An Analysis of Short-Term Overreaction to Stock Market News: Iranian Evidence

Masoumeh Naderi
Accounting Department, Management and Accounting, Faculty, Shahre E Ray Branch, Islamic Azad University, Tehran, Iran
Email: masoumeh_naderi25@yahoo.com

Sasan Mekanik
Accounting Group, Parand Branch, Payme Noor University, Tehran, Iran

Abstract

In Financial markets information is in the form of signs, news and different predictions coming from inside or outside of the company which makes reactions and as a result changes in stock prices. Such as increase and decrease over the limit or long period of times. However, this behavior is non-rational behavior of market which can be a rational response to perceived uncertainty that is understood by investors. We investigate the stock market short-term overreaction. The Aim of this project is to analyze overreaction of investors to news and information includes Earnings announcement (Pleasant or unpleasant) in Bear and Bull Market in Tehran Stock exchange (TSE) Using daily data over the period 2005-2011. Over the window of 14 days before and 14 days after news announcements. The result indicates that investors in Tehran Stock exchange did not have over reaction to information in short time period.

Keywords: Behavioral Finance, Over Reaction, under Reaction, Bear Market, Bull Market.

Introduction

Nowadays information is considered as an important tool in decision making and with no doubt the quality of decision is depended on validity and timeliness of the available information. In Financial markets this information is in the form of signs, news and different predictions coming from inside or outside of the company that are available to stock holders which makes reactions and as a result changes in stock prices. Reactions of stock market to news has a long range of variation and are not always rational, which sometimes creates abnormalities in stock prices such as increase and decrease over the limit price. Over and under reaction occurs when people set prices higher or lower than the real amount, based on gathered new information.

Although, over time the market will realize their mistake and returns to equilibrium, however, this behavior is non-rational behavior of market which can be a rational response to perceived uncertainty that is understood by investors. People’s expectation is a factor of their predictions which are sometimes inefficient. Finding the resource of this inefficiency might have important
applications for studies on rational behavior of investors and efficiency of the market. This paper is organized as follows:

Present Conceptual Framework, Relevant Literature Reviews and Background Studies

Overall limitation on computing power, the complexity of issues and decisions, and some systematic errors in judgment causes people not to react rational. In this context psychological patterns are the most important factors which can influence investors’ behavior and reactions. Overreaction or excessive reaction is one of the exceptions or abnormalities in capital market. This phenomenon occurs when the stock price, according to new data changes more than what it must. This situation is usually followed by decrease in prices in short time. Researches indicate that capital markets normally experience periods with over and under reactions of investors during time. In general type of reaction is depending on how investors understand the primary of available information. If these primaries be understandable by most of the people both over and under reactions will be less than the ultimate Measure. In this context ‘Daniel & ‘Titman (2001) provide a model that indicates: Stock prices overreact to insensible information rather than sensible data in market.

Moreover, a substantial body of empirical literature has provided the evidence for overreaction in the financial markets. Evidence shows that previously losers became future winners. In this area ‘DE bunt & Taller’ (Designers of Overreaction hypothesis) have used Monthly stock returns of companies listed on the New York Stock market during January 1926 to December 1981 as data to test efficiency of the market. Their research indicates that inefficiency is in low level. The reason was the overreaction of investors to the new information which create artificial difference between the intrinsic value and market value. Also market usually less reacts to relevant information with full statistics and figures and will overreact on the basis of irrelevant, roomer type information.

In this context ‘Hung & Estin (1999)’ has developed a model that shows Interaction between the two groups of irrational people including: News followers and fast Traders. News followers are most of investors which are willing to pay reasonably high amount of money for confidential information. But on the other hand fast traders are investors who put less effort or money to gather information. Therefore if ambiguous information enters to the market news followers would not be able to rapidly derive this information from stock prices, as result will under react to such information. Therefore fast traders use this reaction of previous group and will over-estimate prices. ‘Belk’ (1986) has also indicated role of disruptive traders. They believe of having specific information on market Therefore causes changes in attitude and reaction of people as a result in whole stock market. They gather their false signals from their shareholders, financial analysts and rumors that are spread among investors. And illogically believes that these signals contain important information. Thus they can influence people. Daniel, Hershlaifer and Subramanian (1998) have also emphasis on the effect of bias in personal data. These researchers indicated that sometimes investors have over-confident on their personal information especially when they put a lot of efforts to achieve them. If these personal information, indicating positive predictions about the future of the company, over-confident
will cause the company price to be way over the intrinsic value. At the end when the general future information will be available in the market the stock price will decline to normal.

Another factor for overreaction on investors is their optimistic. Previous researches in this area shows that people optimism will lead them to over react on positive information and under react on negative information. Therefore they show wrong reaction to information that (at least for short time) could be a logical reaction to uncertainty for higher revenues. Also some investigators may out less weight on the news that has been announced once or twice but more weight for those which has been repeated for some days. ‘Griffin & Tuersky (1992)’ have analyzed role of information in financial markets they concluded that people examine data from two aspects: Strength of Intensity and Weight. Strength of Intensity implies that how pleased or unpleasant the information is. Wight means how real are the information. They research show that people have more attention on Strength than Weight. Therefore in overreactions people will put high strength and low weight to information signals and vice versa; low strength and high weight in under reaction behavior. Also, news may be complex and Investment analysis and reports to explore the whole story might be time consuming. Therefore such news will have less gradual move during days. Reaction of investors in this area is moderate. This means their reaction is depend on the amount of information they receive. Financial markets can sometimes move without economic news or other stimuli. This might be because of the overreaction of people to non-seen stimuli. In Stock markets, people are mostly looking for simple understanding and new information with immediate implications and are not interested in the information contained long-term consequences with extractable results. This pattern can lead to overreaction of investors. However, Fama (1998) challenges this conclusion that investors irrationally react to Events. He has shown that sometimes considering the size of company market value ratio to book value and appearance of next events some reaction on investors disappears. ‘Bachelor and Oraxigle’ examined the hypothesis that says dividends per share (DPS) have no effect on company’s value. The research conducted on DPS of 20 companies in Istanbul stock market during 1990 – 1994 for the period of 30 days before and after payment of dividend. They found that fluctuations before and after the payment of dividends.

Marney and others (2004) examined the stock market reaction to the announcement of the annual income in China’s two stock markets. They have choose 698 news from Shanghai stock market and 525 news from Shenjin stock market and analyzed market reaction to these news in 10 days before and after payment of dividend. The result shows that there is an overreaction in 4 to 6 days before payment day.

Leo (2004) analyzed reaction of stock markets to advertisement news about America’s biotech patents during January 1983 to December 1993. In this research his sample size was 611 invention advertisements which were established by 103 biotech companies. In this research time period was divided in three groups (+2,-2), (+3,-3), (+5,-5) and observing the market reaction for each group separately. The evidence showed that prior to the announcement; overreactions exist and were associated with return in prices.
Deal Luechy (2004) researched market behavior around the time of announcement of annual income report in Paris stock market. His sample size was 117 announcements from January 2001 to March 2003. He analyzed market reaction 15 days before and after announcement. Results indicate that overreaction exist in this market.


Ruhani and et al (2011) have done a research about the analysis of relationship between stock market reactions and trading volume on the Bursa Malaysia over the period January 2000 to October 2010. they came to this result that winner portfolios have more tendencies to have negative returns in which loser portfolios have positive returns. Moreover they found that there is lower level of overreactions for winner stocks. Norli and et al (2011) analysis the stock overreaction on syariah compliant stock in Bursa Malaysia over the period January 1988 to December 2009. the results identify that there is overreaction. And this reaction was stronger before financial crises in Asia in 1997 and 2008 and then has been decreased.

Alrabadi (2012) examine the short term stock price reaction to shocks on Amman stock exchange by using of data during 2002 to 2010. the results show that there is under reaction for both of the positive and negative shocks. Furthermore there is abnormal rate of return after formal announcements in lower volume.

**Materials and Methods**

Aim of this project is to analyze overreaction of investors to news and information (Pleasant or unpleasant) in Bear and Bull Market in Tehran Stock exchange. Researchers conducted in other countries had less attention in the factor that Macroeconomic condition can affect investor optimism or pessimism as a result over or under reaction to the market. This research is the first effort that studied investors’ stock Price in Bear and Bull Market. In this research news and information includes Earnings announcement advertising during 2005 to 2011.

Pleasant information are those ‘Earning Announcements’ with %5 Positive adjustment and unpleasant information are those with %5 negative adjustment. Based on studies on Total Index in Bear and Bull times; 15 pleasant and unpleasant news from Bear and 15 pleasant and unpleasant news from Bull period has been selected. In this research information gathered through available databases and financial statements in Tehran Stock Market.

In this research, the Event study model has been used to evaluate the effect of earnings announcement advertising on the stock price. The aim of this method is to calculate effect of special event on stock price and evaluate unusual performance in time of an event. Because the
aim is to study reaction of investors in short time; therefore reaction of Tehran stock market 14 days before and 14 days after news announcement has been analyzed and it was called as Event window. Also we considered Estimation window 60 days before news announcement, in this period we did not have any news announcement. Figure 1.

![Figure 1: Event study](image)

Based on Literature review, Hypothesis is listed below:

Hypothesis I: investor will have positive overreaction to positive news in Bear Market.

Hypotheses II: Investor will have negative overreaction to negative news in Bull Market

Hypotheses III: investor will have negative under reaction to negative news in Bear Market

Hypotheses IV: investigator will have positive under-reaction to positive news in Bull Market

In order to validate or reject hypothesis, following statistical methods has been used.

The First step is Calculations of return for estimation period. It has been calculated based on market model for all Stocks used in sample.

\[ R_{i,t} = \alpha_i + \beta_i R_{M,i,t} + \epsilon_{i,t} , \quad (t = -75 \ldots -15) \]

\[ R_{i} = \text{DailyReturn of 'i Stock' in 't Time'} \]

\[ R_{M,i,t} = \text{Price Index and Cash Return of 'i Stock' in 't Time'} \]

\[ R_{M,i,t} = \left( R_{M1} - R_{M0} \right) / R_{M0} \]

By Using the correlation equation obtained in the first stage, expected return for the event period (14 days before and after announcement) has been calculated. At this stage by subtracting the actual return from expected return, abnormal returns are calculated such as:

\[ ARI_{i,t} = R_{i,t} - R'_{i,t} , \quad (t = -14 , +14) \]

Then, Average of abnormal returns for each news at the period before announcement, at announcement day, and after announcement day, calculated separately:

\[ AAR_t = \left(1/N\right) \Sigma_i ARI_{i,t} , \quad N = 14 \]
Since stocks are exposed to variety of information and some of this information led to higher prices and some to lower ones therefore a reaction to a particular event may become neutral by reacting to other information. To solve this issue average of accumulated abnormal return for each group for the period of before and after announcement has been calculated:

\[ \text{CAAR}_i,t = \Sigma \text{AAR}_i,t \quad , \quad N=15 \]

At the end for conducting statistical test, normality of date was examined using ‘Non-Parametric Kolmogorov-Smironov Test for all results and all groups. Since average of abnormal return of each group for the period before and after announcement was normal; therefore Paired Sample T-test has been conducted for hypothesis testing.’ SPSS & Eviews 4’ was using for testing data in %5standard error.

**Analyzing statistical hypothesis and Results and Discussion**

**Hypothesis I:** Investor will have positive overreaction to positive news in Bear Market. So the hypothesis is as follow:

H0: \( \text{CAAR pre} = \text{CAAR post} \)

H1: \( \text{CAAR pre} > \text{CAAR post} \)

CAAR pre, is the average of abnormal accumulated return before news announcement and CAAR post, is the average of abnormal accumulated return after news announcement. Obtained result for testing hypothesis one is shown in Table 1. Overreaction hypothesis indicates that average abnormal return before announcement should be higher than average abnormal return after announcement. Table 1, illustrates that average abnormal return before announcement is lower than it after news announcement. We can conclude that investors did not have positive overreaction to positive news in a good market. Therefore we cannot reject H0.

<table>
<thead>
<tr>
<th>Average abnormal accumulated return before News (%)</th>
<th>Average abnormal accumulated return After News (%)</th>
<th>Difference of average abnormal accumulated return Before and After News (%)</th>
<th>T-test</th>
<th>P-Value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6051</td>
<td>2.9067</td>
<td>-2.3067</td>
<td>-0.372</td>
<td>0.715</td>
<td>Accept H0</td>
</tr>
</tbody>
</table>

**Hypotheses II:** Investor will have negative overreaction to negative news in Bull Market. So the Hypothesis is as follow:
H0: CAAR pre = CAAR post

H1: CAAR pre > CAAR post

The result for test of hypothesis 2 is shown in Table 2. As it indicates average of abnormal accumulated return in the period of before announcement was -3.2471, which was increased to 4.0391 for the period of after announcement. We can conclude that investors in recession were overreacting to negative news but this overreaction rate was not statistically significant. Therefore we cannot reject H0.

Hypotheses III: investor will have negative under reaction to negative news In Bear Market. The hypothesis is as follow:

H0: CAAR pre = CAAR post

H1: CAAR pre < CAAR post

Under reaction hypothesis indicates that average of abnormal return before announcement should be less than average after announcement. However, as shown in Table 3 average of accumulated abnormal return before announcement of news is higher than it after announcement. We can conclude that investors during boom market didn’t have negative under reaction to unpleasant news of company. Therefore we cannot reject H0.
Hypotheses IV: investigator will have positive under-reaction to positive news in Bull Market

The hypothesis is as follow: H0: CAAR pre = CAAR post

H1: CAAR pre < CAAR post

As seen in Table 4; average on abnormal accumulated return before announcement is -6.1777 percent, which rises to 0.1853 percent for after announcement. The conclusion is investors in recession market did not under react to pleasant information. H0 cannot be rejected.

Table 4: Average abnormal accumulated return for pleasant news in Bull market Before and after announcement of news

<table>
<thead>
<tr>
<th>Average abnormal accumulated return before News (%)</th>
<th>Average abnormal accumulated return After News (%)</th>
<th>Difference of average abnormal accumulated return Before and After News (%)</th>
<th>T-test</th>
<th>P-Value</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1777</td>
<td>0.1853</td>
<td>-6.6630</td>
<td>-0.451</td>
<td>0.659</td>
<td>Accept H0</td>
</tr>
</tbody>
</table>

Conclusion

As previously mentioned, the results of researches conducted in other Stock Markets shows that abnormal returns exist before news announcement. This shows the release of information from other sources, and even having access to confidential information, which by reveal of real data this issue has been adjusted and prices have returned to their normal. The results of this research are also evidence of the market being affected by the new published information. The results show that a delay of market reaction to new information exists. This can be caused by
the problems in interpretation of information by investors, inappropriate information sharing, Lack of financial analyzers in Tehran Stock Market and etc. however it shows market sensitivity to new information. Hypothesis testing results of this study indicates that in some circumstances market has shown a short term over or under reaction to new information, but it was not statistically significant. According to the literature in this study it was expected that investors in Bull market overreact to pleasant information and under react to unpleasant information. However result shows that in the Bull market investors under react to company’s pleasant information and had short term reaction to unpleasant information but after announcement of news because of Bull market stock had positive price move. It was also expected in Bear market investors under react to pleasant information and over react to unpleasant information. Although the findings are inconsistent with research conducted in other countries existence of differences in study and research that has been done in other countries, draw the attention that applying theories based on perceived results to Iran’s market should be done with more diligence.

Some Suggestions Are Offered for Future Studies

Based on the role of reliable and transparent information for timely decision making; following suggestion are provided:

- Providing appropriate environment for quick and accurate information sharing.
- Requiring companies listed in Tehran Stock Exchange to comply with laws in performing its obligations to provide adequate information.
- Set new rules for efficiency of the market.
- Research on the role of confidential information and monopolies on the market reaction to the new information.
- Repeat this research for a period of 30 days to provide an appropriate statistical base for assessing the effect of advertisement on price reaction of stocks.
- Provide necessary training on the principles and techniques of investment for potential and active investors.

References


Gu, Zhaoyang. And Xue ,Jian.(...). “Do analysts Overreact to Extrem Good News in Earning ?” Working paper.


Louhichi ,W. ( ). Adjustment of stock Prices to earnings announcements : An intraday analysis,


