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Modifier words in the financial press and investor expectations



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ABSTRACT

We experimentally investigate the priming effect of modifier words in the news media by looking at how different formulation of news affects investor expectations and beliefs. We asked subjects to estimate the future stock price for twelve real (anonymous) listed companies. They received information about historical stock prices and extracts from real newspaper articles, published on the last month of each corresponding stock. Subjects were divided into two treatment groups that differed in the framing of the newspaper article. In the positive (negative) news frame condition, the positive (negative) news are accentuated with emphasize and amplifier words, while the negative (positive) news are attenuated with downtoners. The factual information remained identical across treatment groups. We found that subjects were more likely to expect higher (lower) future stock prices, be optimistic (pessimistic) about the economy and the potential of a stock, perceive stock markets as more safe (risky), and decide to buy (sell) stocks after reading news that emphasized positive (negative) and attenuated negative (positive) content.

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1. Introduction

The news media is a major source of information for the general public (McCombs and Shaw, 1972). Goidel and Langley (1995) suggest that individuals know very little about real economic conditions and rely heavily on economic forecasts available in the mass media. Despite a great variety of news sources, the news media has become a powerful tool in influencing people's opinion (Shiller, 2005, p. 105). Readers may pick up clues regarding the general direction of the economy from "impression" rather than "hard" economic information in a newspaper article (Goidel and Langley, 1995). As a result, the evaluation of the economy might be "impression-driven" rather than "data-driven". Shiller (2005, p. 88) notes that the news media uses superlatives excessively. More importantly, people tend to avoid individual assessments of quantitative data and rely heavily on interpretations by celebrity sources. In a recent paper, Goetzmann et al. (2016) argue that the financial press accentuates negative news. The authors show that the negative valence of news is associated with the investor's assessment of the probability of the future market crash. They also suggest that without news attention to the potential for

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a crash, investors would probably ignore this information. Dougal et al. (2012) argue that the news media is not a faceless institution, but an individualistic craft that allows an author's style, persuasion, views or biases to be injected into the news content.

Research in finance has been mainly focused on the textual analysis of the content of news and its effect on the financial markets (García, 2013; Tetlock, 2007). Dougal et al. (2012) investigate the fixed effects of columnist writing such as journalist writing style and identity on the market performance. However, to date, there has not been any study on the direct effect of the salient stimuli of news on investor's stock price expectations and beliefs. In this paper we attempt to fill this gap by designing an experiment that measures how the presentation of news influences investor beliefs.

Priming is a technique that allows activating mental connections or associations via salient stimuli prior to the implementation of a certain task (Gilad and Klinger, 2008; Cohn et al., 2015; Kliger and Gilad, 2012). This technique is widely used in psychology as well as in economic and finance experimental studies to measure the pure psychological impact of primed concepts on behavior. A key advantage of the priming method is the ability to isolate the emotions from the background factors that remain unchanged in both treatment groups.

In our experimental design we prime subjects with positively or negatively framed news before asking them to evaluate the performance of a stock and make an investment decision. We distinguish between different news frames by manipulating the salient stimuli in the newspaper articles such as modifier words, while keeping the factual content seemingly unchanged in both treatment conditions. The subjects observe the same stock in both treatment groups. The main assumption of our experimental design is that modifier words do not contain any factual information, as we do not provide any supporting evidence for these words to be used in the text.

We believe that the change in subjects' expectations is driven by a change in sentiment. Baker and Wurgler (2007) define sentiment as a belief about future cash flows and investment risks that is not justified by the facts at hand. Shleifer and Summers (1990) argue that changes in demand for equity are to some extent an irrational response to changes in sentiment that are not justified by fundamentals, but driven by pseudo-signals that some investors believe convey information about future returns. The salient stimuli of news such as modifier words are thought to be those pseudo-signals that shape investor sentiment and account for aggregate demand shifts.

The subjects in our experiment were asked to estimate the future stock price of twelve real (anonymous) companies, based on the historical prices of each stock for 50 months and an extract from a real newspaper article published in the past. We introduced two treatment conditions: positive and negative news frames. In the positive (negative) news frame, we primed subjects with newspaper articles that highlighted positive (negative) and attenuated negative (positive) news by using modifier words while keeping the factual content unchanged. For example, the modifier word *impressive* and *insignificant* in "an impressive increase by 2%, while insignificant decrease by 1%" highlights the fact of the increase by 2% and attenuates the fact of the decrease by 1%, thereby amplifying the *positiveness* of the news (*positive news frame*). On the other hand, the modifier word *unimpressive* and *significant* in "an unimpressive increase by 2%, while significant decrease by 1%" amplifies the *negativeness* of the news (*negative news frame*). In both cases, the factual content of "an increase by 2%, while decrease by 1%" remains unchanged.

We divided subjects randomly over two treatment groups. In each treatment group they read six positively framed news for six stocks, and six negatively framed news for another set of six stocks. The difference between the treatments is that the subjects read oppositely framed news for each of the twelve stocks. The stocks were classified into increasing, decreasing, and no-trend in order to account for different past price performance. Apart from predicting the next period stock price, the subjects were asked to assess their confidence in their predictions, to describe their feelings about prevailing economic conditions, to evaluate the future potential of each stock, to evaluate the riskiness of stock markets, and to make an investment decision.

Our results show that subjects on average expect a significantly higher (lower) future stock return after reading news that highlight positive (negative) and attenuate negative (positive) facts. Additionally, subjects tend to expect a higher (lower) stock return next period, feel positively (negatively) about the economic outlook and the potential of each stock, perceive stock markets as safer (riskier), and state that they are going to buy (sell) additional shares. Additionally, we find that the reported effect is asymmetrical and is more pronounced for decreasing (trending downwards) and no-trend stocks relative to increasing (trending upwards) stocks.

There can be multiple explanations for how modifier words impact investor sentiment and subsequent investor expectations and actions. As one possibility, we suggest to use the theory of limited attention. We argue that the news media may be able to manipulate investor's perception of the content of financial news by drawing readers' attention to one fact, while taking it away from another via salient stimuli such as modifier words. As a consequence, the content to which investors pay attention impacts their expectations, beliefs and ultimate decisions. Barber and Odean (2008) argue that in a world of abundant information and thousands of alternatives, options that attract attention are more likely to be selected and options that do not attract attention are more likely to be ignored. As a result of limited attention and processing power, people are not able to fully utilize all publicly available information and are likely to make suboptimal decisions. Hirshleifer and Teoh (2003) assert that attention is drawn to vivid or salient stimuli, which are prominent, have a tendency to stand out or have a high degree of contrast with other stimuli in the environment. Peng and Xiong (2006) argue that important news and information is not reflected in prices until investors pay attention to it. The post-earnings announcement drift is a potential example of this claim. Ball and Brown (1968) and Bernard and Thomas (1989) suggest that prices underreact to earnings news as if some participating investors fail to react fully to such announcements. Such anomaly contradicts with

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