Stock Pledge of Ultimate Owner Information Transparency and Construction Projects Cost

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Abstract. In recent years, with the rapid development of China's capital market, strong shareholders' stock pledge activity has occurred frequently and has received increasing attention. The disclosure of company's information is the main way for investors to know about the enterprise. The company's information transparency will also affect the enterprise construction project cost. Based on this, the paper selects all a-share construction enterprises from 2006 to 2016 as samples to study the impact of stock pledge of ultimate owner and information transparency on construction project costs. First of all, the article examines the impact of the stock pledge on project cost. Then, referring to Bhattacharya's research, this paper used earnings aggressiveness and earnings smoothing as the measurement of transparency. The relationship between the transparency and the construction project cost discussed when the transparency is taken as the moderator variable. The research found that the stock pledge of ultimate owner will constrain construction project expenditure and that transparency is positively correlated with construction project cost. The research also found improving firm's transparency can alleviate the cost constraints which was caused by pledge.

1. Introduction
With the rapid development since the reform and opening up (nearly 40 years), China has entered an important stage of economic transformation and industrial upgrading. The outline of the science and technology development plan clearly states that scientific and technological progress will become a new driving force for China's economic growth. After China's entry into the world trade organization (WTO), economic integration has promoted China's foreign trade and brought competitive pressure to Chinese enterprises in the global market. The key to the core competitiveness of an enterprise is to form its continuous comparative advantage. Therefore, the essence of enterprise core competitiveness is expenditure. Under this background, this paper studies how to encourage enterprises to carry out expenditure activities.

The existing research shows that the pledge of shares by major shareholders will aggravate the agency problem in the company, and the more the pledge of shares is, the more serious the agency problem will be. Pledge of equity refers to the pledge of the company shares held by shareholders as collateral. The capital risk brought by equity pledge will seriously affect the style of management. When the pledge of equity, the controlling shareholders are faced with the original financing constraints and the stock price decline risk caused by the pledge of equity. Therefore, we propose whether equity pledge will affect enterprise expenditure activities. On the other hand, corporate information disclosure is an important means for investors to understand corporate business conditions. A good level of information disclosure of an enterprise can bring good signals of enterprise operation to investors and promote
investors to increase investment. Therefore, whether the improvement of information transparency can alleviate the inhibiting effect of financing constraints on enterprise expenditure activities to some extent is also one of the issues studied in this paper.

On this basis, this paper selects a-share listed companies in China as research samples for empirical experiments, explores the financing channels of enterprise expenditure activities, and tests the relationship between empirical equity pledge and enterprise expenditure, as well as the impact of accounting information transparency on enterprise expenditure behavior.

This paper investigates the economic consequences of equity pledge in the field of enterprise expenditure activities, enriches the theoretical basis for equity pledge, and provides some empirical evidence for enterprise expenditure, which is undoubtedly of great significance for Chinese companies in the period of social and economic transition to improve their expenditure.

2. Theoretical analysis and research hypothesis

2.1. Equity pledge to enterprise expenditure

Equity pledge affects enterprise expenditure mainly by aggravating agency problem and expanding information asymmetry problem, which affects the investment of enterprise research and development, and further affects the development of enterprise expenditure activities. Enterprise expenditure activity is a complex system project with high risk, long term, high adjustment cost and high information asymmetry. The influencing factors of enterprise expenditure performance depend on internal expenditure activities and the interaction between activities and expenditure environment (J· Hinlooper, 1998). R&D input is one of the most important factors affecting the expenditure performance of the company, and the company's R&D activities are the main carrier of expenditure.

This paper analyses the impact mechanism of equity pledge from the perspective of enterprise expenditure activity characteristics. First, enterprise expenditure needs continuous cash flow support and has the characteristics of high risk and vulnerability to internal and external conditions. When the controlling shareholder carries out stock pledge repurchase, if the capital is used for high-risk projects, once the investment fails, the stock price of the listed company may face the risk of collapse, and the controlling shareholder will face the crisis of losing the control right of the company. So equity pledge will intensify the risk aversion of controlling shareholders and reduce the company's willingness to invest in research and development. Second, process of expenditure is very long. Although technological expenditure can gain competitive advantages, under the situation of equity pledge financing of controlling shareholders, controlling shareholders tend to improve short-term performance, so the willingness of enterprises to enhance long-term competitiveness will decline, and therefore the expenditure performance of enterprises will decline accordingly. Third, most of the small shareholders funds is one of the main source of enterprise expenditure capital, when the controlling shareholder equity pledge, controlling shareholders usually uses earnings management and manipulation of information disclosure to manipulate the stock price, and some investors will recognize it and choose to reduce the investment of listed companies, which results in enterprise financing constraints and make enterprise expenditure activities constrained with funds. From above, we propose hypothesis 1 of this paper.

H1a: stock pledge of major shareholders has an inhibiting effect on enterprise expenditure;
H1b: pledge of shares of major shareholders promotes enterprise expenditure.

2.2. Information transparency on enterprise expenditure under equity pledge

Many scholars believe that the stock pledge behavior of controlling shareholders aggravates the tunneling degree of major shareholders and the second type of agency problem. This paper will analyse the impact mechanism of enterprise expenditure activities from two perspectives.

Firstly, there have been many literature studies on the second type of agency problems in the academic circle, including enterprise size, ownership structure, compensation incentive mechanism and other factors that will affect the agency problems between large shareholders and small shareholders. Financial information disclosure can alleviate the agency problem within the company by reducing the
information asymmetry between major shareholders and small and medium-sized shareholders, and the level of corporate information disclosure will affect the role of other corporate governance mechanisms (Armstrong, 2010). For example, recent studies have shown that corporate information transparency largely reflects the agency problem between large shareholders and small shareholders. (Li Wenjing, Kong Dongmin, 2013) Bushman (2001), Armstrong (2010) et al. conducted an empirical study on the relationship between information transparency and corporate governance mechanism. The research results show that information transparency can indeed affect the governance effect of external directors, manager evaluation, equity structure and financing constraints.

Bider (2007) and Wild (2010) found that the more frequently the corporate disclosure of financial information, the understanding of the outside investors to invest the more deep, which can effectively eliminate the internal and external information asymmetry, shareholders, the more feel free to put money in the enterprise, will be willing to put more money into the enterprise, reduce the agent cost and the cost of equity financing, to alleviate the principal-agent problem under equity pledge, had regulation for equity pledge.

In addition, foreign researchers Madhavan (1996) looked at the relationship between the share price and information transparency, the results show that the frequency of the enterprise information disclosure is higher, the investor's trust in the company will be higher, investors expected return of positive attitude of stock prices have driven effect, so as to alleviate the controlling shareholder of short-term psychological risk aversion and interests, promote the R&D investment in the enterprise for the long term, so as to improve enterprise expenditure performance. Based on this, we propose hypothesis 2 of this paper.

**H2**: improving information transparency can help alleviate the restriction of equity pledge on enterprise expenditure.

### 3. Research design

#### 3.1. Variable Definition

**3.1.1. Explained variable**

This paper uses the patent number of listed companies to measure the enterprise expenditure performance (He and Tian, 2013). Considering the lag of expenditure activities, this paper uses the number of patents in the current period and the number of patents in the first period to measure the expenditure performance of the company, and the data comes from the CSMAR database.

**3.1.2. Explained variable**

In this paper, the sum of absolute values of manipulative accruals in the current and previous two periods is used as an alternative indicator of information transparency (Hutton et al., 2009; Kim and Zhang, 2014b; Pan Yue et al., 2011). The smaller the sum of absolute values of manipulative accruals in the first three periods, the lower the degree of information asymmetry, and the higher the information transparency.

Pledgerate: Pledgerate refers to the cumulative Pledgerate of major shareholders in the year, which is calculated by the ratio of the number of shares pledged by major shareholders to the total number of shares held by major shareholders.

**3.1.3. Control variables**

- Asset-liability Ratio (Lev): companies with high asset-liability ratio have a higher probability of financial difficulties.
- Investment Opportunity (tobinQ): this paper USES tobinQ as an alternative indicator to measure business investment opportunities.
• Growth ability (Growth): this paper uses the growth rate of revenue as an indicator to measure the growth ability of enterprises. Operating income growth rate = Δ operating income/previous operating income.

• Enterprise Size (LnSize): this paper takes enterprise size as the control variable to eliminate the impact of enterprise size on expenditure performance. If large enterprises have a high position in the asset market, the enterprise has a larger competitive advantage in the market.

• Cash Holdings: This paper uses the initial cash inventory and compares the total assets at the beginning of the previous period to calculate the cash holding rate at the beginning of the period.

• Enterprise Age (Age): the Age of listed companies on the stock exchange is selected to represent, and the calculation method is to subtract the listing year from the current year of the sample.

• Industry (Ind): the dummy variables selected in this paper are to control the influence of industry and Year factors on samples.

3.1.4. Empirical Model

In order to test the impact of equity pledge on enterprise expenditure and the regulatory effect of information transparency, this paper designs a model for data regression.

\[ \text{App} = \alpha_0 + \beta_1 \text{Lev} + \beta_2 \text{TbQ} + \beta_3 \text{LnSize} + \beta_4 \text{Age} + \beta_5 \text{Cash} + \beta_6 \text{Ind} + \beta_7 \text{Year} + \beta_8 \text{Growth} + \epsilon \] (1)

\[ \text{App} = \alpha_0 + \beta_1 \text{Lev} + \beta_2 \text{TbQ} + \beta_3 \text{LnSize} + \beta_4 \text{Age} + \beta_5 \text{Cash} + \beta_6 \text{Ind} + \beta_7 \text{Year} + \beta_8 \text{Pledgerate} + \beta_9 \text{Growth} + \epsilon \] (2)

\( \alpha_0 \) is the intercept term, \( \beta_1, \beta_2 \ldots \beta_9 \) are the coefficients. App represents enterprise expenditure achievements, \( \text{Lev} \) represents asset-liability ratio, \( \text{Growth} \) represents growth rate of operating revenue, \( \text{LnSize} \) represents company size, \( \text{Age} \) represents listing age, \( \text{TobinQ} \) represents TobinQ, and \( \text{Cash} \) represents cash holding rate. (1) mainly studies the relationship between the explained variables -- company size, asset-liability ratio, operating income growth rate, listing age and cash holding rate. Model (1) and (2) tests the research hypothesis H1.

\[ \text{App} = \alpha_0 + \beta_1 \text{Lev} + \beta_2 \text{TbQ} + \beta_3 \text{LnSize} + \beta_4 \text{Age} + \beta_5 \text{Cash} + \beta_6 \text{Ind} + \beta_7 \text{Year} + \beta_8 \text{Pledgerate} + \beta_9 \text{Trans} \times \text{Pledgerate} + \beta_{10} \text{Growth} + \epsilon \] (3)

\( \alpha_0 \) is the intercept term, \( \beta_1, \beta_2 \ldots \beta_9 \) are the coefficients. App represents enterprise expenditure achievements, \( \text{Pledgerate} \) represents cumulative equity pledge rate, \( \text{Pledgerate} \times \text{Trans} \) is the cross product of pledge rate and Tran, and the rest are control variables, the same as models (1) and (2).

4. Empirical test and result analysis

4.1. descriptive statistical analysis

| Variable | Observations | Minimum | Maximum | Median | Standard Deviation | Average |
|----------|--------------|---------|---------|--------|--------------------|---------|
| App      | 11325        | 0.00    | 4236.00 | 7.00   | 190.53             | 42.42   |
| Pledgerate | 11325      | 0.00    | 1.00    | 0.00   | 0.36               | 0.23    |
| Tran     | 11325        | 0.00    | 18.55   | 0.17   | 0.42               | 0.24    |
| Cash     | 11325        | 0.00    | 1.40    | 0.10   | 0.11               | 0.13    |
| Age      | 11325        | 4.00    | 38.00   | 15.00  | 4.85               | 15.49   |
| TobinQ   | 11325        | 0.09    | 32.90   | 1.54   | 3.58               | 2.23    |
| Growth   | 11325        | 1.00    | 1.87    | 0.10   | 0.67               | 0.33    |
| Lev      | 11325        | 0.035   | 0.92    | 0.49   | 1.06               | 0.51    |
| LnSize   | 11325        | 16.16   | 28.51   | 22.01  | 1.33               | 22.17   |
Descriptive statistical results are obtained through statistical software. As shown in Table 1, we can see that among all sample companies, the maximum value of patent application is 4236, the minimum value is 0, and the standard deviation is 190.53, indicating that there is a large difference in the number of expenditure achievements among enterprises as a whole. The Pledgerate mean and standard deviation of the equity Pledgerate are 23% and 0.36, indicating that the percentage of equity pledge of the controlling shareholders of listed companies is about 23%. The values of other variables are also within a reasonable range.

4.2. Regression results

| variable    | Model (1)       | Model (2)       | Model (3)       |
|-------------|-----------------|-----------------|-----------------|
| Constant    | 645.9333***     | 640.2598***     | 640.8266***     |
|             | (25.06)         | (24.70)         | (24.73)         |
| Cash        | 8.4739          | 6.9772          | 7.3916          |
|             | (1.03)          | (0.84)          | (0.89)          |
| Age         | 0.7734***       | 0.7696***       | 0.7841***       |
|             | (4.60)          | (4.57)          | (4.66)          |
| TobinQ      | 3.5976***       | 3.9598***       | 3.4970***       |
|             | (6.81)          | (6.83)          | (6.59)          |
| Growth      | 5.2071***       | 5.16818***      | 5.4272***       |
|             | (3.66)          | (3.63)          | (3.80)          |
| Lev         | 10.6508**       | 9.7655**        | 10.0938**       |
|             | (2.26)          | (2.06)          | (2.13)          |
| LnSize      | 34.7280***      | 34.4930***      | 34.5581***      |
|             | (46.68)         | (45.83)         | (45.89)         |
| Pledgerate  | 4.39208**       | 9.3420***       |                 |
|             | (2.05)          | (2.98)          |                 |
| Pledgerate*Tran | control   | control   | 20.5568**       |
|             |                 |                 | (2.17)          |
| Ind         | control         | control         | control         |
| Year        | control         | control         | control         |
| F value     | 106.65***       | 103.91***       | 101.34***       |
|             |                 |                 |                 |
| N           | 11325           | 11325           | 11325           |
| R-squared   | 0.2514          | 0.2516          | 0.2519          |

Note: t values in brackets are *** p<0.01, ** p<0.05, * p<0.1.

First, it can be seen in Table 2 that in model (1) the control variables, except asset-liability ratio and cash flow of operating activities, other variables have significant influences on enterprise expenditure achievements at the level of 1%, and asset-liability ratio is significant at the level of 5%. Second, in model (2), the regression coefficient of Pledgerate is significantly negative, indicating that the intensity of stock pledge of controlling shareholders increases and the expenditure achievements of enterprises decrease. In other words, stock pledge of controlling shareholders and enterprise expenditure are negatively correlated, supporting hypothesis H1. Finally, the coefficient of cross-product term Pledgerate*Tran is significantly positive, indicating that the lower information transparency is, the stronger inhibitory effect of equity pledge on enterprise expenditure. On the other hand, the improvement of information transparency will help ease the the inhibitory effect of equity pledge on expenditure, corresponding with hypothesis H2.

5. Robust analysis

In order to ensure more robust and reliable research results, we do the following robustness test on the basis of the main test. When the natural logarithm of the number of patents filed plus one, ln (APP+1), is used to replace the index to measure the expenditure performance of enterprises, the conclusion remains unchanged.
6. Conclusions and recommendations

6.1. Conclusions

• There is a significant negative correlation between stock pledge of controlling shareholders and enterprise expenditure performance. Although equity pledge can temporarily solve the problem of capital shortage, it will aggravate the agency conflict between large shareholders and small shareholders of the company. Because of the fear of control transfer, the controlling shareholders focus on the preparation of false financial statements rather than the long-term strategic development of the enterprise. In the decision-making of expenditure activities, the controlling shareholders will reduce their investment in expenditure research and development, and the expenditure performance of enterprises will decline accordingly.

• The improvement of information transparency is helpful to alleviate the enterprises' expenditure activities which are inhibited after facing the pledge of equity. The controlling shareholders are worried about investors' doubts on the enterprise's operation after the pledge of shares, so they choose to whitewash financial statements, hinder real information disclosure. For those companies which have lower information transparency, investors will reduce investment, leading to constraints of enterprise expenditure activities.

6.2. Recommendations

• For controlling shareholders, equity pledge expands the financing channels for shareholders and can relieve financing constraints. However, we must recognize the possible negative impact of equity pledge. The controlling shareholder should do efforts to improve business performance and increase the company's core competitiveness to improve the share price, rather than rely on information disclosure management.

• Regulatory authorities should improve the legal system of equity pledge. The current laws and regulations have not made specific provisions on the pledgee, pledged shares, pledged information disclosure and other aspects.

• As for enterprises, corporate governance must be improved. In addition to the provisions of the company's articles of association, it must also strengthen the responsibility of the pledge subject through the construction of laws and regulations.

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