Studying the effects of related factors to risk on shareholders' equity cost by considering earnings quality for accepted companies in Tehran Stock Exchange

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ABSTRACT

This study examined the effects of related factors to risk on shareholders' equity cost by considering earnings quality for accepted companies in Tehran Stock Exchange. This survey investigates a population of 76 companies during the time period of 2009-2014. The results show that under high earnings quality, the market risk factor, the book risk to market factor, and the size risk factor have positive effects, and the profit risk factor has negative effects on shareholders equity cost.

1. Introduction

Considering investor to relationship and return on investment is effective factors in selection and implementation of investment. The role of risk and return on investment is as well as role of supply and demand in economy for commodity pricing, according to theoretical perspective, risk means potential measurable loss of investment. Until 1950s, "risk" was considered a qualitative factor, until with efforts of Harry Markowitz, risk was quantifiable and standard deviation of investment plans cash flow was introduced as "risk assessment" equinity in different economic, social and political conditions.

Effects of risk investment to total risk investment was required "covariance" and "correlation coefficient" calculation that was difficult and time consuming calculations. Later, William Sharp released to investment word a simple and applied model by coefficient determination as risk factor [1].

Using the current theories and methods and theorizing are required to information special produce information in accounting system that in new capital market of our country is obtained difficulty. For this reason, recognize the relationship between market risk and accounting information have specific importance. Other studies, is showing relationship between accounting ratios and market risk and its suggested that accounting ratios can used in β securities forecast Ahmadpur & Jamkarani [2].

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This paper is looking for answer this question that are effects of related factors to risk on shareholders' equity cost with considering earnings quality in accepted companies in Tehran stock exchange effective or not?

2. Literature and study's background

2.1. Theoretical bases

Competitions in business environment are required business companies' ability for optimal attracting of limited environmental sources including customer, qualified human resources and financial resources. Optimal resources using is second factor that has effective role in competitive advantage for companies. In this regard, despite all planning and opinion accuracy by experts in this filed, but still there are factors out of company's control that can make increase companies accomplishment possibility to each operational goals. In this regard, company's accomplishment possibility to predetermined goals is released as risk. Risk is including possible change in anticipated benefits and advantages for a decision, as event or a state in future [10]. Shareholders' equity cost is one of effective variables in decision making models and is introduced as expected return of shareholders. On the other hand, shareholders' equity cost is said to minimum rate of return that a company should obtained that supplied investors returns in company. Actually if investment return ratio of one company is more, shareholder's wealth will increase. So if companies experiment lower shareholder's equity cost, can accept more investment projects. According to conceptual framework, accounting goal, financial reporting as such as provided information lead to decision by users. Provided information have features that mentioned as qualitative characteristic; qualitative characteristic was presented by financial accounting standard board (FASB) for the first time, after that accounting purposes was elaborated in statement financial accounting conceptual number 2 (2 SFAC), statement financial accounting conceptual number 2 is a bridge between SFAC number 1 related to financial characteristic on one side and other statement financial accounting conceptual framework on the other side. Tow primarily qualitative characteristic that help to make better and higher quality information due to decision making is including relevance, reliability and profit as one of important information of financial reporting.
The profit has higher quality that has high reliability and relevance and if this feature will increase, decision making will be more useful. Due to related limitations to information cost and its importance, can be said that if relevance and reliability of information will increase, information for users will be more useful [4].

2.2. Study's background

Ming FengHsu , is studying 4 risk factors related to shareholders' equity cost under asymmetry information. Results show that 4 risk factors have significant effects on shareholders' equity cost under earnings quality. Ming Feng Hsu & Zhang Yu is studying earnings quality and liquidity in shareholders' equity cost. Results show that discretionary accruals and liquidity reduce shareholders' equity cost. Franco measured effects of risk management on value creation for company. Results show positive and significant effects of risk management in company's value creation. Dastgiret al [7], are studying relationship between earnings quality and stock return. Results of studying 185 companies show that there is positive and significant relationship between earnings quality and stock return. BaniMahd

et al.[3], is studying products competitive ability and shareholders' equity cost. This study's results shows that competitive ability and shareholders' equity cost have adverse and significant relationship with each other. On the other hand, increasing competitive ability, reduce shareholders' equity cost. Rezazade & Zaheri [9], are studying discretionary accruals, systematic risk and financial disability. Survey's findings show that discretionary accruals have relationship with systematic risk and financial disability level.

3. Surveys hypothesis

First hypothesis: market risk factor has positive effect on shareholder's equity cost, under high earnings quality and adverse.

Second hypothesis: size risk factor has positive effect on shareholder's equity cost, under high earnings quality and adverse.

Third hypothesis: book risk to market factor has positive effect on shareholder's equity cost, under high earnings quality and adverse.

Fourth hypothesis: profit risk factor has negative effect on shareholder's equity cost, under high earnings quality and adverse.

4. Surveys method

Surveys method is including set of regulation, tools and valid and statistical ways (reliable) for facts studying, unknown discovery and obtaining to problems solutions [6]. This survey is correlation in terms of method and nature, in terms of relationship between variable is combined and in terms of data type is quantitative, in terms of implementation is descriptive survey and in terms of time is retrospective and in terms of surveys goal is upper applied survey.

4.1. Statistical population and sample

Most researchers believe that population is include all real members with this impose that we are interested to generalize findings to them [8].
This surveys population is including all accepted companies in Tehran stock exchange. The reason for choosing these companies as Statistical population is ease access to audited financial statements. Selecting companies' criteria has been done as step with elimination and systematic elimination. Thus study's population is including all accepted companies in Tehran stock exchange during 2009 to 2014, with regarding to following conditions:
The company's financial year ending to March (Esfand) each year (in terms of increase comparability);
Company do not change financial year during 2009 to 2014;
Company do not part of banks and financial institutes (investment companies, financial intermediary node, leasing companies);
Companies that does not trading interval more than 6 months;
Study sample is 76 companies, due to above limitations, by systematic elimination.

4.2. Operational definitions

4.2.1. Independence variables

Market risk measuring index
For measuring market risk use duration analysis. Duration of saving bond (or any other securities with fixed income) is equal to cash flows weight mean. In hear, weight is time interval to maturity securities.

Size risk measuring index
This index includes dispersion amount in earned return of 12 months that measure by standard deviation of 12 months' stock.

Book risk to market measuring index
This risk calculates by shareholders' equity cost book value division to market value of shareholders' equity cost.

Earning risk measuring index
For measuring earning risk uses systematic risk in this study.
Systematic risk (B):

$$\beta_i = \frac{\text{cov}(R_i, R_m)}{(\sigma_m)^2} = \frac{\sigma_i . \sigma_m . \rho_{im}}{(\sigma_m)^2} = \frac{\sigma_i . \rho_{im}}{\sigma_m} \tag{1}$$

That (cov) RI,Rm include covariance between stock return and portfolio market return, it means:

$$COV(R_i, R_m) = \frac{[(R_{it} - \overline{R_i})(R_{mt} - \overline{R_m})]}{n-1} \tag{2}$$

and $(\sigma_m)^{\gamma}$ variance of portfolio market return, $\rho_{i,m}$. Correlation coefficient is between i stock and portfolio market return, σ_i standard deviation of i stock return and σ_m standard deviation of portfolio market return [5].

4.2.2. Dependent variable

Due to measuring shareholders' equity cost in this study has been used Gordon valuation model as follows:

$$K_e = \frac{D_1}{P_0} + g \tag{3}$$

K_e: expected shareholders' return
D_1: expected dividend of future year
P_0: stock price in beginning of year
g: expected growth rate

4.2.3. Moderating variable: earnings quality
For calculating earnings quality in this study is used discretionary accruals (Jones adjusted model) that is as follows:

In this model that is trying to separate the discretionary accruals and nondiscretionary accruals has been tried evaluate economic conditions of business unit effects on accruals for a specific time period that known as event period with sell, estate, machinery and equipment variables, as follows:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta REV_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \tag{4}$$

In this relationship TA represents total accruals, A is total assets, REVΔ is sale income change and PPE is machinery and equipment.

Nondiscretionary accruals calculate for evolution period as follows:

$$NDA_{it} = \alpha_1 \left(\frac{1}{A_{it-1}}\right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + \alpha_3 \left(\frac{PPE_{it}}{A_{it-1}}\right) \tag{5}$$

RECΔ is changes in demands.

In the last step, discretionary accruals calculate as follows:

$$DA_{it} - \frac{TA_{it}}{A_{it-1}} - NDA_{it} \tag{6}$$

DA is discretionary accruals.

5. Study's findings

5.1 Volatility test

Due to significant effects of variance volatility on estimation, standard deviation and statistical inference, is required to realized existence or absence volatility before addressing any estimation. In this research Likelihood Ratio test used for testing variance equality in panel data.

Table 1: variance volatility test results

Statics	Statics amount	Significance level
Likelihood Ratio	3/17	0.068

H_0 hypothesis is that there is not variance volatility. Due to significance level (Prob> 0.05) H_0 hypothesis is accepted a H_1 hypothesis is rejected, in result our regression in 0.05% significance level is lack of variance volatility.

5.2 Chow test

Chow test done for determining fixed effects model using in-return of all data integration. Chow test coefficient to sum of squares error of binding and nonbinding model, is follows:

$$Chow = \frac{(RRSS - URSS)/(N-1)}{(URSS)/(NT - N - NK)}$$

(7)

This coefficient has F distribution with freedom degree of N-1andNT-N-K. If statistical value of calculated binding F is less that F value of table, in determined significant level, H_0 hypothesis rejects and there will be significant effects for sections and fixed effects model will be selected. Otherwise, uses Pooled data model.

Table 2: Results of Chow test (binding F)

Coefficient	Coefficient amount	Prob.
Fbinding	2/855563	0/000
Chi 2	223/321028	0/000

Noticed results for presented model in this study shows that both F and Chi Coefficient are in 0.05% of significance level. So H_0 hypothesis isn't accepted based on need to using Pooled model and model should estimate based on data panel method.

Husman Test Results

Husman test is used to determine fixed and random effects. H_0 hypothesis in Husman test means that there is not relationship between disruption related to intercept and explanatory variables and they are independence. On the other hand, if H_0 hypothesis is rejected and other hypothesis is accepted, we declare the fixed effects compatibility and random effects incompatibility and we should use fixed effects method.

Table 3: Results of Husman test

Coefficient	Coefficient amount	Prob.
Husman	102/822209	0/000

Noticed results shows that Chi 2 Coefficient is significant in 0.05 probability. Thus H_0 hypothesis about need to using gradient effects is not accepted and should estimate according to fixed effects method.

Study's hypothesis analyzing

First hypothesis: market risk factor has positive effect on shareholder's equity cost, under high earnings quality and adverse.

Second hypothesis: size risk factor has positive effect on shareholder's equity cost, under high earnings quality and adverse.

Third hypothesis: book risk to market factor has positive effect on shareholder's equity cost, under high earnings quality and adverse.

Fourth hypothesis: profit risk factor has negative effect on shareholder's equity cost, under high earnings quality and adverse.

$$AR_{i,t} = \beta_0 + \beta_1 MKT_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 EM_{i,t} + \beta_5 MKT_t \times HEM_{i,t}$$
$$+ \beta_6 SMB_t \times HEM_{i,t} + \beta_7 HML_t \times HEM_{i,t} + \beta_8 EM_{i,t} \times HEM_{i,t}, \qquad (8)$$

$$\begin{cases} H_0: \beta_i \neq 0 \\ H_1: \beta_i = 0 \end{cases}$$

Table 4: Estimation model results

Variables	Estimation coefficient	Standard error	t test coefficient	t test possibility
C	-10175027	2110040/0	-4/822195	0/0000
MKT	753456/6	224787/1	3/351867	0/0009
SMB	1/690497	0/301691	5/603409	0/0000
HML	466465/1	165253/2	2/822730	0/0050
EM	-431056/3	113019/6	-3/813997	0/0002
MKT*HEM	-1/94E-11	1/08E-10	-0/179724	0/8575
SMB*HEM	-0/056506	0/014809	-3/815595	0/0002
HML*HEM	-0/588041	0/038604	-15/23268	0/0000
EMH*EM	0/008395	0/016280	0/515679	0/6064
R^2	0/922364	Akaike criteria		29/62471
Adjusted R^2	0/903329	Schwartz coefficient		30/44244
Fcoefficient	48/45667	Hannan Quinn criteria		29/94692
Fpossibility	0/000000	Dorbin Watson criteria		1/922429

The results of estimation show that T test possibility for market risk, size risk, book risk to market and earning risk are smaller than 5%; so estimation coefficient of above variable is significant statistically. It means that above variables are important factors in shareholders' equity cost, thus all hypothesis are accepted with 95% confidence. Positive effect is accepted for first, second and third hypothesis due to positive regression coefficient; but in fourth hypothesis earning risk has negative effect on shareholders' equity cost, under high earning quality. Negative effect is accepted because of negative regression coefficient. Adjusted determination coefficient shows models explanatory power that it is able to explain 33.90% of shareholders' equity cost. F coefficient possibility shows that all the model is significant statistically (because F possibility is less than 5%). Since Dorbin-Watson criteria is between 1.5 and 2.5, so there is not any autocorrelation in model.

6. Conclusion

As the study's results shows some of risks aspects have informational content and with regarding to earnings quality that has significant relationship with shareholders' equity cost, meanwhile some of other features have not informational content and does not constitute as related information in investment decisions. First hypothesis tests results are consistent with Ming FengHsu andDastgir& et al , but is not consistent with study of Feng Hsu & Zhang Yu . According to literature, in addition to various aspects of risk factor, another factor has effects on shareholders' equity cost that effects of this

factor is considered as moderating variable. The results of second, third and fourth hypothesis is consistent with Ming Feng Hsu.

However, the general study's results show that used independent and moderating variable, is include all affecting factors on shareholders' equity cost. Present study's results show that there is possibility of using quantitative methods for earnings quality processing and preparing them for decision making. Academic recognition of earnings quality and shareholders' equity cost changes, is opportunity to replace scientific analysis rather that subjective data that should not be ignored. Present study's main obstacle that can affected results generalization of study, is that data are not adjusted for inflation. Some Suggestions for future surveys are as follows:

1. Studying measurement models evaluation of shareholders' equity cost with profit margin deviation;
2. Optimize Markowitz risk management patterns and parametric VaR (value at risk) in Iran's capital market;
3. Examination predictive value, certified value criteria and specific selection in earnings quality evaluating;
4. Studying market risk traditional and modern methods effects on earning profit forecast.

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