

Entrepreneurship Emotional Prediction of Entrepreneurs' Reduction -evidence from IPO Road Shows

Dehu Liu^{1, a}

¹School of Management, Shanghai University, China

^aliudehu1027@163.com

Abstract: Can external stakeholders use information prediction of entrepreneurs to reduce their holdings with information prediction? In combination with cognitive disorders and emotion, this study analyzes the relationship between the emotional state of the entrepreneur and the reduction of entrepreneurs during the lifting of the entrepreneurial and lifting entrepreneurs during the IPO roadshow of the GEM listed company. Studies have found that there is a positive correlation between the negative emotions of entrepreneurs and the reduction of entrepreneurs, and there is a negative adjustment effect on industry competition on negative emotions-entrepreneurs' reduction relationships. The results of the research show that when predicting entrepreneurs' reduction behavior, the emotional information of entrepreneurs during the IPO roadshow can be included in the field of analysis, which is of great significance for the supervision of relevant departments and the decision -making of investors.

Keywords: Entrepreneur reduction, Entrepreneurial emotion, Cognitive imbalance theory, Emotional information theory.

1. Introduction

The GEM effectively alleviates the financing constraints of my country's high -tech and high -growth enterprises, but these companies frequently have a large -scale reduction of holdings after listing, which harms the interests of small and medium investors, and severely destroys the capital market. Stability, greatly weakening the efficiency of the securities market (Bebchuk & Frytman, 1994). According to the information disclosed by the Shenzhen -Shanghai Exchange, in the nearly 10 trading days in June 2020, a total of 55 listed companies in GEM suffered a reduction in holdings, with a total reduction of 764 million yuan.

Related stakeholders can accurately predict executive reduction behavior with the information disclosed by an enterprise. The current research on executive reduction predictions is mainly based on the company's financial performance, the internal power structure of the enterprise and other self -disclosed business information. However, as a high -level employee of the enterprise, executives can use their own control advantages to manipulate information disclosure: such as annual newspapers management, media strategic disclosure and even financial report fans (Kraet et al., 2014). Therefore, executives may disclose information to the outside world from the actual situation of enterprises or their own interests. As a core member of the high -level enterprise, entrepreneurs have a vital impact on the strategic selection of entrepreneurial enterprises and the growth of enterprise growth. This article focuses on the reduction of entrepreneurs.

In addition, the current scholars do not distinguish between the time of reducing their holdings and ignore the attention of the special period of restrictions on sale restrictions. Does the large -scale reduction that appears immediately after the lifting period means that the entrepreneurs have adverse motivation to reduce holdings before the IPO listing (Mudambi & Treichel, 2004)? Those with external stakeholders in the enterprise are only difficult to accurately predict the entrepreneurial entrepreneur reduction behavior

after the listing of the IPO of the enterprise. So, what non -disclosed information can effectively predict the decision -making of entrepreneurs in the lifeline?

In recent years, non -autonomous disclosure information such as the voice, facial features, and emotions of entrepreneurs have gradually attracted the attention of the academic circles (Akansu et al., 2017). The difficulty of self -control reflects the real psychological activity of the individual at that time (Lupon, 1983), and the emotion is also widely used as a reliable clue to infer the true intention of individuals (Carmen et al, 2020). The facial expressions are the most important way for individual emotions (Mehrabian & Wiener, 1967). Studies have shown that when the entrepreneurs stated their business conditions and the emotions revealed in the future expectations, they contain important accounting information (Mayew & VenkataChalam, 2012). The effectiveness of performance prediction is even better than a completely financial information prediction effect (Hobson et al., 2011). For the non -autonomous characteristics of emotional information, the emotional state of the entrepreneur (CEO, etc.) in public (road show, call meeting, etc. and the company's unfair behavior (Gong et al., 2019), performance "change face "(Hobson et al., 2011). However, research on entrepreneurs' emotional information has not yet extended to predicts the future decision -making of entrepreneurs themselves.

In this paper, Facereader software was used to analyze the facial expressions of entrepreneurs in the IPO roadshow speech, and to test the relationship between the level of negative emotions of entrepreneurs and the entrepreneurs' stock reduction during the lifting period. The study found that the higher the level of negative emotions presented by entrepreneurs in the road show speech, the more likely the entrepreneurs were to reduce their shares within one year after the lifting of the ban. When the competition intensity of the industry is higher, the relationship between negative emotions and entrepreneurs' reduction will be weakened. The main contributions of this paper are reflected in the following three

aspects: First, from the perspective of entrepreneurial sentiment for the first time, this study explores the role of entrepreneurial sentiment in predicting the subsequent did-down behavior of entrepreneurs during IPO roadshows, and extends the research scope of did-down to the non-self-disclosed financial information. Second, this paper extends the study of emotional information to the field of entrepreneurs' own decision-making, providing new evidence for testing the value of information contained in emotions. Third, this study focuses on the entrepreneurs' selling behavior in the short term after the lifting of the stock embargo, and refines the research on selling.

2. Hypothetical Development

Liability of newness is the survival challenge faced by entrepreneurial enterprises. In order to reduce the risk of enterprise death, entrepreneurs will spare no effort to obtain financing (Certo et al., 2019). IPO financing is one of the most important financing methods for start-ups, and road show promotion is the core link of IPO.

According to the signal hierarchy theory, entrepreneurs, as individuals or groups with the highest level of power in entrepreneurial enterprises, know the actual operation and future development of enterprises. If the company's internal situation is not as good as the entrepreneur claims, but the pitch constantly emphasizes the value and future growth of the company, the company must realize that it has deceived outside investors.

Cognitive dissonance theory points out that when an individual's cognition, such as belief, value or expectation, conflicts with his own behavior, the individual will have cognitive dissonance, and then show anger, fear, tension and other negative emotional states (Festinger, 1957; Hinojosa et al., 2017). If the company information presented by entrepreneurs to external investors during the road show is different from the actual information, such cheating behavior will conflict with their honest moral concept, thus causing cognitive dissonance and negative emotions such as tension and depression among entrepreneurs (Klass, 1978). In addition, entrepreneurs usually have confidence in their own abilities and believe that they have the ability to manage the enterprise well (Mayew & Venkatachalam, 2012). When the poor operation of the enterprise is inconsistent with their own high expectations, entrepreneurs are also triggered by cognitive dissonance, resulting in stress, dissatisfaction, disappointment and other negative emotions (Gong et al., 2019). Therefore, the lower the authenticity of the information provided by the entrepreneur during the speech, the stronger the degree of cognitive dissonance felt by the entrepreneur during the IPO road show, and the higher the level of negative emotion ultimately reflected in the facial expression.

Emotion as Information theory points out that the emotional state experienced by an individual during a specific event will provide an important basis for the individual to make decisions in the relevant situation later, that is to say, such emotional state is the source of information that influences subsequent judgment (Schwarz and Clore, 2003). Negative moods often convey information that leads to more negative judgments than happy moods (Schwarz et al., 1987). At the same time, the emotion-as-information theory suggests that emotions are more influential when individuals make decisions for themselves than for others (Schwarz and Clore, 1983). When the stock of listed companies reached the

unrestricted period, entrepreneurs again faced with a similar situation to the IPO. Road show as an important link of enterprise listing, the emotional experience of road show provides an important basis for entrepreneurs to make decisions on whether to reduce their holdings. When the entrepreneurs experienced more negative emotions during the road show, the entrepreneurs recalled the road show process more negative evaluation and feelings. Such negative emotional experience will make entrepreneurs have a negative judgment on holding stocks, which will lead to more likely to make decisions to reduce their holdings. Therefore, the following hypothesis is proposed in this study

H1: The higher the level of negative emotions reflected by the entrepreneurs' facial expressions during the IPO roadshow, the more likely the entrepreneurs will reduce their shares after the lifting period.

With the development of cognitive dissonance theory, scholars have found that responsibility plays an important role in arousal and manifestation of cognitive dissonance (Cooper et al., 1971). Responsibility is a multidimensional concept, including Choice and Foreseeability (Andiappan & Dufour, 2017). When a decision is faced with multiple options, the conflict between an individual's desire to choose the best option and his awareness of his inability to choose the best option will lead to cognitive dissonance (Hinojosa et al., 2016). Conversely, when individuals have no choice, they feel less responsible for the choices they have to make, and thus less dissonant. Secondly, if an individual can predict the impact of his behavior in advance, he is more inclined to adopt an attitude consistent with his action (Goethals et al., 1979). Specifically, if an individual knows in advance that his or her behavior is obviously wrong, the disorder of his or her behavior will be more serious (Lowell, 2012).

As a bridge between macro-environment and micro-environment, industry environment is regarded as "the strongest mechanism to promote economic efficiency in the world" (Shleifer & Vishny, 1997). However, in the highly competitive industry environment, market liquidation mechanism will lead to the survival threat of bankruptcy or liquidation for poorly operated enterprises. Entrepreneurs have a special emotional bond for their new enterprises (Fisch & Block, 2020), and there may even be an emotional bond like "father and son" between them (Lahti et al., 2018). In order to avoid the "premature death" of their children, entrepreneurs choose to hide the bad management news of their enterprises or even exaggerate their business performance during the IPO roadshow, so as to gain more favor from investors. In an environment of intense industry competition, entrepreneurs believe that their cheating behavior above is a choice they have no choice to make, for which they are not mainly responsible and will not affect self-concept. Therefore, the degree of cognitive dissonance stimulated will be reduced, and the negative expression of entrepreneurs will be less in the road show.

In addition, high-intensity industrial competition is often accompanied by high environmental uncertainty, which makes it difficult for entrepreneurs to accurately grasp the future development trend of enterprises. However, entrepreneurs tend to have high confidence in their own abilities (Mathew et al., 2006) and tend to evaluate bad opportunities as good ones. When the industry market competition becomes more intense, overconfident entrepreneurs regard it as a "good environment" instead, believing that competition will reduce the information

asymmetry of the company and reduce the cost of obtaining limited resources (Hoberg & Phillips, 2010), and have a higher expectation and judgment on the future business performance of the enterprise. As a result, entrepreneurs do not believe that their "hype" about the future of the company during the IPO roadshow is necessarily wrong, so the degree of dissonance generated by the behavior is reduced, and thus the level of negative emotion expressed is reduced. According to the theory of emotion as information, when the negative emotions experienced by entrepreneurs in the road show decrease, the negative emotions they feel in recalling the road show will be weakened, thus weakening their negative judgment on whether to hold stocks or not, and ultimately reducing the possibility of making the decision to reduce their holdings. Therefore, hypothesis H2 is proposed:

H2: Industry competition negatively moderates the relationship between entrepreneurs' negative emotions during IPO roadshows and entrepreneurs' reduced holdings after IPO

3. Research Design

3.1. Sample selection and data sources

The samples in this paper include enterprises listed on chinext from 2010 to 2016. Since China Securities Regulatory Commission completely stopped IPO in 2013, there were no samples that met the requirements in that year. Related data such as entrepreneurs' reduction of holdings and enterprise performance level were collected from CSMAR database, RESSET database, WIND and other second-hand databases. The roadshow videos are downloaded from Panorama -- China Online Roadshow Center, which is an online roadshow platform designated by China Securities Regulatory Commission. According to the research requirements of this paper, the samples are screened: (1) 42 samples of companies without road show videos are eliminated; (2) Eliminate one sample of companies listed on GEM to main board; (3) Eliminate the samples with missing relevant data; (4) In order to avoid the influence of extreme values, this paper conducted tail reduction treatment on 1% and 99% of all the involved continuous variables, and finally got 388 samples of the company.

3.2. Variable definition

3.2.1. Dependent variable -- entrepreneurs reduce their holdings

On April 5, 2007, China Securities Regulatory Commission issued the Rules on the Management of the Shares held by Directors, Supervisors and senior Managers of Listed Companies and Their Changes, stipulating that "the shares held by senior executives of the Company shall not be transferred within one year from the trading day of the company's shares. The articles of association of the company may make other restrictive provisions on the transfer of the shares held by the directors, supervisors and senior managers of the company." In view of the situation where there is a restricted period for executives' stock reduction, this study refers to the research of Wang Fule (2018) and chooses the stock changes within one year (from the date of release to the date of release +365 days) of the company as the standard. If the total net change of shares of entrepreneurs is less than 0 during the period, it is regarded as a behavior of stock reduction, and the value is 1. If the total net change of shares of entrepreneurs is greater than 0 during the period, it is regarded as the existence of shareholding increase behavior,

and the value is -1; The value is zero without increasing or subtracting.

3.2.2. Independent variable -- negative emotion

In order to reliably measure the level of entrepreneurs' emotions during road shows, previous literatures were consulted (Gong et al., 2019) used Facereader software for facial emotion recognition and analysis of IPO roadshow videos. In order to ensure that the measured data is the facial data of entrepreneurs, we manually excluded the shot data of non-entrepreneurs (sponsors, other company members, etc.) in the roadshow video.

Facereader is a facial expression recognition software developed by Noldus Information Technology Company. Based on pictures or videos, Facereader can identify seven basic emotions (happiness, sadness, anger, surprise, fear and frustration) and a neutral emotional state. Facereader combines Facer Modeling and Classification with Deep face classification

Face Classification can achieve a more reliable and robust analysis. Face pattern recognition is based on deep artificial neural network, so Facereader can directly classify image pixels, which can realize effective recognition even if the face is partially blocked. Valence = $p(\text{happy}) - \text{Max}(p(\text{sad}), p(\text{angry}), p(\text{depressed}), p(\text{fearful}))$. The lower Valence is, the more negative the Valence is. According to the operating manual of Facereader, when Valence is less than negative 0.033, individuals are considered to be in a negative emotional state.

According to the operating manual of Facereader, when Valence value was less than -0.033, subjects were considered to be in negative emotional state. In order to effectively measure the overall level of negative emotions of entrepreneurs during the whole road show, we took Jia Ming et al. (2020) for reference, counted the number of times that the Valence value was less than negative 0.33 during the emotion measurement period, and then multiplied by the length of each measurement interval (0.1 seconds) to get the total time of negative emotions. Clearly, the longer the negative mood, the more negative the entrepreneur's mood.

3.2.3. Regulating variable -- industry competition degree

For reference to the research of Haveman et al. (2016), the Herfindahl-Hirschman index (HHI), that is, the sum of squares of the proportion of operating revenue of companies in the total operating revenue of the industry, is chosen as the index to measure the degree of industry competition. In order to facilitate subsequent empirical explanation, we made negative processing on the index (multiplied by -1), and the larger the index is, the fiercer the industry competition will be.

3.2.4. Control variable

In this paper, indicators such as company age, company scale, number of actual controllers of the company, and company debt ratio are selected as control variables at the company level, and age, gender, shareholding ratio of entrepreneurs and whether they concurrently serve as general manager are selected as control variables at the individual level. According to the characteristics of this study, we also controlled the road show length, IPO financing cost, winning rate, IPO underpricing rate and other factors (Mousa et al., 2015).

3.3. Descriptive statistics and correlation coefficients

Table 2 and Table 3 respectively list the basic descriptive

statistical results and correlation coefficient matrix of variables. It can be seen from the correlation coefficient matrix that the correlation coefficients among variables are all less than 0.5, so there is no serious multicollinearity problem

among model variables. In addition, negative emotions were significantly positively correlated with entrepreneurs' downholdings ($\beta=0.14, p<0.01$), which supported hypothesis 1.

Table 2. Descriptive statistics of variables

| Variable | Obs | Mean | Std.Dev. | Min | Max |
|-------------|-----|--------|----------|--------|--------|
| Reduction | 388 | 0.222 | 0.603 | -1.000 | 1.000 |
| Negaemotion | 388 | 3.988 | 5.469 | 0.000 | 24.300 |
| HHI | 388 | -0.174 | 0.214 | -1.000 | 0.000 |
| Firmage | 388 | 10.088 | 4.805 | 1.000 | 22.000 |
| Ln_scale | 388 | 6.193 | 0.699 | 4.205 | 8.125 |
| Num_control | 388 | 1.698 | 1.136 | 0.000 | 8.000 |
| Lev | 388 | 0.373 | 0.153 | 0.045 | 0.711 |
| Ln_age | 388 | 3.886 | 0.130 | 3.497 | 4.304 |
| Gender | 388 | 0.954 | 0.211 | 0.000 | 1.000 |
| Ln_holder | 388 | 3.779 | 0.958 | 0.000 | 4.594 |
| Power | 388 | 0.178 | 0.383 | 0.000 | 1.000 |
| Ln_time | 388 | 4.992 | 0.293 | 4.272 | 5.710 |
| Ln_cost | 388 | 8.271 | 0.308 | 7.694 | 9.307 |
| Lottery | 388 | 0.792 | 0.798 | 0.014 | 5.946 |
| Ipo_ret | 388 | 1.340 | 0.227 | 0.858 | 2.200 |

3.4. Regression result analysis

Since the dependent variable, entrepreneur's reduction belongs to the ordered classification variable, this paper adopts the ordered logit (ologit) regression model (Williams, 2015) for analysis. Table 3 shows the regression results of the relationship between entrepreneurs' negative emotions and entrepreneurs' holdings reduction within one year of the company's lifting period. Among them, Model 1 only has control variables, Model 2 includes independent variables and regulating variables into the Model, and Model 3 is the regression result of adding negative emotions of entrepreneurs, the degree of industry competition, the interaction term of negative emotions and the degree of

industry competition as well as all control variables.

In Model1, we found that there was a significant positive correlation between the number of actual controllers (Num_control) and entrepreneurs' disengagement ($\beta=-0.169, p<0.05$), indicating that the mutual supervision and rights checks and balances among multiple actual controllers could effectively inhibit entrepreneurs' disengagement behavior during the disengagement period. In addition, Lottery has a negative correlation with entrepreneurs' reduction of stock holdings ($\beta=-0.351, p<0.05$), suggesting that the more investors participate in corporate IPO, that is, the more "hot" the IPO, the more likely entrepreneurs are to reduce stock holdings in one year during the unrestricted period.

Table 3. Correlation coefficient matrix

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|-------------|----------|---------|-------|----------|---------|---------|-------|---------|-------|---------|----------|-------|----------|----------|------|
| Reduction | 1.00 | | | | | | | | | | | | | | |
| Negaemotion | 0.14*** | 1.00 | | | | | | | | | | | | | |
| HHI | -0.07 | 0.08 | 1.00 | | | | | | | | | | | | |
| Firmage | 0.06 | -0.01 | 0.04 | 1.00 | | | | | | | | | | | |
| Ln_scale | 0.03 | 0.02 | 0.08 | 0.06 | 1.00 | | | | | | | | | | |
| Num_control | -0.09* | -0.03 | 0.02 | 0.02 | 0.01 | 1.00 | | | | | | | | | |
| Lev | -0.04 | 0.06 | -0.08 | 0.02 | 0.24*** | -0.02 | 1.00 | | | | | | | | |
| Ln_age | -0.04 | 0.01 | 0.10* | 0.20*** | -0.05 | 0.11** | 0.01 | 1.00 | | | | | | | |
| Gender | -0.02 | 0.05 | 0.06 | 0.07 | 0.08* | 0.04 | 0.03 | -0.03 | 1.00 | | | | | | |
| Ln_holder | 0.07 | -0.07 | -0.07 | -0.03 | 0.04 | 0.21*** | -0.06 | -0.13** | -0.06 | 1.00 | | | | | |
| Power | 0.05 | 0.12** | 0.04 | 0.22*** | 0.04 | -0.04 | -0.04 | 0.06 | -0.06 | 0.01 | 1.00 | | | | |
| Ln_time | 0.05 | 0.15*** | 0.00 | 0.07 | -0.04 | -0.01 | 0.05 | 0.17*** | 0.02 | 0.00 | -0.01 | 1.00 | | | |
| Ln_cost | 0.00 | -0.04 | -0.05 | -0.21*** | 0.14*** | -0.01 | -0.06 | -0.06 | -0.02 | -0.07 | -0.08 | 0.02 | 1.00 | | |
| Lottery | -0.15*** | -0.10** | 0.01 | -0.17*** | 0.03 | 0.12** | 0.05 | -0.01 | 0.02 | 0.03 | -0.39*** | -0.06 | 0.19*** | 1.00 | |
| Ipo_ret | 0.07 | 0.07 | -0.03 | 0.14*** | -0.08 | -0.10* | -0.06 | 0.11** | 0.05 | -0.11** | 0.21*** | 0.02 | -0.24*** | -0.42*** | 1.00 |

Hypothesis 1 indicates that there is a positive correlation between negative emotions of entrepreneurs and downsizing of entrepreneurs. As shown in Model 2, there is a significant positive correlation between entrepreneurs' negative emotions and entrepreneurs' reduction of shares ($\beta= 0.284, p<0.01$), indicating that the higher the level of entrepreneurs' negative emotions in the IPO roadshow, the more likely the company is to reduce its shares within one year of the lifting period. Hypothesis 1 is verified.

Hypothesis 2 predicts that industry competition negatively regulates the relationship between entrepreneurs' negative emotions and entrepreneurs' downsizing. The interaction coefficient of Model 3 is negative and significant ($\beta= -0.618, p<0.01$), indicating that when the degree of competition within the industry is high, the relationship between

entrepreneurs' negative emotions and entrepreneurs' downholdings will be weakened, and the results are consistent with hypothesis.

3.5. Robustness analysis

We used other measures to measure negative sentiment and industry competition, and supplemented them with robust analysis to ensure the reliability of the conclusions. The above negative emotions of entrepreneurs, who took the duration of negative emotions during the road show as an alternative indicator. In this way of measuring emotions, both negative emotions and positive emotions (happiness) were considered. In order to avoid the impact of positive emotions on the results, we only measure the negative emotions of entrepreneurs during the road show. We classify five

emotional states of sadness, anger, frustration, fear and surprise as negative emotions, and then average the five negative expressions (sadness, anger, frustration, fear and surprise) that appear every second in the road show video. The negative emotion of the entrepreneur per second is calculated, and then the average negative emotion of the entrepreneur in the whole video (manually excluding the time when the entrepreneur does not appear) is calculated as Five_expression. Robustness test was carried out following the above Model, and the regression results were shown in Model 4 and Model 5 in Table 4. Hypothesis 1 and hypothesis 2 were both supported and the conclusion was robust.

As for the degree of industrial competition, we select the number of listed companies in the industry in which the company is located as another index to measure the degree of industrial competition. When the number of listed companies in the industry is larger, the competition in the industry will be more intense; conversely, the degree of monopoly in the industry will be higher. The regression results are shown in

Model 6 and Model7 in Table 4. Hypothesis 1 and hypothesis 2 are supported, and the conclusion is robust.

In order to further ensure the accuracy of the measurement of negative emotions, we refer to the research of Breaban and Noussair (2013) and believe that anger is a transient emotional state, which usually disappears quickly after the root cause of fear disappears (Akansu et al., 2017). Therefore, we only classified the four emotional states of sadness, anger, frustration and surprise as negative emotions, averaged the four negative expressions (sadness, anger, frustration and surprise) that appeared every second in the road show video, calculated the negative emotions of entrepreneurs in every second, and then calculated the average of negative emotions of entrepreneurs in the whole video (manually excluding the time when the entrepreneurs did not appear). That's Four_expression. The regression results are shown in Model 8 and Model9 in Table 4. Hypothesis 1 and hypothesis 2 are supported, and the conclusion is robust.

Table 4. Robustness test

| | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
|-----------------------------------|---------------------|----------------------|----------------------|----------------------|---------------------|---------------------|
| Firmage | 0.029 (0.023) | 0.026 (0.023) | 0.029 (0.023) | 0.026 (0.023) | 0.030 (0.023) | 0.028 (0.023) |
| Ln_scale | 0.099 (0.157) | 0.079 (0.159) | 0.154 (0.159) | 0.127 (0.160) | 0.102 (0.156) | 0.120 (0.158) |
| Num_control | -0.179* (0.093) | -0.179* (0.095) | -0.165* (0.094) | -0.153 (0.095) | -0.173* (0.093) | -0.172* (0.094) |
| Lev | -0.506 (0.702) | -0.466 (0.711) | -0.751 (0.707) | -0.704 (0.710) | -0.579 (0.704) | -0.649 (0.708) |
| Ln_age | -0.356 (0.834) | -0.597 (0.845) | -0.194 (0.845) | -0.366 (0.853) | -0.396 (0.832) | -0.429 (0.836) |
| Gender | -0.143 (0.480) | -0.125 (0.481) | -0.028 (0.488) | -0.010 (0.488) | -0.119 (0.480) | -0.125 (0.480) |
| Ln_holder | 0.202* (0.110) | 0.189* (0.112) | 0.182 (0.111) | 0.177 (0.112) | 0.200* (0.110) | 0.189* (0.111) |
| Power | -0.122 (0.293) | -0.185 (0.298) | -0.034 (0.297) | -0.044 (0.298) | -0.108 (0.292) | -0.146 (0.295) |
| Ln_time | 0.355 (0.353) | 0.430 (0.357) | 0.291 (0.357) | 0.340 (0.360) | 0.315 (0.352) | 0.324 (0.354) |
| Ln_cost | 0.220 (0.362) | 0.099 (0.367) | 0.060 (0.365) | 0.039 (0.367) | 0.230 (0.363) | 0.166 (0.365) |
| Lottery | -0.353** (0.163) | -0.384** (0.164) | -0.424** (0.166) | -0.451*** (0.167) | -0.342** (0.163) | -0.362** (0.163) |
| Ipo_ret | 0.141 (0.521) | -0.001 (0.530) | 0.137 (0.527) | 0.103 (0.530) | 0.078 (0.524) | -0.005 (0.528) |
| Five_expression | 0.221** (0.103) | 0.287*** (0.109) | 0.212** (0.104) | 0.231** (0.106) | | |
| HHI | -0.144 (0.107) | -0.324** (0.130) | | | -0.144 (0.107) | -0.279** (0.127) |
| Five_expression#HHI | | -0.514*** (0.151) | | | | |
| Ln_inducompet | | | -0.361*** (0.111) | -0.382*** (0.114) | | |
| Five_expression# Ln_inducompet | | | | -0.201* (0.115) | | |
| Four_expression | | | | | 0.213** (0.104) | 0.241** (0.107) |
| Four_expression#HHI | | | | | | -0.321** (0.135) |
| N | 388 | 388 | 384 | 384 | 388 | 388 |
| r2_p | 0.034 | 0.053 | 0.047 | 0.051 | 0.034 | 0.043 |
| Log likelihood | -337.426 | -330.816 | -328.763 | -327.161 | -337.611 | -334.494 |

4. Conclusion and Suggestion

Based on the samples of companies listed on GEM between 2010 and 2016, this paper explores the level of negative emotions shown by entrepreneurs during IPO roadshows to infer the actual internal operation of enterprises, so as to judge whether corporate executives will reduce their stock holdings immediately after the listing lifting period. Using FaceReader facial recognition software to measure the level of negative emotions of entrepreneurs in the road show videos, the research results show that: the higher the level of negative emotions shown by entrepreneurs in the IPO road show promotion, the more likely they are to reduce their stock holdings within one year of the lifting period. In addition, the data show that competition negatively moderates the relationship between negative emotions and entrepreneurs' reduction of holdings.

This study has the following contributions: (1) It provides a new perspective for predicting the reduction of corporate executives' holdings after the lifting period. Most of the previous studies on senior executives' shareholding reduction were based on corporate performance, equity structure, market situation and other self-disclosed information. However, company executives can conduct strategic management on disclosure of the above information to manipulate external investors' judgment on enterprise operation and future expectations, so as to seek personal gains for their own subsequent reduction of holdings to cash out. Existing studies seldom start from the perspective of emotion to explore whether the emotional information of entrepreneurs in the process of disclosing corporate information can judge the entrepreneurs' dive-down behavior. This paper innovatively examines the relationship between the level of negative sentiment among entrepreneurs during IPO roadshow speeches and subsequent stock reduction by entrepreneurs. The results of this study provide a new way to effectively predict entrepreneurs' divestment behavior, improve the supervision effectiveness of regulators, and protect the interests of external investors. (2) This study expands the boundaries of research on senior executives' holdings reduction. Industry environment is the external environment in which enterprises have the most close contact. This paper finds that entrepreneurs have higher expectations on the future performance of enterprises in the highly competitive industry environment, while executives reduce the possibility of rapid divestment after the release period in order to avoid the negative impact of divestment. On the contrary, in the industry environment with low competitive intensity, information transparency is low, and entrepreneurs are more likely to gain private interests by reducing their holdings. Therefore, for the industry environment with low degree of competition, especially for the monopoly industry, the relevant regulatory departments need to strengthen supervision. (3) This paper refines the research on relevant reduction. Existing studies regard the divestment of companies in different periods as a whole, while this paper focuses on the divestment behaviors of entrepreneurs within one year after the lifting period according to the characteristics of the Chinese scenario, and further refines the divestment of entrepreneurs from the perspective of time.

The research conclusion of this paper has a certain practical guiding role for government supervision departments, stock analysts and investors. First of all, although China Securities

Regulatory Commission has made strict regulations on share reduction of company executives in recent years, there is still a lack of effective supervision on opportunistic share reduction of executives. Bringing emotional information of entrepreneurs into the scope of regulatory investigation is of great significance for regulating the trading of GEM stock market and promoting the healthy development of capital market. Secondly, analysts and investors can incorporate the entrepreneurs' emotions and other non-autonomous disclosure information into investment decisions. For example, emotion recognition software or feeling the entrepreneurs' emotional state during the road show speech can assist investment judgment. When the entrepreneurs' negative emotions are high, they need to be vigilant and avoid investment risks.

Of course, there are still some research limitations and the direction worth exploring in the future. First of all, the negative emotional performance of entrepreneurs in road shows may be affected by other factors such as the mood of entrepreneurs or the weather on the day. In the future, some new research methods can be explored to avoid the influence of the above factors. Secondly, this paper only focuses on the emotional performance of entrepreneurs in IPO roadshows, while the CFO, secretary of the board of directors and securities underwriters of enterprises may also participate in the presentation of road shows. Follow-up studies can test the relationship between the emotional performance of other spokespersons and the subsequent shareholding reduction of enterprises by entrepreneurs.

References

- [1] Gong M, Zhang Z, Jia M. Lie Detectors? How Entrepreneurs' Facial Expressions During IPO Roadshow Presentations Predict New Venture Misconduct Behaviors[J]. IEEE Transactions on Engineering Management, 2019, PP(99):1-12.
- [2] Qiao Y, Zhang Z, Jia M. Their pain, our pleasure: How and when peer abusive supervision leads to third parties' schadenfreude and work engagement[J]. Journal of Business Ethics, 2019: 1-17.
- [3] Motro D, Comer D R, Lenaghan J A. Examining the effects of negative performance feedback: the roles of sadness, feedback self-efficacy, and grit[J]. Journal of Business and Psychology, 2020(4).
- [4] Noldus, FaceReader: Tool for automatic analysis of facial expressions,"2016, [Online]. Available: <http://www.noldus.com>
- [5] Akansu A, Cicon J, Ferris S P, et al. Firm Performance in the Face of Fear: How CEO Moods Affect Firm Performance[J]. Journal of Behavioral Finance, 2017, 18.
- [6] Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193–206.
- [7] Mayew W J, Parsons C A, Venkatachalam M. Voice pitch and the labor market success of male chief executive officers[J]. *Evolution & Human Behavior*, 2013, 34(4):243-248.
- [8] A. Mehrabian, "Inference of attitudes from the posture, orientation, and distance of a communicator," *J. Pers. Soc.*, vol. 32, no. 3, pp. 296–308, 1968
- [9] A. Mehrabian and M. Wiener, "Decoding of inconsistent communications," *J. Pers. Soc. Psychol.*, vol. 6, no. 1, pp. 109–114, 1967

- [10] Momtaz P P . CEO Emotions and Firm Valuation in Initial Coin Offerings: An Artificial Emotional Intelligence Approach[J]. Strategic Management Journal.
- [11] L. Festinger, A Theory of Cognitive Dissonance. Stanford, CA, USA: Stanford Univ. Press, 1957.
- [12] A. S. Hinojosa, W. L. Gardner, H. J. Walker, C. Coglisier, and D. Gullifor, "A review of cognitive dissonance theory in management research: Opportunities for further development," *J. Manage.*, vol. 43, no. 1, pp. 170–199, 2017.
- [13] E. T. Klass, "Psychological effects of immoral actions: The experimental evidence," *Psychol. Bull.*, vol. 85, no. 4, pp. 56–71, 1978.
- [14] Parigi B M , Pelizzon L . Diversification and ownership concentration[J]. Journal of Banking & Finance, 2008, 32(9):1743-1753
- [15] Michael, C, Jensen, et al. The market for corporate control: The scientific evidence[J]. Journal of Financial Economics, 1983.
- [16] Anastasia Kraft and Bong Soo Lee and Kerstin Lopatta. Management earnings forecasts, insider trading, and information asymmetry[J]. Journal of Corporate Finance, 2014, 26 : 96-123.
- [17] Dyck A , Morse A , Zingales L . Who Blows the Whistle on Corporate Fraud?[J]. Journal of Finance, 2010, 65.
- [18] Hobson J L , Mayew W J , Venkatachalam M . Analyzing Speech to Detect Financial Misreporting[J]. Journal of Accounting Research, 2011, 50(2):349-392.
- [19] Graham J R , Harvey C R , Puri M . A Corporate Beauty Contest[J]. Social Science Electronic Publishing, 2010.
- [20] Lin J C, Howe J S. Insider Trading in the OTC Market[J]. Journal of Finance, 2012, 45(4):1273-1284.
- [21] Vishny S. Management ownership and market valuation: An empirical analysis[J]. Journal of Financial Economics, 1988.
- [22] Claessens S, Djankov S , Fan J , et al. Disentangling the Incentive and Entrenchment Effects of Large Shareholdings[J]. The Journal of Finance, 2002, 57(6).
- [23] Mishra D R. Multiple Large Shareholders and Corporate Risk Taking: Evidence from East Asia[J]. Corporate Governance An International Review, 2011, 19(6):507-528.
- [24] Shleifer A, Vishny R W . A Survey of Corporate Governance[J]. Journal of Finance, 1997, 52.
- [25] Breaban A, Noussair C N. Emotional State and Market Behavior[J]. Ssrn Electronic Journal, 2013, 2013-031.
- [26] Haveman H A, Jia N, Shi J, et al. The Dynamics of Political Embeddedness in China: The Case of Publicly Listed Firms[J]. Administrative Science Quarterly, 2016.
- [27] Bebchuk, L., & Fershtman, C. (1994). Insider Trading and the Managerial Choice among Risky Projects. The Journal of Financial and Quantitative Analysis, 29(1), 1-14.
- [28] Qiang C, Lo K. Insider Trading and Voluntary Disclosures[J]. Journal of Accounting Research, 2006, 44(5):815-848.
- [29] Brockman P, Khurana I K, Martin X. Voluntary disclosures around share repurchases[J]. Journal of Financial Economics, 2008, 89(1):175-191.
- [30] Cheng Q, Luo T, Yue H. Managerial Incentives and Management Forecast Precision[J]. Accounting Review, 2013, 88(5):1575-1602.
- [31] Rogers J L, Stocken P C. Credibility of Management Forecasts[J]. Accounting Review, 2005, 80(4):1233-1260.
- [32] Baron R A. The Role of Affect in the Entrepreneurial Process[J]. Academy of Management Review, 2008.
- [33] Certo S T, Holcomb T R, Jr R M H. IPO Research in Management and Entrepreneurship: Moving the Agenda Forward[J]. Social Science Electronic Publishing, 2009, 35(6):1340-1378.
- [34] Lowell J. Managers and Moral Dissonance: Self Justification as a Big Threat to Ethical Management?[J]. Journal of Business Ethics, 2012, 105(1):17-25.
- [35] Goethals G R, Cooper J, Naficy A. Role of foreseen, foreseeable, and unforeseeable behavioral consequences in the arousal of cognitive dissonance[J]. Journal of Personality and Social Psychology, 1979, 37(7):1179-1185.
- [36] Cooper, J. Personal responsibility and dissonance: The role of foreseen consequences. [J]. Journal of Personality & Social Psychology, 1971, 18(3):354-363.
- [37] Andiappan M, Dufour L. A Difficult Burden to Bear: The Managerial Process of Dissonance Resolution in the Face of Mandated Harm-Doing[J]. Journal of Business Ethics, 2017, 141(1):1-16.
- [38] Fisch C, Block J H. How does entrepreneurial failure change an entrepreneur's digital identity? Evidence from Twitter data[J]. Journal of Business Venturing, 2020.
- [39] Hayward M L A, Shepherd D A, Griffin D. A hubris theory of entrepreneurship[J]. Management Science, 2006, 52(2):160-172.
- [40] Hoberg G, Phillips G. Real and Financial Industry Booms and Busts[J]. Journal of Finance, 2010, 65(1):45-86.
- [41] Tom Lahti, Marja-Liisa Halko, Necmi Karagozoglu, Joakim Wincent. Why and how do founding entrepreneurs bond with their ventures? Neural correlates of entrepreneurial and parental bonding[J]. Journal of Business Venturing, 2018, 34(2).
- [42] Mousa F T , Wales W J , Harper S R . When less is more: EO's influence upon funds raised by young technology firms at IPO[J]. Journal of Business Research, 2015, 68(2):306-313.
- [43] The Role of Emotion Discourse and Pathic Stigma in the Delegitimization of Consumer Practices[J]. Journal of Consumer Research.
- [44] Lupton, Deborah (1998), The Emotional Self. A Sociocultural Exploration, London: Sage
- [45] Mudambi R , Treichel M Z . Cash crisis in newly public Internet-based firms: an empirical analysis[J]. Journal of Business Venturing, 2004, 20(4):543-571.