Internal Control, Financial Flexibility and Corporate Performance -- Based on empirical analysis of listed companies in information Technology industry

Yangyang Gu¹, Fangying Yuan²
¹ School of Management Studies, Shanghai University of Engineering Science, Shanghai, 201600, China
² School of Management Studies, Shanghai University of Engineering Science, Shanghai, 201600, China
*Corresponding author Fangying Yuan, E-mail: 935932001@qq.com

Abstract. This paper takes non-ST and non-* ST listed companies in information technology industry from 2015 to 2018 as the research object, analyzes the relationship between financial flexibility and corporate performance, and further studies the relationship among internal control, financial flexibility and corporate performance. Research shows that financial flexibility has an inverted U-shaped relationship with corporate performance, that is, within a certain range, financial flexibility promotes corporate performance, but beyond this range, financial flexibility is not conducive to the improvement of corporate performance. Internal control has a positive adjustment effect on the relationship between financial flexibility and corporate performance.

1. Introduction
With the arrival of the information age, the information technology industry is rising. In order to take a leading position in the industry, the technology needs constant innovation and a large amount of capital investment is indispensable. Therefore, an appropriate amount of financial flexibility can ensure the supply of funds and improve the ability to cope with risks, as well as fully grasp the appropriate investment opportunities. However, excessive financial flexibility, on the one hand, may lead to too much idle cash, so that the profitability of corporate cash is relatively weak; on the other hand, low leverage with less debt has no incentive effect and will depress corporate performance. Therefore, academic circles generally believe that financial flexibility has both advantages and disadvantages to corporate performance[1]. Effective internal control is conducive to the effectiveness and efficiency of operation, control of cash flow and reduce agency costs. Therefore, this paper will add internal control to the study of financial flexibility and corporate performance, in-depth study of the regulatory role of internal control, so as to further promote the improvement of enterprise performance.

2. Theoretical analysis and research hypothesis

2.1. Financial flexibility and company performance
Financial flexibility refers to an internal comprehensive strength of an enterprise to reduce its financial risks and effectively utilize its financial resources in the face of dynamic financial environment changes and various uncertainties [2]. Therefore, financial flexibility is conducive to corporate performance within a certain range. Financial flexibility, flexible, one of the cash Wan,L.Y. and Sun,L.H. (2010) study of the 2008 financial crisis for large cash reserves and not the influence of high cash reserves entity enterprise, found that the more cash reserves before the crisis of the slow the speed of the company's performance, also is the cash reserves to decline in corporate performance play a buffer role [3]. Soenen (2003) found that holding more cash was more conducive to financial flexibility, and it could seize and create opportunities [4]. It is also mentioned in the theory of tradeoff that when an enterprise is faced with financial difficulties, sufficient cash storage is conducive to reducing this risk. When an enterprise is faced with major losses or financing difficulties, cash storage can play a buffer role to help the enterprise solve the problem, and at the same time will not cause the enterprise to miss some valuable investment opportunities. Therefore, sufficient cash reserves can help enterprises reduce various risks, seize investment opportunities, and improve corporate performance.

However, at the same time, financial flexibility will also be detrimental to corporate performance. On the one hand, high cash reserves will reduce the profitability of cash, not conducive to corporate performance. Wu,H.Q. (2009) found that excessive cash reserves would reduce performance, and the more cash reserves, the more likely it would be to abuse cash flow [5]. On the other hand, higher financial flexibility also means that the company bears lower debt, and low financial leverage cannot motivate employees to improve their performance. Lian,Y.J. and Cheng,J. (2006) found that with better development prospects and more opportunities, the higher the debt ratio, the higher the business performance [6]. To sum up, hypothesis H1 is proposed:

H1: There is an inverted U relationship between financial flexibility and corporate performance, that is, within a certain range, financial flexibility promotes corporate performance, but beyond this range, financial flexibility is not conducive to the improvement of corporate performance.

2.2. Internal control, financial flexibility and corporate performance
First of all, by strengthening the improvement of the internal control structure of corporate governance, compliance can effectively supervise the management, reduce overconfidence, and minimize the impact of individual irrational behaviors of the management on the development of the company, such as the abuse of cash flow by the management [7]. Therefore, effective internal control can control the company's cash flow, so that financial flexibility can better promote corporate performance. Secondly, the low leverage under the high financial flexibility makes the enterprise lose external supervision, so that the individual inside the company can pursue personal interests in a wider scope, while the internal control can help the enterprise to reduce agency costs and improve corporate performance [8]. To sum up, hypothesis H2 is proposed:

H2: Internal control positively regulates the relationship between financial flexibility and corporate performance.

3. Study design

3.1. Sample selection and data sources
This paper takes listed companies in China's information technology industry from 2015 to 2018 as the initial research samples. After removing the companies with data missing and damaged during the study and ST and *ST in the initial sample, a total of 197 it listed companies were selected. The main sources of data are CSMAR and flush shun databases. The data were sorted and analyzed by EXCEL and SPSS software.
3.2. Variable definitions

3.2.1. Explained variable. This paper is concerned with the study of financial flexibility, so ROA, which includes debt, is adopted as the index to measure the enterprise performance.

3.2.2. Explanatory variables and moderator variables. The first explanatory variable is financial flexibility. In this paper by Zeng, A.M., Zhang, C., and Wei, Z.H. (2013) proposed multi-index measurement method, could be divided into cash financial flexibility (FF) flexible flexible (CF) and liabilities (LF) these two aspects were analyzed, and the FF = CF + LF, including CF = average cash ratio, cash ratio - industry enterprises LF = Max (0, the industry average debt ratio - corporate debt ratio) [9]. The second explanatory variable is the square of financial flexibility. The regulating variable is the enterprise internal control index, which can quantify the level of enterprise internal control.

3.2.3. Control variables. Based on previous studies, this paper introduced Growth of operating income, Size of enterprise, TOP proportion of largest shareholder, NPMS and Year as control variables. Specific variables are shown in Table 1:

| The variable name                  | Variable code | Description                                                                 |
|-----------------------------------|---------------|-----------------------------------------------------------------------------|
| Return on total assets            | ROA           | Net profit/average total assets                                             |
| Financial flexibility             | FF            | FF = CF + LF, CF= Enterprise cash ratio - industry average cash ratio LF= Max (0, industry average debt ratio - corporate debt ratio) |
| Financial flexibility squared     | FF^2          | Financial flexibility squared                                               |
| Internal control index            | LnIC          | The logarithm of the internal control index                                 |
| Revenue growth rate               | Growth        | (Current operating income - operating income of the same period last year) / Revenue year-over-year |
| The enterprise scale              | Size          | The logarithm of the total assets of an enterprise                           |
| The largest proportion of Top shareholders | NPMS | Shares held by the largest shareholder/total shares of the company            |
| Year                              |               | Annual dummy variable                                                       |

3.3. Model construction

To test H1, model (1) and model (2) are constructed in this paper. In order to test H2, lnIC*FF, the cross product of internal control and financial flexibility, was added, and model (3) was constructed to verify that internal control plays a positive regulating role between financial flexibility and corporate performance.

\[ \text{ROA}_{it} = \beta_0 + \beta_1 \text{FF}_{it} + \beta_2 \text{LnIC}_{it} + \beta_3 \text{Top}_{it} + \beta_4 \text{Growth}_{it} + \beta_5 \text{Size}_{it} + \beta_6 \text{NPMS}_{it} + \sum \text{Year} + \epsilon \] (1)

\[ \text{ROA}_{it} = \beta_0 + \beta_1 \text{FF}_{it} + \beta_2 \text{FF}^2_{it} + \beta_3 \text{LnIC}_{it} + \beta_4 \text{Top}_{it} + \beta_5 \text{Growth}_{it} + \beta_6 \text{Size}_{it} + \beta_7 \text{NPMS}_{it} + \sum \text{Year} + \epsilon \] (2)

\[ \text{ROA}_{it} = \beta_0 + \beta_1 \text{FF}_{it} + \beta_2 \text{FF}^2_{it} + \beta_3 \text{LnIC}_{it} + \beta_4 \text{LnIC}_{it} \times \text{FF}_{it} + \beta_5 \text{Top}_{it} + \beta_6 \text{Growth}_{it} + \beta_7 \text{Size}_{it} + \beta_8 \text{NPMS}_{it} + \sum \text{Year} + \epsilon \] (3)
4. Empirical analysis

4.1. Descriptive analysis
This paper takes listed companies in the information technology industry from 2015 to 2018 as research samples, and the specific descriptive statistical results are shown in Table 2. The minimum value of return on total assets is -56.37%, the maximum value is 59.81%, and the average value is 4.1156%, which is greater than 0. It can be seen that the performance level of the information technology industry is low, but overall, it is profitable at least. Financial flexible averages of 8.8484, the minimum value is 147.35, the maximum value is 1262.95, the difference between the two is very big, the standard deviation is bigger also, it shows that information technology industry differences between the listed company financial flexibility is bigger, some companies reserve more financial flexibility, are some enterprises do not take the financial flexibility, flexible enterprise financial reserves is low; On the whole, the financial flexibility reserve of listed companies in the information technology industry is low, and there are problems in financial reserve. The mean value of the internal control index is 7.7478, indicating that the overall internal control of listed companies in the information technology industry is generally low. The largest shareholder held a maximum of 67.08%, with an average of 27.9368%, indicating that the equity of listed companies in the information technology industry is concentrated. From the perspective of corporate growth capacity, as shown in Table 2, the average growth rate of operating income is 24.6074%, which is much higher than 0. It can be inferred that listed companies in the information technology industry have better overall growth capacity and achieved revenue growth. However, there is a big difference between the minimum and maximum growth rates of operating income, indicating that the development status of listed companies in the information technology industry varies greatly among individuals, and the enterprises with weak growth capacity should learn from the leading enterprises in the industry and timely adjust their deficiencies to achieve new growth points. From the perspective of enterprise size, the difference between the minimum and maximum of enterprise size is small, and the standard deviation is also small. It can be seen that the size of listed companies in the current information technology industry generally differs little. The average net profit rate of sales is 8.0303%, indicating that listed companies in the information technology industry have good profitability, but there are also large differences among individuals.

Table 2. Descriptive statistics for each variable.

| Variable | Sample size | Min     | Max     | Mean    | Standard deviation |
|----------|-------------|---------|---------|---------|--------------------|
| ROA      | 788         | -56.37  | 59.81   | 4.1156  | 7.55902            |
| FF       | 788         | -147.35 | 1262.95 | -8.8484 | 157.87092          |
| FF^2     | 788         | 0.01    | 1595043.27 | 24969.8914 | 119161.05341      |
| LnIC     | 788         | -4.61   | 14.14   | 7.7478  | 1.94662            |
| Top      | 788         | 4.15    | 67.08   | 27.9368 | 12.81394           |
| Growth   | 788         | -87.18  | 927.71  | 24.6074 | 56.94361           |
| Size     | 788         | 19.64   | 27.15   | 22.0049 | 1.01714            |
| NPMS     | 788         | -253.68 | 156.35  | 8.0303  | 21.87308           |

4.2. Correlation analysis
Correlation analysis was conducted on the collected samples, and Pearson correlation coefficient was
shown in Table 3. As shown in Table 3, the correlation coefficient between corporate performance and financial flexibility is 0.093, which is significant at 1% level, thus preliminarily verifying H1, but further regression analysis is needed for verification. Internal control index, revenue growth rate, enterprise size, sales net interest rate and enterprise performance are significantly positively correlated. The relationship between the proportion of the largest shareholder and corporate performance is not significant.

Table 3. Correlation coefficient of each variable.

|       | ROA     | FF   | FF^2  | LnIC   | Top   | Growth | Size   | NPMS   |
|-------|---------|------|-------|--------|-------|--------|--------|--------|
| ROA   | 1       |      |       |        |       |        |        |        |
| FF    | 0.093** | 1    |       |        |       |        |        |        |
| FF^2  | 0.013   | 0.805** | 1    |        |       |        |        |        |
| LnIC  | -0.035  | -0.352** | -0.071* | 1     |       |        |        |        |
| Top   | 0.023   | -0.057 | -0.009 | 0.033  | 1     |        |        |        |
| Growth| 0.227** | -0.085* | 0.01  | -0.034 | -0.050 | 1     |        |        |
| Size  | 0.083*  | 0.133** | -0.108** | 0.111** | 0.071* | 0.062 | 1     |        |
| NPMS  | 0.792** | -0.007** | 0.024 | 0.01   | -0.011 | 0.163** | 0.080* | 1     |

** and * indicate significant correlation at the level of 1% and 5%, respectively.

4.3. Regression analysis
The regression results are shown in Table 4. To verify the inverted U-shaped relationship between financial flexibility and corporate performance in H1, FF^2 is added on the basis of model (1) to form model (2). In order to verify the regulating effect of internal control in H2, on the basis of model (2), the cross multiplier FF*LnIC of internal control and financial flexibility is added to form model (3). From the perspective of the explanatory ability of the model, model (1) is 0.644, model (2) is 0.645, and model (3) is 0.648. After adjustment, the R square keeps growing, indicating that the model is getting better and better in terms of its fitting degree and explanatory ability. According to the regression results of model (1), the FF coefficient is 0.001, which is significant at the 1% level. It can be inferred that financial flexibility is positively correlated with corporate performance. The more financial flexibility is reserved, the better corporate performance will be. According to the model after joined the FF^2 (2) the regression results, the coefficient of FF^2 is negative, according to the nature of the quadratic curve, the curve can be deduced is an inverted u-shaped curve, also means that within a certain range, more flexible financial reserves to corporate performance, but once exceeded the scope, financial flexibility will have a negative effect on performance, so as to prove the H1. According to the regression results of FF*LnIC model (3), the interaction coefficient between internal control and enterprise performance is positive, indicating that internal control has a positive regulating effect on the relationship between financial flexibility and enterprise performance. This is because the internal control can monitor the abuse of management, can help enterprises to reduce agency costs; In other words, internal control significantly enhances the positive effect of financial flexibility on enterprise performance, thus proving H2.
Table 4. Regression results.

| Variable   | Model (1) Coefficient | Model (2) Coefficient | Model (3) Coefficient |
|------------|-----------------------|-----------------------|-----------------------|
| FF         | 0.001                 | 0.002                 | -0.022                |
| $FF^2$     | -3.120E-6             | -2.591E-6             |                       |
| LnIC       | -0.128                | -0.146                | -2.352                |
| FF*LnIC    |                       |                       | 0.003                 |
| Top        | 0.018                 | 0.018                 | 0.015                 |
| Growth     | 0.012                 | 0.012                 | 0.012                 |
| Size       | 0.249                 | 0.228                 | 0.173                 |
| NPMS       | 0.262                 | 0.261                 | 0.259                 |
| Year       | control               | control               | control               |
| Adjusted R squared | 0.644             | 0.645                 | 0.648                 |
| Number of samples | 788               | 788                   | 788                   |

4.4. Robustness test

In order to ensure the reliability of the research results, this paper replaces several key indicators to conduct stability tests. ROE is also a key indicator to measure performance, so this paper USES ROE instead of enterprise performance for stability test. This paper also USES the growth rate of total profit to replace the growth rate of operating income, and measures the growth ability of the company from the perspective of profit. The final stability results are shown in Table 5. It can be seen that there is still an inverted U-shaped relationship between financial flexibility and corporate performance, and internal control still plays a positive regulating role between them.

Table 5. Robustness test.

| Variable   | Model (1) Coefficient | Model (2) Coefficient | Model (3) Coefficient |
|------------|-----------------------|-----------------------|-----------------------|
| FF         | 0.001                 | 0.002                 | -0.055                |
| $FF^2$     | -5.796E-6             | -4.479E-6             |                       |
| LnIC       | -0.177                | -0.210                | -5.679                |
| FF*LnIC    |                       |                       | 0.009                 |
| Top        | 0.03                  | 0.03                  | 0.024                 |
| Growth     | 0.000                 | 0.000                 | 0.000                 |
| Size       | 1.229                 | 1.19                  | 1.052                 |
| NPMS       | 0.391                 | 0.391                 | 0.386                 |
### 5. Conclusion

This paper selects non-ST and non-*ST listed companies in China's information technology industry from 2015 to 2018 as research samples, tests the relationship between internal control, financial flexibility and corporate performance through empirical methods, and finally draws the following two conclusions: First, to a certain extent, financial flexibility is positively correlated with corporate performance; second, financial flexibility is positively correlated with corporate performance. Beyond a certain range, financial flexibility and corporate performance will be negatively correlated. Financial flexibility is an ability to face many uncertainties. Nowadays, information technology companies need a large amount of capital investment to innovate technologies. When the market environment is turbulent or technology research and development fails, information technology companies need financial flexibility to buffer the status quo. Now in the era of rapid development and change of new technologies, the advent of new technologies also requires information technology enterprises to hold enough cash reserves to seize investment opportunities. However, beyond a certain range, excessive cash held by information technology enterprises will reduce the profitability of cash, and problems such as abuse of cash by management will occur, which will increase the agency cost of the enterprise, thus not conducive to the improvement of enterprise performance. In the process of research, it is found that the financial flexibility of information technology enterprises is generally not high, and individual differences are large. Second, internal control plays a positive regulatory role between financial flexibility and corporate performance, and can promote the positive role of financial flexibility on corporate performance, because internal control can control cash flow, supervise enterprises and reduce agency costs.

### Acknowledgments

Upon the completion of my thesis, I would like to express my sincere gratitude and high respect to my respected tutor, Ms. Yuan. Thank you very much for your careful instruction and patient guidance.

### References

1. Yang, L., Pan, Z. (2019) Dynamic relationship between financial flexibility and corporate performance: a moderating effect analysis based on financing constraint and agency cost. Economic and management research, 40:125-144.
2. Zhao, H., Zhang, D.Z. (2010) Research on the Original Attributes of Corporate Financial flexibility. Accounting Research, 06:62-69+96.
3. Wan, L.Y., Sun, L.H. (2010) Can the company's high cash holding policy mitigate the impact of the financial crisis? -- Empirical Evidence from Chinese listed companies. Financial Research, 06:42-46.
4. Soenen, L. (2003) Cash Holdings: A mixed Blessing?. AFP Exchange, 5:54-57.
5. Wu, H.Q. (2009) Empirical Research on the relationship between cash holdings and Corporate Operating Performance and value. Accounting Friends (the first issue), 02:94-97.
6. Lian, Y.J., Cheng, J. (2006) Research on the Relationship between capital structure and business performance under different growth opportunities. Contemporary Economic Science, 02:97-103+128.
7. Gong, H. (2019) Research on the Influence of Managers' Overconfidence on financial resilience. Guizhou University of Finance and Economics.
[8] Morck,R.,A.Shleifer,R.W.Vishny. (1988) Management Ownership and Market Valuation: An Empirical Analysis. Journal of Financial Economics, 20: 293-315.

[9] Zeng, A.M., Zhang, C., Wei, Z.H. (2013) Impact of financial Crisis, Financial Flexible Reserve and Enterprise Investment Behavior -- Empirical Evidence from Chinese Listed Companies. Management World, 04: 107-120.