

# The relationship of between investors' sentiment and earnings forecast error of the listed companies in Tehran stock exchange

Samira Ahmadvand

Department of Accounting, Ayatollah Amoli Branch, Islamic Azad University, amol, Iran.

*Received: March 26, 2015*

*Accepted: May 17, 2015*

## ABSTRACT

The major purpose of this investigation is to examine the relation between investors' sentiment and earnings forecast error of the listed companies in Tehran stock exchange. All listed companies in Tehran stock exchange were selected as statistical population during 2008 to 2012. Equity Market Sentiment Index (EMSI) is used to measure investors sentiment in this research which is has been developed by Jones (2005) and adjusted with Persawd (1996) model. Furthermore, Cohen et al, (2006) scale is used for measuring earnings forecast error variable. To illustrate the explanatory power of the explanatory variables, coefficient of adjusted determination (adjusted  $R^2$ ) will be used to evaluate significant variables, t-statistics and to assess the overall adequacy of the model, Fisher statistical. The statistical analyses will be performed using EXCEL and EVIEWS 7 software. The results indicated that there is a significant relation between investors' sentiment and earnings forecast error of the listed companies in Tehran stock exchange.

**KEYWORDS:** Investors' sentiment; Earnings forecast error; Tehran Stock exchange

## 1- INTRODUCTION

The evidences suggest that investors don't use quantitative methods for determining a stock's value. There are some judgments based on imaginations and non-scientific information as well as mental and emotional conditions in Tehran stock exchange. Emotional variables formed by cognitive constraints have addressed the mental conditions of activist in the stock exchange (Chen & Lean, 2013). Behavioral Finance is a study which has been rapidly expanded and deals with the examining investors' decision-making process and their reflection toward different conditions of financial markets. It is highlighted on the impact of the investors' emotions, personality, culture and judgments on investment decisions. Daniel Kahneman is the popular psychologist in finance field (Shahr Abadi & Yousefi, 2007). Behavioral finance perspective shows some changes in securities' price have no fundamental justification and an investor's sentiment plays a vital role in determination of prices (Kim & Ha, 2012).

In fact, dynamic interaction among noisy traders and rational costly arbitrage forms prices and if a stock has more noisy traders and less reasonable traders, it will have significant volatilities (Chen & Lean, 2013). Behavioral finance indicates two basic assumptions: The first one is that investors make decisions affected by their own sentiments. This tendency is defined as belief in future cash flow and investment risks which is not formed based on available facts. The second assumption is that arbitrage is risky and costly against sentiment investors. Therefore, rational investors or arbitrageurs are not willing to bringing back the prices to their basic prices. Modern behavioral finance believes that there are some constraints for arbitrage (Heidari Pour et al, 2013).

Based on basic principles of financial literatures, investors and shareholders always attempt to maximize their earnings. Earnings forecast provided by a firm's manager is one of factors that investors emphasize on during investment decisions-making. In order to investors make belief in this forecast, it is necessary to enhance the accuracy of forecasts. Investors, creditors, management and other users of financial statements rely on their own or others forecasts in a business agency level. Since more users of financial statements do not have access to financial information, they inevitably rely on forecasts made by managers, so earnings forecast error became the interesting issue for researchers (Meshki & Asi Rabbani, 2012). In this research, we try to examine the relation between investors' sentiment and earnings forecast error of the listed companies in Tehran stock exchange. Investors' sentiment and earnings forecast error are considered as independent and dependent variables, respectively. The hope is that the issue can help the shareholders, investors, managers and other stakeholders.

## 2- Research background

Feret et al, (2013) examined earnings forecast error of 114 new Singaporean firms during 2003 to 2012. Their findings indicated that the accuracy of Singaporean firms were higher than Australian, Canadian and New Zealand firms. Their research also showed that there is a positive association between forecast time horizon and earnings forecast error and other independent variables such as auditor reliability hadn't significant correlation with earnings forecast error.

Chen et al, (2014) examined earnings forecast error of 110 Hong Kong firms during 2001 to 2012. The results of the multiple regressions indicated that past earnings volatilities and changes in economic conditions are effective factors in accurate earnings forecast and other variables were not significant.

Kim & Ha (2014) investigated the impact of investors' sentiment on stock price. They provided quintile of portfolio arranged by size, book to market value, institutional ownership and price, and concluded that investors' sentiment systematically impact on stock prices of small, low stock price and low book to market value and low institutional ownership Korean firms.

Heriber & Mc Enis (2014) examined the correlation between investors' sentiment and earnings forecast error of the American firms during 2001 to 2013. The results suggested that earnings forecast error in the first year and long-term earnings growth were increased along with increased investors' sentiment.

### 3- RESEARCH METHODOLOGY

#### 3-1- Research method

- There is a significant relation between investors' sentiment and earnings forecast error of the listed companies in Tehran stock exchange.

#### 3-2: Operational definition of the research's variables

**Investors' sentiment:** Equity Market Sentiment Index (EMSI) is used to measure investors sentiment in this research which has been developed by Jones (2005) and adjusted with Persawd (1996) model. Hence, investors' sentiment can be calculated through 4 equations:

$$SENT_{pt} = \frac{\sum (R_{it} - \bar{R}_t)(R_{iv} - \bar{R}_v)}{[\sum (R_{it} - \bar{R}_t)^2 \sum (R_{iv} - \bar{R}_v)^2]^{\frac{1}{2}}} \times 100, \quad -100 \leq EMSI \leq +100$$

In which,

**R<sub>it</sub>:** The monthly stock returns rate of the firm i in the month t.

**R<sub>iv</sub>:** Historical volatilities rate of the firm i in the month t.

To calculate historical volatilities, mean standard deviation of quintile stock return is used.

**R<sub>r</sub>:** Mean of monthly stock returns rate of portfolio companies.

**R<sub>v</sub>:** Mean of historical stock volatilities rate of portfolio companies (Heidarpour et al, 2013).

**Earnings forecast error:** In this research, EFE is the independent variable which is calculated through absolute actual deviation of the forecasted earnings divided by forecasted earnings of per share. This definition is consistent with Kohen et al, (2006).

$$EFE_{it} = \frac{|AE_{it} - FE_{it}|}{FE_{it}}$$

In which EFE is the indicator earnings forecast error, AE indicates actual earnings per share and EF shows forecasted earnings per share (Anbavi, 2013).

**Firm size:** Natural logarithm of book value of total assets (Sajjadi et al, 2011).

**Q –Tobin:** It is obtained from market value divided by book value of total assets during a financial period. Market value of a firm's total assets includes total market value of equity and book value of a firm's total debt during a financial period (Jafari et al, 2008).

**Financial leverage:** Total debt to total assets ratio (Yeganeh et al, 2012).

**Firm age:** It is calculated based on the years listed in Tehran stock exchange (Koredstani et al, 2010).

#### 3-3: Statistical population of the research

The studied statistical population includes listed companies in Tehran stock exchange during 2008 to 2012. The selected firms should have three following conditions:

- 1- They should be listed in Tehran stock exchange before 2008.
- 2- Their fiscal year ends in 19/3/
- 3- Their information should be available.

66 firms were selected based on Morgan table.

**3-4: Regression model**

$$EFE_{it} = a_0 + a_1Investor\ Sentiment_{it} + a_2Size_{it} + a_3QTobin_{it} + a_4Leverage_{it} + a_5Age_{it} + \epsilon_{it}$$

**EFEit:** Earnings forecast error

**Investor Sentimentit:** investors' sentiment.

**Sizeit:** Firm size

**QTobinit:** Q-Tobin

**Leverageit:** Financial leverage

**Ageit:** Firm age

**Eit:** Error level

In this research, F-Limer test is used for selecting between common effects and fixed effects methods. If fixed effects model is selected, Hausman test would be used to select among fixed effects or random effects models. Also, model's error term autocorrelation, heteroskedasticity and data normality would have been examined. To illustrate the description power of descriptive variables, to examine the significance of variables and to investigate the adequacy of whole model, adjusted coefficient of determination, T-statistics and F-Fisher test are used, respectively. As well, statistical analyses are done through EVIEWS 7 and EXCEL software.

**4- Results**

**4-1- Examination of heteroskedasticity**

To examine heteroskedasticity, Arch error terms test (LM) is performed. The obtained results are as follow:

**Table 1-1: The results of Arch error term test (LM)**

Description	Statistics amount	Probability
F-statistic	1.518963	0.147
Obs*R-squared	2.748512	0.147

\* 5% ERROR LEVEL

Regarding table 1-1, due to the significance level of f-statistics is not significant in 5% error level, homogeneity of variance is confirmed and heteroskedasticity of error terms are rejected.

**4-2- Significance test of fixed effects method**

**Table 1-2: F-Limer and Hausman test**

F-Limer test			
Description	Statistics amount	Freedom degree	Probability
Cross-section F	4.195735	65	*0.000
Cross-section Chi-square	158.062996	65	*0.000
Hausman test			
Description	Statistics amount	Freedom degree	Probability
Cross-section F	9.258416	8	*0.000

\* 5% error level

Regarding the results of both table (F and Hausman), the obtained probability were less than 5% in each tests, so fixed effects method should be used in the related regression model.

**4-3: Lean-Lewin method**

**Table 1-3: Test of cumulative unit root test on variables by Lean-Lewin**

Variables	Statistics	Probability
Earnings forecast error	7.158	*0.014
Investors' sentiment	9.663	*0.001
Firm size	5.487	*0.037
Q-Tobin	6.315	*0.023
Financial leverage	8.154	*0.006
Firm age	6.032	*0.027

\* 5% error level

According to the table 1-3, the examination of calculated statistics and their acceptance probability indicate that H0 is rejected and all variables of the study are durable.

## 4-4- Research hypothesis test

Table 1-4: regression and model significance test

Variable	Estimated coefficients	Estimation of deviation	t-statistics	Significance level
Fixed	0.569	0.223	2.551	0.055
Investors' sentiment	0.741	0.146	5.075	*0.008
Firm size	-3.589	0.528	-6.797	*0.003
Q-Tobin	-0.374	0.269	-1.391	0.074
Financial leverage	0.692	0.412	1.769	0.069
F-statistics		94.276		
Significance level		**0.000		
Durbin-Watson		2.166		
Adjusted coefficient of determination		0.651		

\* 5% error level, \*\* 1% error level

Regarding the table 4-1, coefficient of determination of investors; sentiment and firms' earnings forecast error is 0.741, indicating positive and direct correlation between them, as increased investors' sentiment can enhance firms' earnings forecast error. Durbin-Watson statistic test value is determined among 1.5 to 2.5, lack of correlation between errors is not rejected and regression can be used. The adjusted coefficient of determination is 0.651, indicating independent and control variables of the study can predict 65.1% of the dependent variable's changes. Significance level of F-statistics is significant in 1% error level which can be said that the model is statistically significant. Finally, to confirm/reject the opposite hypothesis, it can be said that since significance level of t-statistics of investors' sentiment is significant in 5% error level, H<sub>0</sub> is rejected and H<sub>1</sub> is confirmed. We concluded that there is a significant correlation between investors' sentiment and earnings forecast error of the listed companies in Tehran stock exchange. The empirical model of the research is:

$$EFE_{it} = 0.569 + 0.741Investor\ Sentiment_{it} - 3.589Size_{it} - 0.374QTobin_{it} + 0.692Leverage_{it} - 0.423Age_{it} + \varepsilon_{it}$$

## 5- Conclusion and Recommendation

The research's result indicated that is a significant correlation between investors' sentiment and earnings forecast error of the listed companies in Tehran stock exchange. Hence, Heriber & Mc Enis (2014) examined the correlation between investors' sentiment and earnings forecast error of the American firms during 2001 to 2013. Kim & Ha (2014) concluded that addition of investors' sentiment to capital assets pricing model has enhanced the performance of the model and size effects describe the value in a better way. Heidari Pour et al, (2013) examined the impact of investors' sentiment on stock return. Their research showed that there is a positive and significant relation between investors' sentiment with stock returns of the firms with low stock price and low book to market value and low institutional ownership. There is no suitable model for predicting investors' sentiment. It can be recommended to related experts and researchers that they should help forecasting investors' sentiments through providing a comprehensive model, because the model can heavily assist managers to forecast and lower the earnings forecast error.

## 6- REFERENCES

- Agrawal, A & Chen, A. (2008). Do analyst conflicts matter? Evidence from stock recommendations. *Journal of law economy*, vol 51. No 3, pp 503-537
- Baker, M & Wurgler, J. (2007). Investor sentiment in the stock market. *The journal of economic perspectives*, vol 21. No 2, pp 129-152
- Baker, M, Wurgler, J. (2006). Investor sentiment and the cross- section of stock returns. *Journal of finance*, vol 61, pp 1645-1680
- Baker, M & Wurgler, J. (2012). Global, local, and contagious investor sentiment. *Journal of financial economics*, vol 104. No 2, pp 272-287
- Bradshaw, M, Richardson, R & Sloan, G. (2001). Do analysts and auditors use information in accruals? *Journal of accounting review*, vol 39, pp 45-74
- Bradshaw, M, Richardson, R & Sloan, G. (2006). The relation between corporate financing activities, analysts' forecasts and stock returns. *Accounting economy*, vol 42, pp 53-85
- Chen, W. (2013). Can corporate governance mitigate the adverse impact of investor sentiment on corporate investment decisions? Evidence from Taiwan. *Asian journal of finance and accounting*, Vol 5. No 2

- Demirakos, E, Strong, M & Walker, M. (2004). What valuation models do analysts use? *Accounting horizons*, vol 18, pp 221-240
- Diether, K, Malloy, C & Scherbina, A. (2002). Differences of opinion and the cross section of stock returns. *Journal of finance*, vol 62, pp 2113-2141
- Greene, W. (2003). *Econometric analysis*, 5<sup>th</sup> ed. Prentice-Hall upper saddle river, NJ
- Hribar, P & McInnis, J. (2014). Investor sentiment and analysts' earnings forecast errors. *Management science*, vol 58. No 2, pp 293-307
- Irvine, P. (2004). Analysts' forecasts and brokerage- firm trading. *Accounting review*, vol 79, pp 125-150
- Kim, T, Ha, A, (2010), Investor sentiment and market anomalies , 23rd Australasian Finance and Banking conference 2010 paper, Available at [www.ssrn.com](http://www.ssrn.com)
- Kothari, S. (2001). Capital markets research in accounting. *Journal of accounting economic*, vol 30, pp 105-231
- Kraft, A, Lee, B, Lopatta, K, (2014), Management earnings forecasts, insider trading, and information asymmetry, <http://www.elsevier.com/locate/jcorpfin>
- Lemmon, M & Portniaguina, E. (2006). Consumer confidence and asset prices. *Review of financial studies*, vol 19, pp 1499-1529
- Malmediar, U & Shathikumar, D. (2009). Do security analysts speak in two tongues? Working paper. University of California Berkeley.
- Qui, L & Welch, I. (2006). Investor sentiment measures. Working paper. Brown university, providence , RI
- Seybert, N & Yang, H. (2012). The party's over. The role of earnings guidance in resolving sentiment – driven overvaluation. *Management science*, vol 58. No 2, pp 308-319
- Zhang, F. (2006). Information uncertainty and stock returns. *Journal of finance*, vol 61, pp 105-137
- Zhu, Z & Huang, W. (2013). Investor sentiment and firm's investment: an empirical study based on catering channel. *Journal of applied sciences*, pp 1199-1205