

Study of the relationship between accrual quality and Unsystematic risk of stock in the accepted Companies in Tehran stock exchange

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ABSTRACT: The recent research has studied the relationship between accrual quality and unsystematic risk. The independent variables include accruals, information content of accruals, discretionary accrual amount that have been considered as quality features of accruals. The dependent variable is non-systematic risk according to fama & French and CAPM models. Company size, financial leverage, stock return. Cash flow fluctuation, book value to market value has been considered as control variable. The method of library information and documents are financial statements. The method of analyzing data has performed from multiple regressions. The results showed that there is significant and direct relationship between financial leverage and discretionary accruals with unsystematic risk according to fama and French model and CAPM model. There is significant and direct relationship between accrual ability, information content of accruals, company size and stock return with unsystematic risk according to fama & French and CAPM models. There isn't also relationship between the ratio of book value to market value and cash flow fluctuation with unsystematic risk according to fama & French model and CAPM model.

Keywords: accrual quality, unsystematic risk, CAPM model, Fama & French model.

INTRODUCTION

One of the needed information is to know investment risk. We define risk as the difference probability between real return and expected return (Noroush & Vafada 1999). Believe that risk of one asset like stock is to change future return probability resulted from asset. There fore, we can define risk as standard deviation of return rate by distribution criterion of asset return, and then we can calculate the distribution of possible returns from the expected return by variance and regard as one criterion of risk. Generally, we can obtain risk by measurement between real return and the expected return by the statistical methods, regression slope semi- variance and regression reminder.

In financial literature, the types of various risks have been identified that each one has its special definition. From one prospective, we can classify risk into two classes: the first class is risks that is related to internal factors of company. In each company, these risks depend on the special conditions of the same company and isn't related to risk of other companies. Finally, this kind of risk can allocate to one certain industry. This kind of risk is unsystematic risk. The second class is risks that hasn't allocated to one or many companies and is related to whole market. These risks are existed from factors that return of whole market is affected and it is called systematic risk (Noroush & Vafadar, 1999).

Systematic risk is related to outside factors but unsystematic risk is related to outside factors of company. As, accrual quality includes internal factors. For this reason, in this research, we try answering this question, is there relationship between accrual quality and unsystematic risk that both of them include internal factors?

Research theoretical basics

Accrual quality is used as view to measure financial statement quality. Accrual has been defined as the difference between accounting profit and cash flows and from investor perspective, we can define accruals as closeness of company profit or cash flows. Law accrual quality decreases closeness of profit with cash flows and increases investor risk in relation to decision- making about special company or companies (Francis *et al*, 2005). Accruals are divided into two categories: discretionary accruals and non- discretionary accruals.

Discretionary accruals are changed with management decisions of commercial unit, namely, are affected by selective procedures and policies.

The more discretionary management for modification of accruals, the more using them will be. Depreciation cost, income resulted from investors, advantage and disadvantage resulting from the sale of fixed assets and bonds fraction are as sample of discretionary accrual. While non- discretionary accruals are limited by laws, organization and other external factors.

Discretionary accruals are affected by management of commercial unit (Jonz, 1991).

Research background

Chon *et al* (2006) studied the relationship of accrual with future stock return and showed that in companies with high accruals, stock return is decreased in the next periods of financial reports. These finds show when investors understand low earning quality, they modify stock price in proportion to this subject, but this reaction performs by delay.

Ang *et al* (2006) computed unsystematic risk of each stock according to three factorial fama & French model. They resulted that high unsystematic risk in each month predicts low return mean. They showed that portfolio return that has the lowest unsystematic risk, is 1.06 percent more than portfolio return that has the highest unsystematic risk.

The results of Radakrishtan (2008) indicated that the variety of sections has relationship with earning quality and positive accrual has positive relationship with cash flows and this relationship is negative about multi- sectional companies.

Wei & Zhang (2006) found that change in company performance has relationship with transient changes in unsystematic risk over time. Arvin & Puntif attribute Wei & Zhang result to substantial cash flow stock due to increases in economic competitiveness.

1. Research hypotheses

H₁: There is relationship between the ability of accruals and unsystematic risk according to CAPM model.

H₂: There is relationship between the ability of accruals and unsystematic risk according to fama and French model.

H₂: There is relationship between the ability of accruals and unsystematic risk according to fama and French model.

H₃: There is relationship between abnormal (discretionary) accruals and unsystematic risk according to CAMP model.

H₄: There is relationship between abnormal (discretionary) accruals and unsystematic risk according to fama & French model.

H₅: There is relationship between information content of accrual and unsystematic risk according to CAPM model.

H₆: There is relationship between information content of accrual and unsystematic risk according to fama & French model.

Methodology

This research is descriptive- correlation and the objective is practical, because the purpose is to use these results in capital market.

Research model

In this research, the ability of accruals, non- discretionary accruals and information content variables are as independent variables and non- systematic risk is as dependent variable according to fama & French model CAPM model. Company size, financial leverage, stock return, each flow fluctuations and the ratio of book value market value are as control variables.

Multi- variable regression models for each hypothesis are as follows:

$$1) \beta_{CAP} = \beta_0 + \beta_1 R^2 + \beta_2 VCFO + \beta_3 CFO + \beta_4 RE + \beta_5 SIZE + \beta_6 B/M + \beta_7 B/M + \varepsilon$$

$$2) \beta_{CAP} = \beta_0 + \beta_1 R^2 + \beta_2 VCFO + \beta_3 CFO + \beta_4 RE + \beta_5 SIZE + \beta_6 B/M + \beta_7 B/M + \varepsilon$$

$$3) \beta_{CAP} = \beta_0 + \beta_1 R^2 + \beta_2 VCFO + \beta_3 CFO + \beta_4 RE + \beta_5 SIZE + \beta_6 B/M + \beta_7 B/M + \varepsilon$$

$$4) \beta_{CAP} = \beta_0 + \beta_1 R^2 + \beta_2 VCFO + \beta_3 CFO + \beta_4 RE + \beta_5 SIZE + \beta_6 B/M + \beta_7 B/M + \varepsilon$$

(1)

Research findings

Descriptive findings of research variables:

Descriptive statistic of research variables including non- systematic risk according to CAPM model (R_c), non-systematic risk according to fama & French (R_F) model, discretionary accruals (ACC), information content accruals (ICA), Ability of accruals for prediction of optional cash flows (ACR), company size (SIZE), financial leverage (FL), market value to book value (M/B), stock return (R), operating cash flow fluctuations (VCFO) and operating cash flows (CFO) given in table 1.

Table 1. descriptive analysis of research variables

VAR	S.E	Average	Max	Min	Number	variable
.020	.14209	.365	1.84	.083	455	R _c
.025	.159593	.776	4.74	-2.93	455	R _F
.695	.872668	146239	25676876	38590	455	ACC
.025	.15818	.14789	1.220	-.23328	455	ICA
.008	.08683	.02983	.9374	-.5078	455	ACR
.024	.15366	2.021	4.99	.13	455	SIZE
.083	.28858	.875	1.811	-.053	455	FL
.100	.316	1158635	56595170	3702	455	M/B
.388	.840	13.776	62.74	-25.88	455	R
.032	.1780	17292	80946	3456	455	VCFO
1.024	.153	1,309,250	309,250	-768,177	455	CFO

Considering that we use the combination of erass- sectional series data to test hypotheses, the number of year-company observation has been observed according to balanced combination data, 455 (91 companies). According to descriptive statistics, distribution index of these variables is low in the various companies. The maximum standard deviation relates to stock return and the minimum standard deviation relates to the ability of accruals to predict operating cash flows.

By studying Skewness of pach variables and its comparison with normal distribution, it seems that all variables have been distributed normally.

Normality test of variables.

To study normality of variables, kolmogorov- smirnov test has been used. Actually, this test is used to evaluate normality of distribution of one- variable qualitative data that is according to spss software. In below table, the results of normality test of variables have been shown:

Table 2. normality test of variables

Sig	Z kolmogorov- smirnov	Variables
0.238	1.031	R _c
.691	0.712	R _F
0.299	0.450	ACC
.642	0.741	ICA
0.582	0.777	ACR
0.094	1.235	SIZE
0.331	1.315	FL
0.370	.917	M/B
.880	0.588	R
0.142	1.390	VCFO
0.427	1.373	CFO

As shown, as significant level in each variables is higher than 0.05, thus research variables have normal distribution.

Correlation test

In this research, we study the correlation between variables. As shown in the previous section, data distribution is normal.

Therefore, to study the correlation between variables, person correlation coefficient is used. The result of this study is given in table 3.

Table 3. Test of Pearson correlation

CFO	VCFO	R	M/B	FL	SIZE	ACR	ICA	ACC	R _F	R _C	Variable
.165	.004	.391**	.113	.064	.452	.520**	.432**	.294**	.853	1	R _C
.097	.050	.428**	.099	.093	.308	.196**	.407**	-.385**	1	.853	R _F
.051	.010	.229	.073	.096	.157**	-.083	-.180**	1	-.385**	-.294**	ACC
.106**	.030	.426**	.113**	.081	.371**	.068	1	-.180**	.407**	.432**	ICA
.033	.038	.136	.003	.027	.311	1	.068	-.083	.196**	.520**	ACR
.011	.039	.038	.092	.087	1	.311	.371**	.157**	.308	.452	SIZE
.120**	.374**	.120**	.137**	1	.087	.027	.081	.096	.093	.064	FL
.083	.149**	.156**	1	.137**	.092	.003	.113**	.073	.099	.113	M/B
.182	.035	1	.156**	.120**	.038	.136	.426**	.229**	.428**	.391**	R
.203**	1	.035	.149**	.374**	.039	.038	.030	.010	.050	.004	VCFO
1	.203**	.182	.083	.120**	.011	.033	.106**	.051	.097	.165	CFO

Significant at error level 1% , Significant at error level 5%

According to above table, the correlation of variables with significant at error level %1 and significant at error level 5% has been shown.

Regression significant test

According to statistic F in above tables related to regression because significant level is lower than %05, therefore, regression model is significant in all tests.

Co-linear test:

Co- linear test of research variables is as below table:

Table 4. Co-linear test

شخص وضعت	مقدار ویژه	ردیف	مدل
1.000	5.295	1	1
2.180	1.115	2	
2.358	0.952	3	
2.410	0.912	4	
2.510	0.840	5	
2.819	0.667	6	
2.967	0.602	7	
3.317	0.481	8	
6.736	0.117	9	
13.981	0.118	10	
14.436	0.111	11	

As shown, particular values show inters- correlation probability between variables. In addition, all status indicators are lower than 15 that show lack of co- linear between all independent variables.

Non- auto correlation test

Durbin- Watson statistics in each test shows auto- correlation test between research variables. As this statistic is between 1.5 to 2.5, therefore, there isn't auto correlation

Hypotheses test and its result

The question that often arises in practical studies whether is there evidence of the ability to merge data for all units of the sectional model is different. Thus, it must be examined whether the levels of heterogeneity or individual differences exist or not? If there is heterogeneity in panel data approach and other wise, the method of least squares panel data approach is used to estimate the model. Lymer F test is used for this purpose. In this test, the hypothesis H₀ of equal intercept (merged data) is placed to the opposite hypothesis H₁ the anisotropy intercept (panel data). If it is identified that the studied sections were heterogeneous and had individual difference, panel method are more suitable, to select fixed or random effects, Hasman test has been used. Hasman test statistic to determine whether a fixed or random cross- sectional differences of the calculated result with chi- square distribution with degrees of freedom equal to the number of independent variables.

Lymer F test result given in the below table.

Table 5. test F (same intercept points)

Null hypothesis	Research models	Statistic F	Freedom degree	p- value	Test result
Same intercept point	Model1	2.40	6	0	H ₀ reject
	Model2	1.91	6	0	"
	Model3	1.00	6	0	"
	Model4	1.39	6	0	"
	Model5	3.16	6	0	"
	Model6	2.79	6	0	"

In F test, null hypothesis shows use of merged data against opposite hypothesis, namely using panel data. According to significant level of above table, the result indicates that the studied section is heterogeneous and using panel data is more suitable. After selecting panel data method using lymer F test, Hasman test is performed. If H₀ accepts, random effect model is used and if H₀ reject, fixed effect model is used.

Table 6. results of Hasman test (selection between fixed and random effects)

H ₀	Research models	Chi- square statistic	Freedom degree	p- value	Test result
There isn't difference in systematic coefficient	Model1	10.43	6	0	H ₀ reject
	Model2	101.37	6	0	"
	Model3	101.243	6	0	"
	Model4	103.47	6	0	"
	Model5	101.89	6	0	"
	Model6	112.45	6	0	"

The result show that the value of this statistic is significant for each model and the reported significant level in the above table (p- value <05) indicates rejection of H₀ in confidence level 95 percent for each model, it indicates use of constant effects. The summary of hypotheses results and comparison of the results of present result with the results of previous researches is shown in tables (13) and (14).

Table 7. Summary table of the results of hypotheses test

Row	Hypothesis	Type relationship	of	Test result
1	There is relationship between the ability of accruals and unsystematic risk according to CAPM model	Significant reverse	and	Hypothesis accepted is
2	There is relationship between the ability of accruals and non- systematic risk according to Fama & French model	Significant reverse	and	"
3	There is relationship between abnormal (discretionary) accruals and unsystematic risk according to CAPM model	"	"	"
4	There is relationship between abnormal (discretionary) accruals and non- systematic risk according to Fama & French model	"	"	"
5	There is relationship between information content of accrual and non- systematic risk according to CAPM model	"	"	"
6	There is relationship between information content of accrual and non- systematic risk according to Fama & french model	Significant reverse	and	Hypothesis accepted is

Table 8. summary of results related to control variables

Row	Hypothesis	Type of relationship	Test result
1	There is relationship between market value and non- systematic risk based on CAPM model	-	Hypothesis accepted isn't
2	There is relationship between fluctuations of operating cash flows and non- systematic risk based on CAPM model	-	"
3	There is relationship between company size and non- systematic risk based on CAPM model	Reverse significant	and Hypothesis accepted is
4	There is relationship between financial leverage and non- systematic risk based on CAPM model	Direct significant	and "
5	There is relationship between stock return and non- systematic risk based on CAPM model	Reverse significant	and "
6	There is relationship between market value to book value and non- systematic risk based on Fama & French model	-	Hypothesis accepted isn't
7	There is relationship between operating cash flows fluctuation and non- systematic risk based on Fama & French model	-	"
8	There is relationship between company size and non- systematic risk based on Fama & French model	Reverse significant	and Hypothesis accepted is
9	There is relationship between financial leverage an non- systematic risk based on Fama & French model	Direct significant	and "
10	There is relationship between stock return and non- systematic risk based on Fama & French model	Reverse significant	and "

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