



Evaluation on the Relation between Earning Response Coefficient (ERC) and Financial Leverage

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ABSTRACT

In this research, relation between Earning Response Coefficient and financial leverage are evaluated. The main purpose in this research, evaluation of abnormal return influence from unexpected profit when profits are declared and according to company's financial leverage. Measurement criterions of financial leverage are classified into 2 groups: 1. Income approach, 2. Balance sheet approach. But in this survey Balance sheet approach is used. Due to different opinions about use of book and market approaches in calculating financial leverage, in this survey both approaches are used. According to this explanation we will have: 1. Ratio of liabilities to total of assets (book value) 2. Ratio of liabilities to (market value of equity + book value of liabilities). Total assets show company's book value and (market value of equity + book value of liabilities) show company's market value. Study on the only hypothesis research with help of Regression's analysis according to 2 approaches, book and market value, during 2004-2010 shows that financial leverage has no significant effect on abnormal returns. In fact, level of leverage and capital structure of companies has no effect on the reaction of Investors and analysts to release Good and Bad news.

Keywords: Earning Response Coefficient, Abnormal return, unexpected profit, financial leverage.

INTRODUCTION

In today's investment world, the most important part of investment's process is making decision, Where investors need making the best decision to maximize their revenue and money. According to this, the most important factor of making decision's process is information. Bond market's theorists understood accounting and financial reporting as the most important information resource. According to this reason one of accounting objectives and financial statements preparation, provision information in order that facilitate in decision making. The result of investor's decision is the same market's reaction that is observable the value of bond market which shows reaction to the new information. The reasons that affect on different reaction of market (accounting theory) [1]. Such as, systematic risk, permanent of profitability, quality of profit, growth opportunities, capital structure, similarity expectations of investors, ability informing of price. The first strong witnesses about reaction of bond market to release and announcement of profit by Ball & Brown are provided. They showed that reaction of investors to Good news (GN) caused positive unexpected return, and Bad news (BN) caused negative unexpected return. One of the most important guides that empirical researches have done after Ball & Brown study is recognition and explanation about different reactions of market for earning information. This subject called Earning Response Coefficient (ERC). Actually ERC measures unexpected return in the market to unexpected component of reported earnings by a company that has issued securities. According to this, ERC is a criterion for measurement information content of earnings, namely knowing this subject, Can reported earnings by company affect efficiently and effectively on the investor's making decision?

Another issue is financial leverage. For measuring financial leverage there are 2 approaches: Balance sheet and Income approaches. In this study Balance sheet approach is used. There are different opinions about Book and Market financial leverage. Some of researches believed that financial leverage should be calculated based on Book value, because book financial leverage is independent of the factors that are out of the company's control

[2]. Some of researchers are preferred financial leverage, because they believed market financial leverage better reflects agency problem between stockholders and creditors. Therefore for help to more correct and logical reasoning of hypothesis testing result, both book and market approaches are used.

About researches have been done, we can point to Beaver's survey in 1983, they studied on the relation between unexpected profit and abnormal return. Research result shows the degree correlation between two variables were significant. Kormendi et al. [3] focused on the magnitude relation between relations between profit and return. Their prediction was probability magnitude relation between stock return and related profit to permanent profitability. Research results confirmed their prediction with help of model based on permanent profitability, first effective factor on ERC as trend continued profitability was determined. Results of researches evaluated relation between systematic risk and Earning Response Coefficient, they found that only reduction factor of ERC is systematic risk [4, 5, 6, 7, 8, and 9].

MATERIALS AND METHODS

3.1. Data and sample

The current study is descriptive. The correlation between the variables has been investigated. Other than correlation between the variables, the direct and indirect relationship between them has been examined. Research's hypothesis test was done by multiple linear regression. The statistical community is all of the companies which are accepted in Tehran stock exchange during 2004-2010. We chose 140 companies for evaluating. The firms selected were based on criteria. First, all of companies are manufacturing because different companies' data in different industries is homogeneous. Second, in Iran the fiscal year of most firms is ends 21 March, this criterion is chosen because in calculating of variables specially return, performance conditions and seasonal factors not affect, and periods of time are similar. Third, company shares are traded on the stock exchange, because any reason companies shares deal had not been, there was no possible accurately calculate of return.

3.2. Measurement of dependent variable

In this research dependent variable is abnormal return. This variable is measured according to difference between real return and expected return.

3.3. Measurement of independent variables

3.3.1. Unexpected profit: This variable is measured according to difference between real EPS and expected EPS.

3.3.2. Financial leverage: We used of Balance sheet approach according to book and market value. We had 2 ratios: 1. Ratio of liabilities to total of assets; 2. Ratio of liabilities to (market value of equity + book value of liabilities)

3.4. Measurement of explanatory variables

3.4.1. Systematic risk: we collected data about systematic risk of common stock in Tehran stock exchange's data that is measured by financial software.

3.4.2. Growth opportunities: Ratio market value of equity to book value of equity is used as growth opportunities.

3.5. Research hypothesis

Research hypothesis is as follows:

There is an inverse relation between Earning Response Coefficient (ERC) and financial leverage.

Model

To test our hypothesis we applied the regression model as follows:

$$AR_{it} = \alpha_1 + \alpha_2 UE_{it} + \alpha_3 \beta_{it} + \alpha_4 Growth + e.F.L + \epsilon_{it}$$

Where:

AR_{it} = abnormal return;

UE_{it} = unexpected profit;

β_i = Systematic risk;

Growth = Growth opportunities;

F.L = financial leverage

RESULTS

In order to better understanding the nature of research community and learning more about the variables. before analysis of statistics data it is necessary to describing the data, according to this before testing research's hypothesis should level of descriptive factors for each statistic's variable be examined.

Table 1. Descriptive statistics

Variables of research	Mean	Median	Maximum	Minimum	Standard deviation
Abnormal return	0.416	0.180	37.260	-26.750	5.822
Unexpected profit	-51.937	-6.000	5158.000	-4943.000	581.954
The ratio of total debt to book value of total assets	0.746	0.668	31.682	0.096	1.185
The ratio of total debt to market value of total assets	0.539	0.569	0.951	0.033	0.216
The ratio of total debt to book value of Equity	2.722	1.932	74.749	-38.866	4.858
The ratio of total debt to market value of Equity	2.018	1.321	19.242	0.034	2.466
Systematic risk of common stock	0.487	0.215	22.610	-14.420	1.627
Rate of growth opportunities	2.275	1.608	50.691	-7.301	2.636

Table 2. Inferential statistics

Variables	Coefficients	Standard error	T-statistic	Significant
Unexpected profit	0.002	0.001	4.401	0.000
The ratio of total debt to book value of assets	0.224	0.153	1.469	0.142
Interaction between company's unexpected profit and total debt ratio to book value of assets	-0.001	0.001	-1.633	0.103
Systematic risk of common stock	0.062	0.112	0.549	0.583
Rate of growth opportunities	0.096	0.071	1.342	0.180
Constant	0.073	0.276	0.263	0.7925
Coefficient of determination	Adjusted coefficient of determination	F-statistic	Significant of F-statistic	D-W
0.139	0.128	13.421	0.000	2.352

According to table 2, regression model in this research is meaningful because significant of F-statistics is smaller than 5%, means at least one of the coefficients is zero. Coefficient of determination is 13.9% means 13.9% changes of dependent variable is explicable with independent and explanatory variables. D-W statistic is between 1.5 and 2.5 means there is no autocorrelation between errors of model. Unexpected profit significant is zero, smaller than 5% so there is positive relation between unexpected profit and abnormal return but significant of t-statistic the ratio of total debt to book value of assets and Interaction between company's unexpected profit and total debt ratio to book value of assets show financial leverage has no significant effect on abnormal return and earning response coefficient. Level of t-statistic related to explanatory variables show there is no significant relation between systematic risk and growth opportunities and abnormal return.

Table 3.

Variables	Coefficients	Standard error	T-statistic	Significant
Unexpected profit	0.002	0.001	3.136	0.002
The ratio of total debt to market value of assets	-0.686	0.954	-0.720	0.472
Interaction between company's unexpected profit and total debt ratio to market value of assets	-0.001	0.001	-0.895	0.371
Systematic risk of common stock	0.037	0.115	0.319	0.749
Rate of growth opportunities	0.067	0.079	0.847	0.397
Constant	0.685	0.653	1.049	0.295
Coefficient of determination	Adjusted coefficient of determination	F-statistic	Significant of F-statistic	D-W
0.135	0.125	12.976	0.000	2.317

According to table 3, regression model in this research is meaningful because significant of F-statistics is smaller than 5%, means at least one of the coefficients is zero. Coefficient of determination is 13.5% means 13.5% changes of dependent variable is explicable with independent and explanatory variables. D-W statistic is between 1.5 and 2.5 means there is no autocorrelation between errors of model. Unexpected profit significant is zero, smaller than 5% so there is positive relation between unexpected profit and abnormal return. but significant of t-statistic the ratio of total debt to market value of assets and Interaction between company's unexpected profit and total debt ratio to market value of assets show financial leverage has no significant effect on abnormal return and earning response coefficient. Level of t-statistic related to explanatory variables show there is no significant relation between systematic risk and growth opportunities and abnormal return.

Table 4.

Variables	coefficients	Standard error	T-statistic	Significant
Unexpected profit	0.002	0.001	4.995	0.000
The ratio of total debt to book value of equity	-0.052	0.043	-1.219	0.223
Interaction between company's unexpected profit and total debt ratio to book value of equity	-0.001	0.001	-1.281	0.201
Systematic risk of common stock	0.054	0.112	0.485	0.628
Rate of growth opportunities	0.124	0.076	1.630	0.103
Constant	0.321	0.259	1.240	0.215
Coefficient of determination	Adjusted coefficient of determination	F-statistic	Significant of F-statistic	D-W
0.136	0.128	13.079	0.000	2.363

According to table 4, regression model in this research is meaningful because significant of F-statistics is smaller than 5%, means at least one of the coefficients is zero. Coefficient of determination is 13.6% means 13.6% changes of dependent variable is explicable with independent and explanatory variables. D-W statistic is between 1.5 and 2.5 means there is no autocorrelation between errors of model. Unexpected profit significant is zero, smaller than 5% so there is positive relation between unexpected profit and abnormal return but significant of t-statistic the ratio of total debt to book value of equity and Interaction between company's unexpected profit and total debt ratio to book value of equity show financial leverage has no significant effect on abnormal return and earning response coefficient. Level of t-statistic related to explanatory variables show there is no significant relation between systematic risk and growth opportunities and abnormal return.

Table 5.

Variables	Coefficients	Standard error	T-statistic	Significant
Unexpected profit	0.002	0.001	4.119	0.000
The ratio of total debt to market value of equity	-0.082	0.083	-0.995	0.320
Interaction between company's unexpected profit and total debt ratio to market value of equity	-0.001	0.001	-0.099	0.921
Systematic risk of common stock	0.044	0.113	0.390	0.696
Rate of growth opportunities	0.072	0.75	0.962	0.336
Constant	0.479	0.334	1.435	0.152
Coefficient of determination	Adjusted coefficient of determination	F-statistic	Significant of F-statistic	D-W
0.135	0.125	12.959	0.000	2.215

According to table 5, regression model in this research is meaningful because significant of F-statistics is smaller than 5%, means at least one of the coefficients is zero. Coefficient of determination is 13.5% means 13.5% changes of dependent variable is explicable with independent and explanatory variables. D-W statistic is between 1.5 and 2.5 means there is no autocorrelation between errors of model. Unexpected profit significant is zero, smaller than 5% so there is positive relation between unexpected profit and abnormal return but significant of t-statistic the ratio of total debt to market value of equity and Interaction between company's unexpected profit and total debt ratio to market value of equity show financial leverage has no significant effect on abnormal return

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DISCUSSION

According to statistics methods only hypothesis in this survey is rejected. There is a significant relationship between unexpected profit and abnormal return, but there is no significant relation between financial leverage (as an independent variable), Growth opportunities & Systematic risk (as explanatory variables) and Earning Response Coefficient. Importance of this research is due to use of Balance sheet approach according to market and book value of companies. In general, we can say according to collected data from companies that listed in Tehran stock exchange during 2004-2010, financial leverage have not impact on reaction of market and investors to unexpected profits are declared.

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