

# Impact of Food Corporation Social Responsibility Information Disclosure on the Cost of Equity Capital—Taking Internal Control as the Regulating Variable

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**Abstract:** *In the background of a number of food safety problems in China, the fulfillment of social responsibilities in the food industry has become the focus of attention, and the cost of equity capital is an important factor affecting corporate equity financing. The academic community has begun to pay attention to whether the fulfillment of corporation social responsibilities will have an impact on the cost of equity capital. This paper takes 37 A-share listed food companies in Shanghai and Shenzhen stock exchanges that released corporation social responsibility reports from 2010 to 2022 as the research objects, constructing relevant model and using internal control as the adjusting variable to study the relationship between corporation social responsibility disclosure and the cost of equity capital. Empirical results show that there is a negative correlation between the corporation social responsibility disclosures and the cost of equity capital, and internal control can inhibit the increase in the cost of equity capital caused by the decline in the quality of corporation social responsibility disclosures. Finally, this paper puts forward some suggestions: Improving corporation social responsibility information disclosure standards; Establishing a corporation social responsibility reward and punishment mechanism; Strengthening corporate internal control.*

**Keywords:** *Corporation social responsibilities; Cost of equity capital; Internal controls*

## 1. Introduction and literature review

Food safety has always been the eternal topic of concern in the whole society. The Sanlu tainted milk powder incident, gutter oil and other incidents that jeopardize public health and safety have made stakeholders pay more attention to the corporation social responsibility (CSR). In 2002, the China Securities Regulatory Commission (CSRC) and the Economic and Trade Commission (ETC) jointly issued the Code of Governance for Listed Companies, which for the first time included corporation social responsibility as part of corporate governance. Since then, the CSRC has repeatedly emphasized that enterprises should actively undertake certain social responsibilities and companies should disclose their CSR reports at the same time as their annual reports. Which prompted food companies to emphasize food safety and improve production quality and reduce the occurrence of safety problems. With the continuous development of globalization, public information becomes more and more transparent, and corporation social responsibility becomes one of the core competitiveness of enterprise development. Davis(1960) put forward the idea of "Iron Law of Responsibility", which believes that while businessmen assuming corporation social responsibility, they also gain social rights and interests, the two are dependent on each other<sup>[1]</sup>. On the one hand, the fulfillment of CSR and disclosure of relevant information can improve corporate reputation and help to enhance long-term financial performance and market value (Malik et al., 2020), and contribute to the sustainable development of the enterprise (Xu and Yang, 2017) <sup>[2][3]</sup>. On the other hand, corporate disclosure the corporation social responsibility information will increase additional costs, especially when choosing to disclose negative CSR information about corporate development, which may also cause social condemnation, affecting corporate image as well as accounting robustness (Zhang and Gao, 2017)<sup>[4]</sup>.

The cost of equity capital is the price paid for raising capital for enterprises and the necessary rate of return on investment for shareholders. The high or low cost of equity capital is influenced by external factors such as the market economic environment, legal system, and national policies, as well

as internal factors such as the nature of corporate property rights, the level of governance, financial characteristics, and the quality of information disclosure (Lei et al., 2023; Wang et al., 2019)<sup>[5][6]</sup>. Compared with uncontrollable external factors, scholars focus more on the study of internal factors that can be intervened. Regarding the research on the impact of company information disclosure quality on the cost of equity capital, a large number of scholars have shown that high-quality financial information can reduce the cost of equity capital of enterprises, which has almost become a consensus (Li et al., 2023; Teng and Han, 2017)<sup>[7][8]</sup>; In recent years, the impact of CSR and the cost of capital has also attracted more attention, but the conclusions are still uncertain. Three views usually exist:

The first view is that the two are negatively related. In a study of the relationship between the two with information transparency as a mediating variable, Teng and Han(2017) found that the quality of CSR information and the cost of equity capital are negatively correlated, and the impact of corporation social responsibility information on the cost of equity capital is more obvious in enterprises with poorer information transparency<sup>[8]</sup>. Tong et al.(2020) found that the improvement of the quality of corporate environmental information disclosure can effectively reduce the cost of equity capital of enterprises<sup>[9]</sup>. Wei et al.(2020) found that the fulfillment of corporation social responsibility plays a strategic effect by taking into account the interests of enterprises and stakeholders<sup>[10]</sup>. In addition, enterprises that disclose independent corporation social responsibility information will also reduce the cost of corporate fundraising capital to a certain extent, thus reducing the cost of equity capital (Huang and Jin, 2016)<sup>[11]</sup>; The second view is that the two are positively correlated. Feng et al.(2016) take the motivation of disclosing CSR of listed companies as the starting point to explore the impact and mechanism of CSR behavior on the cost of corporate equity capital, and conclude that the disclosure of corporation social responsibility report by companies in Chinese current social environment does not help to reduce the cost of corporate equity capital<sup>[12]</sup>. Zhang and Deng(2017) took the corporation social responsibility reports issued by A-share listed companies in Shanghai and Shenzhen during the period of 2008-2013 as a sample, examined whether the forensics of corporation social responsibility reports can provide useful information for investors from the perspective of the cost of equity capital, and the results of the study showed that the cost of equity capital of the companies whose corporation social responsibility reports have been forensically certified by a third-party professional organization is relatively low<sup>[13]</sup>; The third view is that the two are not a single linear relationship, but rather interact with each other in a U-shaped interactive relationship. Han and Zhang (2022) used the data of A-share listed companies in China's Shanghai and Shenzhen stock to find that the management of CSR information with the cost of capital is a U-shape relationship, which through the cost of capital to affect the sustainable development ability of enterprises<sup>[14]</sup>. In addition, CSR information disclosure also helped to reduce information asymmetry and reduce the cost of capital, but the play of this role is subject to whether the CSR information disclosure of the enterprise is true or not;(Meng et al., 2010)<sup>[15]</sup>.

Synthesizing the above literature research, the relationship between the cost of equity capital and CSR information is uncertain, and the research perspectives are carried out from different industries, enterprises of different natures, and different types of responsibility reports, which provides a preliminary support for the writing of this paper. However, the literature has less research on the relationship between CSR information disclosure, internal control and cost of equity capital, and it is even less common to take food enterprises as the research object. Based on this, this paper takes food enterprises as the research object and takes internal control as a moderating variable to study its moderating role in the impact of CSR information disclosure on the cost of equity capital. This not only helps to enrich the research on the impact of corporation CSR information disclosure on the cost of equity capital, but also allows enterprises to recognize the positive effect of disclosing CSR information, enhance the confidence of food enterprises in disclosing their corporation social responsibility. Which is help to build the first line of defense for the safety of life of the general public.

## 2. Theoretical Analysis and Research Hypotheses

### 2.1 CSR information disclosure and cost of equity capital

The theory of information asymmetry holds that in the process of business operation, market participants with different economic roles perceive news related to business transactions differently, and this information asymmetric behavior may put parties in business activities in different market positions, triggering the phenomenon of adverse selection, so that the party with more information is in an advantageous position and seeks to obtain more benefits by taking advantage of its own level of knowledge of the information (Teng and Han, 2017)<sup>[8]</sup>. CSR information as a part of corporate

information is often excluded from financial statements. When the information disclosed by the enterprise is too little, investors will claim a risk premium against the incomplete disclosure of corporate information to protect their interests to a greater extent. First, enterprises often tend to reduce the cost of equity capital by sending positive signals to the market and strengthening the trust of investors by establishing a positive image in the capital market (Wei et al., 2020)<sup>[10]</sup>. Second, high-quality corporation social responsibility information is a positive signal, which will strengthen the trust of investors in the enterprise by improving the external evaluation of the enterprise, and reduce the investment risk to achieve lower equity capital in the capital market. Therefore, the disclosure of CSR information can reduce the cost of equity capital by mitigating information asymmetry and lowering prediction risk. Based on the above analysis, a hypothesis is proposed:

Hypothesis 1: The quality of CSR disclosure is negatively related to the cost of equity capital.

## ***2.2 Internal control and cost of equity capital***

Internal control is the methods, procedures and measures for organizing, restraining, assessing and regulating business activities among various functional departments established to achieve business management objectives and organize internal business activities. It is now widely recognized in academia that the quality of internal control will inversely affect the cost of equity capital (Cai et al., 2022; Yun and Xue, 2021;)<sup>[16][17]</sup>. From the principal-agent theory, high-quality internal control firms will build a sound monitoring and restraining mechanism, which will help to reduce improper behavior of management, and have a positive impact on the firm's future cash flow, which helping to reduce the cost of equity capital. Therefore, high-quality internal control improves the risk prevention ability due to limiting management's misappropriation behavior, so that investors will lower their required return on investment and reduce the cost of equity capital (Zeng et al., 2021;)<sup>[18]</sup>. From the perspective of corporate governance, good internal control marks the smooth operation and good development of business development, and enterprises with strong internal control are more willing to disclose the information, which not only improves the trust of shareholders, but also reduces the risk premium expected by investors, which in turn reduces the expected compensation; Therefore, high-quality internal control can reduce the information risk faced by investors, enhance the degree of trust in the enterprise, so that reduce the cost of equity capital (Cai et al., 2022)<sup>[16]</sup>. Based on the above analysis, a hypothesis is proposed:

Hypothesis 2: The quality of firms' internal controls negatively affects the cost of equity capital.

## ***2.3 Internal control, CSR disclosure quality and cost of equity capital***

As a useful supplement to the corporate governance structure, a sound internal control system can not only effectively limit opportunistic behavior, but also facilitate the balance and coordination of interests among various stakeholders. In face of different CSR disclosure situations, the establishment of a sound internal control system can effectively reduce various types of risks, and it is particularly important to establish a internal control system in the context of poor CSR disclosure quality. As mentioned earlier, a number of academic studies have confirmed that the quality of internal control is negatively related to the cost of equity capital (Tong et al., 2020; Wei et al., 2020)<sup>[9][10]</sup>, and the specific mechanism is that a sound internal control system can help to limit the opportunistic behavior of the management as well as to improve the quality of accounting information, alleviate the asymmetry of information between the company and the external investors, so that reduce the cost of equity capital. When the quality of corporation social responsibility disclosure is low, it is difficult for investors to judge whether the decline in the company's operating performance is caused by the moral hazard of the management or the change in the quality of corporation social responsibility disclosure, so it is easier for the management to hide its opportunistic behavior and the consequences of mismanagement, which ultimately makes it difficult for the external investors to effectively assess the management's corporate value (Zhang and Deng, 2017)<sup>[13]</sup>. If the company has high-quality internal control quality at this time, the high-quality accounting information it produces will help external investors distinguish the causes of performance fluctuations, reasonably assess the performance of the management and mitigate the risk of information asymmetry, reducing the risk faced by investors and the investment premium demanded. Obviously a sound and complete internal control system will ultimately help to alleviate the negative relationship between the quality of CSR disclosure and the cost of equity capital. Based on the above analysis, a hypothesis is proposed:

Hypothesis 3: Internal control quality plays a moderating role in the quality of CSR disclosure and

the cost of equity capital.

### 3. Study design

#### 3.1 Model construction

In order to verify the above research assumptions and consider other factors that affect the equity capital of food corporate, this paper refers to the research results of Zhu et al. (2019)<sup>[19]</sup>, and builds the following regression model:

$$Re_{it} = \alpha_0 + \alpha_1 CSR_{it} + \sum Control_{it} + Year_i + Industry_t + \varepsilon_{it} \quad (1)$$

$$Re_{it} = \beta_0 + \beta_1 IC_{it} + \sum Control_{it} + Year_i + Industry_t + \varepsilon_{it} \quad (2)$$

$$Re_{it} = \gamma_0 + \gamma_1 CSR_{it} + \gamma_2 IC_{it} + \gamma_3 CSR_{it} * IC_{it} + \sum Control_{it} + Year_i + Industry_t + \varepsilon_{it} \quad (3)$$

The Equation (1) verifies the relationship between the CSR information disclosure and the cost of equity capital, the Equation (2) verifies the relationship between the internal control quality and the cost of equity capital, and the Equation (3) verifies the regulatory effect of the internal control in the CSR information disclosure and the cost of equity capital.  $Re_{it}$  represents the cost of the equity capital of  $i$  companies in the  $t$  year;  $CSR_{it}$  represents the quality of the CSR information disclosure of  $i$  companies in the  $t$  year;  $IC_{it}$  represents the quality of internal control of  $i$  companies in the  $t$  year;  $CSR_{it} * IC_{it}$  is an interactive item of explaining variables  $CSR_{it}$  and adjusting variables  $IC_{it}$ ; Controls represents control variables,  $Year_i$  indicates year fixation effect,  $Industry_t$  means a corporate fixed effect,  $\varepsilon_{it}$  represents a random error item.

#### 3.2 Variable description

##### 3.2.1 Explanatory variable

Corporation social responsibility information disclosure(CSR): This paper uses the score of RKS (Rankins CSR Ratings) to measure the quality of CSR information disclosure. Since 2020, RKS has replaced the CSR to ESG, and evaluated ESG in three aspects: Environmental, Social and Governance. Therefore, this paper processes the social rating score in the ESG rating from 2020 to 2022, and converts them into CSR score corresponding to the corresponding level.

##### 3.2.2 Explained variable

Cost of the Equity Capital (Re): The operation of PEG model calculates the cost of equity capital is easy and there are no strict restrictions. Therefore, it has stronger universality, objectivity and operability in Chinese securities market, which has been recognized by the academic community (Zhu et al, 2019; Jin et al, 2023)<sup>[19][20]</sup>. This paper uses the PEG model to calculate the cost of the Equity Capital. The formula is as follows:

$$Re = \sqrt{(eps_2 - eps_1) / p_0} \quad (4)$$

In the formula (4),  $eps_1$  represents the future earnings per share of the first phase predicted by the analyst,  $eps_2$  represents the future earnings per share of the second phase predicted by the analyst, and  $P_0$  represents the per stock price of the base period.

##### 3.2.3 Regulating variable

Internal Control Quality (IC): The Internal Control Index of DIB database is the first index that comprehensively reflects the internal control level and risk management ability of listed companies in China. Referring to the paper of Yun and Xue (2021)<sup>[17]</sup>, this paper uses the internal control index of DIB database to measure the quality of internal control.

##### 3.2.4 Control variables

In order to avoid the bias caused by omitted variables, this paper selects the following variables with a high correlation with equity capital cost as control variables: Enterprise size, the proportion of the largest shareholder, inventory ratio, Tobin Q value, book-to-market, and accounts receivable ratio.

**3.3 Sample selection and data source**

This paper selects the Shanghai and Shenzhen A-share food listed companies that have been released in CSR information from 2010 to 2022 as samples. According to various conditions, 481 valid sample observations of 37 food listed companies are finally obtained. Among them, the CSR information disclosure is from the RKS, the internal control data is from the internal control and risk management database of DIB, and the rest of the data is from the CSMAR database.

**4. Empirical analysis and testing**

**4.1 Descriptive statistics**

First, this paper conducted a descriptive statistical analysis of each variable, and the results are shown in Table 1.

*Table 1: Variable descriptive statistical analysis.*

Variable	Observation	Mean	Standard deviation	Min	Max
Re	481	0.101	0.0161	0.0847	0.135
CSR	481	40.22	4.275	31.79	45.86
IC	481	676.8	119.1	3.93	957.9
SIZE	481	22.64	0.336	22.04	23.21
Top1	481	0.379	0.144	0.0990	0.714
INV	481	0.211	0.116	0.0093	0.550
TQ	481	2.419	0.468	1.831	3.478
BM	481	0.620	0.444	-1.036	2.047
REC	481	0.0354	0.0398	0	0.172

From the Table 1, it can be seen that the average cost of equity capital is 0.101, the maximum value is 0.135, and the minimum value is 0.0847. It shows that the index of equity capital cost varies greatly among different food enterprises. The average value of CSR information disclosure is 40.22 (total score of 100), the maximum value is 45.86, and the minimum value is 31.79. It shows that the quality of CSR information disclosure of food enterprises needs to be improved as a whole. On the other hand, there are certain differences in the disclosure of CSR information between different food enterprises.

**4.2 Benchmark regression**

*Table 2: Results of benchmark regression.*

Variable	(1)	(2)	(3)	(4)
	Re	Re	Re	Re
CSR	-0.0010*** (-6.73)	-0.0015*** (-8.85)	-0.0008*** (-3.65)	-0.0006** (-2.81)
SIZE		0.0099*** (5.16)	-0.0074 (-1.82)	0.0140* (2.32)
TQ		-0.0069*** (-4.15)	-0.0070*** (-4.15)	-0.0060*** (-3.48)
Top1		-0.0575*** (-4.50)	-0.0828** (-2.94)	-0.0749** (-2.75)
INV		-0.0223 (-1.37)	0.0535 (1.66)	0.0594 (1.89)
BM		-0.0168** (-3.14)	-0.0061 (-0.96)	-0.0147* (-2.32)
REC		0.0336 (0.67)	0.243** (2.64)	0.305*** (3.36)
Cons	0.139*** (20.87)	-0.0166 (-0.41)	0.330*** (3.64)	-0.175 (-1.22)
Time fixation	No	No	No	Yes
Industry fixation	No	No	Yes	Yes
Observation	481	481	481	481
R <sup>2</sup>	0.09	0.18	0.13	0.21

Note: Symbols \*, \*\* and \*\*\* indicate statistical significance at 10%, 5% and 1% levels respectively. The numbers in parentheses are t-values. The same is below.

The regression analysis of model (1) is shown in Table 2. Among them, columns (1) to (4) are the regression results in the four cases of no control variables, adding control variables, year fixed effects, and Two-way fixed effects.

It can be seen from Table 2 that in the four cases of without controlling variables, adding control variables, year fixed effects, and Two-way fixed effects, the coefficients between corporation social responsibility and equity capital costs are -0.0010, -0.0015, -0.0008 and -0.0006; They are all negatively significant at a level of 1% or 5%, which confirmed the hypothesis 1 is true. It shows that the higher the quality of CSR information disclosure, it will help to enhance investors' confidence in the sustainable development of enterprises, reduce the degree of panic about market risks, the required necessary rate of return, and thus reduce the cost of equity capital of enterprises.

#### 4.3 Robustness test

First, replace the explained variables, using the Huazheng ESG Scores to replace RKS CSR scores; Second, considering that there is a certain time lag in the effect of CSR disclosure on the cost of equity capital, the other robustness test of this paper is performed by lagging one-period processing of the explanatory variables, and the results are shown in Table 3.

Table 3: Results of robustness test.

Variable	Re	Re
ESG	-0.0015*** (-3.73)	
L.CSR		-0.0007** (-2.87)
SIZE	0.0105 (1.76)	0.0132* (1.97)
TQ	-0.0055** (-3.27)	-0.0061** (-3.17)
Top1	-0.0709** (-2.62)	-0.0773** (-2.62)
INV	0.0540 (1.72)	0.0252 (0.73)
BM	-0.0135* (-2.18)	-0.0163* (-2.46)
REC	0.267** (2.95)	0.274** (2.90)
Constant	-0.245 (-1.70)	-0.129 (-0.80)
Time fixation	Yes	Yes
Industry fixation	Yes	Yes
Observation	481	444
R <sup>2</sup>	0.23	0.22

From table 3, it can be seen that whether it is the substitution of explanatory variables or the lagged processing of the CSR index, the CSR is still negatively significant related to the cost of equity capital. Therefore, the results of the correlation regression have not changed substantially, which is basically consistent with the regression results above.

#### 4.4 Regulatory effect test

This paper further examines the relationship between the internal control quality and the cost of corporate equity capital, which also examines the regulating effect of internal control on corporate social responsibility and the cost of equity capital. The results are shown in Table 4.

As can be seen from Table 4, the coefficient between the internal control quality and the cost of equity capital is -0.0393, and is negatively significant at a 5% confidence level, which confirmed the hypothesis 2 is true. It shows that the better the quality of internal control, the lower the cost of equity capital of the enterprise. At the same time, the correlation coefficient between the interaction item (CSR\*IC) and the cost of equity capital was 0.0039, which was significantly positively correlated at the confidence level of 1%, and the regulatory effect was established. Therefore, Internal control can curb the impact of low quality of corporation social responsibility reports on the cost of equity capital.

Table 4: Results of regulatory effect.

Variable	Re	Re	Re
CSR	-0.0006** (-2.81)		-0.0257*** (-3.87)
LNIC		-0.0393** (-2.91)	-0.173*** (-4.34)
CSR*IC			0.0039*** (3.98)
SIZE	0.0140* (2.32)	0.0144*** (3.83)	0.0128* (2.15)
TQ	-0.0060*** (-3.48)	-0.0061*** (-3.48)	-0.0054** (-3.16)
Top1	-0.0749** (-2.75)	-0.0857** (-2.97)	-0.103*** (-3.73)
INV	0.0594 (1.89)	0.00798 (0.22)	0.0437 (1.40)
BM	-0.0147* (-2.32)	-0.0014 (-0.21)	-0.0132* (-2.08)
REC	0.305*** (3.36)	0.198 (1.92)	0.304*** (3.42)
Constant	-0.175 (-1.22)	0.210 (1.65)	-1.278*** (-4.37)
Time fixation	Yes	Yes	Yes
Industry fixation	Yes	Yes	Yes
Observation	481	481	481
R <sup>2</sup>	0.21	0.16	0.24

## 5. Conclusions and suggestions

Through the empirical analysis of the relationship between the CSR information disclosure and cost of equity capital of food enterprises by collecting relevant data, the following conclusions are drawn: First, there is a negative correlation between CSR information disclosure and cost of equity capital, in other words, enterprises with better CSR information disclosure have lower cost of equity capital; Second, there is a negative correlation between the quality of internal control and the cost of equity capital, in other words, the worse the quality of internal control, the higher the equity capital of the enterprise. Third, the quality of internal control plays a regulating role between the CSR information disclosure and the cost of equity capital, in other words, good internal control can help enterprises with low level of CSR information disclosure to reduce the cost of equity capital.

Based on the above conclusions, this paper puts forward the following suggestions:

First, we should improve CSR information disclosure standards: Standardizing disclosure behavior to make corporation social responsibility information disclosure unified, standardized and legalized.

Second, establish a reward and punishment mechanism for CSR: On the one hand, the government should reward enterprises with good CSR to enhance the enthusiasm of enterprises to fulfill their social responsibilities. On the other hand, improving relevant laws and regulations so that enterprises can disclose higher-quality CSR reports in accordance with the law.

Third, strengthen the internal control of enterprises: the enterprises should improve the internal control system of enterprises, and internalize the various systems of internal control into each work in actual work.

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