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# Impacts of the mass media effect on investor sentiment

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ABSTRACT

Based on one set of micro-level survey data, we examine impacts of the mass media effect on investor sentiment. The financial information is distributed through three mass media channels. The study reveals that the mass media effect leads to investor sentiment fluctuation, and significantly affects investors' trading decisions. Moreover, the impacts of media reports are asymmetric: in a rising market, investors pay more attention to optimistic reports and ignore those with a negative signal; by contrast, in a declining market, investors are more vulnerable to pessimistic reports, and reports with active information do not bring a significant effect.



## 1. Introduction

Many scholars believe that the stock price surge follows rules of the economy itself. No matter whether it is a bull or a bear market, assets shall ultimately return to their appropriate values. However, historical data show that Chinese investors (either individual or institutional) seldom transact based on the inherent assets evaluation. Instead, they rely more on outside information or mass media reports for investment decisions. For instance, at the early stage of a bull market, stock prices are relatively low and investors are quite conservative in trading, and hence, the number of new accounts is small; while at the later stage, stock prices are overvalued and investors become activated, and hence the number of new accounts is obviously increased. The bull market soar and the bear market plunge are hence not just driven by capital market fluctuation. There are investor-sentiment factors which also influence investors' decisions and lead to price fluctuations in stock market (Baker et al., 2012; Stambaugh et al., 2012; Stambaugh et al., 2014). As examples, Baker and Wurgler (2007) point out that investor sentiment has a clear effect on the company and the stock. Baker and Wurgler (2006) examine how investor sentiment affects the cross-section of stock returns and predict that investor sentiment more significantly affects securities with valuations highly subjective and difficult to arbitrage.

In the Internet era, specifically, the mass media plays the role of sources for most financial information. It disseminates specialized knowledge, solves the problem of information asymmetry between stock investors and listed companies, and strengthens regulation and development of the stock market. However, a considerable fraction of the current media reports deviates from the truth and is full of subjective color. Hence, as a market information system, the mass media sometimes fails to play a normal function, and the investor sentiment as well as investment decisions are unavoidably misled (Meng and Bo, 2010; Li et al., 2014; Sul et al., 2016; Zhang et al., 2016).

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In the prior literature, Shiller (2015) finds that the popular media optimism is more likely to attract investors to enter the market, and promote the stock market bubble. By examining the relationship between mass media reports and stock returns, Fang and Peress (2009) find that the breadth of information dissemination and stock returns are correlated. Taking the Standard & Poor's 500 index as a sample, Engelberg and Parsons (2011) show that mass media reports have a strong driving force for investors. According to Tetlock (2007), the higher the degree of pessimism over the mass media, the more active the trading behavior in the market.

As listed above, most scholars empirically analyze the impacts of mass media on the stock market from the macro perspective or using macro-level data. However, this paper argues that it is difficult to generalize the conclusions to all individual stock investors only from the macro-based views. We instead focus on the impacts of media effect on investor sentiment and trading behavior from a micro perspective of view. It is conducted by building a binary Logit model and making empirical analysis using data from a micro-level survey with a considerable sample size. By doing so, we reveal those categories of financial information that impose significant impacts on investor sentiment and highlight differences in these impacts between a bull market and a bear market.

More concretely, we obtain the following findings through analysis in this paper: First, the media effect produced by media reports will affect the investor sentiment and evaluation about the asset prices. Due to the asymmetric information and the media reports with subjective color, investors may make irrational investment decisions, and eventually make asset prices deviate from the reasonable valuation. Second, the impact of media reports on the market is asymmetric. In a rising market, stock investors are more sensitive to the optimistic reports and insensitive to negative ones; in a declining market, stock investors are more easily affected by pessimistic reports, and active market reports do not work too much.

## 2. Data and methodology

This study is based on a micro-level survey in April 2016, whose respondents are students with stock investment experience in xxx University.[1] The survey collects a total of 166 questionnaires, which consists of 42 females and 124 males. In terms of the respondents' subject distribution, 85 of them are on a financial subject and 81 are not. As a result, the sample distribution is not biased due to respondents' subject differences. Each respondent is required to report whether and to what extent he or she is influenced by mass media. Further, for three types of mass media, News Media, Social Media and Specialist Media, they are asked to report their sensitivity level to various categories of financial information in a bull market and a bear market, respectively.

We adopt a binary Logit model to analyze the impacts of media effect on investor sentiment. The binary Logit analysis basically examines the relationship between a categorical variable and a set of independent indicators.[2] In our model, it explicitly builds connection between investor sentiment and various categories of financial information in mass media. The investor sentiment is characterized by whether the investor is affected by mass media for investors. Two categories are included, i.e., being affected and not being affected. According to McFadden (1973), the corresponding random outcome follows a Logistic distribution. The model is concretely formulated as follows:

$$\text{Logit}(P) = \ln \frac{p}{1-p} = \alpha_0 + \alpha_1 \boldsymbol{EP} + \alpha_2 \boldsymbol{ID} + \alpha_3 \boldsymbol{IF} + \alpha_4 \boldsymbol{SMR} + \alpha_5 \boldsymbol{IE} + \varepsilon,$$

where $p$ reflects the odds of being affected by mass media for investors. Then, *1-p* corresponds to the odds of not being affected by mass media for investors. As such, a logarithm transformation of *p/(1-p)*, which is called Odds Ratio, quantitatively measures the relationship between the independent variables and dependent variables. The problem of predicting the probability of a random outcome is transformed to predict the Odds Ratio. The strength of the relationship is characterized by the coefficients $\alpha_i$,which are to be estimated based on the survey data. Further, this model contains five categories of financial news as indicators. The corresponding definitions and descriptions are stated as below:

(1) Economic Policy (EP).This indicator mainly reflects the overall economic policy, which is usually at a macro level. Examples include but are not limited to fiscal and monetary policies. In our survey, in the bull market, EP is set as "On the weekend, the People's Bank of China will cut the benchmark interest rate of RMB loans and deposits in financial institutions"; in the bear market, ID is set as "On the weekend, the people's Bank of China will increase the benchmark interest rate of RMB loans and deposits in financial institutions".

(2) Industrial Development (ID).This indicator refers to the economic situation of industries that the listed companies belong to. It generally measures the development trend for one specific industry. In our survey, in the bull market, ID is set as "One Belt and One Road – Dig for gold in five regions and six industries"; in the bear market, ID is set as "The reform of the supply side will be pushed, and focus will be on shares in five industries".

(3) Index Forecast (IF). This indicator refers to the prediction of the Shanghai composite index and the Shenzhen component index, by either professional financial institutions or scholars in the field of stock investment. In our survey, in the bull market, IF is set as "the bull market is not yet on top and the 4000-points is just the beginning of the A

[1] University name is removed for the blind review purpose.

[2] The binary Logistic model is used to estimate the probability of a binary response based on several independent indicators. The regression coefficients are usually estimated using maximum likelihood estimation. For more detailed information on Logit analysis, please refer to McFadden (1973).