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# Controlling Shareholder Equity Pledge and Non-Financial Information Disclosure—An Empirical Study Based on the Text and Financial Data of Listed Companies in My Country

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**Abstract:** In recent years, as the proportion of non-financial information in the company's external disclosure information continues to rise, its text information characteristics and the motivation behind it have gradually been valued by regulators and academia. This paper uses the management discussion and analysis data of listed companies and the equity pledge data of controlling shareholders from 2007 to 2020 to conduct a relatively comprehensive investigation on the motivation for non-financial information disclosure. The main research is on the impact of the controlling shareholder's equity pledge on the readability of the annual report text of listed companies. And a heterogeneity analysis is conducted from the perspective of equity nature. The study concluded that the readability of the Chinese text of the annual report disclosure of listed companies with controlling shareholders' equity pledges and listed companies with larger equity pledge scales is worse. This confirms that there is a behavior of beautifying the non-financial information disclosure of listed companies after the controlling shareholder's equity pledge. However, this conclusion is mainly significant in non-state-owned enterprises. The empirical analysis of this paper also found that the internal governance of listed companies and the operating conditions of listed companies will have an impact on the non-financial information disclosure behavior of listed companies' annual report disclosure after equity pledge. This study has the following contributions: First, new motivations for non-financial information disclosure are discovered, thereby enriching the literature on the motivation for non-financial information disclosure. Secondly, this paper enriches the literature on the economic consequences of equity pledge by controlling shareholders. Finally, this paper answers the question of "why non-financial information disclosure can be manipulated" from the perspective of the second type of agency. This result can provide a useful reference for improving the relevant regulatory system of listed companies in my country.

**Keywords:** Disclosure of Non-Financial Information; Equity Pledge; Annual Report Text Information; Controlling Shareholder

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## 1. Introduction

Non-financial information refers to various information materials related to the production and operation activities of listed companies, which are mainly in the form of unstructured data such as text information. Compared with standardized traditional financial digital information, non-financial information is more flexible in expression, more diverse in dissemination channels, and has rich connotations that are difficult to reflect in financial digital information. In recent years, the capital market has paid unprecedented attention to the disclosure of non-financial information. According to the results of Ernst & Young's global investment institution survey, 97% of investors said that they would conduct corporate valuation based on the non-financial information disclosure of enterprises, and 85% of investment institutions would exclude companies with negative impacts on society from their investment portfolios. From the perspective of the generation and pattern of non-financial information, even the world's best emerging companies are faced with the troubles and challenges of non-financial information disclosure. For example, Alibaba Group (Alibaba) triggered a class action lawsuit from international law firms shortly after its listing in the United States, accused of making false statements or omitting important facts in the disclosure of non-financial information such as the company's business operations and regulatory risks. In August 2018, Tesla CEO Musk was investigated by the US securities regulator for disclosing the company's plans on social media. In February 2023, the perovskite bull stock Aolian Electronics was investigated by the China Securities Regulatory Commission for some false announcements, especially the suspected falsification of the resume of the company's key technical personnel Xu Mingjun. This is the "first case" of suspected information disclosure violations after the full implementation of the registration system for A-shares.

In recent years, with the continuous increase in the proportion of non-financial information in the company's external disclosure information and the continuous complexity of the disclosure style, the text information characteristics of non-financial information disclosure and the motivation behind it have gradually been valued by regulators and academia. The so-called text features refer to the quantitative information obtained by analyzing the non-financial information text, including tone, readability, similarity, competitiveness, theme structure, risk uncertainty and other features. Among them, tone, also known as text emotion, is composed of two opposing feelings of positive or negative. It is one of the most basic and important features of text information, reflecting the author's attitude towards people, things and things revealed between the lines when writing the text. In the era of artificial intelligence and quantitative trading, tone and sentiment analysis have become increasingly popular and important. Tone, a non-financial information, is no longer just a "straw man" for display, but a wealth that can be captured and decoded by machines, affecting the allocation of market resources. Existing studies have shown that the tone of management in various information disclosure forms such as annual reports, management discussion and analysis (MD&A), quarterly earnings announcements, prospectuses, and performance press conferences has predictive power for the company's future performance, and the market will react significantly (Tetlock, 2007; Li, 2010; Demers and Vega, 2011; Loughran and McDonald, 2016). There are also studies showing that companies will manage tone out of self-interest (Huang et al., 2014).

my country's capital market has problems such as low information transparency, high information collection costs, and a relatively loose regulatory environment. The "face-changing" events of annual reports that occur from time to time in the capital market show that Chinese listed companies will also manage text information out of self-interest. Because there is a language communication habit and environment of "listening to the sound of the gong and listening to the sound of the words" in Chinese culture, and Chinese characters are profound and flexible, with rich expressions and rhetoric techniques, including first praise and then criticize, first criticize and then praise, insinuation, etc., which objectively provides a cultural "soil" for management to use language characteristics for strategic disclosure. Therefore, management will use the language characteristics of non-financial information disclosure to create a large number of "fuzzy components", and this "packaged" language will mislead the decision-making judgment of information users at the micro level, and then play a negative role in fueling the irrational performance of stock prices and even the abnormal fluctuations of the entire market.

Previous research literature on the motivation of non-financial information disclosure mainly focuses on the manipulation of management, ignoring that the controlling shareholder, as the controller of the company, may also affect the company's information disclosure decision-making by its interest-seeking motivation. Especially in the state of equity pledge, the controlling shareholder is likely to prompt the company to issue obscure annual reports to cover up unfavorable information, reduce negative tones and may also increase positive tones at the same time, thereby avoiding the risk of control transfer caused by falling stock prices. For example, during the period of equity pledge by the major shareholder, LeTV manipulated the non-financial information disclosure in the annual report to manage its market value, and used more positive and optimistic words to cover up unfavorable information, which eventually led to a stock price collapse and harmed the interests of investors. Therefore, analyzing the motivation for non-financial information disclosure and its economic consequences and improving the quality of non-information disclosure of listed companies are the core of maintaining the fairness and justice of the capital market and an important way to protect investors.

From the top-level design of non-financial information disclosure in my country, in the reform of the registration system piloted by the Science and Technology Innovation Board, the Growth Enterprise Market and the Beijing Stock Exchange, the information disclosure system is the core of the registration system and the most important part. On January 28, 2022, the China Securities Regulatory Commission issued the “Guiding Opinions on Improving the Quality of Information Disclosure in Prospectuses under the Registration System” (Announcement No. 27 [2022]). On February 17, 2023, the China Securities Regulatory Commission issued a series of system rules related to the full implementation of the stock issuance registration system. The guiding opinions and system rules once again clarified that information disclosure should be “true, accurate, complete, concise, clear, and easy to understand, and there should be no false records, misleading statements, or major omissions.” Although the quality of non-information disclosure in prospectuses has improved since the pilot registration system, there are still problems such as lengthy and tedious texts, insufficiently concise language, obscure professional content, a large amount of compliance information, low relevance to investment decisions, and low pertinence of information disclosure. These problems not only reduce readability and increase the difficulty for investors to identify and use effective information, but also have a profound impact on the resource allocation function of the capital market. It can be seen that improving the quality of non-financial information disclosure plays an important role in promoting the high-quality development of my country’s capital market and maintaining financial market stability.

At present, the academic community has proposed two competing hypotheses about the motivation of non-financial information disclosure: the incremental information hypothesis and the impression management hypothesis (Merkl-Davies and Brennan, 2007). The incremental information hypothesis proposes that managers actively add real value-related information in various financial reports and announcements, and use incremental information to strongly supplement and explain the original quantitative information. For example, when the profitability of a company declines due to the increase in research and development investment costs, management often demonstrates its confidence in the future sales profits of R&D products by adding positive words in announcements and other channels, thereby conveying to investors the reasons for the decline in corporate profits and the layout of the company’s long-term development. The impression management hypothesis believes that target groups such as investors will understand the image and culture of the company through the non-financial information in the company’s annual report. Therefore, management often has the motivation to strategically manipulate the target group’s perception of the company through impression management to leave a perfect impression on readers. For example, when there is negative information in the annual report, management uses complex sentences and obscure words to describe such information when writing the annual report, reducing the degree of comprehension of the information by investors, thereby maintaining the image of the company. For example, in 2016, China Shipbuilding Technology Co., Ltd. suffered serious losses in its operations. It used a lot of obscure policy words and transitional sentences in its annual report that year. The language was long and euphemistic, making it difficult for investors to accurately discern the true information in the text.

Another example is LeTV.com, which was listed on my country’s Growth Enterprise Market on August 12, 2010 at an issue price of 29.20 yuan. Since then, the company has embarked on a path of rapid expansion. In 2015, its stock price reached 89.47 yuan per share, standing on the “top of the world”, and its market value once exceeded 100 billion yuan, becoming the largest weight stock on the Growth Enterprise Market. However, due to the very weak “blood-making” function of its new business, it has always needed external financing to make up for the funding gap in its operations. The company’s major shareholders began to conduct external financing through equity pledges. As of the end of the third quarter of 2016, Jia Yueting still had 571 million shares that had not been released, accounting for 83.63% of his shares, and the amount of financing reached 14 billion yuan. Through equity pledge, funds can be obtained at a lower cost, and the operation procedures are simple and the cycle is short; these low costs also mean increased risks, and the controlling shareholder may lose control.

Therefore, after the major shareholder pledges its equity, it has the motivation of market value management and reduces the quality of the company's information disclosure by manipulating information disclosure. After LeTV released its 2016 annual report on April 20, 2017, it made as many as 11 supplements and corrections to the content. Not only was the original report shockingly rough, but the related-party transaction issues disclosed in it also caused the audit agency to issue a "non-standard" opinion again. In the corrected report, LeTV also expressed special optimism about 2017. The report believes that 2017 is the first year of the company's new strategic stage and a key year for LeTV. The company will enhance its monetization capabilities, improve cash flow, and achieve full profitability, and is full of confidence in the future...

LeTV's bizarre annual report and non-financial information disclosure have attracted widespread attention from market investors and analysts. On one hand, public opinion is boiling, and on the other hand, the institutions are "ruthless". CICC believed that LeTV's net profit attributable to the parent company was lower than market expectations, and the company's accounts receivable and cash flow risks were relatively high, so it lowered LeTV's target price and rating. Subsequently, LeTV's stock price fell all the way, from 30.68 yuan on April 14, 2017 to 0.17 yuan before delisting.

It can be seen that during the period of equity pledge, the controlling shareholder has the motivation to manage the market value by manipulating the non-financial information disclosure of the annual report and conceal unfavorable information. However, analysts and other capital market intermediaries can effectively identify the interests of the controlling shareholder to a certain extent, which will bring about the risk of stock price collapse in the capital market.

Therefore, this paper will focus on the non-financial information disclosure of listed companies' annual reports and try to systematically answer the following questions. (1) Is non-financial information disclosure a "straw man"? (2) Does the management of listed companies have a signal motivation for non-information disclosure? Are listed companies with controlling shareholders' equity pledges and larger pledge scales more motivated to use non-financial information disclosure for market value management?

This paper uses the management discussion and analysis data of listed companies and the equity pledge data of controlling shareholders from 2007 to 2020 to conduct a comprehensive investigation on the motivation for non-financial information disclosure. It mainly studies the impact of controlling shareholders' equity pledge behavior on the readability of listed companies' annual report texts. And a heterogeneity analysis is conducted from the perspective of equity nature. The study concludes that the readability of the Chinese text of the annual report disclosure of listed companies with controlling shareholders' equity pledges and listed companies with larger equity pledge scales is worse. This confirms that there is a behavior of beautifying the non-financial information disclosure of listed companies after the controlling shareholder pledges its equity. However, this conclusion is mainly significant in non-state-owned enterprises. The empirical analysis of this paper also found that the internal governance of listed companies and the operating conditions of listed companies will have an impact on the non-financial information disclosure behavior of listed companies' annual reports after equity pledges.

This study has the following contributions: First, it discovered new motivations for non-financial information disclosure, thereby enriching the literature on the motivations for non-financial information disclosure. Secondly, this paper enriches the relevant literature on the economic consequences of controlling shareholders' equity pledges, and there are relatively few literatures on this type of research. Finally, this paper answers the question of "why non-financial information disclosure can be manipulated" from the perspective of the second type of principal-agent relationship. This result can provide a useful reference for improving the relevant regulatory system of listed companies in my country and has certain practical significance.

The structure of the rest of this article is arranged as follows: the first part conducts a theoretical analysis of the non-financial information disclosure behavior of listed companies and the equity pledge behavior of controlling shareholders; the second part is the research design of this article, which mainly includes data description, model setting and sample matching; the third part is the main empirical results and analysis; the fourth part further studies the impact of corporate governance on the relationship between controlling shareholders' equity pledge and annual report readability; the fifth part conducts a robustness test through endogenous treatment methods such as instrumental variable method; the sixth part is the summary of this article.

# 2. Data Description and Study Design

## 2.1 Data source and description

Taking 2007 to 2020 as the research period, this paper selects A-share listed companies of the Shanghai and Shenzhen Stock Exchanges as the initial sample. In order to study the impact of controlling shareholders' equity pledge behavior on the non-financial information disclosure of listed companies, this paper first excludes listed companies in the financial and real estate industries; then, the remaining sample companies are processed as follows, that is, ST, PT companies and company samples with missing relevant data are further deleted. Finally, 36,610 company-year observation samples corresponding to 4,201 companies are obtained. In order to reduce the impact of some extreme observations on the relevant conclusions of this paper, this paper performs winsor processing from 1% to 99% on all continuous variables. Main data sources: The number of positive and negative tone words in the management discussion and analysis of the annual reports of listed companies in this paper comes from the China Research Data Service Platform (CNRDS). The equity pledge data of controlling shareholders of listed companies comes from the Wind database; other indicator calculation data and other financial data come from the CSMAR database.

## 2.2 Variable selection

This paper focuses on the analysis of the text readability characteristics of non-financial information disclosure of listed companies, that is, measuring the variables of annual report text readability. Text readability is the natural logarithm of the number of times accounting subjects and professional vocabulary appear in the management discussion and analysis text of listed companies' annual reports. Accounting subjects and professional vocabulary are from Lingoes PowerWord. The larger the value, the worse the readability.

In order to control other factors that affect text readability, this paper also introduces enterprise size (Size), enterprise age (Age), whether it is state-owned (SOE), analyst coverage (Coverage) and other control variables. The detailed description of the variables is shown in Table 1.

*Table1:Definition of Key Variables*

| Variable Name | Variable Symbol | Variable Definition |
|---|---|---|
| **Dependent Variable** | | |
| Text readability | Readability | The natural logarithm of the number of times accounting subjects and professional terms appear in the management discussion and analysis text of the annual reports of listed companies |
| **Independent variable** | | |
| Dummy variable for controlling shareholder's equity pledge | Pledge | If the listed company has a controlling shareholder equity pledge in that year, the value is 1, otherwise it is 0 |
| Scale of equity pledge by controlling shareholder | Pledge_ratio | The proportion of the number of shares pledged by the controlling shareholder of a listed company to the total number of shares of the company (%) |
| | Pledge_ratio2 | The proportion of the number of shares pledged by the controlling shareholder of a listed company to the shares held by the controlling shareholder of the company (%) |
| **Control variable** | | |
| Text complexity | Complexity | The natural logarithm of the number of times accounting subjects and professional terms appear in the management discussion and analysis text of the annual reports of listed companies. Accounting subjects and professional terms are from Lingoes PowerWord |
| Return on Equity | ROE | The net profit of a listed company divided by its net assets |
| Total Debt-to-Asset Ratio | Lev | The total liabilities of the listed company divided by its total assets. |
| Total revenue growth rate | SGR | The main business income of a listed company in the current period divided by its main business income in the previous period |
| Firm Size | Size | Ln(1+Total Assets of the listed company) |

| Variable Name | Variable Symbol | Variable Definition |
|---|---|---|
| Book-to-Market Ratio | B/M | Book value of the listed company divided by its market value |
| Institutional Ownership Ratio | INST | Sum of the shares held by financial institutions in the listed company |
| Analyst attention | Coverage | The natural logarithm of the number of analysts (teams) who have conducted follow-up analysis on the listed company within one year |
| Firm Age | Age | Ln(1+Number of years the company has been listed) |
| Shareholding ratio of the largest shareholder | BIGR | Number of shares held by the largest shareholder of a listed company/ total number of shares of the listed company |
| Dual Role Integration | DUAL | Whether the chairman and general manager are combined into one, if yes, then 1, otherwise 0 |
| Nature of the Firm | SOE | Takes a value of 1 if the listed company is state-owned, otherwise takes a value of 0. |
| Discretionary Accruals | DA | Absolute value of the residuals obtained from regressing using the modified Jones (1991)[20] model at the industry-year level |
| Real Earnings Management | REM | Real earnings management based on the model referenced from Roychowdhury (2006)[21] |
| Total assets growth rate | TAGR | The current period's total assets divided by the previous period's total assets |
| Stock Volatility | SIGMA | Standard deviation of the weekly stock returns of the company |
| Stock Return | RET | Mean of the weekly stock returns of the company |
| Stock Turnover | Turnover | Trading volume of listed company stocks / Total number of outstanding shares×100% |
| Illiquidity Indicator | Amihud | Non-liquidity indicator of the stock obtained using the calculation method described in Amihud |

### 2.3 Variable selection

In order to study the impact of controlling shareholders' equity pledge behavior on the readability of listed companies' annual reports, this paper designs the following model to test this issue:

$$Readability_{i,t} = \alpha + \beta Pledge_{i,t} + \gamma Control_{i,t-1} + year_t + industry + \varepsilon_{i,t} \quad (1)$$

In formula (1), the subscripts i and t refer to the listed company and year, respectively. The explained variable $Readability_{i,t}$ is the readability of the annual report of company i in year t, and the explanatory variable $Pledge_{i,t}$ is the scale of equity pledged by the controlling shareholder of company i in year t. industry represents the industry fixed effect of the enterprise, $year_t$ represents the time fixed effect of the year, and $\varepsilon_{i,t}$ represents the error term. This paper adopts the robust standard error based on individual clustering. $Control_{i,t-1}$ represents a series of control variables that affect the tone of management in the annual report of listed companies. In order to reduce the endogeneity caused by reverse causality, all control variables are lagged by one period.

## 3. Empirical results and analysis

### 3.1 Main regression analysis

In order to test and study the impact of whether the company's controlling shareholders have equity pledges on the readability of the annual report text, this chapter uses two methods to conduct empirical analysis, without controlling other variables and controlling other variables. The regression results are as shown in columns (1) and (2) of Table A1 ) shown. In order to test the impact of the scale of equity pledges of controlling shareholders on the readability of annual reports, this chapter also uses two methods to conduct regression analysis. The regression results are shown in columns (3) and (4) of Table A1.

According to the regression results in column (1) of Table A1, it can be seen that the controlling shareholder's equity pledge dummy variable (Pledge) has a significant positive impact on the tone of management in the company's annual report, with a value of 0.0549 (T=8.83). This means that compared to listed companies without controlling shareholder equity pledges, companies with controlling shareholder equity pledges have worse annual report text readability at the 1% significance level. Judging from column (3) of Table 1, while controlling for industry and year dummy variables, the regression coefficient of the listed company's controlling shareholder's equity pledge scale (Pledge_Ratio) on the text readability of the company's annual report is significantly positive, with a size of 0.0842 (T=5.49). This shows that the larger the equity pledge size of the controlling shareholder, the worse the readability of the annual report of the listed company. Judging from the regression results in Table (4), after further controlling for other factors that affect the tone of the management discussion and analysis text in the annual reports of listed companies in China's A-share market, the equity pledge scale (Pledge_Ratio) of the listed company's controlling shareholder has an impact on the management in the company's annual report. The regression coefficient of layer intonation is significantly positive, with a size of 0.0504 (T=3.12). This once again shows that: controlling for the influence of other factors, the greater the equity pledge of a listed company's controlling shareholder, the worse the readability of the listed company's annual report text.

*Table A1 Readability regression analysis results*

| Variable | *Readability* | *Readability* | *Readability* | *Readability* |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Pledge | 0.0549*** | 0.0310*** | | |
| | (8.83) | (4.62) | | |
| Pledge_Ratio | | | 0.0842*** | 0.0504*** |
| | | | (5.49) | (3.12) |
| ROE | | -0.2674*** | | -0.2752*** |
| | | (-5.55) | | (-5.70) |
| LEV | | -0.0083*** | | -0.0078*** |
| | | (-2.96) | | (-2.79) |
| SGR | | 0.0490*** | | 0.0486*** |
| | | (6.97) | | (6.88) |
| Size | | 0.0804*** | | 0.0814*** |
| | | (17.98) | | (18.18) |
| B/M | | 0.2312*** | | 0.2301*** |
| | | (16.04) | | (15.95) |
| INST | | -0.0335** | | -0.0328** |
| | | (-2.14) | | (-2.10) |
| Coverage | | 0.0311*** | | 0.0314*** |
| | | (9.40) | | (9.48) |
| Age | | -0.1124*** | | -0.1120*** |
| | | (-20.76) | | (-20.68) |
| BIGR | | -0.0009*** | | -0.0010*** |
| | | (-4.52) | | (-4.87) |
| DUAL | | 0.0174** | | 0.0177*** |
| | | (2.55) | | (2.60) |
| SOE | | -0.0214*** | | -0.0280*** |
| | | (-2.74) | | (-3.73) |
| DA | | 0.0141 | | 0.0171 |
| | | (0.42) | | (0.51) |
| REM | | -0.0122 | | -0.0111 |
| | | (-0.68) | | (-0.62) |
| Constant | 7.9292*** | 6.3904*** | 7.9338*** | 6.3777*** |
| | (263.81) | (66.08) | (264.22) | (65.85) |
| Industry FE | Controlled | Controlled | Controlled | Controlled |

| | | | | |
|---|---|---|---|---|
| Year FE | Controlled | Controlled | Controlled | Controlled |
| Observations | 22,999 | 22,999 | 22,999 | 22,999 |
| R-squared | 0.728 | 0.747 | 0.728 | 0.746 |

Note: The t test values are in parentheses; ***, **, and * indicate that the estimated results are significant at the 1%, 5%, and 10% levels respectively.

### 3.2 Heterogeneity analysis based on equity nature

In order to test the difference in the nature of the controlling shareholder's equity, listed companies were divided into state-owned holding companies and non-state-holding companies; then the sub-samples of these two types of companies were grouped to examine whether the controlling shareholder carried out equity pledges and the impact of the controlling shareholder's equity pledge size on listed companies. The impact of annual report text readability. The specific test results are shown in Table A2.

According to columns (1) and (2) of the regression results in Table A2, for non-state-controlled sample companies, the regression coefficients in front of the dummy variable (Pledge) of the controlling shareholder's equity pledge are all significantly positive, which shows that the company's controlling shareholder's equity The positive and significant relationship between the pledge and the readability of the company's annual report exists in non-state-controlled listed companies; while the positive relationship between the company's controlling shareholder's equity pledge and the tone of management in the company's annual report is not significant in the state-controlled listed companies. With. From the perspective of the controlling shareholder's equity pledge scale (Pledge_Ratio), similarly, the positive and significant impact of the controlling shareholder's equity pledge scale on the readability of the company's annual report only exists in non-state-owned holding companies. In short, when other conditions are the same, compared with the state-controlled sample companies, the readability of the annual reports of non-state-owned enterprises will be worse after the controlling shareholder's equity is pledged.

*Table A2 Results of heterogeneity analysis based on equity nature*

| Variable | *SOE=1* | *SOE=0* | *SOE=1* | *SOE=0* |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Pledge | 0.0083 | 0.0407*** | | |
| | (0.53) | (5.39) | | |
| Pledge_Ratio | | | 0.0294 | 0.0622*** |
| | | | (0.49) | (3.58) |
| ROE | -0.1843** | -0.3220*** | -0.1848** | -0.3399*** |
| | (-2.48) | (-5.06) | (-2.48) | (-5.34) |
| LEV | -0.0058 | -0.0087** | -0.0057 | -0.0081* |
| | (-1.54) | (-2.03) | (-1.53) | (-1.90) |
| SGR | 0.0626*** | 0.0408*** | 0.0626*** | 0.0398*** |
| | (5.31) | (4.70) | (5.31) | (4.55) |
| Size | 0.0872*** | 0.0829*** | 0.0873*** | 0.0853*** |
| | (12.95) | (13.12) | (12.94) | (13.50) |
| B/M | 0.2291*** | 0.2346*** | 0.2292*** | 0.2326*** |
| | (10.46) | (12.03) | (10.47) | (11.91) |
| INST | -0.0097 | -0.0519*** | -0.0093 | -0.0506*** |
| | (-0.36) | (-2.67) | (-0.35) | (-2.60) |
| Coverage | 0.0120** | 0.0424*** | 0.0120** | 0.0429*** |
| | (2.24) | (10.03) | (2.24) | (10.14) |
| Age | -0.1085*** | -0.1092*** | -0.1084*** | -0.1086*** |
| | (-11.65) | (-15.43) | (-11.64) | (-15.33) |
| BIGR | -0.0008** | -0.0010*** | -0.0009*** | -0.0012*** |
| | (-2.57) | (-3.68) | (-2.62) | (-4.08) |

| | | | | |
|---|---|---|---|---|
| DUAL | 0.0282* | 0.0149* | 0.0283* | 0.0155** |
| | (1.91) | (1.95) | (1.91) | (2.02) |
| DA | -0.0439 | 0.0519 | -0.0437 | 0.0582 |
| | (-0.83) | (1.21) | (-0.82) | (1.36) |
| REM | 0.0380 | -0.0356 | 0.0378 | -0.0325 |
| | (1.24) | (-1.62) | (1.23) | (-1.47) |
| Constant | 6.2287*** | 6.3174*** | 6.2275*** | 6.2767*** |
| | (42.52) | (45.67) | (42.46) | (45.40) |
| Industry FE | Controlled | Controlled | Controlled | Controlled |
| Year FE | Controlled | Controlled | Controlled | Controlled |
| Observations | 10,070 | 12,929 | 10,070 | 12,929 |
| R-squared | 0.740 | 0.735 | 0.740 | 0.735 |

Note: The t test values are in parentheses; ***, **, and * indicate that the estimated results are significant at the 1%, 5%, and 10% levels respectively.

This section conducts a robustness test again by changing the measurement method of equity pledge behavior. Columns (1) and (2) of Table A3 replace the explanatory variables with the number of major shareholders with equity pledges in listed companies (Pledge_gds). From columns (1) and (2) of Table 3, we can see that the coefficients in front of the core explanatory variable (Pledge_gds) are all significantly positive, which shows that when a listed company has more large shareholders with equity pledges, the readability of the company's annual report will decrease. The worse. This is because the greater the number of major shareholders with equity pledges in a listed company, the greater the incentive for the company to whitewash the information in its annual report.

*Table A3 Robust regression results with changing explanatory variables*

| Variable | *Readability* | *Readability* |
|---|---|---|
| | (1) | (2) |
| Pledge_gds | 0.0572*** | 0.0314*** |
| | (12.12) | (6.16) |
| ROE | | -0.2673*** |
| | | (-5.54) |
| LEV | | -0.0084*** |
| | | (-3.01) |
| SGR | | 0.0475*** |
| | | (6.74) |
| Size | | 0.0800*** |
| | | (17.90) |
| B/M | | 0.2293*** |
| | | (15.90) |
| INST | | -0.0306* |
| | | (-1.96) |
| Coverage | | 0.0308*** |
| | | (9.29) |
| Age | | -0.1110*** |
| | | (-20.52) |
| BIGR | | -0.0009*** |
| | | (-4.16) |
| DUAL | | 0.0173** |
| | | (2.55) |
| SOE | | -0.0198*** |
| | | (-2.58) |

| | | |
|---|---|---|
| DA | | 0.0109 |
| | | (0.33) |
| REM | | -0.0127 |
| | | (-0.71) |
| Constant | 7.9305*** | 6.3932*** |
| | (264.63) | (66.12) |
| Industry FE | Controlled | Controlled |
| Year FE | Controlled | Controlled |
| Observations | 22,999 | 22,999 |
| R-squared | 0.729 | 0.747 |

Note: The t test values are in parentheses; ***, **, and * indicate that the estimated results are significant at the 1%, 5%, and 10% levels respectively.

## 4. Summarize

With the evolution of new information technology, artificial intelligence and trading strategies, research on non-financial information disclosure based on massive big data analysis is gradually becoming a new direction in the field of finance. Compared with standardized traditional financial digital information, non-financial information accounts for a larger proportion of the company's external disclosure, has a more flexible form of expression, and has more diverse channels of dissemination. It also has rich connotations that are difficult to reflect in financial digital information. Especially in China, a special investor structure and high-context communication environment, the second type of agency entrustment of listed companies is more serious.

Therefore, this paper uses the management discussion and analysis data of listed companies and the equity pledge data of controlling shareholders from 2007 to 2020 to conduct a comprehensive investigation on the motivation for non-financial information disclosure. The main research is on the impact of the controlling shareholder's equity pledge on the readability of the annual report text of listed companies. And a heterogeneity analysis is conducted from the perspective of equity nature. The study concluded that the readability of the Chinese text of the annual report disclosure of listed companies with controlling shareholders' equity pledges and listed companies with larger equity pledges is worse. This confirms that there is a behavior of beautifying the non-financial information disclosure of listed companies after the controlling shareholder's equity pledge. However, this conclusion is mainly significant in non-state-owned enterprises. The empirical analysis of this paper also found that the internal governance of listed companies and the operating conditions of listed companies will have an impact on the disclosure of non-financial information in the annual report of listed companies after equity pledge. This study has the following contributions: First, it discovered new motivations for non-financial information disclosure, thereby enriching the literature on the motivations for non-financial information disclosure. Second, this paper enriches the relevant literature on the economic consequences of equity pledge by controlling shareholders. Finally, this paper answers the question of "why non-financial information disclosure can be manipulated" from the perspective of the second type of principal-agent. This result can provide a useful reference for improving the relevant regulatory system for listed companies in my country.

## 5. Policy recommendations

In theory, the purpose of non-financial information disclosure is to let investors know more about the company and its value, and to alleviate the information asymmetry between stakeholders, so as to reduce the company's financing costs. Non-financial information can also reflect the intrinsic value of the enterprise, and feedback to the stock price is conducive to guiding the investment behavior of the enterprise. According to the current behavior of enterprises and research findings, the disclosure of non-financial information has deviated from the original intention, and management and major shareholders often use this means to seek benefits; thus affecting the stability of the capital market. Based on the above research conclusions of this article, the following policy recommendations are put forward:

First, for listed companies with a high proportion of equity pledge by controlling shareholders, when disclosing non-financial information, the supervision and review of such companies should be stricter to prevent major shareholders from disclosing non-financial information for their own interests. According to the conclusions of this article, when companies with more serious equity pledges disclose non-financial information, the tone of management is more complex and less readable, and non-financial information is used to manage market value and maintain stock prices. This shows that listed companies are no longer disclosing non-financial information based on the goal of alleviating information asymmetry. In addition, the internal and external governance structure of the company needs to be further improved, such as: by introducing external institutional investors to constrain and regulate the information disclosure behavior of major shareholders, reducing the space for controlling shareholders to make profits through this tool.

Secondly, when formulating the non-financial information disclosure guidelines, the regulatory authorities are faced with a dilemma: they need to strengthen and improve the norms of non-financial information disclosure, and they need to greatly simplify the information disclosure requirements; they need to disclose non-profit information in a timely and strict manner, and they need to exempt the disclosure of commercially sensitive information. More importantly, many non-financial information disclosed in the A-share market are not the information that investors need, but only the information required by the regulatory authorities. For example, the current IPO prospectus in the A-share market has generally exceeded 600 pages, and the arguments in it are mostly irrelevant. A large amount of text is only used to prove that the company's financial situation is true, the relevant matters are free of legal risks, and there are long sections of template-style commitments. As for the investment value of the company, the core competitiveness of the company's products, the driving factors and potential risk points of the company's operations, the factors affecting the company's profitability, the changes in the industry's market share, how the industry will develop in the future, and the advantages and disadvantages of competing companies, the issues that investors care about are not the focus of the CSRC's review, so they are glossed over or copied here and there. This article believes that the guiding ideology of non-financial information disclosure should be easy to understand, concise, logical and reasonable in language and text, and should be disclosed according to the characteristics of the company's own industry and operations, emphasizing the adequacy, consistency and comprehensibility of information, rather than just adding a large amount of information disclosure content. The existing information disclosure supervision mainly emphasizes the authenticity, accuracy and completeness of financial information, which is obviously not suitable for non-financial information disclosure with flexible forms, diverse expressions and rich connotations. This article believes that while non-financial information disclosure follows the basic norms of current information disclosure, it should be differentiated and more flexible in terms of its own characteristics and the characteristics of the times.

In short, for the current non-financial information disclosure in my country, investors need to carefully identify it, and regulatory authorities need to strengthen supervision to return it to its essence of alleviating information asymmetry, rather than becoming a tool for major shareholders to encroach on the interests of the company. Of course, it is also hoped that the policy recommendations of this article can improve the effectiveness of non-financial information disclosure in my country, and encourage listed companies to disclose non-financial information in order to increase the transparency of corporate information, so as to create value for the company and further bring about the improvement of my country's innovation capabilities and economic quality.

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## Conflict of Interests

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