

The Influence of CEO's Anger on Investors' Group Decision-Making

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Abstract. Under the background of economic globalization, information spreads more widely and changes faster, and the decision-making factors considered by investors are becoming more and more abundant. In addition to traditional linguistic information such as market-related indexes, the nonverbal information of company management has attracted more and more attention from investors. Facial emotion, as a highly personalized decision-making factor, affects information dissemination and investor decision-making from the social effect level of emotion and then affects market performance. However, there is still a lack of accurate classification and closed-loop explanation for the specific expressions in the existing research. Therefore, this paper makes a regression analysis by collecting the existing domestic and foreign literature and foreign-specific market data and studies the related influence of chief executive officer (CEO) anger on investor group decision-making. Furthermore, it is convenient to discuss the nature of facial emotions, individual differences in management, and the influence of the market environment on investors' decision-making, which will be an important proposition in the analysis of factors affecting decision-making in a business environment.

Keywords: Facial expression; Investment decision; Nonverbal information.

1. Introduction

With the continuous advancement of globalization and the popularity of the Internet, the influencing factors of investors' decision-making are becoming increasingly complicated. In this context, chief executive officer (CEO) expression, as a kind of nonverbal information, has attracted more and more researchers' attention. In recent years, one of the hot academic issues is the influence of CEO's specific expression on investors' decision-making.

Emotion is a valuable response to the relevant stimulus for a specific goal, which is different and generally lasts for a short time. Emotional expression refers to the clues that indicate the existence of the emotional state and focuses on the clues that imply the existence of an internal emotional state [1]. The expression of human and animal emotions written by Darwin has brought people's attention to the communication function of emotional expression, and since then, scholars have put forward its extensive influence and various social effects. Emotional expression has become an indispensable and important factor in event analysis, including emotional contagion, social information, reciprocal emotional response, etc., regardless of its causes or subsequent effects.

Studies in the past few years have shown that CEO's angry expression has a significant impact on investors' decision-making. These influences may include the change in investors' mood, the formulation of investment decisions, and the market reaction [2]. However, there are still some limitations in the current research, such as the lack of consideration of environmental factors of angry expressions and the failure to analyze investors' factors. In addition, most of the existing studies focus on a wide range of levels, ignoring the influence of the CEO's specific expressions on the group level.

The purpose of this study is to explore the influence of CEOs' angry expressions on investors' decision-making. During the discussion, we will pay attention to the limitations and shortcomings of existing research and put forward new research questions and assumptions, which can reveal the role of emotion in investment decision-making and provide a more theoretical basis for future investment decision-making. It can also deepen the understanding of emotional management. By studying the influence of a CEO's anger, investors can better understand and manage their emotions, to make more

informed investment decisions. Contribute to the development of financial theory, especially in the fields of emotional management, investor behavior, and corporate governance.

To sum up, studying the influence of a CEO's anger on investors' decision-making can contribute to the academic value of emotional management, investor behavior, and corporate governance in today's market.

2. Literature Review

In recent years, the existing research system has clarified the emotional mechanism and extensive social influence, reviewed the emerging literature on the social effect of emotions, and recorded the influence of emotional expression on the observer's emotion, cognition, and behavior. This paper discusses how emotional expression mediates the influence on the observer's behavior through emotional reaction and reasoning processes [3]. With the evolution of the commitment mechanism, the observer's recognition ability and inference may be influenced to some extent by the psychological process of the human brain's natural bias towards the reward system. That is, when feelings conflict with the way we evaluate the real situation, we may be biased against the truth [4].

Some scholars in China have also researched this topic and obtained results. The research is based on a neural network to analyze it, and the influence of the CEO's emotional characteristics on the media attention of the press conference is explored by relevance analysis. CEOs of different companies have different emotional expression patterns in the press conference, which can be grouped into thousands of groups closely related to the main product types of enterprises, and there are also different emotional inertia expressions and influence trends in various blocks. The proportion of anger and the media attention of the press conference is significantly positively correlated with 95% confidence [5].

Based on this, this paper aims to systematically analyze the influence of CEO's anger on investors' decision-making through market performance response, to put forward corresponding improvement measures for company management.

3. Research Objectives and Assumptions

As the decision-maker of an enterprise, the CEO plays a vital role in enterprise decision-making. Facial expression is a way for people to express their feelings and intentions. It not only reflects people's inner state, but also may affect others' reactions. In a business environment, the CEO's facial expression may affect the decisions of investors, employees, and other stakeholders [6]. This article aims to prove that CEO's angry expression has a clear influence on investors' decision-making. It is assumed that the proportion of CEO's angry expressions is positively correlated with the negative market reaction.

4. Research Design

Firstly, video samples are collected. This study collects interviews about Crazy Money from YouTube. The reason why we pay attention to this program is that executives often appear in this program, and every episode is watched by an average of 190,000 families. After removing all kinds of fragments that can't judge the CEO's expression, the sample finally includes 959 CEO interviews.

In addition, relevant financial data are collected, and links to other databases are obtained by collecting stock codes of each company and using Center for Research in Security Prices (CRSP) stock name files.

This study obtains accounting information from Compustat-capital Intelligence Quotient (IQ) through the Wharton Research Data Services (WRDS) platform. This financial database covers financial information and stock information of global companies, including comprehensive financial data, income statements and cash flow statements of listed companies, from which financial indicators

of companies, such as profit changes and company size, can be calculated. In the next step, it will be used as important data to build the benchmark model.

This study obtains market data from CRSP, which contains the stock information of listed companies in North America, the target market of this study, includes the stock market, securities prices and trading volume of listed companies involved. The opening discount rate, Initial Public Offering (IPO) market fever, and IPO discount rate can be obtained through corresponding calculations. As important data in the regression analysis of the benchmark model.

This research obtains analyst data from Institutional Brokers' Estimate System (IBES), the most complete and in-depth comprehensive public opinion historical database on the market at present, which can help users to analyze the correlation between market sentiment and fluctuation, covering the forecast data of major profit indicators provided by many listed companies and brokers, including the financial indicators forecast made by various professional analysts for the listed companies involved in recent years, to better grasp the attitude of professional analysts towards company management and make corresponding market trends and investor decision-making forecasts. As a related feature related to independent variables in the components of subsequent regression models.

This study obtains media data from RavenPack and has focused on news data analysis since its establishment. The biggest feature is that the calculation of emotions is mostly analyzed from the perspective of entities and events, which means that the abstract observation of emotions has more scientific logic behind it. By grabbing the news related to the company, this study can be used to mark the time to compare the changes of market indicators before and after the time point to get the influence of CEO's obvious emotional expression on market investors. It is also used as a feature study of regression model.

In this study, the CEO characteristics of relevant listed companies are obtained from BoardEx, which covers the directors' information of all companies in the world, including the composition of the board of directors, basic personal information, age and education level, and the shareholding ratio and concentration ratio of executives can be calculated. It is the best choice to ensure the standardization and unification of the independent variables in this study.

At the same time, this study uses the video samples analyzed by recognition facial detection API to establish the CEO emotional index system. That is, by observing and analyzing the images of each frame in the video, we can judge the emotional state of the executives at that time. Although there are many ways to obtain this kind of data, these videos are quite different because of the differences in shooting angle, environment, equipment conditions and playing platform. At the same time, to ensure the authenticity of executive expression data, it is necessary to obtain their real facial expressions for a long time. The video provided by this program is one of the best channels to obtain this kind of data in this study. In this kind of video, the speeches of executives mainly include the disclosure of important information such as the company's business and development prospects, and their speeches can often reflect their inner true thoughts, so these emotions are more real and reliable [7].

As shown in Table 1, this study numbers this column of emotions. The assignment of different emotions is completed by observing and judging facial patterns.

Table 1. Expression assignment

Emotion	serial number	facial pattern
Neutral	0	has no obvious change
Happy	1	Lips spread outward and upward, eyes smile, and annular wrinkles
Grief	2	Eyebrows arched, mouth down
Surprise	3	Eyebrows up, blink
Anger	4	Frowns and narrows eyes

Finally, a benchmark model (1) based on verifying the relationship among executive sentiment, IO market performance and executive financial behavior is established: $IPO_{perf} = \beta_0 + \beta_1 \times Managers_{Emotions} + \beta_2 \times ln_{age} + \beta_3 \times ln_{edu} + \beta_4 \times ipo_{mrkt} + \xi$. Analyze the relationship

between the three. Among them, IPO_{perf} is the dependent variable IPO market performance, represented by IPO discount rate. The subscript Emotions represent four main emotions, namely, happiness, sadness, surprise and anger, as the independent variable No.1. The other independent variables are the age ln_{age} of executives, educational background ln_{edu} and IPO market fever ipo_{mrkt} (IPO average discount rate). The background characteristics of executives are controlled as follows: age represents age; Edu is the education level, and its division standard refers to the rules of the Board EX executive characteristic library: according to the order of junior high school, senior high school, junior college, undergraduate, master and doctor, different educational backgrounds are assigned values of 6, 5, 4, 3, 2 and 1. β_0 is the intercept term, $\beta_1 \dots \beta_4$ is the coefficient of each characteristic term, and ξ is the error term. Model parameters such as coefficient and intercept can be estimated by the least square method or other optimization algorithms.

After the data preparation is completed, the data is cleaned, the missing values and abnormal values are processed, and the data is converted. The logarithm of the age and educational background of the executives is ln_{edu} and ln_{age} respectively. IPO market fever ipo_{mrkt} is the average IPO discount rate in the A-share market in the first three months of IPO. Ownership concentration adopts Herfindal index HHI provided by CRSP database.

In the empirical test, the training data is used to fit the model, and the best coefficient value is found, and then the model is evaluated and verified. MSE and other indicators can be used to evaluate and check its prediction performance, which can be continuously adjusted and optimized in the follow-up research.

5. Conclusion

To sum up, this paper puts forward a relatively perfect method system for studying the influence of a CEO's anger on investors' decision-making, which can be optimized and adjusted with different research needs. Different from the subjective evaluation data of executives' impressions in general research, this paper adopts the direct measurement of executives' emotions, and constructs a benchmark model by combining several characteristic variables, which pushes the exploration of executives' characteristics into the acquired characteristics of anthropology, psychology and physiology, and also provides preliminary evidence for the influence of executives' emotions on market performance and financial behavior.

Based on the influence mechanism of CEO's anger, this paper considers various factors, tries to ensure the unity of individual characteristics of regression variables as much as possible, grabs financial data and video data to build an emotional index system, and finally preliminarily studies the possible influence of CEO's emotions on investors' decision-making through regression model. The previous research system in the field has been deepened and expanded vertically. However, there are still some limitations in this study. First, the research perspective is only based on the samples of listed companies in North America, and the perspective is single; Second, the research level is limited by subjective factors such as personal professional cognition and cultural background, which may not cover the fluctuation of some professional analysis factors. Future research can establish a more sound emotional management mechanism, pay attention to investor feedback, and better clarify the possible relationship between the two.

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