correlation coefficient is 95% significant from statistics point of view.

**Significant error 1 % (level confidence 99%)

* Significant error 5 % (level confidence 95%)

The result of the first model is shown in the third table. The dependent variable is net debts.

Table 3: The result of the first model of the research

Descriptive variables	Growth			Mature			Decline		
	Variable coefficient model	T	P-value	Variable coefficient model	T	P-value	Variable coefficient model	T	P-value
(Constant)	0.069	1.885	0.061	0.019	0.449	0.654	0.082	1.960	0.052
D	0.038	4.396	0.000	0.050	3.474	0.000	0.017	4.457	0.000
SIZE	0.000	3.158	0.000	0.004	3.210	0.000	-0.021	-4.217	0.000
Camera statistic	1.846			1.856			1.777		
F	4.866			4.456			4.501		
P-value	0.000			0.000			0.000		
R	0.432			0.440			0.787		
Mediated correlation coefficient	0.173			0.180			0.615		

First Mode: Growth Stage

T is 4.396 for the descriptive variable D and the level confidence variable equals 0.000 that the confidence level 99% is significant. Analyzing the first sub-hypotheses of Capital Structure of the firms that are growth, have a positive and significant relationship with debts; because the descriptive variable D is 0.038 and T is 4.396 that are 99% significant in the confidence level.

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Second Mode: Mature Stage

As it is shown in tables 3, F equals 4.456 and P-value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

Third Mode: Decline Stage

As it is shown in the tables 3, F equals 4.501 and P value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

The results of model 2 are explained in table 4. The dependent variable is equity issue.

Table 4: The results of model 2 of the research

Descriptive variables	Growth			Mature			Decline		
	Variable coefficient model	T	P-value	Variable coefficient model	T	P-value	Variable coefficient model	T	P-value
(Constant)	0.064	4.760	0.000	0.172	1.942	0.054	0.188	2.328	0.021
D	0.114	4.816	0.000	0.133	2.860	0.035	0.124	4.713	0.000
SIZE	0.009	4.408	0.000	0.000	-2.017	0.046	-0.002	-4.319	0.000
Camera statistic	1.874			1.761			1.772		
F	3.083			3.772			3.467		
P-value	0.000			0.000			0.000		
R	0.183			0.145			0.146		
Mediated correlation coefficient	0.023			0.009			0.007		

Table 5: The results of third model of the research

Descriptive Variables	Growth			Mature			Decline		
	Variable coefficient model	T	P-value	Variable coefficient model	T	P-value	Variable coefficient model	T	P-value
(Constant)	0.252	2.194	0.030	0.174	1.214	0.226	0.140	1.144	0.255
D	0.019	4.221	0.000	0.128	3.112	0.002	0.044	4.399	0.000
SIZE	-0.003	-4.348	0.000	0.005	3.525	0.000	0.006	3.645	0.000
Camera statistic	1.869			1.781			2.022		
F	3.075			4.876			4.348		
P-value	0.000			0.000			0.000		
R	0.029			0.102			0.072		
Mediated correlation coefficient	0.010			0.001			0.010		

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First Mode: Mature Stage

As it is shown in the tables 4, F equals 3.083 and P value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

Second Mode: Mature Stage

As it is shown in the tables 4, F equals 3.772 and P value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

Third Mode: Decline Stage

As it is shown in the tables 4, F equals 476 and P value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

The results of the third model are shown in table 5. The dependent variable is retained earning.

First Mode: Growth Stage

As it is shown in the tables 5, F equals 3.075 and P value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

Second Mode: Mature Stage

As it is shown in the tables 5, F equals 4.876 and P value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

Third Mode: Decline Stage

As it is shown in the tables 5, F equals 4.348 and P value equals 0.000 that show that in confidence level 99% lineal Regression model is significant from statics point of view.

The first, second and third sub-hypotheses mentions this important that the mature firms and the one that are in the decline stage, solve their financial problems through debts, while the firms that are mature, do not tend to solve this problem through this method.

According to the sub-hypotheses of 4 and 5, the relationship between Capital Structure and equity issue in the firms that are in the growth stage, is so much stronger than the relationship between Capital Structure and equity issue in the firms that are in the mature and decline stage. The examination of sub-hypotheses of 7 and 8, the relationship between Capital Structure and equity issue in the firms that are in the mature and decline stage is so much stronger than the relationship between Capital Structure and retained earning in the firms that are in the mature stage. All sub hypotheses of research were confirmed, so the main hypotheses of research, was confirmed.

So it is suggested that shareholders and financiers who intend to enter the capital structure market in the firms, should pay attention to the level of life cycle, because in each stages of growth, mature and decline for solving the financial problems they act differently and the financiers should fund in accordance with their own aim and utilizing each of these methods in each process.

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