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THE EFFECT OF FIRM SIZE AND INFLATION RATE ON CAPITAL COST AND FINANCIAL HEALTH OF COMPANIES ACCEPTED IN TEHRAN STOCK EXCHANGE AND BUMBAY STOCK EXCHANGE

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Resumen: El presente estudio tiene como objetivo investigar el efecto del tamaño de la empresa y la tasa de inflación sobre el costo de capital y la salud financiera de las empresas aceptadas en la Bolsa de Teherán y en la Bolsa de Valores de Bumbay. Para ello, se ha estudiado una muestra de 125 empresas que cotizan en la Bolsa de Teherán durante los años fiscales 2011 a 201 y una muestra de 500 empresas aceptadas en la Bolsa de Valores de Bumbay durante los años fiscales 2011-2015. Con el fin de medir la salud financiera, se utilizan dos parámetros de retorno sobre los activos y la rentabilidad del capital. Los resultados de las pruebas mostraron que el tamaño de la empresa tiene un efecto negativo significativo sobre el valor de las empresas cotizadas en la Bolsa de Teherán, mientras que en la Bolsa de Valores de Bumbay el tamaño de la empresa tiene un efecto positivo significativo en el costo de capital. En la Bolsa de Valores de Teherán y en la Bolsa de Valores de Bumbay, el tamaño de la empresa tiene un efecto negativo significativo en la salud financiera (rendimiento de los activos y rendimiento del capital). Mientras tanto, en ambas bolsas, la tasa de inflación tiene un efecto negativo y significativo sobre la salud financiera (rentabilidad de los activos y rentabilidad del capital). Cabe señalar, que en ninguno de estos intercambios, la tasa de inflación tiene un efecto significativo sobre los costos de capital.

Palabras clave: Tamaño de la empresa, tasa de inflación, costo de capital, salud financiera, rendimiento de los activos, retorno del capital.

Abstract: The present study aims to investigate the effect of firm size and inflation rate on capital cost and financial health of companies accepted in Tehran Stock Exchange and Bumbay Stock Exchange. For this purpose, a sample of consisted of 125 companies listed in Tehran Stock Exchange during fiscal years of 2011 to 201 and a sample consisted of 500 companies accepted in Bumbay Stock Exchange during fiscal years of 2011 to 2015 have been studied. In order to measure financial health, two parameters of return on assets and return on capital are used.

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The results of hypotheses testing using panel data showed that firm size has a significant negative effect on the value of companies listed in the Tehran Stock Exchange, while in the Bumbay Stock Exchange, the firm size has a significant positive effect on capital cost. In the Tehran Stock Exchange and the Bumbay Stock Exchange, the firm size has a significant negative effect on financial health (return on assets and returns on capital). Meanwhile, in both stock exchanges, the inflation rate has a negative and significant effect on financial health (return on assets and returns on capital). It should be noted that in none of these exchanges, the inflation rate have a significant effect on capital costs.

Keywords: Firm size, inflation rate, capital cost, financial health, return on asset, return on capital.

1. INTRODUCTION

The amount of enterprise investment can be due to several factors. One of these factors is the company's cash flow and, in fact, the amount of funding available to finance new projects. How to finance new investment in the company is influenced by management decisions, but overall, it seems that the higher the cash flows of the company are, the higher the amount of investments. Therefore, it can be concluded that the company's access to financial resources is an important factor in the amount of investment. When relatively large fluctuations are created in cash flow, directors of profit-oriented units will have to adjust their investments (Almeida et. al, 2007). The importance of cash flows becomes even greater when firms face financing and resource availability constraints and are bound to rely on domestic financial resources. When cash flow fluctuates negatively, the company loses some of its finances and changes in managerial investment behavior occur. Considering the importance of having sufficient liquidity in different economic conditions and the need to enhance the financial flexibility of companies, it is necessary for administrators to identify their authority and jurisdiction in the field of cash management. Investors are always keen to know when and how firms distribute their cash flows. Therefore, many empirical studies have shown that the level of liquidity of companies is managed purposefully to provide accurate information to users and in particular investors in order to ensure the corporates' structure of capital and financial health (Ahadi et. al, 2013). Risky financial health (bankruptcy) of a company is always an important issue as an unwanted phenomenon. Financial health, as profitability and sustainability of the activity of the

economic unit, is important for all shareholders and stakeholders. Basically, all stakeholders in the economic units are interested in having appropriate tools that can assess and predict the profitability and sustainability of activities of these units (Taghavi and Pourali, 2010).

1.1. Statement of the problem

The corporate capital structure is generally affected by the amount of capital required and the composition of the financing sources. Loans and stocks are two main components that make up the capital structure. Due to financing sources, companies have different returns and risks in the capital markets. Therefore, the decision on the capital structure will have an effective role in the efficiency and credibility of the companies in capital-provision institutions. Capital structure is considered as the most important parameter affecting the valuation and orientation of economic firms in capital markets. The current changing environment makes rating of companies in terms of creditability to be partly dependent on their capital structure and their strategic planning is required to select effective sources for achieving the goal of "maximizing shareholder wealth" (Drobotz, 2003). Various variables and factors can influence the profitability and efficiency of an economic enterprise by influencing the choice of optimal capital structure. Therefore, the study of the rate of effectiveness of the structure of companies' financial resources by different parameters such as characteristics of the company, as well as the importance of companies in terms of scope, profitability, growth facilities, size and type of activity that determine their diversified financial need, specify the position of companies in financing markets and make financial managers aware of the internal and external opportunities and threats on the

path to these activities (Eriotis, (2007)). According to studies by Agustini (2016), Nikolaos et al. (2007), Rajan and Zingales (1995) and Warner (1997), there is a positive and significant relationship between firm size and capital structure. In their view, firm size is closely related to the risk and cost of bankruptcy. In other words, larger corporations are more diverse in terms of financial resources and, as a result, are less risky and have less problems with the issuance of new securities, attracting public funds and borrowing funds from banks (Agustini, 2016) (Nikolaos et al, 2007) (Rajan, 1995) (Warner, 1977). The growth of the general level of prices is referred to as inflation, which is one of the most harmful economic phenomena and imposes high social and economic costs on societies at high rates (Hubbard,2001). Inflation uncertainty is a space in which the decision of economic activists, including households, firms or the public sector in various fields is associated with uncertainty about future inflation. Uncertainty about the future inflation rate causes price uncertainty and volatility, and continually makes changes in economic decisions through this channel. In an atmosphere of uncertainty, economic activists make decisions that are contrary to their expectations. With increased inflation uncertainty, future cost estimates and future earnings of activities become unclear, and this could have adverse effects on resource allocation and the efficiency of economic activities. With increasing inflation, the efficiency of the price mechanism will be distorted in the optimal allocation of resources and ultimately will have a negative impact on production and will alter all intra-organizational resource-allocation decisions by influencing the interest rates (Barth, 2008). One of the most important issues that economists have been focusing on in recent years is identifying the relationship between different factors with capital structure. Inflation of the general level of prices is one of the most harmful economic phenomena that, at high and acute rates, imposes large economic and social costs (Sunders, 1999). Inflation increases the business risk of firms and causes significant fluctuations in corporate earnings, which is itself due to volatility in the volume and price of sales of firms' goods and services. Assuming that other factors are stable, the high operating leverage level has increased the business risk, so inflation will fluctuate the operating income of the economic units and increase

the likelihood of bankruptcy, and consequently the managers of the company become confused in making their decisions about the capital structure of their own economic unit. It is crucial for managers to be sure about the amount and stability of the company's cash flow and to form an appropriate capital structure that combines equity and liability [.

2. THEORETICAL FOUNDATION

2.1. Firm size and capital structure

Many studies have investigated the effect of firm size on capital structure. The results of the study of Graham et al. (1998) and Hovakimian et al. (2001) show that larger firms are less risky than smaller ones. Also, larger corporates' debt costs are less than smaller ones. As a result, this causes their leverage to be high. Faulkender and Peterson (2001) concluded that the leverage ratio of larger firms is lower. Coeurderoy (2002) concluded that there is a correlation between the firm size and capital structure in European countries. Ang (2000) examined the financing of large and small companies. The result of his review showed that financing in small firms is more important than large companies. A further study by Balla and Mateus (2002) in Hungary show that there is a direct and significant relationship between the firm size and the capital structure. Meanwhile, Agustini (2016) also explored the impact of firm size and inflation rate on capital structure. Their research results showed that firm size has a negative and significant effect on the structure of capital.

2.2. Inflation rate and capital structure

The variable of inflation is one of the oldest terms in the field of economics and everyday issues of life that is well known to all social groups. Inflation, like many economic concepts, has been defined by economists in many ways. Inflation is an increasing trend in the general level of prices over a relatively long period. Inflation is an increase in the general level of prices that is out of control and unwanted. Inflation is a situation in which monetary incomes increase faster than the flow of goods and services that these revenues are spent on (i.e. faster than real national income) (Faraji, 2003). The definition of inflation that is more accepted by economists is the continuous increase in the general level of prices for

goods and services, which ultimately results in a reduction in purchasing power and economic turmoil (Azimi, 2006). Drobtez et al. (2007) examined the impact of economic factors and corporate characteristics on capital structure, and concluded that there is a negative and significant relationship between capital structure of companies with liquidity and inflation. Inflation has several causes, most of which include inflation as a monetary phenomenon, inflation resulted from demand pressure, and inflation resulted from cost of inflation rate fluctuations that may affect managers' decision makings about financing. Given that rising inflation in the long run will improve cash inflows into the company, the reserves and unprofitable corporate profits will also increase. Since one of the sources of corporate financing is the use of company's accumulated profits, by financing through accumulated profits, the company's leverage will decrease, indicating a negative relationship between the rate of inflation and the structure of capital. Agustini (2016), Bokpin (2009) and Song Shin and Adrian (2007) also concluded that inflation had a significant negative impact on capital structure [17] [44] [18].

2.3. Firm size and financial health

One of the main motivations for investors to enter the capital market is to generate good returns and ultimately increase wealth. The company's performance is a major factor in changing the value of the stock market, resulting in a change in shareholders' wealth. Small companies are usually sensitive to changing economic conditions, so they are more volatile at the time of changing business cycles, they have a higher risk and hence, there is a negative relationship between firm size and returns. On the other hand, companies with higher returns will perform better than those with lower returns and have better financial health, so it can be concluded that there is a negative relationship between firm size and firm performance and financial health (Foroughi, 2014). Bokhari et al. (2005) showed that in the United Kingdom, larger firms are more stable in financial health than smaller firms, and the financial health of smaller firms is more subject to market conditions and fluctuations (Bokhari, 2005). Cinca et al. (2005) showed that there is a meaningful positive correlation between the size of European companies

and financial health . Acheampong et al. (2014) found a positive and significant relationship between firm size and financial health and a negative and significant relationship between financial leverage and financial health of companies.

2.4. Inflation rate and financial health

The principle of inflation is an undesirable economic phenomenon that imposes many costs on society. Inflation at high levels, in addition to disrupting the price system, reduces savings, loses investment motives and escape of capital from real sectors toward speculative activities, and ultimately slows economic growth and puts financial health at risk. By examining the effects of inflation, it is concluded that those listed companies that have assets whose price increase is greatly under the effect of inflation, the effect of inflation on their stock price increase is more. As a result, these stocks will be more acceptable to the people. Therefore, shareholders whose nominal returns are higher than the inflation rate are beneficiaries and shareholders whose nominal stock returns are lower than the inflation rate will suffer from the phenomenon of inflation (Pashaeifam, 2009). Buyuksalvarci (2010) and Robert (2008) concluded that inflation does not have a significant effect on financial health. Leon (2008) and Brahmasrene et al. (2007) also concluded that there is a negative and significant relationship between inflation and financial health.

2.5. Research background

Agustini (2016) explored the impact of firm size and inflation rate on capital cost, with an emphasis on the role of international financial reporting standards in 880 years-company among 31 countries. His research results showed that the financial statements of corporations operating in the New York Stock Exchange were the most consistent with international financial reporting standards. At the same time, there was no evidence of direct impact of international financial reporting standards on lowering the cost of capital. Also, the firm size and the inflation rate had a significant negative effect on the cost of capital. Ogawa (2015) explored the "impact of corporate investment and liquidity on the financial health of Asian banks." The results of his research showed that the investment sensitivity to cash flow and cash

holdings had a significant effect on the financial health of banks. Also, when the financial health of some banks is at risk, the bank affiliated companies will increase their domestic financial resources and by storing the inflows from external financing, they will be thinking of investing in future profitable projects. Fischer (2013) conducted a study entitled as "investment choice and inflation uncertainty" and concluded that during periods that inflation uncertainty is increased, investments declined sharply and capital goes toward circulating assets. Shimizu (2012) explored the role of small banks in Japan's credit market. The results of his research showed that small banks will reduce the financial distress of small companies and increase their growth. Fenjanchi (2012) conducted a research entitled as "the relationship between inflation uncertainty and return" and concluded that inflation changes have a positive effect on stock returns during the period under study. Zhao and Wijewardana (2012) explored the "development of theoretical foundations for financial leverage, corporate growth and bankruptcy in companies accepted in Sri Lankan Stock Exchange." The research data were collected from annual reports issued by companies and annual reports from the Central Bank of Sri Lanka during the years 2000-2009. The research was conducted on 62 of the 235 commercial companies accepted in the Sri Lankan Stock Exchange. The results of the analysis of the multivariate regression model showed that there is a positive and significant relationship between financial leverage and growth of the company; there is also a positive and significant relationship between financial leverage and bankruptcy of the company (Zhao, 2012). Salehi and Yousefi (2016) investigated "the relationship between capital structure and return on assets, with an emphasis on inflation created by government decisions." The results of their research showed that the rate of return on assets has a negative and significant relationship with capital structure. But the structure of capital does not have a significant relationship with annual inflation. Karami and Tajik (2015) investigated the "compilation of inflationary accounting reporting model in Iran". In their research, by interviewing and based on theme analysis of interviews with experts, a model has been proposed for reporting the effects of inflation in Iran. The acceptability of the qualitative model was measured using a questionnaire. The questionnaire was

acceptable in terms of both reliability and credibility. The results show that all the main components of the qualitative model have been approved. In this model, adjustment with the general index of inflation was considered as a suitable basis for evaluation, and adjustment of capital with the indicated index was considered appropriate for the maintenance of capital. Sepasi et al. (2015) investigated "inflation, operating cycle and cash holdings". Their research results show that by increasing inflation, the amount of cash held by business units decreases, and when inflation reaches a certain level, companies' cash holdings increase with increasing inflation. Yousefvand and Jahanshad (2015) explored the role of leverage on analyzing stock portfolios with regard to corporate financial health. Their results showed that the expected returns of portfolios sorted based on financial leverage had a significant difference with the actual returns of these portfolios. Leverage changes also have a negative effect on the returns of portfolios, and the severity of the negative effect of leverage changes at higher levels of leverage is greater than the low levels of leverage variations. The severity of the negative effects of leverage changes at higher levels of leverage and lower health is higher than low levels of leverage and higher financial health. Sadeghi et al. (2014) investigated the impact of macroeconomic factors and governance on financial distress in manufacturing companies accepted in Tehran stock exchange. The results of their research showed that the high level of work experience, leverage ratio and ownership concentration may increase the likelihood of financial distress, and the firm size, the cost of agency and high current ratio will reduce the likelihood of financial distress. Of macroeconomic factors, per capita income and high economic growth in the business environment reduce the likelihood of financial distress and inflation also increases the likelihood of companies' distress. Second, the role of macroeconomic factors in the financial health and distress of companies is far more than the role of the factors of governance system. Banimahd and Ghanbari (2011) investigated the relationship between intellectual capital, firm size, profitability and capital structure in companies accepted in Tehran Stock Exchange. The results of their research showed that the intellectual capital and firm size have a direct

relationship and profitability has a reverse relationship with the capital structure.

2.6. Hypotheses

First main hypothesis: Firm size has a significant effect on the cost of capital.

Second main hypothesis: Firm size has a significant effect on financial health.

- Sub-hypothesis 2.1: Firm size has a significant effect on the return on assets.
- Sub-hypothesis 2.2: Firm size has a significant effect on the return on capital.

Third main hypothesis: Inflation rate has a significant effect on the cost of capital.

Fourth main hypothesis: Inflation rate has a significant effect on financial health.

- Sub-hypothesis 4.1: Inflation rate has a significant effect on the return on assets.
- Sub-hypothesis 4.2: Inflation rate has a significant effect on the return on capital.

3. RESEARCH METHODOLOGY

This research is a semi-experimental analytical research. It is quantitative in terms of data type, and is considered as a positive research in terms of its nature. It is also a post-event research and is considered as an applied research in terms of its objective. In this research, the financial history information is obtained from financial statements and corporate reports; therefore, the data of the sample companies accepted in Tehran Stock Exchange during the financial year of 2011 to 2015 has been extracted from sources such as Rahavard Novin and Tadbir Pardaz software, the site of Tehran Stock Exchange and the data of the sample companies accepted in Bumbay Stock Exchange during the years 2011 to 2015 has been extracted from the Bumbay Stock Exchange site and transferred to the Excel spreadsheet. E-views software is also used for processing information. The hypotheses testing is done using regression analysis method using panel data. Statistical information was also collected and analyzed using E-views and Excel software.

3.1. Statistical population and sample

The statistical population of this study is the total companies accepted in Tehran Stock Exchange and Bumbay Stock Exchange. To select the research sample, all the data including the list of companies accepted in the Tehran Stock Exchange during the mentioned period (fiscal year of 2011-2011) were obtained from the exchange information and Rahavard Novin and Tadbir Pardaz software and the list of companies accepted in Bumbay stock exchange (2011-2015) obtained from Bumbay Stock Exchange. Based on the nature of the research and the existence of some inconsistencies between companies accepted in Tehran and Bumbay Stock Exchanges, systematic (targeted) elimination sampling method has been used. The following conditions are considered for the purpose of determining the statistical sample of the research.

- 1) The company should not be a bank, financial and investment institution, and leasing.
- 2) In order to comply with the comparability capability, the fiscal year should end on March 29th of each year.
- 3) The Company should not have changed the fiscal year during fiscal years of 2011 to 2015.
- 4) The company should have been accepted in Tehran Stock Exchange by the end of 2011 and has not been removed from Tehran Stock Exchange during the years 2011 to 2015.
- 5) The financial statements of the above companies should be available.

According to the constraints applied, 125 companies were selected. Information of these companies was collected from Tehran Stock Exchange, Tehran Stock Exchange website, and Rahavard Novin Software. Of the 5133 companies listed in Bumbay Stock Exchange, data from the financial statements of 500 companies were used as examples.

3.2. Research models for hypotheses testing

To test the first main hypothesis, the Equation 1 regression model is used:

$$Cost\ of\ Capital_{i,t} = \beta_0 + \beta_1 Firm\ Size_{i,t} + \beta_2 Profitability_{i,t} + \beta_3 Q_{i,t} + \varepsilon_{i,t}$$

(1)

Where, *Cost of Capital*_{i,t} is cost of capital of company i at year t; *Firm Size*_{i,t} is firm size of company i at year t; *Profitability*_{i,t} is profitability of company i at year t; *Q*_{i,t} is Q-Tobin ratio of company i at year t; β_0 is intercept; β_1, \dots, β_3 are regression model coefficients; and $\varepsilon_{i,t}$ is error term of the model [17].

To test the second main hypothesis and its sub-hypotheses, the Equation 2 and Equation 3 regression model are used.

$$ROA_{i,t} = \beta_0 + \beta_1 Firm\ Size_{i,t} + \beta_2 Profitability_{i,t} + \beta_3 Q_{i,t} + \varepsilon_{i,t}$$

(2)

$$ROE_{i,t} = \beta_0 + \beta_1 Firm\ Size_{i,t} + \beta_2 Profitability_{i,t} + \beta_3 Q_{i,t} + \varepsilon_{i,t}$$

(3)

Where, *ROA*_{i,t} is return on assets of company i at year t; *ROE*_{i,t} is return on capital of company i at year t; *Firm Size*_{i,t} is firm size of company i at year t; *Profitability*_{i,t} is profitability of company i at year t; *Q*_{i,t} is Q-Tobin ratio of company i at year t; β_0 is intercept; β_1, \dots, β_3 are regression model coefficients; and $\varepsilon_{i,t}$ is error term of the model (Agustini, 2016).

To test the third main hypothesis, the Equation 4 regression model is used:

$$Cost\ of\ Capital_{i,t} = \beta_0 + \beta_1 INF_{i,t} + \beta_2 Profitability_{i,t} + \beta_3 Q_{i,t} + \varepsilon_{i,t}$$

(4)

Where, *Cost of Capital*_{i,t} is cost of capital of company i at year t; *INF*_{i,t} is inflation rate of company i at year t; *Profitability*_{i,t} is profitability of company i at year t; *Q*_{i,t} is Q-Tobin ratio of company i at year t; β_0 is intercept; β_1, \dots, β_3 are regression model coefficients; and $\varepsilon_{i,t}$ is error term of the model (Agustini, 2016).

To test the fourth main hypothesis and its sub-hypotheses, the Equation 5 and Equation 6 regression model are used:

$$ROA_{i,t} = \beta_0 + \beta_1 INF_{i,t} + \beta_2 Profitability_{i,t} + \beta_3 Q_{i,t} + \varepsilon_{i,t}$$

(5)

$$ROE_{i,t} = \beta_0 + \beta_1 INF_{i,t} + \beta_2 Profitability_{i,t} + \beta_3 Q_{i,t} + \varepsilon_{i,t}$$

(6)

Where, *ROA*_{i,t} is return on assets of company i at year t; *ROE*_{i,t} is return on capital of company i at year t; *INF*_{i,t} is inflation rate of company i at year t; *Profitability*_{i,t} is profitability of company i at year t; *Q*_{i,t} is Q-Tobin ratio of company i at year t; β_0 is intercept; β_1, \dots, β_3 are regression model coefficients; and $\varepsilon_{i,t}$ is error term of the model (Agustini, 2016).

3.3. Research variables and their calculation

3.3.1. Cost of capital

To calculate the rate of capital cost the weighted average capital cost is used that can be calculated as Equation 7 for companies listed in Tehran stock exchange:

$$WACC_{i,t} = (W_d \times K_d) + (W_p \times K_p) + (W_e \times K_e) + (W_s \times K_s)$$

(7)

Where,

*WACC*_{i,t}: weighted average of cost of capital

W_d: Percentage of debt contribution in total capital (weight of debt)

W_p: Percentage of preferred stocks' contribution in total capital (preferred stock weight)

W_e: Percentage of retained earnings' contribution in total capital (retained earnings' weight)

W_s: Weight of equity

K_d: The cost of debt

K_p: Preferred stock cost

K_e: New common stock cost (retained earnings)

K_s: Equity cost.

3.3.2. Firm size

Firm size is calculated as natural logarithm of annual sale (Equation 8).

$$Firm\ Size_{i,t} = \text{Log}(Sale_{i,t}) \quad (8)$$

3.3.3. Profitability

Profitability of the company is derived from the ratio of net profit after deduction of tax to equity (Setayesh, 2012).

3.4. Q-Tobin ratio

The Q-Tobin ratio is calculated as Equation 9.

$$Q_t = \frac{COMVAL_{i,t} + PREFVAL_{i,t} + SBOND_{i,t} + STDEBT_{i,t}}{SRC_{i,t}} \quad (9)$$

Where:

Q_t : Q-Tobin

$COMVAL_{i,t}$: Market value of the end of the year of common stocks

$PREFVAL_{i,t}$: Market value of the end of the year of preferred stock

$SBOND_{i,t}$: Book value of the end of the year of long-term debts

$STDEBT_{i,t}$: Book value of the end of debts with maturity of less than one year

$SRC_{i,t}$: Book value of the end of the year of total assets (Heidarpoor, 2009).

3.5. Returns on asset

Return on assets is derived from the ratio of net profit to total assets (Ognjan, 2015).

3.6. Return on capital

Return on capital is obtained from the ratio of net profit to the company's capital (Ognjan, 2015).

3.7. Inflation rate

Inflation affects all economic activities, such that high level of inflation increases the opportunity cost for firms and imposes increasing costs on firms. Hence, it is expected that firms will be in a more

distressed financial situation as inflation grows (Sadeghi, 2012).

4. DATA ANALYSIS

4.1. Descriptive Statistics

Table 1: descriptive statistics of Tehran stock exchange

Variable	Mean	SD	Min.	Max.
Firm size	5.87	0.59	4.36	7.9
Cost of capital	1.812	1.338	0.2	6.36
Return on asset	0.094	0.136	-0.362	0.503
Return on capital	0.223	0.333	1.618-	1.819
Inflation rate	21.033	8.936	10.8	34.7
Profitability	0.178	0.131	-0.11	0.61
Q-Tobin ratio	0.21	0.36	-0.79	1.9

Investigation of the mean of the research variables showed that the mean firm size of the companies in the Tehran and Bumbay Stock Exchanges was 5.87 and 5.7, respectively. Also, the mean capital cost, return on assets and return on capital in Tehran and Bumbay Stock Exchanges were 1.812, 2.104, .094, .099, .223, and 29.15, respectively.

Table 2: descriptive statistics of Bumbay stock exchange

Variable	Mean	SD	Min.	Max.
Firm size	5.7	0.61	3.87	7.73
Cost of capital	2.104	1.128	0.141	7.501
Return on asset	0.099	0.158	-0.439	0.505
Return on capital	29.15	73.54	955-	664
Inflation rate	8.484	1.322	5.701	10.611
Profitability	0.314	0.106	-0.201	0.523
Q-Tobin ratio	0.245	0.392	-1.03	2.92

Table 3: results of estimating the regression model of the first hypothesis

Variable	Cost of capital in Tehran stock exchange					Cost of capital in Bumbay stock exchange					
	β	t-statistics	SE	VIF	Sig.	β	t-statistics	SE	VIF	Sig.	
Intercept	1.024	0.497		0.225	0.68	0.45	0		0.639	3.542	
Firm size	-0.941	-3.325	0.05	1.017	0.001	1.092	2.002	0.028	1.157	0.046	
Profitability	-0.244	-1.302	0.09	1.091	0.194	-0.559	-1.556	0.078	1.739	0.121	
Q-Tobin ratio	-0.119	-1.976	0.123	1.739	0.049	0.19	1.677	0.083	1.107	0.094	
Coefficient of determination	0.304					0.053					
Adjusted coefficient of determination	0.295					0.02					
F-statistics	32.566 (.000)					2.549 (.028)					
Durbin-Watson	2.36					2.45					
Regression model determination tests	Test value					Null hypothesis		Result			
Mixed data test	Constant effects (F-Limer)				2.281 (.000)	Rejected		Panel			
	Random effects (Hausman)				15.543 (.114)	Not rejected		Random effects			
Violation of classical assumptions	Breusch-Godfrey test				4.502 (.012)	Rejected		Serial auto-correlation			
	Breusch-Pagan-Godfrey test				.995 (.446)	Not rejected		Lack of heteroscedasticity			
	Jarque-Bera test				18.129	Rejected		Non-normal distribution			

4.2. Hypotheses testing

4.2.1. Testing the first main hypothesis

The results of violation of classical assumption tests showed that in the regression model, error terms had second-order serial autocorrelation and also had abnormal distribution ($\text{sig} < .05$), while there was no heteroscedasticity ($\text{sig} > .05$). On the other hand, the co-linearity test results showed that the factor of inflation, variance of the variables introduced into the regression model is less than 10 and close to 1, which according to the results obtained, it can be said that there is no co-linearity between the independent variables of the regression model. Therefore, no problem will be faced to estimate regression models. The results of the test of the effects of mixed data of the regression model showed that the significance level of the F-Limer test (2.281) at the error level of 5% is less than 5% ($\text{sig} < .05$), which indicates that the null hypothesis is rejected at the error level of 5%. As a result, non-acceptance of the same intercept of sections is confirmed. Therefore, according to the results obtained, it is possible to test the regression model of the research using panel data. Also, the results of the Hausman test indicated that the null hypothesis was not rejected at the error level of 5% ($\text{sig} > .05$). Therefore, it can be stated that for the estimation of the regression model, random effects model is preferred to the constant effects model. Given that the random effects model is used to estimate the regression model, the problems caused by autocorrelation will be resolved because the

generalized least squares practical approach (EGLS) is used in this method. On the other hand, it should be noted that serial autocorrelation of error terms is negligible because the Durbin-Watson is also 2.36 and 2.45. Therefore, it can be said that the estimated model has no problem in terms of autocorrelation. The results of estimating the regression model of the first main hypothesis showed that in the Tehran Stock Exchange, the significance level of the t-statistic of the variable of firm size (-3.325) was smaller than 5% ($\text{sig} < .05$) at the error level of 5% and therefore, the null hypothesis is rejected with a confidence of more than 95%; in other words, firm size has a negative and significant effect on the cost of capital. Also, in the Bumbay Stock Exchange, the significance level of t-statistics of the variable of firm size (2.002) was less than 5% ($\text{sig} < .05$) at an error level of 5% and therefore, the null hypothesis was rejected with a confidence of more than 95%; in other words, firm size has a direct (positive) and significant effect on the cost of capital.

Table 4: results of estimating the regression model of the first and second sub-hypotheses of the second main hypothesis

Variable	Cost of capital in Tehran stock exchange					Cost of capital in Bumbay stock exchange				
	B	t-statistics	SE	VIF	Sig.	β	t-statistics	SE	VIF	Sig.
Intercept	0.513	-2.055	0.18		0	0.441	-2.033	0.12		0
Firm size	-0.54	-3.966	0.14	1.03	0	-0.04	-2.401	0.14	1.09	0
Profitability	-0.02	-10.222	0.01	1.08	0.04	-0.031	-9.301	0.01	1.03	0.01
Q-Tobin ratio	0.034	15.389	0	1.03	0	0.107	8.111	0	1.04	0
Coefficient of determination	0.846					0.02				
Adjusted coefficient of determination	0.814					0.006				
F-statistics	26.240 (.000)					1.380 (.231)				
Durbin-Watson	1.718					1.712				
Variable	Cost of capital in Tehran stock exchange					Cost of capital in Bumbay stock exchange				
	B	t-statistics	SE	VIF	Sig.	β	t-statistics	SE	VIF	Sig.
Intercept	1.131	6.105	0.19		0	-0.023	-5.03	0.17		0
Firm size	-0.04	-2.069	0.01	1.04	0	-0.19	-3.102	0.11	1.64	0
Profitability	-0.19	-2.472	0.01	1.08	0.04	-0.031	-2.111	0.02	1.03	0.04
Q-Tobin ratio	-0.03	-10.614	0	1.04	0.01	0.011	-9.501	0.01	1.02	0.03
Coefficient of determination	0.041					0.044				
Adjusted coefficient of determination	0.028					0.028				
F-statistics	3.058 (.010)					2.776 (.018)				
Durbin-Watson	2.214					2.448				

Table 5: results of estimating the regression model of the third hypothesis

Variable	Cost of capital in Tehran stock exchange					Cost of capital in Bumbay stock exchange				
	B	t-statistics	SE	VIF	Sig.	β	t-statistics	SE	VIF	Sig.
Intercept	0.513		0.18		0	0.441		0.15		0
Firm size	0.002	0.868	0.12	1.02	0.39	-0.001	0.758	0.13	1.08	0.45
Profitability	-0.32	-11.02	0.01	1.06	0	-0.061	-4.626	0.01	1.01	0
Q-Tobin ratio	-0.06	-8.51	0.03	1.01	0	0.131	3.63	0.05	1.02	0
Coefficient of determination	0.186					0.04				
Adjusted coefficient of determination	0.183					0.037				
F-statistics	60.83 (.000)					11.126 (.000)				
Durbin-Watson	2.331					2.398				

4.2.2. Testing the second main hypothesis and its sub-hypotheses

Results of estimating regression model of the first and second sub-hypotheses of the second main hypothesis showed that in Tehran stock exchange, significance level of t-statistics of the variable of firm size (-3.966) and (-2.069) was less than 5% (sig. < .05) at an error level of 5%. On the other hand, given the negative sign of regression coefficient of firm size, it can be stated that firm size has a negative and significant effect on financial health (return on asset and return on capital). In other words, financial health (return on asset and return on capital) of companies reduces (increases) to the extent that firm size increases (decreases). Also, in Bumbay stock exchange, significance level of t-statistics of the variable of firm size (-2.401) and (-3.102) was less than 5% (sig. < .05) at an error level of 5%. Therefore, null hypothesis is rejected with a confidence level of more than 95%. In other words, firm size has a negative and significant effect on financial health (return on asset and return on capital).

4.2.3. Testing the third main hypothesis

Results of estimating regression model of the third main hypothesis showed that in Tehran stock exchange, significance level of t-statistics of the variable of inflation rate (.868) was greater than 5% (.386) at an error level of 5% and is not significant. Also, in Bumbay stock exchange, significance level of t-statistics of the variable of inflation rate (.758) was greater than 5% (.449) at an error level of 5% and is not significant.

4.2.4. Testing the fourth main hypothesis and its sub-hypotheses

Table 6: results of estimating the regression model of the first and second sub-hypotheses of the fourth main hypothesis

Variable	Cost of capital in Tehran stock exchange					Cost of capital in Bumbay stock exchange				
	B	t-statistics	SE	VIF	Sig.	β	t-statistics	SE	VIF	Sig.
Intercept	0.6	-2.001	0.19		0	0.541	-2.022	0.14		0
Firm size	-0	-3.966	0.14	1.02	0	-0.001	-2.069	0.16	1.09	0
Profitability	-0.23	-8.11	0.01	1.09	0	-0.11	-8.4	0.02	1.09	0
Q-Tobin ratio	0.132	12.002	0	1.04	0	0.166	11.201	0	1.06	0
Coefficient of determination	0.02					0.041				
Adjusted coefficient of determination	0.006					0.028				
F-statistics	1.380 (.231)					3.058 (.010)				
Durbin-Watson	1.712					2.214				
Variable	Cost of capital in Tehran stock exchange					Cost of capital in Bumbay stock exchange				
	B	t-statistics	SE	VIF	Sig.	β	t-statistics	SE	VIF	Sig.
Intercept	1.001	-6.111	0.17		0	-0.034	-5.441	0.17		0
Firm size		-4.852	0	1.03	0.01	-0.001	-2.472	0.14	1.44	0
Profitability	-0.22	-2.11	0.01	1	0	-0.34	-2.101	0.1	1.04	0
Q-Tobin ratio	-0.02	-9.333	0	1.01	0.01	0.303	-9.005	0	1.02	0.01
Coefficient of determination	0.044					0.078				
Adjusted coefficient of determination	0.028					0				
F-statistics	2.776 (.018)					.532 (.751)				
Durbin-Watson	2.448					1.5				

Results of estimating regression model of the first and second sub-hypotheses of the fourth main hypothesis showed that in Tehran stock exchange, significance level of t-statistics of the variable of inflation rate (-3.966) and (-4.852) was less than 5% and significant at an error level of 5%. Given the coefficient of inflation rate (-.002) and (-.002) that was significant at a confidence level of 95%, inflation rate has a negative and significant effect on financial health (return on asset and return on capital). In other words, financial health of companies listed in Tehran stock exchange is at risk and return on asset and return on capital decrease if inflation rate is increased, and vice versa. Also, in Bumbay stock exchange, significance level of t-statistics of the variable inflation rate (-2.069) and (-2.472) was less than 5% and significant at an error level of 5%. Given the coefficient of inflation rate (-.001) and (-.001) that was significant at a confidence level of 95%, inflation rate has a negative and significant effect on financial health (return on asset and return on capital). In other words, financial health of companies listed in Bumbay stock exchange is at risk

and return on asset and return on capital decrease if inflation rate is increased, and vice versa.

Table 7: research hypotheses and summary of results

Hypotheses	Hypothesis test results	Stock exchange		Comparison of the obtained results with previous studies		
		Tehran	Bumbay	Consistent studies	Inconsistent studies	
First main hypothesis	Firm size has a significant effect on the cost of capital.	Negative	Positive	Coeurderoy (2002)	Graham et al. (1998)	
				Agustini (2016)	Hovakimian et al. (2001)	
Second main hypothesis	2.1: Firm size has a significant effect on the return on assets.	Negative	Negative	Foroughi (2014)	Bokhari et al. (2005)	
	2.2: Firm size has a significant effect on the return on capital.				Cinca et al. (2005)	
					Acheampong et al. (2014)	
		Negative	Negative			
Third main hypothesis	Inflation rate has a significant effect on the cost of capital.	-	-	Salehi and Yousefi (2016)	Drobtez et al. (2007)	
					Agustini (2016)	
					Bokpin (2009)	
					Song Shin and Adrian (2007)	
Fourth main hypothesis	4.1: Inflation rate has a significant effect on the return on assets.	Negative	Negative	Pashaefam and Omidipoor (2014)	Buyuksalvarci (2010)	
	4.2: Inflation rate has a significant effect on the return on capital.			Leon (2008)	Robert (2008)	
					Fenjanchi (2012)	
					Brahmasrene et al. (2007)	
		Negative	Negative			

5. CONCLUSION AND RECOMMENDATIONS

The effect of firm size on capital structure is such that the larger the company is, the larger the company's credit, and consequently, it will have more and better access to the capital markets for getting loan and the money needed. In other words, the larger the size of a company, the company will be more credible to capital markets, lenders and investors. The results of this research show that the firm size has a negative and significant effect on the capital structure in the Tehran Stock Exchange, while the firm size has a positive and significant effect on the capital structure in the Bumbay Stock Exchange. Therefore, corporate financial executives are suggested to take measures to optimize capital structure in view of the

significant impact of firm size on the creation of favorable capital structure for the company.

It seems that due to the fact that stock market is not specialized, information asymmetry and more frequent publication of news and comments on undesirable effects of government policies in relation to the national economy and the stock market as the news published on the confirmation of these policies, investors are heavily under the influence of the atmosphere on the market and take movement in stock trading. The results of this study indicate that the firm size has a significant and negative impact on financial health (return on assets and returns on capital) in Tehran Stock Exchange and Bumbay Stock Exchange. The negative impact of firm size on financial health means that large firms are less vulnerable to financial crisis than smaller ones. Therefore, it is suggested that small and financially vulnerable companies combine themselves with large companies or carry out joint projects with the participation of large companies in order to avoid financial crisis. At the same time, investors are encouraged to pay attention to the firm size when creating a portfolio, as the results of this study indicated that this factor has a significant effect on the financial health of companies.

- Inflation as one of the economic variables has devastating effects on the structure of the economy and politics of the country and has a major impact on economic growth, distribution of income and wealth, social and political conditions of a country and financial health of companies. In other words, inflation is a factor that causes prices to rise in the community, and consequently the real value of money and monetary assets to decrease, and in contrast, the value of non-monetary assets such as fixed assets or inventories is constant. The value of non-monetary assets increases as monetary value decreases against monetary assets. If the inflation factor is included in the accounting calculations, more real decisions can be made. The results of this study indicate that the inflation rate has a negative and significant effect on financial health (return on assets and returns on capital) in Tehran Stock Exchange and Bumbay Stock Exchange. Accordingly, it can be said that for manufacturing companies in the Tehran stock exchange to be

financially healthy, not only their managers should have to consider the macroeconomic environment in their decisions in addition to the use of appropriate governance system, but also they should weight these factors more than others. In addition, by examining the effect of inflation on the financial health of companies, firstly, companies can be vigilant about financial distress by providing the necessary warnings, so that they take appropriate measures in the light of these warnings; secondly, investors can identify favorable investment opportunities from unfavorable opportunities and invest their resources in appropriate opportunities and locations, and prevent the risk of loss of their principal capital and interest.

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