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Measuring Diversification and Information Risk in Iran's Mutual Funds

Heidar Foroughnejad[1]

Abstract

This study aims to investigate the correlation between the diversification and accruals quality (AQ) in Iran's mutual funds considering two main hypotheses and four sub-hypotheses. This research investigates the effects of cases such as beta of the company, the company's return on assets, debt ratio of company, firm's size, and accrual quality on the company's cost of capital and considers the effect of mutual funds' diversification on decreasing information risk calculated through accruals quality in Tehran Stock Exchange (TSE) and Iran Farabourse listed companies. This research investigates 42 mutual funds from 2009 to 2013. Furthermore, the financial data of companies is considered for 20 years up to 2013 in order to calculate the accruals quality. The research results indicate that the factors such as the company's beta, the company's return on assets, and the ratio of firm's debt have direct correlation with cost of capital and this indicates that the increased risk in the form of beta and debt ratio increases the investors' expected return. However, the firm's size is inversely correlated with the cost of capital indicating that the increased firm's size provides the possibility of borrowing and bargaining at lower costs for companies. Furthermore, diversification in mutual funds results in lowering information risk caused by low accrual quality. Accordingly, the result of this research can help the mutual funds' managers and investment companies to better manage their investments.

[1]. Faculty Member, Financial Management Department, Islamic Azad University, North Tehran Branch, Foroughnejad@yahoo.com .

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Introduction

Given the high diversity in investment options, investors select various options. This choice is based on characteristics of risk and return. Any logical person invests with the purpose of earning the appropriate return. To reach an estimate of the expected return, investors try to provide the necessary information from various sources; and the accounting earning is also one of the most important information. The accounting earning is measured based on the accrual assumption and in the form of accounting principles and emphasizes on the reported reliability of items. The accruals quality has been always taken into account by financial management due to the impact on investors' perception of earnings quality in order to reduce the cost of capital of the company through its improvement (Francis et al. 2005). In fact, managers try to identify the appropriate tool for minimizing the cost of capital and pay attention to it by identifying the factors affecting the profitability of the company. The aim of this study is to identify and explain the relationship between the accruals quality and cost of capital, using the data of companies listed on Tehran Stock Exchange. The cost of capital refers to the ordinary shareholders' expected return, which is calculated in the form of weighted mean of financing cost through the stock by debt financing.

Theoretical principles and research literature

The expected return is influenced by two factors: First, the rate of confidential information (the expected return is increased by enhancing the confidential data), and then the accuracy of public and private information (the expected return is reduced by enhancing the precision and accuracy of data). On the other hand, the value of securities for investors is based on their assessment of future cash flows. Therefore, the criterion associated with the accrual components of earnings is the best one which covers the information risk in cash flows. A major part of information about cash flows is provided by

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earnings. For instance, the cash flow is equal to the earnings minus the accruals. In general, the earnings accrual is determined with higher uncertainty than its cash component because the accruals are created according to the judgments, estimates, and assignments (from the cash flows generated in other periods), while the cash component of earnings is more objective (Francis et al. 2005)

Taking into account the results of previous studies on the qualitative features of earnings, the accruals quality is more appropriate than other earnings' features to determine the information risk of cash flows (McNichols, 2002).

The financial analysts, managers and investors pay particular attention to reported earnings. The earnings' forecasts are quickly spread among users, and any revision in it is closely followed. Since the retention of managers in the organization and in some cases a part of their compensation are determined based on the earnings figure, they try to maintain a good earnings level. The news of the firm's failure in achieving the expected earnings reduces the stock price. Companies which achieve their expectations are welcomed by investors.

The managers' efforts to use the accrual for earnings improvement reduce the information asymmetry, which creates the information risk. Therefore, the risk premium demanded by investors is reduced and the studies indicate that in large case companies, which are studied over the long periods, the management authority leads to opportunistic earnings. Therefore, the quality of accruals is the combination of increasing and decreasing of the information risk (Francis et al, 2005).

The accruals consist of two components, the optional components, or the items which management can apply control on them, and inherent components which management is not able to impose control on them.

Diversification

Creating a portfolio consists of choosing from different investments with risks in order to gain the most return from the least risks. Markowitz was the first, who studied this issue and published the study in an article in 1952 article, and a book in 1959. The main assumption of Markowitz's stock choosing mechanism was the idea that investors are basically risk averse. Portfolio is consisted of investments, as well as real and financial assets. The aim of

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making a portfolio is dividing investment risk between multiple stocks, to be able to cover one investment's loss with the other's gain.

Two main assumptions of portfolio theory:

- Investors are generally rational and risk adverse. They are completely aware of all the risk contained in investment and actually take positions based on the risk determination, demanding a higher return for accepting greater volatility.
- The distribution of securities' return is normal.

This is important, because we can calculate the average of distribution and risk based on the variance of the security. The stock pricing was first introduced by Sharp (1946) and Linter (1965) and continued to develop Markowitz's model.

Accruals quality

Ogneva (2012) has provided a simple methodology in his article based on the earnings response coefficient (ERC) which makes it possible to divide the realized returns into the cash flow shocks and exception returns of cash flow shocks. He has found that the shocks with weak (strong) quality of accruals have been exposed to lower (higher) shocks of cash flows on average in the past 37 years. These lower (higher) shocks of cash flows exclude the higher expected returns (lower) in companies with lower accruals quality (higher). After excluding the cash flow shocks, the realized future returns also have the negative correlation with accruals quality. These premiums including the accruals quality are statistically and economically significant in standard asset pricing tests when the shocks of cash flows have been excluded from the division of firm specific returns. In general, this research provides the evidence for existence of priced risk of accruals and emphasizes on the importance of cash flow shock control in asset pricing tests which utilize the realized returns.

The evidence indicates that the accruals quality criterion based on Dechow and Dichev (2002) is priced by market and is important due to the theoretical attraction of model and its wide application in the accounting research. The model is particularly attractive in the context of pricing assets, because it includes the important feature of accruals quality and the quality of earnings, errors in estimation of accruals and the future returns of these items. These

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errors are associated with the accounting information accuracy concept which plays the theoretical role in linking the cost of capital and quality of information. (Lambert et al, 2007)

This paper also has the untold facts for studies which use the realized returns as the alternatives to the cost of capital, and provides the simple way to identify the correlations with future shocks of cash flows and control the effects of these shocks. The results approve the importance of excluding the cash flow shocks to avoid the biased estimates of the risk premium.

Paugam and Ramond (2014) have examined the effect of Impairment-Testing Disclosures on the Cost of Equity Capital. According to them, the information risk creates the uncertainty related to the distribution parameters of future cash flows in the company and the evaluation errors and it is costly for investors who need higher returns to compensate for the higher information risk. They believe that managers disseminate the information which reduces the information risk on average through the disclosure of impairment test. Based on the sample disclosure of 250 accepted companies in France from 2006 to 2009, they have found that there is a negative correlation between the disclosure of impairment tests and the implicit cost of capital. They have found that the future-oriented disclosure of the company has a negative correlation with the cost of capital, while descriptive disclosures have no correlation with the cost of capital. Furthermore, companies avoid the registration of impairment when economic indicators suggest that this impairment should be recorded, they do not indicate any correlation between the impairment-testing disclosure and the cost of capital. This indicates that the disclosure of these companies for investors is interpreted as the less accurate disclosure than prediction errors. Their study indicates that economic consequences of the accounting mechanism for disclosure of impairment-testing in financial reporting, and approves the conservatism of the financial reporting.

Francis et al (2004) have studied the earnings quality pricing in markets. In this study, there is more evidence whether the capital markets and debt markets apply the information of earnings quality. They have examined 8 alternatives for earnings quality (four models based on adjusted Jones model for estimating the abnormal accruals, three criteria based on Dechow and Dichev's approach (2002), which links the working capital accruals to cash flows, and a factor analysis except for the other seven methods). Among these eight criteria, they have found that the companies with lower earnings quality, have higher cost of

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capital; and their evidence is fully obvious in the form of lower ranking of debt securities, the realized higher costs of debt, the ratios of earnings to higher adjusted price of industry, the higher betas of capital, and positive pressure on pricing regressions of significant statistical one and three-factor assets. The documented effects are statistically and economically meaningful and important: The results indicate that the companies which have the highest earnings quality, benefit from the lower figures of 80 to 160 hundredths of a percent of debt cost and 150 to 300 hundredths of a percent of cost of capital compared with companies with the lowest earnings quality.

They have found that shareholders price the securities in a way that it reflects their knowledge of earnings quality: The lower quality earnings are correlated with lower debt ratings, higher realized debt costs, lower prices ratios than earnings, and higher capital beta. Furthermore, the earnings quality is increased as a separated factor in interpretation of excess changes in returns in one and three-factor models. The results are consistent in securities (debt and capital), estimated procedures (collective and Fama-MacBeth regressions, specification of variable (raw and decile) and model identification (cross-sectional levels against the changes over time) and maintain their power in the case of inclusion of control variables in influencing the hypothesized relationships, including the earnings fluctuations. According to their evidence, there is a correlation between the tested earnings quality criteria with accounting/quality earnings applied in previous studies (e.g., the ability of annual earnings to explain the annual returns and the regression reaction coefficients of two-day returns to quarterly earnings news). In general, they have considered these results as the reference under which the consequences of systematic capital markets are correlated with changes in earnings quality.

Mutual Funds

The most valuable mutual funds based on net asset value (NAV) measure, are stock mutual funds. There are two types of mutual funds: Active strategy funds, in which the manager actively manages the holdings; Passive mutual funds, in which the manager follows an index and duplicates the weights. The first index fund was introduced in 1976 by Vanguard Group and in late 2010s the index funds reached 13% of NAV of mutual funds around the globe.

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Mutual funds in Iran are defined by article 21 of the securities markets law enacted in 2006 and considered the structure of mutual funds in developed countries. Investors should study the prospectus and statutes and regulation of these funds to be able to monitor their activities and choose the pertinent strategy and buy units of fixed income or stock funds.

Research methodology

The research is applied in terms of objective and it has the regression and correlation method. The research is conducted within the framework of deductive-priori reasoning; in other words, its background and theoretical framework are inductive and according to the library studies, the Internet and articles, and the data is inductively collected to prove or reject the hypotheses.

This study is correlative and the multiple-regression is applied to test the hypotheses. The necessary information about the accruals and cost of capital and the required data related to the accruals and cost of capital, and data of stock market value are extracted from the financial statements of companies listed on Tehran Stock Exchange, stock exchange reports, the databases like Rahavard Novin, and websites of capital market information.

Population and sample

We first chose 42 mutual funds for 5 years period from 2009 to 2013. After extracting monthly portfolios, the weight of each security comparing the whole fund was calculated. These data consisted of 2520 observations in 5 years. In order to calculate the diversification, the SD and coefficient of securities was brought by each fund in different months. In this regard, data of 21900 observations gathered. The AQ calculation was based on 20 years period before the test period. Afterwards, using CAPM model the Beta data was calculated from the regression models of 127 companies.

Main hypothesis:

H1: The cost of capital of companies with low accruals quality is different from the companies with high accruals quality.

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Sub-hypotheses:

First hypothesis: There is a significant correlation between the beta of company and the cost of capital.
Second hypothesis: There is a significant correlation between the return on assets and cost of capital.
Third hypothesis: There is a significant correlation between the debt ratio and cost of capital.
Fourth hypothesis: There is a significant correlation between the firm size and cost of capital.
H2: Mutual funds are able to decrease information risk with an increase in diversification.

Measuring Diversification

The Choueifaty, Froidure, Reynier , (2013) method was used for measurement of diversification. They present a real measure of portfolio diversification named diversification ratio (DR) and calculated based on a proportion of weighted average of asset portfolio fluctuation to be less than or equal to the total average fluctuation of assets. If this happen, the DR would be bigger than one.

Consider a world with N assets with typical risk characteristics which their fluctuation is (σ_i), the correlation matrix is consisted of $C=(\rho_{i,j})$ and covariance matrix is consisted of $\Sigma(\rho_{i,j}\sigma_i\sigma_j)$ and $1 \le i, j \le N$.

Weight of each asset is (w_i) and its fluctuation is $\sigma(w)$ and the weighted average of its fluctuation is $\langle w|\sigma\rangle = \Sigma_i w_i \sigma_i$. The DR would be as follow:

$$DR(w) = \frac{\langle w|\sigma\rangle}{\sigma(w)}$$

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Decomposition of DR

It can be inferred that portfolios with centralized highly correlated weights, are less diversified and have lower DR. However, with decomposition of DR to correlation and centralization factors, these two factors could be highlighted. The decomposition is as follows:

$$DR(w) = [\rho(w)(1 - CR(w)) + CR(w)]^{-\frac{1}{2}}$$

In which $\rho(w)$ is the weighted average of portfolio's assets correlations

$$\rho(w) = \frac{\Sigma_{i \neq j}(w_i \sigma_i w_j \sigma_j)\rho_{i,j}}{\Sigma_{i \neq j}(w_i \sigma_i w_j \sigma_j)}$$

And $CR(w)$ is the weighted centralization of portfolio's fluctuation.

$$CR(w) = \frac{\Sigma_i (w_i \sigma_i)^2}{(\Sigma_i w_i \sigma_i)^2}$$

A totally centralized long position's (only one asset in the portfolio) DR equals one, and the weighted average portfolio would have the lowest centralization ratio equal to 1 divided by the number of assets. The centralization ratio is the result of the Herfindahl Hirschman index generalization. The centralization ratio not only measures the centralization of weights, but also measures the centralization of risks. The assets are weighted based on related fluctuations.

Calculation of cost of capital (CC)

The total cost of capital of the company is equal to the weighted mean cost of different sources of funds used by the company and the (weight) factor of each source towards the capital structure of the company. The weighted mean cost of capital is calculated according to the following formula:

$$CC = K_e \frac{S_i}{D_i + S_i} + kd \frac{D_i}{D_i + S_i}$$

CC= Weighted mean cost of capital of the company during the target period

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Kd= Effective debt rate of the company during the target period
Ke= The common stock cost of the company during the target period
D= Total financing of companies (book value) during the target period
S= Common stock equity (book value) of the company during the target period

Calculating the cost of debt (KD)

The cost of debt is a part of cost of capital which is paid for funding from the outside of the company. This cost in fact includes the interest paid for interest-bearing liabilities such as the short-term and long-term loans. In the case of companies, which have issued the bonds, the cost of bonds is also added to them. Given the number of loans received by companies, a mean can be considered as their cost of interest and debt.

Calculating the cost of equity (Ke)

In this study, the capital assets pricing model (CAPM) is used to calculate the cost of equity.

The capital assets pricing model is one of the most important innovations in the theory of portfolio. This model is simple, but powerful. This single-factor model has still a lot of uses. The CAPM is provided by Sharp (1978), Lintner (1956) and follows the theory of portfolio and diversification by Markowitz (1952). This model provides a linear relationship between the expected returns and beta. This model has changed the total risk to systematic risk in order to determine the expected rate of return; its equation is as follows:

$$E(R_i) = R_f + \beta_i [E(R_m) - R_f]$$

According to the CAPM, the expected return of an asset is only affected by its systematic risk; and beta is the criterion of systematic risk. Two assets with the same beta will have the equal expected return; and the nature of assets will have no effect on this issue.

Measurement of accruals quality (AQ)

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This study focuses on a specific structure under which the managers make decisions. Therefore, the accruals quality is considered as an alternative to information risk. According to the provided definitions in the literature, the accruals quality is defined as follows:

The accruals quality is defined as the standard error time series of regression residuals of working capital accruals for cash flows of past, present and future due to the operation, as well as the changes in earnings, assets, installations and equipment. (Francis et al, 2005). This criterion is defined as the AQ in this study.

The mentioned regression equation is applied for estimating the accruals quality of the company j in the year t. This equation is as follows (Equation 1):

$$\mathrm{TCA}_{j,t} = C + \varphi_{1,j}\mathrm{CFO}_{j,t-1} + \varphi_{2,j}\mathrm{CFO}_{j,t} + \varphi_{3,j}\mathrm{CFO}_{j,t+1} + \varphi_{4,j}\Delta\mathrm{REV}_{j,t} + \varphi_{5,t}\mathrm{PPE}_{j,t} + \varepsilon_{j,t}$$

$\Delta REV_{j,t}$: Changes in sales of company

$PPE_{j,t}$: Gross property, machinery, equipment

$TCA_{j,t}$: Total current accruals

$TCA_{j,t}$ Is calculated according to (2):

$$\mathrm{TCA}_{j,t} = (\Delta\mathrm{CA}_{j,t} - \Delta\mathrm{Cash}_{j,t}) - (\Delta\mathrm{CL}_{j,t} - \Delta\mathrm{STDEBT}_{j,t})$$

$\Delta CA_{j,t}$: Changes in current assets

$\Delta Cash_{j,t}$: Changes in cash flow, $\Delta\mathrm{CL}_{j,t}$: Changes in current liabilities

$\Delta\mathrm{STDEBT}_{j,t}$: Changes in payables or other short-term interest-bearing debt

$\mathrm{CFO}_{j,t}$: Operating cash flows in each year.

Based on the model by Francis et al (2005), the accruals quality in the year t is equal to the standard deviation of residuals in the company in equation (1) from the years t to t-4, and it is calculated according to the equation (2):

$$AQ = \sigma = \sqrt{\frac{\sum_{n=t-4}^{t}(\varepsilon_{j,n} - \bar{\varepsilon})^2}{4}}$$

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$\bar{\varepsilon}$: The mean residuals during the years t to t-4. This information is provided in Appendix 1.

The correlation between the accruals quality and the cost of capital

According to the study of accounting and financial literature and the defining scope of beta for the company, the ratio of return on assets, the ratio of debt to assets, and the firm's size are selected as the moderator variables in order to examine the primary hypotheses of research along with the cost of capital variable in a multiple regression model.

The multi-factor analysis is done by investigating the correlation between accruals quality and the cost of capital. The following regression model (Equation 3) is estimated on this basis:

Equation (I)

$$CC_{it} = C + \alpha_1 B_{it} + \alpha_2 ROA_{it} + \alpha_3 Lev_{it} + \alpha_4 LNS_{it} + B_t AQ_{i,t} + \varepsilon_{it}$$

CC_{it} : Cost of capital

B_{it} : Beta of pricing model for capital assets

ROA_{it} : Return on assets

Lev_{it} : Ratio of Debt to assets

LNS_{it} : Firm's size

ε_{it} : Error term (residual) in estimation of regression

AQ_{it}: Accruals quality

The researcher's main focus is the $AQ_{i,t}$ correlation coefficient or B_t which is expected to be positive.

The diversification effect on pricing of accruals quality

Finally, it will be analyzed that is it possible to diminish the relation between accruals quality and the cost of capital with diversification. For this reason,

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calculated DR would be categorized by percentiles, and these would be entered in the regression models in two ways:

Equation(II)

$$CC_{it} = C + \alpha_1 B_{it} + \alpha_2 ROA_{it} + \alpha_3 Lev_{it} + \alpha_4 LNS_{it} + B_t AQ_{i,t} + \sigma_t DR_{it} + \varepsilon_{it}$$

Equation(III)

$$CC_{it} = C + \alpha_1 B_{it} + \alpha_2 ROA_{it} + \alpha_3 Lev_{it} + \alpha_4 LNS_{it} + \sigma_t DR_{it} + \theta_t (AQ_{i,t} \div DR_{pt}) + \varepsilon_{it}$$

$\frac{\theta_t}{B_t}$ Captures the effect of diversification on pricing of accruals quality.

Model estimation and its analysis

ModelI

$$CC_{it} = C + \alpha_1 B_{it} + \alpha_2 ROA_{it} + \alpha_3 Lev_{it} + \alpha_4 LNS_{it} + B_t AQ_{i,t} + \varepsilon_{it}$$

Dependent Variable: CC Method: Panel EGLS (Cross-section weights) Date: 11/15/15 Time: 16:33 Sample: 1 635 Periods included: 5 Cross-sections included: 127 Total panel (balanced) observations: 635 Linear estimation after one-step weighting matrix White cross-section standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.029878	0.037039	-0.806682	0.4202
B	0.046838	0.001519	30.84115	0.0000
ROA	0.024995	0.011636	2.148096	0.0322
LEV	0.008946	0.010435	0.857343	0.3917
LNS	0.009014	0.002825	3.191042	0.0015

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AQ	2.38E-08	3.26E-09	7.302737	0.0000
Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0.898005	Mean dependent var	0.198329
Adjusted R-squared	0.871441	S.D. dependent var	0.136114
S.E. of regression	0.028512	Sum squared resid	0.408915
F-statistic	33.80611	Durbin-Watson stat	1.969094
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.775773	Mean dependent var	0.125204
Sum squared resid	0.451129	Durbin-Watson stat	1.789473

The significant level of F is equal to 0.0000 which is less than 0.05, thus the null hypothesis is rejected at the confidence level of 95%; in other words, there is a significant model at the confidence level of 95%.

The adjusted coefficient of determination is equal to 0.801111; in order words, about 80% of variance in the dependent variable is explained by independent variables. The value of Durbin-Watson is equal to 1.889. The values close to 2 indicate the lack of autocorrelation of residuals, which is another regression assumption.

Hypothesis test

First hypothesis test

The cost of capital of companies with low accruals quality is different from the companies with high accruals quality.

H_0: There is no significant correlation between the accruals quality and cost of capital of companies listed on Tehran Stock Exchange.

$$H_0 : \beta_i = 0$$

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H_1: There is a significant correlation between the accruals quality and cost of capital of companies listed on Tehran Stock Exchange.

$H_1 : \beta_i \neq 0$

According to the table (1), the accruals quality coefficient is equal to 2.60E-08 (0.00000003). According to t statistic which is equal to 2.486438 and p-Value of 0.0132, which is less than 5% (0.05>0.0132), the results of this variable indicate the significant indicator of this coefficient at the error level of 5%. Therefore, the H_0 (research hypothesis) is rejected and there is a correlation between the accruals quality and cost of capital; in other words, the less the accruals quality, the more the cost of capital of companies.

First sub-hypothesis: There is a significant correlation between the beta of company and the cost of capital of companies listed on Tehran Stock Exchange.

According to the table (1), the beta coefficient is equal to 0.046975. According to the t statistic, which is equal to 13.47739 and the p-Value of 0.000 which is less than 5% (0.05>0.000), the results of this variable indicate that this coefficient is significant at the error level of 5%. These findings suggest that the beta of companies has a significant positive correlation with the cost of capital of companies.

Second sub-hypothesis: There is a significant correlation between the return on assets and the cost of capital of companies listed on Tehran Stock Exchange.

According to the table (1), the return on assets coefficient is equal to 0.047377. According to the t statistic, which is equal to 2.947422 and the p-Value of 0.0004 which is less than 5% (0.05>0.0004), the results of this variable indicate that this coefficient is significant at the error level of 5%. These findings suggest that the return on assets has a significant positive correlation with the cost of capital of companies

Third sub-hypothesis: There is a significant correlation between the debt ratio and cost of capital of companies listed on Tehran Stock Exchange.

According to the table (1), the debt ratio coefficient is equal to 0.041699. According to the t statistic, which is equal to 3.880931 and the p-Value of 0.0001 which is less than 5% (0.05>0.0001), the results of this variable indicate that this coefficient is significant at the error level of 5%. These findings suggest that the debt ratio has a significant positive correlation with the cost of capital of companies.

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Fourth sub-hypothesis*:* There is a significant correlation between the firm's size and the cost of capital of companies listed on Tehran Stock Exchange.

According to the table (1), the firm's size coefficient is equal to -0.020916. According to the t statistic, which is equal to -3.574398 and the p-Value of 0.0001 which is less than 5% (0.05>0.0001), the results of this variable indicate that this coefficient is significant at the error level of 5%. These findings suggest that the firm's size has a significant inverse correlation with the cost of capital of companies.

Second hypothesis test

Mutual funds are able to decrease information risk with an increase in diversification.

The results of three models are summarized in the following table

	Model (I)	Model (II)	Model (III)
Adjusted R-squared	0.87	0.90	0.91
S.E. of regression	0.028	0.021	0.021
F-statistic	33.80	45.59	50
Durbin-Watson stat	1.96	2.12	2.12

Considering the results, especially the F statistic, it can be observed that the model statistics were improved after adding the DR to the model. The coefficient of determination has an increasing trend, which reveals the better descriptive power of the models. The Durbin Watson statistics show the power of all three models. The results show that increasing the diversification helps the pricing of information risk (accrual quality).

The coefficient of AQ and AQ/DR can describe the effect of diversification on accrual quality, and after that we should consider the $\frac{\theta_t}{B_t}$. If this ratio was bigger than 1, it can be inferred that with the increase of diversification, the information risk decreases. The results of these 2 variables are as follows:

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
AQ	0.000000382	0.0000000263	0/302737	0.0000
AQ/DR	0.000000583	0.0000000376	5/610999	0.0000

Considering this table, it can be concluded that the coefficient of AQ/DR and AQ are meaningful. $\frac{\theta_t}{B_t}$ equals 1.5, which confirms the decrease of information risk with the increase of diversification.

Conclusion

The first hypothesis result shows that the there is a reverse relation between AQ and WACC, which confirms the Francis et.al (2005)'s results. They showed that companies with lower accrual quality had higher realized returns, higher debt cost, and higher P/E ratio comparing the companies with higher accruals quality. They also revealed that accruals quality is priced in WACC of each company. On the other hand, these results are in conflict with results of Core et.al (2008).

The second hypothesis test revealed that increasing diversification is able to price information risk. These result are in conflict with Lambert et.al (2011). They showed that the information effect of Easley and O'hara (2004) could be eliminated with perfect competition. With higher transactions, the effect of information risk is diminished.

The present study showed that accounting information risk, even totally idiosyncratic, could be priced. When the capital market is diversified less than needed, the information risk is priced based on diversification. Furthermore, even in the totally diversified market, the non-transparent information risk of discretionary accounting could not be managed. The results also revealed that the lower AQ may bring higher WACC and diversification helps the pricing of information risk. In other words, this risk is diminished with diversification.

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