

IMPACT OF INVESTORS' SENTIMENT ON ROA AND FEATURES OF AUTOMOBILE COMPANIES

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ABSTRACT

Investors base their decision on their emotional tendencies and sentiment. Here, emotional tendencies and sentiment are defined as the belief in future cash flows and investment risks, whereas the belief is not based on facts. The purpose of this study was to investigate the impact of investors' sentiment on the returns of automobile companies accepted in Tehran Stock Exchange. This is an applied research in terms of objectives and it is a descriptive- ex post facto research in terms of data collection method. The research population of the present study is all the companies active in automobile industry in Tehran Stock Exchange from 2011 to 2016. Using a census sampling method, 22 companies and in total 132 company-year were analyzed. Multiple linear regression models were used for data analysis by means of Eviews8 software. The findings showed that the impact of investors' sentiment on financial leverage and earnings per share of the company was negative and significant; meanwhile, the impact of investors' sentiment on the return on assets of automobile companies was not significant.

Keywords: Investors' Sentiment, Return on Assets, Financial Leverage, Earnings per Share.

INTRODUCTION

Two basic assumptions are evident in the literature review of the behavioral finance: first assumption is that investors base their decision on their emotional tendencies and sentiment. Here, emotional tendencies and sentiment are defined as the belief in future cash flows and investment risks, whereas the belief is not based on available facts. The second assumption is that arbitrage against sentimental investors is costly and risky. Therefore, rational investors or arbitrageurs are not overactive to reduce the prices to intrinsic value. Modern behavioral finance believes that there are some limitations on arbitrage. According to the literature of investors' sentiment it is supposed that when investors are in an optimistic mood, they are more likely to make optimistic guesses and through the overestimation of the value of the current cash flow cause the over-valuation of the stock price; this is true for the pessimistic mood the other way round, that is, when investors are pessimistic they underestimate the current cash flow which reduces the price of the stock in proportion to its intrinsic value (Young et al., 2017).

Review of Literature

Eslami Bidgoli and Nabizadeh (2009) conducted a research on "Examination of Weekend Effect and Comparison of Individual and Legal Investors' Behavior During 2002-2006 in Tehran Stock Exchange". The results show that the Tehran Stock Exchange is influenced by the

weekend effect; however, the results are contrary to the effect observed in the stock exchange of other countries.

Hasanali Sinaei, Abdoloh Davodi (2010), conducted a research on “Financial Information Transparency and Investor Behavior in Tehran Stock Exchange”. The results show that three dimensions, i.e. financial statement disclosure, transparency of ownership structure, and transparency of board structure, influence investors’ behavior; however, investors pay more attention to financial statement disclosure.

Moradi et al. (2012) investigated “the Effect of Stock Market Cycles on Investors’ Reaction to Discretionary Accrual’s Changes”. The results show that corporate profits management cannot be a deterrent factor in individuals’ way of investment; moreover, the market conditions and the presence of professional and non-professional investors do not have a significant effect in this regard, as well.

Khaliliaragi et al. (2009) investigated the “Behavioral Difference between Institutions and Individual Investors after the Weekend”. The results of the research at the considered confidence level indicate that weekend influence the individual and institutional investors’ behavior, however, it affects them in opposite directions. The volume of trading by individual investors increases after the weekend. However, on the other hand, institutional investors operate that their volume of trading is reduced after the weekend; moreover, the researcher found that in sum, institutional investors’ volume of trading is more than that of the individual investors.

Fallah et al. (2014) investigated the “Factors Affecting the Intention of Individual Investors in Tehran Stock Exchange”. The research findings indicate that corporate financial statement and general information disclosed in the market influence investors’ purchase decisions both directly and through affecting their expectations. Besides, personal needs directly affect the intention to buy shares.

Mohammadi et al. (2015) investigated the “Herd Behavior of Investors in Tehran Stock Exchange Using State-Space Model”. The results of this study indicate the constant herding of investors in Tehran Stock Exchange toward the market factor. The herding of investors toward the market factor and the ignorance of the fundamental variables by investors in the stock market will weaken the equilibrium relations in the Tehran Stock Exchange to a large extent, and the market tends to be inefficient.

Richardson et al. (2005) examined the reaction of the market and the ratio of stock volume to the fluctuations of stock returns in America with a sample of 192 stock market participants. The findings confirmed that the volume and the price of the stock increased at the day of earnings’ increase announcement.

Fang (2010) investigated investors’ sentiment in the Hong Kong Stock Exchange. He found that, in contrast to the market returns, the average returns of the loser (winner) portfolio for one year after the formation of portfolio is more (less) than the market.

Gurgul et al. (2013) examined the changes in the price and volume of stock exchanges in proportion to the fluctuations of dividend in the Austrian stock market. The findings of the study confirmed the content of dividend statement.

Zigall et al. (2014) conducted a research on “the Effect of Stock Market Cycles on Investors’ Reaction to Discretionary Accrual’s Changes”. In this research, the New York Stock Exchange has been divided into three cycles of optimism, stability, and pessimism from the beginning of



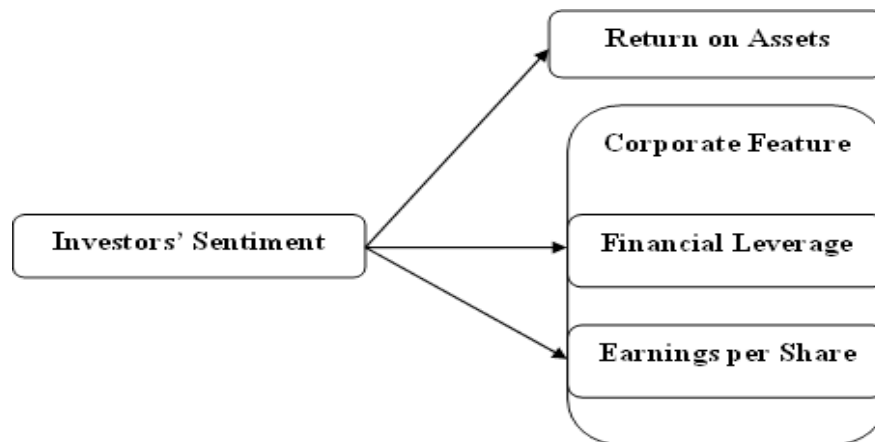
July, 2002 to January 29, 2010. The results show that in the optimistic period, there is a positive correlation between the increase in accruals and increase in discretionary returns. The correlation is negative in the period of pessimism and there is no significant relationship between the increase in accruals and increase in discretionary returns in the period of price stability.

Khamis al-Yahiya et al. (2015), in a paper on “the Oman Stock Market Reaction to Earning Announcement”, reviewed the price changes of the stock traded on the Omani Stock Exchange. The results of the study showed that the announcement of increased earnings would raise stock prices, and decreased earnings would reduce stock prices. Besides, no significant change is observed in companies that do not change dividends.

RESEARCH METHODOLOGY

This is a correlational research in terms of content and it is applied in terms of objectives. This is a correlational research and multiple regression analysis was used to determine the effectiveness of independent variables on the dependent variable. Rahavardenovin Database was used to collect the necessary data for the calculation of the research variables. Moreover, hypothesis testing and data analysis was carried out via Excel and Eviews9. Considering the method of data collection, it is a library research method.

The research community is all automobile companies accepted in Tehran Stock Exchange during the period of 2011-2016. Since the number of accepted automobile companies in Tehran Stock Exchange is limited, the complete enumeration survey method is used for sampling. The present research is descriptive and correlational. The research data are analyzed using the multiple linear regression method. Kolmogorov-Smirnov test (K-S) is used to test the normality of the response variable. The research variables are measured using Excel and the statistical data analysis was performed using SPSS16. The conceptual model of the research is as follows:



The First Hypothesis Testing Model

$$ROA_{it} = \beta_0 + \beta_1 SENT_{it} + \beta_2 BV_{it} + \beta_3 CFVol_{it} + \varepsilon_{it}$$

The Second Hypothesis Testing Model

$$LEV_{it} = \beta_0 + \beta_1 SENT_{it} + \beta_2 BV_{it} + \beta_3 CFVol_{it} + \varepsilon_{it}$$

The Third Hypothesis Testing Model



$$EPS_{it} = \beta_0 + \beta_1 SENT_{it} + \beta_2 BV_{it} + \beta_3 CFVol_{it} + \varepsilon_{it}$$

Dependent Variables

ROA = return on assets for company i in year t, it is the company's net income divided by its average of total assets.

LEV = leverage for company i in year t, it is calculated by the ratio of the company' book value of debt to its asset's book value.

EPS = earnings per share for company i at the end of year t.

Independent Variable

SENT_{i, t} = investors sentiment for company i during year t.

Control Variables

BV = book value per share for company i at the end of year t, it is measured by the total book value of equity divided by the number of common stocks of the company at the end of year t.

CFVol = volatility of operating cash flows, it is calculated through the standard deviation of the operating cash flows of the company over the past three years.

Research Hypotheses

1. **First Hypothesis:** Investors' sentiment affects the return on assets of accepted automobile companies in Tehran Stock Exchange.
2. **Second hypothesis:** Investors' sentiment affects the financial leverage of accepted automobile companies in Tehran Stock Exchange.
3. **Third hypothesis:** Investors' sentiment affects earnings per share of each automobile company accepted in Tehran Stock Exchange.



RESEARCH FINDINGS

Descriptive Statistics:

A summary of the descriptive statistics relevant to the variables of the model is represented in Table 1.

Table 1: Descriptive Statistics of the Research Variables

Variable	Symbol	Mean	Median	Maximum	Minimum	SD
Return on assets	ROV	0.041753	0.031510	0.295505	-0.125076	0.073785
Financial leverage	LEV	0.620831	0.664662	0.94618	0.065760	0.188195
Earnings per share	EPS	267.3498	120.0721	2977.210	-692.7862	598.3246
Investors' sentiment	SENT	18.10006	18.49639	23.67486	10.43652	2.695601
Book value per share	BV	0.001705	0.001295	0.012725	0.000494	0.001444
Cash flow volatility	CFVOL	0.066027	0.052085	0.229254	0.012627	0.048375

Stationary of Research Variables

To investigate the stationary of the research variables, the augmented Dickey-Fuller test (Fisher-type) has been used. The results of this test for quantitative research variables are presented in Table 2:

Table 2: Test Results for the Stationary of Research Variables

Variable	Symbol	Dickey-Fuller	Level of significance
Return on assets	ROV	-7.526335	0.0000
Financial leverage	LEV	-4.507069	0.0003
Earnings per share	EPS	-4.663416	0.0002

Investors' sentiment	SENT	-5.697359	0.0000
Book value per share	BV	-6.882635	0.0000
Cash flow volatility	CFVOL	-5.790055	0.0000

Inferential Statistics

Estimation Results of the First Regression Model

Before the estimation of regression model, the specification tests were performed to determine the significance of the cross-sectional effects of the model. The findings are represented in Table 3.

Table 3: The Chow and Hausman Test Results for the cross-sectional effects

Test	Statistics	Level of significance	Results
Chow (F-limer)	2.827612	0.0002	Panel
Hausman	13.888754	0.0031	Fixed effect

The significance level of Chow test for determining the significance of cross-sectional effects in the research regression model is smaller than type1 error of 0.05; therefore, the null hypothesis for the test is rejected based on the point that the cross-sectional effects are not significant in the research model; besides, it is confirmed that the regression model of this section should be estimated via panel data analysis method. Moreover, the significance level of Hausman test for determining whether cross-sectional effects are fixed or random in the model, was smaller than type1 error of 0.05. This indicates that the null hypothesis for the test is rejected based on the point that the cross-sectional effects are random in the research model. Therefore, the regression models of this section are estimated using panel data with fixed effects.



The Estimation Results of the Effect Coefficient in the First Regression Models

Table 4 summarizes the findings of the model.

Table 4: Estimation Results of the Regression Model

$B = \beta_0 ROA_{it} + \beta_1 SENT_{it} + \beta_2 + \varepsilon_{it3} BV_{it} + CFVol_{it}$				
Variable	Beta		Significance	VIF
C	0.033291	3.247430	0.0012	~
SENT	0.000787	0.657903	0.5109	1.201297
BV	0.156251	6.078018	0.0000	1.195477
CFVOL	-0.148038	-2.417428	0.0160	1.013155
Adjusted R-squared	0.453600			
Statistic F	9.857221			
Level of significance	0.000000			
Durbin-Watson	1.989430			
Breusch-Pagan	1.247860			
Level of significance	0.7415			

Test Results of the Independent Variable Effects:

- The results for the significance level of the independent variable of investors' sentiment (SENT) in the model are greater than the error of 5%. Thus, it can be said that investors' sentiment doesn't affect the return on assets of automobile companies accepted in Tehran Stock Exchange. That means the rejection of the first hypothesis (the first hypothesis is rejected).

- The results obtained for the control variables show that the book value per share has a positive effect on the return on assets of companies, while the effect of corporate cash flow volatility on the return on assets of companies is significantly negative.

Estimation Results of the Regression Model

Prior to the estimation of the regression model, the specification tests were performed to determine the significance of the cross-sectional effects of the model. The findings are represented in Table 5.

Table 5: Chow and Hausman Tests for Detection of Cross-Sectional Effects

Test	Statistics	Level of significance	Results
Chow (F-limer)	29.844119	0.0000	Panel
Hausman	61.21369	0.0000	Fixed effects

The significance level of Chow test for determining the significance of cross-sectional effects in the regression model of the research is smaller than the type1 error of 0.05; therefore, the null hypothesis for the test is rejected based on the point that the cross-sectional effects are not significant in the research model; besides, it is confirmed that the regression model of this section should be estimated via panel data analysis method. Moreover, the significance level of Hausman test for determining whether cross-sectional effects are fixed or random in the model, was smaller than type1 error of 0.05. This indicates that the null hypothesis for the test is rejected based on the point that the cross-sectional effects are random in the research model. Therefore, the regression models of this section are estimated using panel data with fixed effects.

The Estimation Results of the Effect Coefficients in the Second Regression Models

Table 6 summarizes the findings of the model.

Table 6: Estimation Results of the Regression Model

$\beta = \beta_0LEV_{it} + \beta_1SENT_{it} + \beta_2 + \varepsilon_{it}3BV_{it} + CFVol_{it}$				
Variable	Beta		Significance	VIF
C	0.785173	12.43819	0.0000	~
SENT	-0.006972	-2.186274	0.0292	1.201297
BV	-0.018183	-2.887440	0.0039	1.195477
CFVOL	0.426600	2.614083	0.0092	1.013155
Adjusted R-squared	0.837511			
Statistic F	29.13375			
Level of significance	0.000000			
Durbin-Watson	1.699269			
Breusch-Pagan	6.464870			
Level of significance	0.0911			

- The results for the significance level of the independent variable of investors' sentiment (SENT) in the model are smaller than the error of 5%. Thus, it can be said that investors' sentiment affects the financial leverage of automobile companies accepted in Tehran Stock Exchange. Moreover, the coefficient obtained for the variable is negative which means by increasing investors' sentiment the financial leverage also increases (the second hypothesis is confirmed).

- The results obtained for the control variables show that the book value per share has a negative effect on the corporate financial leverage, while the effect of corporate cash flow volatility on the corporate financial leverage is significantly positive.

Estimation Results of the Regression Model

Table 7 shows the findings of the tests.

Table 7: Results of Chow and Hausman Tests for Detection of Cross-Sectional Effects

Test	Statistics	Level of significance	Results
Chow (F-limer)	10.706092	0.0000	Panel
Hausman	41.003601	0.0000	Fixed effects

The significance level of Chow test for determining the significance of cross-sectional effects in the regression model of the research is smaller than the type1 error of 0.05; therefore, the null hypothesis for the test is rejected based on the point that the cross-sectional effects are not significant in the research model; besides, it is confirmed that the regression model of this section should be estimated via panel data analysis method. Moreover, the significance level of Hausman test for determining whether cross-sectional effects are fixed or random in the model, was smaller than type1 error of 0.05. This indicates that the null hypothesis for the test is rejected based on the point that the cross-sectional effects are random in the research model. Therefore, the regression models of this section are estimated using panel data with fixed effects.

Estimation Results of the Effect Coefficients in the Third Regression Models

Table 8 summarizes the findings of the model.

Table 8: Estimation Results of the Regression Model

$\beta = \beta_0 \text{EPS}_{it} + \beta_1 \text{SENT}_{it} + \beta_2 + \varepsilon_{it3} \text{BV}_{it} + \text{CFVol}_{it}$				
Variable	Beta		Significance	VIF
C	0.553319	6.484352	0.0000	~
SENT	-0.066308	-6.818463	0.0000	1.201297
BV	0.513499	3.048565	0.0024	1.195477
CFVOL	-0.421818	-1.265397	0.2058	1.013155
Adjusted R-squared	0.799614			
Statistic F	22.78071			
Level of significance	0.000000			
Durbin-Watson	2.182924			
Breusch-Pagan	3.272401			
Level of significance	0.3515			

- The results for the significance level of the independent variable of investors' sentiment (SENT) in the model are smaller than the error of 5%. Thus, it can be said that investors' sentiment affects the earnings per share of automobile companies accepted in Tehran Stock Exchange. Moreover, the coefficient obtained for the variable is negative which means by increasing investors' sentiment the earnings per share of companies also increases (the third hypothesis is confirmed).



- The results obtained for the control variables show that the book value per share has a positive effect on the earnings per share of companies, while the effect of corporate cash flow volatility on the earnings per share of companies is significantly positive.

The results are summed up in Table 9:

Table 9: Summary of the Results for Research Hypotheses

Hypothesis		Result
First hypothesis	Investors' sentiment affects the return on assets of automobile companies accepted in Tehran Stock Exchange	Rejected
Second hypothesis	Investors' sentiment affects the financial leverage of automobile companies accepted in Tehran Stock Exchange	Confirmed
Third hypothesis	Investors' sentiment affects the earnings per share of automobile companies accepted in Tehran Stock Exchange	Confirmed

DISCUSSION AND CONCLUSION:

In the research first hypothesis, the effect of investors' sentiment on the return on assets of automobile companies was investigated. Given the result obtained for the first hypothesis, it should be noted that it was expected that the increase in investors' sentiment toward buying shares of the company results in the growth and improvement and it positively affect the profitability of the companies since these companies would face with reduced financing costs. However, contrary to this expectation, the results show that the volume of stock trading of automobile companies does not have any effect on their profitability. In this section, it can be noted that the bourse structures in Iran are very different from other countries. In addition, automobile industries have different structures through which the political relationships have great impact on the corporate performance. These findings are contradictory to the results of Moradi et al. (2012).

In the research second hypothesis, the effect of investors' sentiment on financial leverage of automobile companies was investigated. The coefficient obtained for this variable is negative that indicates the increase in investors' sentiment would increase the corporate financial leverage as well. In other words, it can be admitted that the increase in the volume of stock trading of accepted automobile companies in Tehran Stock Exchange, the amount of corporate debt decreases. Of course, this can be interpreted differently and with respect to the amount of corporate assets. The rate of investors' sentiment has a significantly positive effect on corporate assets, as a result, the increase in corporate assets decreases their financial leverage; therefore, the relationship is negative which is consistent with studies of Zigall et al. (2014), and Eslami Bidgoli, and Nabizadeh (2009).

In the research third hypothesis, the effect of investors' sentiment on the earnings per share of automobile companies was investigated. The coefficient obtained for this variable is negative that indicates with increasing investors' sentiment, the earnings per share of companies also increase. In this way, it is expected that by increasing the volume of corporate stock trading, that is an indicator of the popularity of the stock and its liquidity from the view point of managers, investors, analysts and most capital market participants, earnings per share of the company decreases. In fact, managers believe that due to the popularity of the corporate stock and the high volume of trading, internal financial capital can be used for investment and share less profit among the investors. Therefore, they tend to pay less profit, and as a result, the



relationship between investors' sentiment and earnings per share is negative. These findings are consistent with the results of researches by Richardson et al. (2005), Gurgul et al. (2013) and Khamis al-Yahiya et al. (2015).

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