

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

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Abstract

Knowing the stage where the company is located, This will allow the users of accounting information to better evaluate the financial information, Current and future needs (such as investment and financing) and also to provide management capabilities. For this purpose, which is company in any stage of the life cycle, the life cycle of separation Anthony and Ramesh (1992) and Blake (1998) variables using sales growth, capital expenditure, dividends and age ratios used 's. Study period from 2006 to 2011 is considered. In the present study a sample of 156 companies (936 years - the company) of the study population are listed companies in Tehran Stock Exchange has been selected. The separation of the corporate life cycle, 196 (year - company) Growth, 495 (year - company) mature and 245 (year - Company) is declining.

In this study, the pecking order theory is used for investigate the capital structure. This theory is based on asymmetric information between investors and firm managers. Based on the pecking order theory, the first priority for the use of internal funds (retained earnings), then the release of low-risk debt, and finally equity, the position of the last priority. The results of the hypothesis test showed that growth firms are following the pecking order theory in their capital structure model, While mature and declined firms in their capital structure model does not follow from the pecking order theory.

Keywords: capital structure, pecking order theory, life cycle, information asymmetry

1.INTRODUCTION

Undoubtedly, the survival of stability and continuity of operations in the current competitive business environment is complex and involves activities such as investment projects are profitable, As companies consider various factors including the risk-return rates are expected to invest. How the company financial resources needed to invest in this activity provides, The capital structure of the company (Bharath, Pasquariello,2010). Capital structure is a combination of debt and equity sources of the firm's assets to form. Different companies have different structures (Ahmadpoor and Yahya Far,2010). But financial firms based on their financing policies, the two "internal sources" and "external sources" are divided. The internal financing, corporate profits accumulated over the place to try to finance, Instead dividend among

shareholders, the company's operating profit activities primarily used for greater efficiency. And external financing, corporate debt and equity financing to the site (Titman, Grinblatt,1998).

Since the objective of financial management is to increase shareholder value, wealth, Purpose of determining the composition of the capital structure and financial resources in order to maximize the wealth of shareholders. Therefore one of the main concerns is the finance companies, How companies and investment funds operating deficit during their life cycle, To maximize efficiency and ensure the sustainability of the company, to set? This important topic is the motivation for this research.

We focus on the pecking order theory of financing proposed by Myers (1984) and Myers and Maljuf (1984). This theory is based on asymmetric information between investors and firm managers. Due to the valuation discount that less-informed investors apply to newly issued securities, firms resort to internal funds first, then debt and equity last to satisfy their financing needs for the last. In the context of a firm's life cycle, we expect that asymmetric information problems are more severe among young-growth firms compared to firms that have reached maturity and decline stage. Hence, the theory predicted that younger, fast-growth firms should be following the pecking order more closely. The main issue of this study is that growth firms *follow the pecking order theory more closely than mature and declined firms?*

According to the above study net debt issued, net equity issued and new earning retained as the dependent variable and deficit financing and Deficit financing is considered as an independent variable. And continues to be an overview of the concepts and characteristics of the various stages of its life cycle. Well as how to classify each of the aforementioned steps are described and Using multivariate regression equations to test hypotheses to be explored.

2.Literature and Theoretical Research

2.1 Life Cycle

All organisms, including plants, animals and humans, all life or the life cycle of the curve may follow. These beings are born, Grow, , To reach old age and eventually die. The biological system at any stage of their life cycle with specific behavior patterns in order to overcome the issues and problems related to the transition period to other periods. The life-cycle theory assumes that Companies and businesses, Like all living organisms, which are born, Grow and die, Curves are life or the life cycle (Adizes,1998).

Some researchers have studied the effect of accounting information on a company's life cycle (Black,1998-. Sugianis,1986- Jenkins,2004). The researchers describe the four stages of the life cycle are explained as follows:

the birth or emergence: The stage is usually the amount of assets (firm size) is at a low level, The cash flow from operating activities and profitability are low, And companies to finance and realize growth opportunities to high liquidity needs. Dividend ratio in these companies typically have a maximum of 10% , And internal rate of return is negligible compared with the rate financing.

Growth stage: At this stage, firms face increasing sales and profits, due to unpredictable due to uncertainty in demand products, face a higher business risk. Recent research shows that even though the demand for the products is on the rise, However, it is likely that the consumer products business is not yet generally accepted, But firms may be in the growth stage to achieve income (Blake, 1998). Increased earnings and cash flow during this stage is very important. Dividend ratio in the range of firms between 10% and 50% are usually fluctuate. In most cases, the Internal rate of return is the rate increased cost of financing.

the decline stage: In stages decline, growth opportunities are generally very low. Indicators of profitability, liquidity and fulfillment of obligations had a decreasing trend, the company has been locked in a competitive situation is very difficult; Meanwhile, the high cost of financing from external sources, so that in most cases the Internal rate of return is less than the rate financing.

- In this study, due to inactivity transaction (purchase and sale) of shares or stock in companies emerging, the lifecycle phases of a three-figure growth, maturity and decline defined, and Birth or emergence of stage is negligible.

2.2 Previous Research

Sugianis (1996) investigated the relationship between R & D expenditures and future earnings of companies at various stages of the life cycle of payment. His findings indicate that companies in the emergence, growth, maturity and decline, respectively, 94/58, 22/69, 37/61 and 17/32% of R & D expenditures could be explained by ordinary changes. The results of this study indicate that a significant relationship between the explanatory power of the various stages of research and development expenses (R & D) is a life cycle. Bixia Xu (2007) investigated the effects of an entity's life cycle in determining the expected rate of return is paid. The main findings of this study indicate a significant effect on the life cycle stages. The results show that the value relevance of risk factors, provided the entity's life cycle.

Bessler et al (2008) the pecking order theory tests in a sample of international firms from 42 countries studied. According to their results, the model Shyam - Sander and Myers (1999) and Frank goyal model (2003), are not strong enough to test the pecking order theory. also the pecking order of methods of financing, mostly because the agency costs caused adverse selection problem.

Nikolas (2007) in their study as how the features of the company's capital structure are affected. Greek market test panel data (panel data) is used and concluded that the negative relationship between capital structure, interest rates and expected growth rates of coverage and there is an immediate relative firm size and between capital structure, there is a positive relationship.

According to the pecking order theory, proposed by Myers (1984) and Myers and Majluf (1984), the firm has no optimal capital structure. The theory upholds a financing hierarchy of retained earnings, debt, and then equity, in order to minimize adverse selection costs of security issuance. This is the result of the existence of asymmetric information. It has to be highlighted that the original theory was geared towards mature low growth-option firms. Several other studies have lent support to the pecking order theory, finding: an inverse relation of leverage with profitability (Fama and French, 1988; Titman and Wessels, 1988; Allen, 1993; Bennett and Donnelly, 1993; Myers, 1993; Ozkan, 2001; Strebulaev, 2007); a financial deficit correlated with the issuance/retirement of debt (Helwege and Liang, 1996; Shyam-Sunder and Myers, 1999) different for smaller and younger firms (Frank and Goyal, 2003) and high growth (Fama and French, 2005; Lemmon and Zender, 2010).

Based on the results Vulanovic et al (2010) theory of preference, among the small companies that have been in high growth stage. Also, among companies with limited debt

capacity, strongly confirmed. Also, he came to the conclusion that the company, despite the free debt capacity, internal financing to debt issued preferred.

Based on the results Nasiri (2011) both static trade-off theory and pecking order, describe Malaysian companies are in good financial decisions. Thus, under certain conditions, the two theories are not mutually exclusive and may match. Results Gaud et al (2003) among Swiss companies, Adesola (2009) among companies in Nigeria, Dedes (2010) among Swedish companies, Serrasqueiro and Paul(2010) among companies in Portugal, also With results Nasiri (2011) is consistent.

Castro et al (2012) The life cycle of the capital structure of companies in Britain, Germany, France and Spain between the years 2011 to 1980 were investigated. the results showed that the capital structure explanatory factors evolve across the life cycle stages, changing or rebalancing the prevalence of the static models in play, trade-off, pecking order, and market timing.

3.Hypothesis

Generally when agents (individuals within the organization), the market in a more timely and better information (information advantage) about the company than the other groups (people outside the organization) in the so-called market have the market is features information asymmetric (Akerlof, 1970). So expect exist greater information asymmetry between growth firms and decline & mature firms .(Utami and Inanga, 2012.), Resulting in major and minor hypotheses are discussed as follows.

The main hypothesis: growth firms *follow the pecking order theory more closely than mature and declined firms.*

Sub-hypothesis 1: the financing deficit with net debt of the growth firms, a positive and significant linear relationship exists more than mature and decline firms.

Sub-hypothesis 2: the financing deficit with net equity of the growth firms, a significantly positive linear relationship exists less than mature companies.

Sub-hypothesis 3: the financing deficit with retained earning of the growth firms, a significant negative linear relationship exists more mature and decline firms.

4.Research Methodology

The present method of inductive and post-event (using past data) and statistical methods, cross-correlation, ie the existence of a relationship between variables from the regression. Data collected in this study is done in two steps: First, the sample using four variables: sales growth, dividends ratio, age, capital expenditures by corporations in the growth stage, maturity and decline distinguishes Then, using simple regression equations and statistical tests to assess the Arch test hypotheses.

4.1 - Classification of company life cycle stages

Anthony and Ramesh (1992) in their study of firms in order to separate the stages of the life cycle of four variables: sales growth, capital expenditure, dividend ratio and age used company. Separation based companies to process life cycle similar procedures used in this study is the investigation of Anthony and Ramesh. However, because of some real-life companies face difficulties due to acquisition, merger, Create an accounting entity ,New report and after acquisition. Therefore, company age variable is calculated according to SEC Means next Means next initial public offering (IPO) . Also In this study, the separation of the companies growth,

maturity and decline using the variables and the methodology of Park and Chen (2006) is as follows:

1. First, Value of each variable is calculated as sales growth, capital expenditure, dividend ratio and age for every year - the company.
2. Year - companies based on each variable using statistical quintile in each industry can be divided into five categories. With regard to exposure quintile (class) of interest, the figure (1) is assigned a score between 1 and 5.
3. Four criteria have collected scores for the company, the company got a combined score. then, Companies based on the combination of scores ordered, Will be divided into three categories: Firms that are identified in growing, mature, declining.

Figure 1: Score Assignment to Industry Quintile

Quintile Industry Quintile	Life-Cycle Descriptors			
	AGE	SG	CE	DP
80%-100%	1	5	5	3
60%-80%	2	4	4	3
40%-60%	3	3	3	3
20%-40%	4	2	2	4 (2)*
0%-20%	5	1	1	5 (1)*

Note: * If the sum of scores for AGE, SG, and CE is low (i.e., smaller than 7.5), and DP is at the lowest (second lowest) quintile, then one (two) is assigned as the DP score for decline stage firm-years.

How to calculate the above variables is as follows:

$SG\ it = [1 - (Sales\ it / Sales\ it-1)] * 100$

$DPR\ it = (DPS\ it / EPS\ it) * 100$

$CE\ it = CEXP / VALUE * 100$

$AGE = CYEAR - FYEAR$

Where:

SALES = net sales

CEXP = capital expenditure

VALUE = market value of equity

DPS = dividends per share

EPS = Earnings per share

In this study, due to inactivity trade (buy and sell) shares or stock of emerging company, a three-stage life cycle of growth, maturity and decline was defined and the stage is ignored.

4.2. Data and Sample

We collected the data from the book of data published by tehran Stock Exchange from 2006 to 2011. The book of data consists of financial statement of each firm. For our hypothesis, we used quantitative research strategy hence we applied quantitative data collection and quantitative data analysis.

In the present study, the exclusion of systematic sampling in two stages. First, the prototype of the population with the following selection criteria will be applied:

1. At the end of the financial year end is 29 Esfand.
2. Financial Information is available in the period studied.
3. Stock trading companies at Tehran Stock Exchange is done continuously.

4. Least three years from the onset of activity is spent in the public company, the company that has a history of less than three years, Considered as emerging companies in terms of corporate life cycle are not classified.

Next, classification prototype growth stages, maturity, decline Lifecycle model, the graphs (2) and, Of the original sample, samples that are not life-cycle model, are removed and the remainder of the study constituted the final sample. According to the criteria of the Year-Number 936 years - the company has been selected as samples. the number 196, 495 and 245 years - the company Respectively, were in the process of growth, maturity and decline.

4.3. Measuring Variables

The following sub-section is the measurement of the research variables. Our research variables of hypothesis are including net debt issue, net equity issue, and new retained earnings, as dependent variables, while financing deficit is as independent variable. The following is the description of how we measured the variables.

A. Financing Deficits

Bharath, Pasquariello, and Wu (2008) measured firms' financing deficits, dividends, investments, and cash flow separately. Frank and Goyal (2003) measured deficit as dividend plus investment and cash flow. Meanwhile, investment was measured as capital expenditure and working capital to capture a firm's demand for funds due to its real investments. Bulan and Yan (2009) measured deficit as the financing deficit scaled by total assets, financing deficit as net equity plus net debt issues, and capital expenditures as capital expenditures divided by total assets. Frank and Goyal (2007) measured the deficit as cash dividends plus investments plus change in working capital minus internal cash flow. Sogorb-Mira and López-Gracia (2003) measured the financing deficit as change in fixed asset plus change in working capital and change in long term debt minus cash flow. Leary and Roberts (2005) measured current investment as the sum of capital expenditures, increase in investments, acquisitions, and other use of funds, less sale of plant, property, and equipment and sale of investment. Cash flow defined as cash flow after interest and taxes net of dividends, respectively. We measured financing deficit as follows:

$$\text{Financing Deficit} = \text{DIV} + \text{CAPEX} + \text{LTD payment} + \Delta \text{WC} - \text{CF}$$

in which DIV is dividend payments, CAPEX is capital expenditures, ΔWC is the net change in working capital, and CF is operating cash flow (after interest and taxes), long-term debt payment. All variables are scaled by total assets, as in Frank and Goyal (2003). A positive value of financing deficit indicates a financing deficit and a negative one indicates financing surplus.

B. Net Debt Issue

Leary and Roberts (2005) measured debt issuances as a change in total debt (long term plus short term) divided by total assets. Frank and Goyal (2007) measured it as net debt issued as long-term debt issuance minus long-term debt redemption. Bulan and Yan (2009) measured net debt as net debt issued scaled by total assets, or long-term debt issuance minus long-term debt reduction divided by total assets. We measured net debt issue as follows:

$$\text{Net debt issue} = (\text{dTA}/\text{TA}) - (\text{Net equity issue}) - (\text{dRE}/\text{TA})$$

Where TA is total asset, dTA is change in total asset, and dRE is change in retained earnings.

C. Net Equity Issue and New Retained Earning

Leary and Roberts (2005) measured equity issuances as sale of common and preferred stock net of purchase of common and preferred stock. Frank and Goyal (2007) measured net equity issued

as the issue of stock minus the repurchase of stock. Bulan and Yan (2009) measured net equity as sale of common and preferred stock minus purchase of common and preferred stock divided by total assets. Meanwhile, we measured net equity issue and newly retained earning by applying the following models :

Net equity issue = (dEq/TA) - (dRE/TA) and

NRE = dRE/TA

Where TA is total asset, dEq is change in book equity, NRE is new retained earnings, and dRE is change in retained earnings.

4.4. Models associated with testing hypotheses

To test the hypotheses of this research, research models Shyam - Sander and Myers (1999) has been used. The following assumptions were used to test the model.

Net Debt Issue = $a + b_1 * \text{Deficit} + e$ (Model 1)

Net Equity Issue = $a + b_1 * \text{Deficit} + e$ (Model 2)

New Retained Earning = $a + b_1 * \text{Deficit} + e$ (Model 3)

The deficit is financed with debt and/or equity. If firms followed the pecking order, changes in debt should track changes in the deficit one-for-one.

5. The Results of Hypothesis Testing

5.1 The main hypothesis testing

To examine this hypothesis, sub-hypotheses must first be answered and the result will give an overview of the main hypothesis.

5.2.The first sub-hypothesis testing

Figure 2: The first sub-hypothesis test results

Net Debt Issue							
FIRMS		Coefficients	t-statistic	F	Adjust.R2	Arch	LM test
Growth	Constant	.082	10.47***	20.91**	.33	2.94	1.48
	financing deficit	6.18E-08	14.46***				
Mature	Constant	.076	12.29***	.01	.02	.129	.25
	financing deficit	6.61E-10	-.11				
Decline	Constant	.019	1.58	.45	.05	1.03	1.60
	financing deficit	6.91E-09	.67				

In the above table * Significant at 10% level, * Significant at the 5% level .And *** indicate positive significant at 1%.

As can be seen in figure 2, the relationship between growth companies to finance deficits and net debt is positive and significant. The F-statistic is equal to 20.91, the prob. Less than 0.05. While mature and decline firms ,the relation between financing deficits and net debts are not significant. Value Adjust.R2 in growth companies, 0.33, in the company of mature 0.02and the firm declined 0.05 obviousness that their research hypothesis is confirmed.

In this research the dissonance hypothesis variances from LM Arch Test 'we used. In this study, to examine the hypothesis dissonance variances 'we Used Arch test LM. When Arch test statistic is less than the table anisotropy variances may be approved, According to the above table, in all three groups, growth, mature and decline firms the model variance is the difference. Also, Have been used to study the autocorrelation test LM. And will be confirmed the statistics obtained if the amount is less than the table no autocorrelation in the residuals. With this in mind the three groups of companies will be confirmed no residual autocorrelation terms.

5.3.The second sub-hypothesis testing

Figure 3: The second sub-hypothesis test results

Net Equity Issue							
FIRMS		Coefficients	t-statistic	F	Adjust.R2	Arch	LM test
Growth	Constant	.032	2.27**	5.37**	.023	.01	.66
	financing deficit	1.8E-08	2.31**				
Mature	Constant	.029	6.80	.95	.002	1.93	1.61
	financing deficit	3.78E-09	.97				
Dicline	Constant	-.001	-.14	.22	.003	.004	.43
	financing deficit	4.94E-09	.47				

In the above table * Significant at 10% level, * Significant at the 5% level .And *** indicate positive significant at 1%.

As can be seen in figure 3, the relationship between growth companies to finance deficits and net equity issue is positive and significant. The F-statistic is equal to 5.37, the prob. Less than 0.05. While mature and decline firms ,the relation between financing deficits and net equity issue are not significant. Value Adjust.R2 in growth companies, 0.023, in the company of mature 0.002and the firm declined 0.003 obviousness that their research hypothesis is confirmed.

In this research the dissonance hypothesis variances from LM Arch Test 'we used. In this study, to examine the hypothesis dissonance variances 'we Used Arch test LM. When Arch test statistic is less than the table anisotropy variances may be approved, According to the above table, in all three groups, growth, mature and decline firms the model variance is the difference. Also, Have been used to study the autocorrelation test LM. And will be confirmed the statistics obtained if the amount is less than the table no autocorrelation in the residuals. With this in mind the three groups of companies will be confirmed no residual autocorrelation terms.

5.4.The third sub-hypothesis testing

Figure 4: The third sub-hypothesis test results

New Retained Earning							
FIRMS		Coefficients	t-statistic	F	Adjust.R2	Arch	LM test
Growth	Constant	.05	3.33***	11.56**	.055	.013	1.73
	financing deficit	-2.80E-08	-3.40***				
Mature	Constant	.018	3.75***				

	financing deficit	1.19E-09	2.61***	6.85**	.012	3.02	1.10
Decline	Constant	-.02	1.45	.05	.003	.0001	.159
	financing deficit	2.72E-09	.23				

In the above table * Significant at 10% level, * Significant at the 5% level .And *** indicate positive significant at 1%.

As can be seen in figure 3, the relationship between growth companies to finance deficits and new retained Earning is negative and significant. The F-statistic is equal to 11.56, the prob. Less than 0.05. in the mature firms the F-statistic is equal to 6.85, the prob. Less than 0.05. While decline firms ,the relation between financing deficits and New Retained Earning are not significant. Value Adjust.R2 in growth firms, 0.055, in the company of mature 0.012and the firm declined 0.003 obviousness that their research hypothesis is confirmed.

In this research the dissonance hypothesis variances from LM Arch Test 'we used. In this study, to examine the hypothesis dissonance variances 'we Used Arch test LM. When Arch test statistic is less than the table anisotropy variances may be approved, According to the above table, in all three groups, growth, mature and decline firms the model variance is the difference. Also, Have been used to study the autocorrelation test LM. And will be confirmed the statistics obtained if the amount is less than the table no autocorrelation in the residuals. With this in mind the three groups of companies will be confirmed no residual autocorrelation terms.

6. Conclusion

In the present study, to examine the relationship between capital structure and life cycle of the listed companies in Tehran Stock Exchange during the years 2006 to 2011 will be studied. In the present study a sample of 156 companies (936 years - the company) of the study population are listed companies in Tehran Stock Exchange has been selected. The separation of the corporate life cycle, 196 (year - company) Growth, 495 (year - company) mature and 245 (year - Company) is declining.

In this study, the pecking order theory is used for investigate the capital structure. This theory is based on asymmetric information between investors and firm managers. Based on the pecking order theory, the first priority for the use of internal funds (retained earnings), then the release of low-risk debt, and finally equity, the position of the last priority. The results of the hypothesis test showed that in the growth firms, the relationship between financing deficit and net debt is positive and significant. While in the decline and mature firms ,between financing deficits and debts is not significant, In growth firms, the relationship between financing deficit and net equity is positive and significant, While in the decline and mature firms, the relationship between financing deficit and net equity is not significant.

Also in growth firms, the relationship between financing deficit and retained earning are negative and significant, while the declined firms is not significant. So we can conclude that growth firms are following the pecking order theory in their capital structure model, While mature and declined firms in their capital structure model does not follow from the pecking order theory.

Recommendations from research findings

To all capital market participants, Financial analysts and investors are advised potential and the Tehran Stock Exchange in the analysis of investment projects in financial assets and securities firms to assess the degree risks, Timing of their investments with respect to different levels of

heterogeneity and the degree of risk-taking vital to the company's life cycle are important and worthy of great attention, Because of having the major factors leading to the selection of an optimum investment portfolio with minimum risk and maximum efficiency.

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