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A Study of Financing Decisions and Capital Structure in Real Investment

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Abstract

In real investment, there is a relationship between external financing and abnormal stock returns. This study predicts a negative correlation between external financing and stock returns. The dependent variable of the research is stock returns and the independent variables are net financing and equity ratio. Also, control variables of the research include assets growth, company's size and company's age. In this research, the hypotheses have been tested using the financial statements of 178 industrial companies accepted in Tehran Stock Exchange over the 2012-2016 period and also regression models with panel data. The results indicate a positive correlation between external financing, in both net and composition cases, with abnormal stock returns and also a negative correlation between external financing –again in both net and composition cases- with abnormal stock returns in the stock model. In addition, when we use net and composition financing simultaneously, there is not a significant relationship between net and composition financing and abnormal stock returns.

Keywords:

External Financing
Real Investment Theory
Pricing Model

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INTRODUCTION

Experiences derived from theoretical studies and the decision-making process of companies about how resources are allocated to different asset types indicate that various factors are involved in shaping asset components. Industry type, organizational strategies, economic necessities, competition, macroeconomic variables (such as interest rates, inflation) and financial indexes (such as financing practices, business risk, financial risk, credit risk, political risk, etc.) are the most important factors that help executives make investment decisions on how allocate resources to different types of assets. In this research, while the researchers are aware of the existence of various factors affecting the composition of the assets of the companies, are trying to examine the effect of financing practices -as a separate factor- on the structure and composition of the assets of the companies to provide the results as a prelude to comprehensive future researches. From the accounting point of view, the equilibrium of balance sheet has always been considered as the most basic theoretical principles, and equilibrium conditions of two sides of a balance sheet, or specific constraints or requirements have not been explained and clarified in accounting texts. So that, on the one hand, valuation and asset pricing models, and on the other hand, owner's equity theories (proprietary theories, personality theory, excess salaries and mood management theory, etc.) have been studied in theoretical foundations. This study attempts to investigate the impact of one of the variables affecting the combination of assets (ie, financing decisions) on the fluctuation and component changes of assets. Also, studying the correlation between the studied indices can clarify the weight of the "financing structure" indicator in how resources are distributed between assets (Chang et al., 2008).

Daniel & Titman, Pontiff&Woodgate, and Bradshaw, Richardson& Sloan showed that a high level of financing is associated with a lower level of future returns. If there is a negative relationship between external financing and stock returns, it means that when external financing increases, stock returns will decrease. The manager can use Debt/Equity (Hybrid financing). When the manager observes that the shares are

overpriced, he will attempt equity financing and when the share is underpriced, he will launch debt financing, thereby redeeming the shares (Titman, & Wessels,1988).

Over-investment theory is based on the contradiction between managers and shareholders. Managers tend to enlarge the company, even when they have to accept weak projects and reduce shareholder wealth. If there is no surplus cash flow, managers ability to achieve this goal will be limited, but this limitation can be eliminated by financing through debt and capital. Subsequently, the manager should pay in cash these debts along with their interest from the return on investment in poor projects. In this case, the manager will face a cash deficit. Consequently, there will be a negative relationship between financing through debt and stock returns. So, debt financing can be considered as a leverage to overcome the over-investment problem. This theory justifies a negative relationship between leverage and investment in companies that have less growth opportunities. (Kordestani & Najafi, 2010). According to the above-mentioned topic, the main question of this research is to answer whether there is a negative relationship between external financing in net and composition cases with stock returns.

THEORETICAL BACKGROUND AND LITERATURE

Companies need financial resources in order to invest; however, capital resources and using them should be well established so that the company can be profitable and do not face with liquidity problems; this is the duty of a manager to determine the financing resources and how to use them. Financing decisions and optimum combination of capitals structure as well as creating cash flows, optimal use of financial resources obtained and the repayment of debts are among the most important issues for making management decisions. (Talebnya et al., 2015).Managers need to decide how to provide their required funds and how to use the available financial resources. (EbrahiM et al., 2014).

Multiple methods and various approaches existing in the field of firms' financing can give entrepreneurs and their managers several choices and decisions which makes the process more

complicated. Lack of capital is a contributing factor in the failure of many businesses (Chowdhury & Maung, 2013).

Abdolmaleki (2017), in a study entitled "A Study of the Role of Financing Methods in Improving the Decision-Making Behavior of Investors in Tehran Stock Exchange" examines the Impact of financing methods, individual characteristics and investor's experience on his behavior in Tehran Stock Exchange. The financing methods used here include the equity financing, the cumulative shares financing, the loan taking method and the assets selling method. Individual characteristics of the investor are: age, gender, and education level. Also, the investor's experience is the number of years an investor has experience of working in stock exchange. At the end, research hypotheses and the impact of financing methods and individual characteristics and the investor's experience on his behavior in the stock exchange have been tested using a binomial test. The results show that financing methods have an impact on the investor's behavior in the stock exchange. Also, individual characteristics of the investor (except for the gender) as well as his experience affect the investor's behavior.

Khani and Afshari (2013) reviewed financing decisions, market timing and real investment in Tehran Stock Exchange using financial statements of 78 companies over 2006-2010. Hypotheses have been tested using the CAPM and Fama-French model (1993) and analysis of regression with panel data. The results represent the positive correlation between external financing, in both composition and net cases, with abnormal stock returns in the CAPM model and also a negative correlation between external financing in the above-mentioned cases with the abnormal stock returns in Fama-French model. Moreover, when we use net and composition financing simultaneously, there is a significant relationship between net and composition financing and abnormal stock returns.

Sadeghi et al. (2012) investigated the relationship between market structure and capital structure in Tehran Stock Exchange. This research analyzes the relationship between market structure (market power) and capital structure (leverage ratio) of listed companies in Tehran Stock

Exchange in a static and dynamic way. This study examines the significance of relationship between capital structure and market structure (as the main hypothesis of the research) using a balanced panel data of 101 companies listed in Tehran Stock Exchange over a period of about five years from 2006 to 2010. The results suggest that the relationship between market structure and capital structure is nonlinear (cubic), which could be due to the complex relationships in the market, representation issues, and bankruptcy costs.

Asadi (2011) conducted a study titled "The Influence of Over-Investment on Investors' Response to Cash Holdings". The relationship between over-investment and marginal value of cash was investigated in this research. The study measures marginal value of cash through market response to cash fluctuation. The study reviews Tehran Stock Exchange between 2003 and 2008, and a total of 564 observations were used in it. The statistical method used in this study is panel (data) analysis. The results show that cash fluctuation has a positive effect on the market capitalization and marginal value of cash in Tehran Stock Exchange is positive. In addition, the results show that there is an inverse relationship between over-investment and marginal value of cash. The other finding of this research is that marginal value of cash in companies with over-investment is significantly different from marginal cash value in companies without over-investment. In fact, marginal value in companies with over-investment is less than that of companies without over-investment.

Hou (2015) explores controlling interest, flexible investment, and stock valuation in Chinese stock market between 2003 and 2012. This paper examines the effect of controlling interest on investment decisions of large companies and stock valuation based on appraisal theory. Empirical results show that controlling interest can increase the flexibility of investment management and respective shareholder's equity value.

Ferrando et al. (2014) have conducted a research to investigate the relationship between financial flexibility, investment ability with intangible assets and net profit coverage percentage in the US stock exchange. The results indicate that there is a direct relationship between

intangible assets and financial flexibility. In addition, there is a direct relationship between net profit coverage percentage and investment increase. Moreover, there is an inverse relationship between net profit coverage percentage and investment decrease.

Özgür et al. (2012) in their research have investigated the performance of companies in attracting investment during a recession, considering companies flexibility. The research findings indicate that financial flexibility is a substantial factor in attracting capital and investing during a recession. There was also evidence that the leverage ratio is one of the key factors of financial flexibility. Furthermore, the results showed that companies with less financial flexibility were more vulnerable in times of unusually low cash flow.

Chua, (2012) has examined the relationship between cash holdings, capital structure and financial flexibility. The required data to carry this research out has been collected from databases of large companies during 1970-2008. The results showed that financial flexibility is one of the most important determinants of capital structure. In addition, financial flexibility was measured by two components: internal flexibility and external flexibility. In case of internal flexibility, evidence has shown that there is a significant relationship between cash holdings and debt capacity, and companies should reduce liquidity when debt capacity rises.

RESEARCH METHODOLOGY

This study is applied in terms of objective. In terms of research method (operational), this study is descriptive and correlational. It means that examining of the relationship and correlation between variables through multivariate regression; the methodology of this study is post-event (using past data).

The statistical population of this research includes all listed companies in Tehran Stock Exchange during 2012-2016. Companies having the following properties were selected as the statistical sample, and the rest were omitted:

1- Due to the necessity of determining the variables and testing the hypotheses, there should be complete information about each variable in the

company.

2- During the research period, the company should have not a trading interruption for more than six months.

3- Due to the fact that the nature of the financial statements items is influenced by the nature and the type of companies' activities, to have uniform and comparable data, the company should not be financial intermediary. Therefore, financial institutions, Institutional investors and banks are not included in the sample.

4- Due to the consistency of reporting date, elimination of the seasonal effects, and increased comparability of information, the company's financial statements should end on March 19th and it should not change the fiscal year during the research period.

In this research, finally 178 companies were selected as the sample according to the above conditions.

HYPOTHESES, MODEL AND RESEARCH VARIABLES

Hypothesis 1: Net financing has a negative impact on stock returns.

Hypothesis 2: Composition financing (capital vs debt) has a negative impact on stock returns.

Hypothesis 3: There is a relationship between financing in composition and net cases (simultaneously) and stock returns.

In this research, the following models are used to test the research hypotheses:

$$R_{i,t} = \beta_0 + \beta_1 FL_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon_{i,t}$$

$$R_{i,t} = \beta_0 + \beta_1 NF_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon_{i,t}$$

$$R_{i,t} = \beta_0 + \beta_1 ER_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon_{i,t}$$

Where:

$R_{i,t}$ is the stock returns of the i^{th} company at time t .

$FL_{i,t}$ is net financing at time t .

$NF_{i,t}$ is composition financing at time t .

$ER_{i,t}$ is net and composition financing at time t .

$Size_{i,t}$ is the size of the i th company at time t .

$GROWTH_{i,t}$ is assets growth of the i th company at time t .

$AGE_{i,t}$ is the age of i th company at time t .

Dependent variable: Stock returns – is defined as the ratio of the total income derived from the investment in a given period to the consumed capital during that period. In general, stock returns can be written as follows:

$$R_t = \frac{(P_{t+1} - P_t) + DP_{st}}{P_t}$$

Where:

- R_t: common stock returns at time t
- P_t: common stock price at time t
- P_{t+1}: common stock price at time t+1
- Dp_{st}: dividends per share at time t

Independent variable:

• **Composition financing**- A measure for investment

$$NF_t = \frac{(\text{Net Equity}_t + \text{Net Debt}_t)}{\text{Assets}_{t-1}}$$

- NF_t: Net cash derived from financing activities
- Net Debt_t: Net cash derived from borrowing (Hypothesis 2)
- Net Equity_t: Net cash derived from selling shares (Hypothesis 2)

• **Equity Ratio**- net and composition financing

$$ER_t = \frac{(\text{Net Equity}_t)}{(\text{Net Equity}_t + \text{Net Debt}_t)}$$

- ER_t: equity ratio
- Net Debt_t: Net cash derived from borrowing (Hypothesis 3)
- Net Equity_t: Net cash derived from selling shares (Hypothesis 3)

Control variables:

- **GROWTH**: Assets growth, which is equal to the subtraction of total assets in year t and that of year t-1
- **Size**: Size of the company, which is equal to the natural logarithm of the total assets of the company
- **AGE**: The age of the company, which is the subtraction of year t and the year of establishment of the company.

RESEARCH FINDINGS

In the present study, the models are estimated by using multivariate regression technique and regression models with panel data. After reviewing multivariate regression assumptions, the results of Chow test are presented in Table 1:

Table 1: Testing the first hypothesis

Hypothesis	Statistic value	Degree of freedom	Probabliry	Test result
First	0.4546	644.161	1.000	Model POOLD
Second	0.2991	644.161	1.000	Model POOLD
Third	0.3940	644.161	1.000	Model POOLD

Considering the obtained probability, the null hypothesis -which indicates the equality of intercepts in the hypothesis- is accepted. Therefore, the Poold model is chosen as the preferred model.

Table 2: Testing the first hypothesis

$$R_{i,t} = \beta_0 + \beta_1 FL_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon_{i,t}$$

Variable	Variable coefficient	Standard deviation	t-Statistic	Significance level
FL	-0.3042	0.1423	-0.3042	0.0329
SIZE	-0.0149	0.0172	-0.0149	0.3874
GROWTH	0.6721	0.0682	0.6721	0.0000
AGE	0.1041	0.0615	0.1041	0.0909
C	-0.0997	0.3633	-0.0997	0.7838
Adjusted coefficient of determination			0.11	F statistic 26.6659
Durbin-Watson Statistic			2.32	Probability of Statistic F0.000

As can be seen in Table 2, F value is fitted at 5% alpha level or 95% confidence level and the linearity assumption of its model is accepted. Regarding the coefficient of determination of the fitted model, we can claim that the variable could explain 11% of the changes in the dependent variable (stock returns). The results of Durbin-Watson test (2.32) indicates that there is no correlation

between errors.

The results of model fitting for research hypotheses indicate that significance level of the independent variable is less than 0.05 and its coefficient is negative. Therefore, net financing has a negative impact on stock returns. Thus, the first hypothesis is confirmed.

Table 3: Goodness of fit test for the first hypothesis

$$R_{i,t} = \beta_0 + \beta_1 FL_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon_{i,t}$$

Variable	Variable coefficient	Standard deviation	t-Statistic	Significance level
FL	-0.3076	0.1423	-2.1617	0.0309
GROWTH	0.6675	0.0680	9.8056	0.0000
AGE	0.1170	0.0597	1.9611	0.0502
C	-0.3539	0.2133	-1.6587	0.0976
Adjusted coefficient of determination			0.11	F statistic 35.3164
Durbin-Watson Statistic			2.32	Probability of Statistic F0.000

The results of goodness of fit test for the first hypothesis indicate that net financing has a negative

impact on stock returns.

Table 4: Testing the second hypothesis

$$R_{i,t} = \beta_0 + \beta_1 NF_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon_{i,t}$$

Variable	Variable coefficient	Standard deviation	t-Statistic	Significance level
NF	0.9111	0.1052	9.0342	0.0000
SIZE	-0.0089	0.0128	-0.6969	0.4861
GROWTH	0.6059	0.0726	8.3359	0.0000
AGE	0.0681	0.0478	1.4253	0.1546
C	-1.3587	0.2809	-4.8369	0.0000
ARR(1)	0.3370	0.0361	-9.3300	0.0000
Adjusted coefficient of determination			0.32	F statistic 63.0169
Durbin-Watson Statistic			2.37	Probability of Statistic F0.000

Hypothesis 2: Composition financing (capital vs debt) has a negative impact on stock returns.

It should be noted that there is a type 1 correlation in error term, which we fixed by adding ARR(1) variable to the model. As you can see in Table 4, F value is fitted at 5% alpha level or 95% confidence level and the linearity assumption of its model is accepted. Regarding the coefficient of determination of the fitted model, we can claim that the variable could explain 32% of the changes in the dependent variable (stock returns). The results of Durbin-Watson test (2.37) indicates that

there is no correlation between errors.

The results of model fitting for research hypotheses indicate that significance level of the independent variable (Composition financing) is less than 0.05 and its coefficient is positive. Therefore, composition financing has a positive impact on stock returns. Thus, the second hypothesis is rejected.

The results of goodness of fit test for the second hypothesis indicate that composition financing has a positive impact on stock returns.

Table 5: Goodness of fit test for the second hypothesis

$$R_{i,t} = \beta_0 + \beta_1 NF_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon_{i,t}$$

Variable	Variable coefficient	Standard deviation	t-Statistic	Significance level
NF	0.9594	0.1046	9.1704	0.0000
GROWTH	0.5985	0.0726	8.2363	0.0000
AGE	-1.2540	0.1246	-10.0579	0.0000
C	-0.3318	0.0360	-9.2172	0.0000
ARR(1)	0.9594	0.1046	9.1704	0.0000
Adjusted coefficient of determination			0.32	F statistic 103.7296
Durbin-Watson Statistic			2.37	Probability of Statistic F0.000

Hypothesis 3: There is a relationship between financing in composition and net cases (simultaneously) and stock returns.

It should be explained that there is a type 1 correlation in error term, which we fixed by adding ARR(1) variable to the model. As you can see in Table 4, F value is fitted at 5% alpha level or 95% confidence level and the linearity assumption of its model is accepted. Regarding the coefficient of determination of the fitted model, we can claim that the variable could explain 22% of the changes

in the dependent variable (stock returns). The results of Durbin-Watson test (2.35) indicates that there is no correlation between errors.

The results of model fitting for research hypotheses indicate that significance level of the independent variable (net and composition financing together) is greater than 0.05. Thus, there is not any significant relationship between net financing together with composition financing and stock returns. Thus, the third hypothesis is rejected.

Table 6: Testing the third hypothesis

$$R_{i,t} = \beta_0 + \beta_1 ER_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon$$

Variable	Variable coefficient	Standard deviation	t-Statistic	Significance level
ER	0.0493	0.1153	0.4275	0.6692
SIZE	-0.0044	0.0136	-0.3250	0.7455
GROWTH	0.8478	0.7004	12.1104	0.0000
AGE	0.1014	0.0516	1.9641	0.0499
C	0.4587	0.3155	-1.4538	0.1465
ARR(1)	-0.3240	0.0367	-8.8224	0.0000
Adjusted coefficient of determination			0.22	F statistic 37.3790
Durbin-Watson Statistic			2.35	Probability of Statistic F0.000

Table 7: Goodness of fit test for the third hypothesis

$$R_{i,t} = \beta_0 + \beta_1 ER_{i,t} + \beta_2 LnSize_{i,t} + \beta_3 GROWTH_{i,t} + \beta_4 LnAGE_{i,t} + \varepsilon$$

Variable	Variable coefficient	Standard deviation	t-Statistic	Significance level
ER	0.0535	0.1146	0.4670	0.6406
GROWTH	0.8469	0.0699	12.1095	0.0000
AGE	0.1064	0.0493	2.1568	0.0314
C	-0.5405	0.1904	-2.8375	0.0047
ARR(1)	0.3232	0.0366	-8.8185	0.0000
Adjusted coefficient of determination			0.22	F statistic 46.7625
Durbin-Watson Statistic			2.35	Probability of Statistic F0.000

The results of model fitting for research hypotheses indicate that there is not any significant relationship between net financing together with composition financing and stock returns.

CONCLUSIONS AND PROPOSAL FOR FUTURE RESEARCH

Using proper and diverse financing practices for implementation of profitable projects can play a vital role in the company's growth as well as maximizing shareholders' wealth, which is the most important objective of enterprises and companies, so that they could remain in the business cycle. This is one of the most important goals of financial managers. In fact, financial manager is in charge of financial planning and control to achieve the institution's objective. To do this, they are always considering and evaluating various financing methods. Hence, the presence of financial managers in companies and enterprises has increased over the past few decades. Financial managers should know what resources are available for financing and what impact each of them has on company's profitability and financial risk. Developments in financial management has led to companies' further development. Creating value and enhancing long term shareholder wealth are among the companies' most important goals, and this could only happen through desirable performance.

In this research, real investment theory was investigated regarding the relationship between external financing (through debt and capital) and abnormal stock returns. The results of the hypotheses testing for the research indicate that there is a significant negative relationship between net financing and stock returns. Moreover, it was shown that there is not a significant negative relationship between composition of external financing and stock returns. Also, there is not a significant relationship between financing in composition and net cases (simultaneously) and stock returns of companies. It is not possible to explain and predict the stock returns through financial statements data. In this case, it should be noted that stated theories in the literature section- which indicates the negative impact of different external financing methods on stock returns- is impractical in Iran's capital market.

Based on the results of the research, it is sug-

gested that:

Regarding that external financing methods (including equity financing and borrowing) could not generate enough returns for shareholders, companies should consider internal financing as well as other changes in capital structure (stock dividend and raising capital via receivables) in addition to external financing.

Considering the change in effective factors in growth opportunities and returns, such as economic, political and social situations, the subject of this research could be studied in future and future results could be compared with it.

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