



The effect of Information Asymmetry on the Cost of Equity Capital in Listed Companies on Tehran Stock Exchange

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ABSTRACT: The present study aims to assess the relationship between information asymmetry and the cost of equity capital in listed companies on Tehran Stock Exchange, over a period extending from 2006 to the end of 2011. The cost of equity capital is considered as a part of the cost of capital, which is the minimum expected return on equity. Ordinary shareholders expect an appropriate return, since they take investment risks. Information risk is a component of investment risk which affects the cost of capital. Information asymmetry is also a significant index for information risk. The effect of information asymmetry on the cost of equity capital was assessed in 106 listed companies on Tehran Stock Exchange from 2006 to the end of 2011. Simple and multiple regression models were employed in order for testing the research hypotheses. The obtained findings indicate that there is no significant relationship between information asymmetry and the cost of equity capital; however, this hypothesis can be confirmed in case of utilizing control variables.

Key words: Information asymmetry, equity capital, bid-ask price, Inappropriate choice

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INTRODUCTION

The cost of capital can be defined in relation to the expected return. In other words, the cost of capital is the minimum expected rate of return. If the expected return is less than the cost of capital, the economic unit's value will reduce; therefore, an economic unit can be appropriately managed if the expected return is at least at the level of the cost of capital. Key to success is decreasing the cost of capital. A firm should reduce risk-taking in order to enhance shareholders' wealth and decrease the cost of capital. Information risk is a component of investment risk. Information risk is dependent upon information asymmetry and inaccuracy of public information. The higher information asymmetry and information inaccuracy can increase the expected return on investment (Francis et al., 2004).

Information asymmetry refers to the differences in the composition of information between public and private information which affect the cost of capital, and bring about two informed and uninformed investors. Easley and O'Hara (2004) believe that quality and quantity of information affect asset prices.

In the 1970s, three scientists, Michael Spence, George Information asymmetry, resulting from low quality of information disclosure, can bring about inappropriate choices. This state occurs when sellers know more about something than any potential buyer and vice versa, and they use this information in order to get more return. This uncertainty makes buyers unaware of the real value of what they buy, so most goods are transacted over an unreal value. When dealers become aware of the existence of uninformed people in a market, inappropriate choices increase. In

such conditions, information asymmetry may increase by means of more differences in bid-ask prices, and marketers take advantage of it to make up inappropriate choices. In other words, professional investors can earn more by taking advantage of uninformed people in the market (Ghaemi & Vatanparast, 2005).

Securities along with the problem of information asymmetry result in less liquidity (Matoussi et al., 2004); the cost of their transactions are also higher. So, buyers have little tendency to purchase them, and investors request more rewards for extra transactional costs. Consequently, higher liquidity and lower cost of capital are the most important outcomes of disclosure quality and information asymmetry decrease (Espinosa & Trombetta, 2007).

Kordestani and Alavi (2010) investigated the effect of accounting earnings transparency on the cost of equity capital. Findings of their study indicated that accounting earnings transparency decreases the rate of expected return (the cost of equity capital) through reducing the level of risk-taking, so there is a negative significant relationship between these two variables.

Azad (2010) conducted a research entitled "information asymmetry between investors of Stock Exchange". This study showed that an increasing information asymmetry was observed in Tehran Stock Exchange from 2002 to 2007.

Ghaemi and Rahimpour (2009) examined the role of seasonal announcements in decreasing information asymmetry and found that seasonal announcements cannot reduce the level of

information asymmetry, since they lack sufficient amount of required information.

Piri et al. (2013) did a research under the title "effects of financial reporting transparency on the quality of earnings". The results of the examination of the first hypothesis show no meaningful relationship between the transparency rank of the company in financial performance dimension and the reported earnings quality. The results of the examination of the second hypothesis, shows a significant relationship between the transparency rank of the company in board of directors and management dimension and the reported earnings quality. The results of the examination of the third hypothesis, shows no meaningful relationship between the transparency rank of the company in ownership structures dimension and the reported earnings quality.

Armstrong and et al. (2011) did a research under the title "when does information asymmetry affect the cost of capital?" They concluded that when equity markets are perfectly competitive, information asymmetry has no separate effect on the cost of capital. When markets are imperfect, information asymmetry can have a separate effect on firms' cost of capital. They found that information asymmetry has a positive relation with firms' cost of capital.

Barron et al. (2012) did a research entitled "the information environment and cost of capital" and examined the joint effects of information precision, information asymmetry and the level of market competition on firms' cost of equity capital. They found that average information precision and the level of market competition reduce the positive effect of information asymmetry but do not eliminate it. Furthermore, they suggested that information asymmetry and average information precision are more important than equity beta and firm size in determining firms' cost of capital.

Verdi (2012) tested whether higher reporting frequency is associated with lower information asymmetry and the cost of equity capital. Results of this study suggest that firms with higher reporting frequency have lower information asymmetry and a lower cost of equity capital. Barth et al. (2013) assessed the relationship between transparent earnings and the cost of capital. They found a significant negative relationship between transparency measure and subsequent excess and portfolio mean returns, and expected cost of capital, even after controlling for previously documented determinants of cost of capital. Choiet al (2010) conducted a research entitled "what does stock ownership breadth measure?" and investigated the relationship between information asymmetry and the cost of capital. Their findings indicated that there is a significant positive

relationship information asymmetry and the cost of capital.

Research hypotheses

There is a significant positive relationship between information asymmetry and the cost of equity capital in listed companies on Tehran Stock Exchange.

MATERIAL AND METHODS

The current study is an ex-post facto and applied research which employed a descriptive correlation method. Desk method was utilized in order to review related literature. Needed data were collected through Rahavard Novin software, www.seo.ir, Tsetmc.com, and listed companies' financial statements. Simple and multiple regression models were used in this study.

Target population and research sampling

Target population of the current study is consisting of all listed companies on Tehran Stock Exchange. Year-firm data were collected through cross-sectional approach. Sampling was conducted considering the following criteria and applying systematic-elimination method. The company was listed on Tehran Stock Exchange by the end of March 2006. Fiscal year should be leading to March during the process of research period. Investment companies, banks and companies with specific standards were eliminated from statistical sampling. Financial data were accessible during the research period, from 2006 to the end of 2011. Owing to the aforementioned criteria, 106 companies were chosen as the research sample, and needed statistical tests were given.

Research variables

There are three types of dependent variables, main independent variables and control independent variables in this study.

Dependent variable (the cost of equity capital)

The dividend discount model (DDM), proposed by Gordon (1997), was applied in order to calculate the cost of equity capital. In this study, the following model was used (Saghafi&Boulou, 2009).

$$K_e = \frac{D_0(1+g)}{P_0} + g$$

Where;

Ke: the cost of equity capital

D0(1+g): the expected dividend earnings which was paid at the end of the first year

P0: the price of market stock at the beginning of the year

g: the rate of expected dividend growth

Independent variable (information asymmetry)

Chiang and Venkatesh(1986) bid-ask spread model deployed in this study (Ghorbani&Adili, 2012). This model can be written in the following manner: $Spread_{i,t} = \frac{AP-BP}{(AP+BP)/2} * 100$

Where;

t: the studied period

i: the studied sample

Spread_{i,t}: the difference between suggested bid-ask prices for firm i in year t

Ask Price (AP): the least daily suggested ask price for firm i

Bid Price (BP): the most daily suggested bid price for firm i

returns, and the possibility of borrowing or lending with a risk free rate for the expected return on assets for firm i. $E[R_i] = R_f + \beta_{im}(E[R_m] - R_f) + e$

R_m: return on market portfolios

R_f: risk free rate

R_i: expected return on assets for firm i

β_m: coefficient of elasticity

E[R_m] - R_f: risk premium

Beta is an index of systematic risk. The above equation indicates that systematic risk is the only important factor in determining the expected return, so unsystematic risk has no specific role. Beta can be appraised through the following formula: $\beta_i = \frac{COV(R_i, R_m)}{Var(R_m)}$

Firm size (LMtValue_{i,t})

Natural logarithm of stock market value (multiplying the stock prices by the number of stocks) is applied in order to control the effect of firm size on the cost of equity capital at the end of the previous year (Saghafi&Boulou, 2009), which can be assessed through the following formula: $SIZE_{i,t} = \ln(N_{i,t} * P_{i,t})$

Where;

SIZE_{i,t}: the size of firm i in year t

N_{i,t}: number of stocks for firm i at the beginning of the year t

P_{i,t}: price of stocks for firm i at the beginning of the year t

The ratio of book value to market value (LBM_{i,t})

In this study, the ratio of book value to market value equals the logarithm of book value in proportion to the price of each stock at the end of the previous year (Saghafi&Boulou, 2009) which is assessed through the following formula: $LBM_{i,t} = \frac{Stock\ BV}{Stock\ MV}$

Where;

Stock BV: book value for each stock

Stock MV: market value for each stock

RESULTS

The obtained findings of hypothesis testing (without the application of control variables) show that

The higher the difference is between bid and ask prices, the more the information asymmetry will be.

Control independent variables: Based on the reviewed literature, control independent variables of this study include different effective factors in the cost of equity capital such as market risk, firm size, and the ratio of book value to market value (Fama& French, 1993; Francis et al., 2004; Armstrong et al., 2011).

Beta_{i,t} coefficient: Systematic risk index can be calculated through the application of the Capital Asset Pricing Model (CAPM) (Saghafi&Boulou, 2009). CAPM model shows the relationship between stock returns and stock market returns. The coefficient of determination (R²) equals 0.004. It means that information asymmetry can only determine %0.4 of the changes in the cost of equity capital.

The amount of Durbin-Watson statistic is about 2.44 which demonstrate the data's independence, since it is between 1.5 and 2.5.

Regression significance test at the error level of %5 and the amount of F-statistic, which is less than 0.538, prove that H₀ is accepted and H₁ is rejected. In other words, the variable

Information asymmetry is not adequately accepted to determine the cost of equity capital. Assessing regression coefficients shows that there is a positive relationship

Between information asymmetry and the cost of equity capital which is not significant at the error level of %5.

Research hypothesis testing (with the control variables interference):

H₀: There is no significant relationship between information asymmetry, Beta coefficient, firm size, ratio of book value to stock market value and the cost of equity capital in listed companies on Tehran Stock Exchange. (There is no linear regression. H₀: r=0)

H₁: There is a significant relationship between information asymmetry, Beta coefficient, firm size, ratio of book value to stock market value and the cost of equity capital in listed companies on Tehran Stock Exchange. (There is a linear regression. H₁: r≠ 0)

The obtained findings of hypothesis testing (with the application of control variables) show that the coefficient of determination (R²) equals 0.125. It means that the variables of information asymmetry, Beta coefficient, firm size and the ratio of book value to stock market value can determine %12.5 of the changes in the cost of equity capital. Regression significance test at the error level of %5 and the amount of F-statistic, which is more than 0.013, prove that H₀ is rejected and H₁ is confirmed. In other words, all variables of information asymmetry, Beta coefficient, firm size, and ratio of book value to stock

market value are adequately accepted to determine the cost of equity capital. Assessing regression coefficients shows that there is a positive relationship between information asymmetry, Beta coefficient, firm size and the cost of equity capital, and there is a negative relationship between the ratio of book value

to stock market value and the cost of equity capital. Firm size is only significant at the error level of %5. The amount of Durbin-Watson statistic is about 2.395 which demonstrate the data's independence, since it is between 1.5 and 2.5.

Table 1. Descriptive statistics of research variable

Index	The cost of equity capital	Information asymmetry
Mean	0.2088	0.4556
SD	0.06762	0.21968
Variance	0.005	0.048
Coefficient of skewness	-0.087	0.817
Skewness deviation	0.243	0.243
Coefficient of Kurtosis	0.033	2.591
Kurtosis deviation	0.481	0.481
Range of variations	0.34	1.39
The Smallest data	0.04	0.00
The Biggest data	0.38	1.39
Percentile	25	0.1600
	50	0.2100
	75	0.2500

Table 2. Regression Model

Independent variable	R ²	F	P	β	T	P	Durbin Test
Information asymmetry	0.004	0.383	0.538	0.063	0.619	0.538	2.44

Table 3. Regression Model

Independent variable	β	T	Sig.	R ²	F	Sig.	Hypothesis Status	Durbin
Information asymmetry	0.008	0.077	0.939	0.125	3.354	0.013	Confirmed	2.395
Ratio of book value market value	-0.181	-1.697	0.093					
Firm size	0.227	2.150	0.034					

DISCUSSION

Based on the achieved findings, this conclusion can be drawn that there is no significant relationship between information asymmetry and the cost of equity capital in listed companies on Tehran Stock Exchange. However, the application of control variables such as Beta coefficient, firm size, and ratio of book value to stock market value makes this relationship significant, so the first minor hypothesis is confirmed. The results also showed that information asymmetry, Beta coefficient, firm size and the cost of equity capital are positively associated with each other, and there is a negative relationship between ratio of book value to stock market value and the cost of equity capital. But the application of control variables retains the relationship between firm size and the cost of equity capital significant, while other variables become insignificant. Insignificance of information asymmetry can be the result of existing variation in the measurement of information

asymmetry. In order to assess information asymmetry, different variables were applied in external researches such as inappropriate choices, number of analysts in each company, product market competition, percentage of price effects, and market depth; while in Iran, bid-ask spread has been mostly applied to investigate information asymmetry. So, any changes in the applied model can make considerable difference in the outcomes.

Suggestions

1. It is suggested that Tehran Stock Exchange or other associated organizations educate shareholders, investors and other interested people to be capable of making the best investments.

2. Accounting organizations should provide transparent information and appropriate strategies in order to decrease information asymmetry in listed companies on Tehran Stock Exchange.

Suggestions for future studies

1. It is suggested to assess the relationship between reporting frequency and the cost of equity capital in listed companies on Tehran Stock Exchange.

2. It is suggested to apply other models to assess the cost of equity capital such as Fama and French, and PEG rate.

3. It is suggested to investigate and compare information asymmetry, liquidity and cost of capital in family and non-family enterprises.

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