

The relationship between information risk and capital costs in companies listed on Tehran Stock Exchange

Reza Shadman¹, Alireza Mousavi^{2*}

1.Department of financial management, Firoozabad Branch, Islamic azad university, Firoozabad, iran

2.Department of financial management, Firoozabad branch, Islamic azad university, Firoozabad, iran

** Corresponding Author*

Abstract

This study aims to investigate the relationship between accruals quality as an indicator of information risk, and capital cost. Based on the topic and its application, active companies in the Tehran Stock Exchange were selected as study sample. In this study, 90 samples were selected. The data have been collected using annual information from listed companies in Tehran Stock Exchange since 2007 until the end of 2014 and test results of hypotheses have been presented. In this study, multiple regression analysis using combined data method with fixed effects was applied for the test of research hypotheses. The results show that there is a significant relationship between the quality of accruals as an indicator of information risk, and cost of capital.

Keywords: quality of accruals, risk information, cost of capital, stock return

Introduction

The cost of capital plays a vital role in financing and investment decisions. Company management, in order to determine the appropriate financial resources, must specify financing costs and determine the effects of funding on the risk and return. The investors consider the balance between risk and return as the base of their decisions. They are interested to estimate the expected future returns of their investment using information reported by the company and other evidence. As the quality of provided information is higher, the amount of uncertainty in estimating expected returns and information risk will be reduced. It is expected that high-quality information have favorable effect on investors' expectations of expected return (cost of capital). Additionally, investors show greater reliance on the profit related information rather than other functional indexes (such as dividends, cash flows and changes in profits) (Biddle et al, 1995).

In the capital market, those accounting information that help investors to make conscious decisions, are very important. These information should be relevant, timely, accurate and comparable. Today, the financial statements are recognized as the most important source of information reflecting the performance outcome and financial position and cash flows of the business units. Therefore, the principles of preparing financial statements which are the same as accounting standards, are of great importance and one of the most important requirements for the preparation and presentation of high-

quality financial information is to codify principles and accounting standards and adhere to them in practice. Previous studies have shown that the risk in total benefit is an important factor for determining the cost of capital. However, when reported profits become smoothed and the basic operations are unclear, it is possible that a risky total profit hides the operation. In such cases, the benefit components should be considered. The cost of capital, which is the investors' expected rate of return, is determined by taking the company's risk into account. Some recent studies suggest that various features of profit can help risk assessment of the companies. In particular, when profits become smoothed, use of components profit factor becomes more important because the separation of the two components of cash and accrual interest, has more explanatory power than the total profit. Francis et al (2005) used American information in which low-quality accruals represented the risk associated with high capital costs and accruals quality factor was determined as a pricing risk factor. Kim and Qi (2010) introduced the accruals quality as pricing risk. Other studies outside of America report conflicting evidence. The ongoing theoretical debate and experimental unabated questions about the role of Information risk in determining the cost of capital motivates us to re-examine it.

Safdar & Yan (2016) in a study used accruals quality as a criterion of Information risk and analysis of multiple regression and investigated the relationship between accruals quality and the cost of capital and future stock returns, using multiple regression analysis. Based on the findings of this study low- quality accruals are related to high cost of capital, however, this relationship is not significant in the case of public companies. Moreover, there is no association between accruals quality and cost of debt in China. The quality of accruals is also associated with future stock returns.

Gray et al (2009) assessing the "quality of accruals, information risk and cost of capital" showed that there is no evidence regarding "lower accruals quality, higher cost of capital". Their results showed that the impact of the inherent part of accruals on the cost of capital is more than its optional part. Dastgir and Rastgar (2011) have studied the relationship of profit quality (profit stability) and stock returns with the accruals quality which showed a direct relationship. In addition, stock returns increase following reduction in accruals and increasing the size of accruals.

Therefore, this study the relationship between information risk and cost of capital in companies listed in Tehran Stock Exchange will be discussed.

Hypothesis

The study hypothesis has been designed based on the Safdarian's study

- There is a positive relationship between accruals quality and the cost of capital.

Research Methodology

Since the results can be used in decisions made by managers, investors and analysts, current study is considered as an applied research. Additionally, from the deduction method of study hypotheses prospective, it falls into descriptive correlational study groups. Because of using regression techniques to explore the relationships between research variables, from reasoning point of view, this study is deductive reasoning. Also, since we reach a conclusion through testing available data, our research can be categorized as positive theories. This study is conducted based on information from 449 companies listed on Tehran Stock Exchange from 2007 to 2014.

Variables

The dependent variable

Cost of Capital

The cost of capital is the minimum rate of return that must be achieved to provide returns to investors of the company (Payno, 2002).

The cost of capital components include:

- A) $CostDebit_{i,t}$. The cost of debt, is a cost that a company sustains in order to fund through loan or bond issuance. In this study, it is achieved by the ratio of interest payments of the company in year t

divided by the average interest-bearing debts year t and t-1 (In this study the long-term debt has been used as interest-bearing debt).

B) $CostEquity_{i,t}$. The cost of equity consists of the cost of common stock, preferred stock and cumulative profit and rate of return that investors usually demand from companies that in this study is calculated based on a price to income ratio (E/P).

Independent variable

accruals Quality: The accruals quality is used a representative of Information risk. Francis et al (2005) argue that the income part of (profit) accruals are the main source of cash flow uncertainty and compared to other income characteristics, is a more accessible criteria for information risk. we the use Dechow and Dichev model (2000) adjusted by Francis et al (2005) for the calculation of accruals quality. The remainder of this model ($\varepsilon_{i,t}$) is taken as accruals quality (AQ).

$$TCAi,t = \alpha_0 + \alpha_1 CFOi,t-1 + \alpha_2 CFOi,t + \alpha_3 CFOi,t+1 + \alpha_4 \Delta Revi,t + \alpha_5 PPEi,t + \varepsilon_{i,t}$$

In this model:

$TCAi,t$: Current accruals of the company i in year t in which it is used from net profit plus depreciation and minus operational cash flow.

$$TCAi,t = NetIncomi,t - CFOi,t + Deprecitioni,t$$

$CFOi,t$: j Company's operational cash flows in year t. t-1 and t + 1 indexes represent the year before and the year after.

$\Delta Revi,t$: Changes in the net sales of j company and between year t and t-1

$PPEi,t$: The value of properties and equipment of the j company in year t

To test the hypothesis that is the relationship between accruals quality (AQ), as a representative of the information risk and cost of capital, taking control variables into account, we referred to the model used by Francis and colleagues to find the relationship between the cost of equity and cost of debt with AQ:

1) To examine the relationship between the cost of equity and AQ, Francis and colleagues model is presented as follows:

$$CostEquity_{it} = \alpha_0 + \beta_1 AQ_{i,t} + \beta_2 Beta_{i,t} + \beta_3 Leverage_{i,t} + \beta_4 Size_{i,t} + \beta_5 Growth_{i,t} + \varepsilon_{i,t}$$

In which:

$CostEquity_{it}$: The cost of equity

$AQ_{i,t}$: Quality score of accruals in year t

$Beta_{i,t}$: Systematic risk

$Leverage_{i,t}$: Total debt divided by total assets of a company is in year t.

$Size_{i,t}$: Natural logarithm of total assets in the year t.

$Growth_{i,t}$: The company's growth opportunities in year t.

2) To test the relationship between the cost of debt and AQ, Francis and colleagues-estimated cost of debt is as follows:

$$CostDebt_{it} = \alpha_0 + \beta_1 AQ_{i,t} + \beta_2 Leverage_{i,t} + \beta_3 Size_{i,t} + \beta_4 ROA_{i,t} + \beta_5 IntCover_{i,t} + \beta_6 \delta(NIBE)_{i,t} + \varepsilon_{i,t}$$

$CostDebt_{it}$: Cost of debt in an institution in year t.

$AQ_{i,t}$: Quality score is of accruals in year t.

$Leverage_{i,t}$: Total debt divided by total assets of a company is in year t.

$Size_{i,t}$: Natural logarithm of total assets in the year t.

$ROA_{i,t}$: Return on assets of the company in year t.

$IntCover_{i,t}$: Interest cost coverage ratio in year t.

$\delta(NIBE)_{i,t}$: Fluctuations of the company's profits in period t.

Findings

The research hypothesis

In regression models, firstly, Chow test and Limer F-statistic has been applied to determine the detection method used for combined data and assessment of their homogeneity or heterogeneity.

The statistical hypothesis test is as follows:

H0=Pooled Data

H1=Panel Data

H0 is based on the assumption of nonexistence of unobservable individual signs and H1 is based on the existence of unobservable individual signs. If H0 hypothesis is accepted, this means that the model lacks unobservable individual signs, so it can be estimated through compilation regression model. But if H1 hypothesis is accepted, it means that there are unobservable individual signs in the model.

If the results of this test is based on the use of data for panel data, a fixed effects (FEM) model or random effects (REM) model is needed to estimate the research model. Hausmann test should run in order to choose one of these two models:

H0=Random Effect

H1=Fixed Effect

Hausmann's null hypothesis is based on random effects model to estimate the suitability of the panel data regression models.

Hypothesis test

Hypothesis: There is a significant inverse relationship between accruals quality as indicator of information risk, and cost of capital in companies listed in Tehran Stock Exchange.

1) To examine the relationship between the cost of equity and AQ, Francis and colleagues model presented thus:

$$\text{CostEquity}_{it} = \alpha_0 + \beta_1 \text{AQ}_{i,t} + \beta_2 \text{Beta}_{i,t} + \beta_3 \text{Leverage}_{i,t} + \beta_4 \text{Size}_{i,t} + \beta_5 \text{Growth}_{i,t} + \epsilon_{i,t}$$

In order to estimate the coefficients of the research hypothesis, Chow test and Limer F-statistic is used to determine combined data method and assess whether they are homogeneous or heterogeneous. The test results are presented in Table 1.

Table 1: Results of Chow test of the hypothesis

null hypothesis	significance level	F Statistics	Chow test result
Using panel data model	0.95	0.742	Null hypothesis is not rejected

As shown in Table 1, Chow test result shows that the obtained probability for the F statistic is more than 5%. Therefore, the data are used as compilation to test this model.

Table 2: testing the hypothesis: the relationship between the cost of equity and AQ

Variable	Coefficients	Standard deviation	T statistic	P value
Constant	0/068	0/032	2/12	0/03
Accrual quality	7E-1/17	9E-6/74	17/34	0/000
Systemic risk	0/003	0/001	2/608	0/009
Financial Leverage	0/007	0/007	0/927	0/354
Company size	-0/002	0/002	-1/254	0/210
Company growth opportunity	14E-9/63	13E-3/81	0/252	0/800
F statistic	63/64			

Probability of F statistics	0/000
Determination coefficient	0/373
Adjusted determination coefficient	0/367
Durbin-Watson statistic	2/28

For the research hypotheses, as shown in Table 2, in terms of the relationship between the cost of equity and AQ, significant value for accrual quality indicates model is significant for these variables. Thus, the first hypothesis stating that "there is a significant relationship between quality of accruals as an indicator of information risk, with the cost of capital in companies listed in Tehran Stock Exchange" is approved. Moreover, the significant level of systemic risk shows the significance of the variables for this model. The relationship between accruals quality and the cost of equity, is direct, which means that per one unit increase in accruals quality, provided that other variables are controlled, the dependent variable is increased by a rate of $1/17E-7$. The amount of determination coefficient is 0.37, meaning that 37% of the dependent variables are stated by independent variables and controls. This index shows the amount of relationship intensity between variables. Durbin-Watson statistic values for both models is not much different from the 2. Values close to 2 indicate a lack of residuals autocorrelation which shows another regression assumptions.

2) To test the relationship between the cost of debt, Francis and colleagues model with estimation of the cost of debt (AQ) was used as follows:

$$\text{CostDebt}_{it} = \alpha_0 + \beta_1 \text{AQ}_{it} + \beta_2 \text{Leverage}_{it} + \beta_3 \text{Size}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{IntCover}_{it} + \beta_6 \delta(\text{NIBE})_{it} + \epsilon_{it}$$

Initially, Chow test and Limer F statistic was used to determine combined data method and their homogeneity or heterogeneity. The test results are shown in Table 3.

Table 3: Results for the Chow test of research hypothesis

null hypothesis	significance level	F Statistics	Chow test result
Using panel data model	0.03	1.43	Null hypothesis is rejected

Table 4: Results for the Hausmann test of research hypothesis

null hypothesis	significance level	F Statistics	Chow test result
Using random effects model	0.000	59.8	Null hypothesis is rejected

As shown in Table 3 and 4, results for The Chow test in the research model, given that the value of the statistic F test is more critical, the null hypothesis of this test stating that similarity of the intercept in all periods is in favor of the opposite hypothesis and that using FE is appropriate, is rejected. Also, according to Hausmann test results, it is observed that the null hypothesis is rejected in favor of the opposite hypothesis. So we selected FE method to estimate the desired function.

Table 5: testing the hypothesis: the relationship between the cost of equity and AQ

Variable	Coefficients	Standard deviation	T statistic	Sig.
Constant	0/67	1/708	0/393	0/694

Accrual quality	6E-5/75	7E-3/33	17/306	0/000
Financial leverage	0/04	0/376	0/117	0/906
Company size	-0/06	0/124	-0/5	0/617
Return on Assets	2/29	0/75	3/056	0/002
interest cost coverage	12E-4/63	12E-2/04	2/27	0/023
profit fluctuation	7E--5/11	7E-2/53	-2/024	0/043
F statistic	5/37			
Probability of F statistics	0/000			
Determination coefficient	0/542			
Adjusted determination coefficient	0/441			
Durbin-Watson statistic	2/26			

As seen in Table 5, for the main hypothesis that is the relationship between the cost of debt and AQ, significant level of accruals quality is an indicative of the significance of this variable in the model. Thus, the first hypothesis that “there is a significant relationship between quality of accruals as an indicator of risk information, and the cost of capital in companies listed in Tehran Stock Exchange” is approved. Also, the significance value for the return on assets, interest cost coverage and fluctuations in profit indicates their significance in the model. There is a direct relationship between the accruals quality and cost of debt, which means that per one unit increase in accruals quality, provided that other variables are controlled, the dependent variable is increased by a rate of 5/75E-6. The amount of determination coefficient is 0.44, meaning that 44% of the dependent variables are stated by independent variables and controls. This index shows the amount of relationship intensity between variables.. Durbin-Watson statistic values for both models is not much different from the 2. Values close to 2 indicate a lack of residuals autocorrelation which shows another regression assumptions.

Conclusion and Recommendations

According to the results based on t-statistic and significant values, direct association between accruals quality and the cost of equity and cost of debt in companies listed in Tehran Stock Exchange is established. Thus, the first hypothesis is accepted. The results showed that the cost of capital affected by accruals quality, was an indicator of information risk. As the company's accrual quality is decreases, the cost of capital wanes, and vice versa. Information risk is a non-variation risk in capital markets. Investors with less information encounter with a higher level of information risk compared to the investors who are more aware. In other words, non-variation information risk force the investors to demand higher return stock with more private information (Easley and O'Hara).

With regard to the effect of information risk on the cost of capital of listed companies in Tehran Stock Exchange, it is suggested that the chairmen of these companies play more efficient roles improving the cost of equity and the company's cost of debt. This result can also be used by investors in companies listed in Tehran Stock Exchange to make more efficient decisions for investing and stock sales.

References

- Biddle, G.; G, Seow, and A, Siegel, (1995), 'Relative versus incremental information content', *Contemporary Accounting Research* 12, pp.1-23.
- Dastgir, M., & Rastegar, M. 2011. The relationship between earning quality and stock return with accruals. No. 7. Pp. 1-20
- Dechow, P. M., and Dichev, I. D. (2002), "The quality of accruals and earnings: The role of accrual estimation errors", *The accounting review*, Vol. 77, No.1, pp. 35-59.
- Easley, D., & O'Hara, M. (2004)." Information and the cost of capital". *Journal of Finance*, 59, 1553-1583.
- Francis, J., LaFond, R., Olsson, P., and Schipper, K. (2005), "The market pricing of accruals quality", *Journal of Accounting and Economics*, Vol. 39, No. 2, pp. 295-327.
- Gray, P., Koh, P., Tong, Y., (2009). 'Accruals Quality, Information Risk and Cost of Capital'. *Journal of Business Finance and Accounting* 36 (1) & (2), 51-72
- Kim, D., and Qi, Y. (2010), "Accruals quality, stock returns, and macroeconomic conditions", *The Accounting Review*, Vol. 85, No. 3, pp. 937-978.
- Payno, R. 2002. Financial management. Translated by Ali Jahankhani, & Ali Parsaeean, SAMT, vol. 2
- Safdar, R & yan chen(2016)information risk ,stock returns,and the cost of capital ,china finance Review international,Vol.6 Iss 1 pp.