

The Impact of Annual Report Disclosure Lag on the Cost of Debt

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Abstract. Against the backdrop of rising demand for high-quality corporate information, timely annual report disclosure has become a key indicator of corporate information transparency and financing efficiency. A-share listed companies from 2014 to 2024 were selected as the research sample, and the effect of annual report disclosure lag on the cost of corporate debt financing was studied, as well as the heterogeneity at the level of the type of property rights. The examination results demonstrate a significant positive correlation between the delay in annual report disclosure and the cost of corporate debt financing. Grouped regression results show that this positive effect only exists in non-state-owned enterprises. It is insignificant in state-owned enterprises. This finding reflects the distinct role of the nature of property rights in this relationship. Robustness tests confirm the conclusion. The tests use alternative measures and address potential endogenous problems. This paper offers practical guidance for firms to optimize disclosure and cut financing costs. It also provides insights for regulators to refine disclosure rules.

Keywords: annual report disclosure lag, cost of debt financing, property rights nature

1. Introduction

Annual reports act as core information channels through which creditors can obtain listed firms' financial status, operating performance and future development information. Traditional signaling theory holds that high-quality firms disclose their annual reports as soon as possible to distinguish themselves from other competitors. At present, there is also relevant further research, which suggests that corporate disclosure timing is linked to market competition. Relevant market research also shows that there is limited market attention for competition, and when peer companies disclose in advance, these companies will also accelerate the attention competition of their own information disclosure [1].

Annual report disclosure lag acts as both a quality signal and a strategic choice amid market competition. Therefore, a longer disclosure lag may be interpreted by creditors as a negative signal of poor quality or competitiveness of enterprises, raising the cost of debt financing. Empirical studies have confirmed that the delay of annual report disclosure will significantly increase the cost of corporate debt financing [2]. This paper will focus on the heterogeneous impact of different types

of property rights of enterprises. The research sample is expanded to cover the period from 2014 to 2024. This paper aims to use the latest data to test whether the above relationship shows new characteristics at present and to provide updated empirical evidence.

2. Hypothesis development

According to the Information Asymmetry Theory, information distribution in capital markets is asymmetric. There is a significant difference between the business information held by corporate insiders and that of external investors. Information asymmetry prevents external investors from evaluating firms' intrinsic value and underlying risks accurately, thereby triggering adverse selection [3]. As the core vehicle through which enterprises deliver financial condition and operating results to external stakeholders, the timeliness of annual report disclosure directly determines the efficiency of information delivery [4]. If enterprises delay disclosing annual reports, external creditors will be in an information-disadvantaged position for a longer period, unable to access critical information such as the firm's profitability, solvency, and cash flow position promptly. This information vacuum exacerbates creditors' uncertainty regarding the firm's underlying risks, leading to more cautious lending decisions characterized by higher interest rates, increased collateral requirements, or shorter loan terms. The level of disclosure in the company's financial reports is negatively related to the cost of debt financing. The less timely and sufficient the information disclosure, the higher the risk compensation creditors require to offset their information disadvantage [5].

From the agency theory perspective, debt financing agency costs mainly stem from conflicts of interest between shareholders and creditors. Management may damage creditors' interests through asset substitution, overinvestment or dividend policy adjustment, and sufficient information disclosure is an important mechanism to constrain managerial opportunistic behavior and reduce agency costs [6]. Delayed annual report disclosure weakens external creditors' capacity to monitor corporate internal operations and hinders the timely identification of managerial moral hazard, so creditors will expect higher agency costs and shift this cost to enterprises by increasing financing costs *ex ante*. In addition, the Signaling Theory provides a supplementary explanation: in a market with incomplete information, high-quality enterprises have the motivation to distinguish themselves from inferior ones by sending positive signals [7]. Timely disclosure of annual reports is a positive signal reflecting stable operations and high information transparency, while delayed disclosure will be interpreted as a negative signal of potential internal problems or poor operating performance, triggering creditors' demand for a risk premium. Based on the above theoretical reasoning, this study puts forward the hypothesis H1:

H1: Holding other conditions constant, the delay in annual report disclosure significantly increases the company's cost of debt financing.

The nature of property rights is an important institutional factor affecting corporate financing behavior and has a significant regulating effect on the relationship between annual report disclosure lag and debt financing cost. For state-owned enterprises, hereinafter referred to as SOEs, their ownership attributes endow them with inherent institutional advantages. First, SOEs generally benefit from implicit government guarantees. When facing business difficulties or debt default, the government will provide bailouts through fiscal subsidies, debt restructuring, or asset injection to maintain social stability and public interest [8]. Therefore, even if SOEs delay annual report disclosure, creditors still maintain high confidence in their ultimate debt repayment capacity, and short-term information shortages will not drive them to demand markedly higher risk premiums. Second, SOEs enjoy natural advantages in the bank credit market. The common property rights affiliation and long-term stable bank-firm relationships make SOEs face relatively weak financing

constraints when obtaining loans [9]. Third, SOEs are subject to stricter administrative oversight and disclosure requirements, with higher financial and operating transparency, so annual report disclosure lag brings limited marginal information gain.

By comparison, non-state-owned enterprises, hereinafter referred to as non-SOEs, highly rely on market-based financing mechanisms, lack institutional implicit guarantees, and have relatively single financing channels and strong financing constraints. On the premise of already high information asymmetry, the extension of annual report disclosure lag will significantly worsen their information environment. Without government credit endorsement, non-SOEs' debt repayment capacity completely depends on operating conditions and cash flow generation capacity, so creditors show higher dependence and stronger sensitivity to their financial information. Once annual report disclosure is delayed, creditors will rapidly amplify concerns about potential operating risks and financial distress, and significantly raise financing costs to compensate for credit risks [10]. Furthermore, non-SOEs often face severe financing difficulties and high financing costs in the capital market, and delayed annual report disclosure further worsens their disadvantaged status in credit financing and makes them more passive in the bargaining process. In summary, the property rights nature of SOEs can effectively mitigate the positive impact of annual report disclosure lag on debt financing costs through mechanisms such as providing implicit guarantees, broadening financing channels, and enhancing information transparency. Non-SOEs lack the above institutional protections and show higher sensitivity to annual report disclosure lag. Building on the above discussion, this paper proposes the following hypothesis H2.

H2: Holding other conditions constant, the nature of property rights significantly negatively moderates the positive impact of annual report disclosure lag on debt financing costs.

3. Research design

This study draws on 2014-2024 data of China's A-share listed firms from the Wind and CSMAR databases. The sample is processed by excluding observations with missing disclosure dates, financial firms, ST/*ST companies, and observations with missing key financial data. A total of 24,238 valid firm-year observations are retained for empirical analysis. All continuous variables are winsorized at the 1% and 99% levels. The paper sets two indicators for annual report disclosure lag. Following existing literature, disclosure lag refers to the days from December 31 to the actual disclosure date. In this paper, the natural logarithms of the days are taken to obtain the explanatory variables $\ln\text{reportlag}$ and reportlag_M . The whole sample is divided into two groups according to the average. If the time lag days are greater than the average, it is 1. Otherwise, it is 0. $\ln\text{reportlag}$ is used for the main test regression, and reportlag_M is used for the robustness test. The dependent variable, Cost3 , measures the cost of debt financing. It is the interest expense divided by the average of short-term and long-term debt. SOE_Dummy indicates ownership type. It equals 1 for state-owned enterprises and 0 otherwise. Lev measures leverage, calculated as total liabilities divided by total assets. Size stands for firm size, using the natural logarithm of total assets. ROE represents return on equity, calculated as net income divided by total shareholders' equity. $\text{Tangible_Asset_Ratio}$ shows the tangible asset ratio. It is calculated as net fixed assets at year-end divided by total assets at year-end. Growth measures the firm's growth rate. It is calculated as the change in total assets over the year divided by total assets at the start of the year.

Based on the variable definitions above, the paper constructs a two-way fixed effects regression model to test the main effect. Model (1) examines the impact of annual report disclosure lag on debt financing costs, controlling for year and firm fixed effects.

$$Cost3_{i,t} = \alpha_0 + \alpha_1 lnreportlag_{i,t} + \alpha_2 SOE_{Dummy_{i,t}} + \beta_j Controls_{i,t,j} + \sum Year + \sum Firm + \varepsilon_{i,t} \quad (1)$$

4. Empirical analysis

4.1. Descriptive statistics

Table 1 shows the descriptive statistics. The average of the debt financing cost for the dependent variable is 0.0508. The average debt financing cost in the sample is about 5.08%. Its standard deviation is 0.0371, the minimum value is close to 0, and the maximum value is 0.2581, suggesting prominent disparities in debt financing costs across sample firms. For explanatory variables, the mean value of the annual report disclosure lag is 4.6282, and the standard deviation is 0.1676. This reflects that annual report disclosure timing is relatively concentrated. All the control variables and data are consistent with the previous studies. This confirms that the sample selection is appropriate.

Table 1. Descriptive statistics

Variable name	Symbol	N	Mean	Std. Dev.	Min	Max
Cost of debt financing	Cost3	24238	0.0508	0.0371	0.0000	0.2581
Annual report disclosure lag	lnreportlag	24238	4.6282	0.1676	4.0254	4.7958
Nature of property rights	SOE_Dummy	24238	0.3163	0.4650	0.0000	1.0000
Leverage ratio	Lev	24238	0.4273	0.1800	0.0829	0.8403
Firm size	Size	24238	4.0738	1.2874	1.9312	8.1313
Return on equity	Roe	24238	0.0544	0.1091	-0.5046	0.2868
Tangible asset ratio	Tangible_Asset_Ratio	24238	0.2151	0.1515	0.0033	0.6668
Firm growth	Growth	24238	0.1208	0.2072	-0.2371	1.0831

4.2. Empirical results and tests

Table 2, column (1) shows the regression results of Model 1. According to the results in the first column, the coefficient of lnreportlag is significantly positive at the 5% level, with a coefficient of 0.003. A one-unit rise in annual report disclosure lag pushes corporate debt financing costs up by about 0.003 units. Meanwhile, the coefficient of SOE_Dummy is -0.003, which is significantly negative at the 10% level. This outcome means SOEs have lower debt costs.

Table 2. Baseline regression results

Variable	(1) Cost3	(2) Cost3 (non-SOEs)	(3) Cost3 (SOEs)
lnreportlag	0.003** (1.94)	0.005** (2.50)	-0.002 (-0.70)
SOE_Dummy	-0.003* (-1.82)	-	-
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Table 2. (continued)

Obs.	24,238	16,572	7,666
Within R ²	0.0212	0.0251	0.0274
F-value	24.81	20.89	11.07

Note: *, **, *** indicate significance at the 10%, 5%, and 1% levels. T-values are in parentheses.

This paper further conducts heterogeneity tests with group regression. Columns (2) and (3) present the results for non-SOEs and SOEs samples, respectively. In the non-SOEs group, the coefficient on *lnreportlag* is 0.005 and significant at the 5% level. This positive value indicates the two moves are in the same direction. This means delayed annual report disclosure significantly raises the debt financing costs of non-SOEs. In the SOEs group, the coefficient on *lnreportlag* is -0.002. The coefficient is statistically insignificant. For model fit, the R² of the full sample regression ranges from 0.0210 to 0.0218. Group regression yields adjusted R² values between 0.0251 and 0.0274. This is within the reasonable range for similar studies. The F-statistic of all models is significant at the 1% level. The overall model passes the statistical test. This means good model fit and strong explanatory power.

4.3. Robustness test

Table 3 shows the results of the robustness test, whose steps are as follows: firstly, the first robustness test adopts *reportlag_M*, a dummy indicator constructed based on the full-sample average of annual report disclosure lag. If the disclosure lag of a company in a certain year is greater than the mean value, the value of *reportlag_M* will be 1. Otherwise, 0. After replacing the continuous variable *lnreportlag* with a dummy variable based on the mean, the core conclusion remains robust. It can be seen from column (1) that the coefficient of *reportlag_M* is 0.0013, with $p < 0.1$, which indicates that enterprises with disclosure time lags higher than the average have significantly higher debt financing costs. The coefficient of the interaction term “*reportlag_M*×*SOE*” is -0.0030, with $p < 0.05$, which confirms that the property rights nature of SOEs negatively moderates the relationship between disclosure lag and financing costs once again.

Table 3. Robustness test results

Variable	(1) <i>reportlag_M</i> grouping	(2) lagged by one period
<i>reportlag_M</i> / <i>L.lnreportlag</i>	0.0013* (1.77)	0.0021 (0.97)
<i>SOE_Dummy</i>	-0.0012 (-0.49)	0.0282 (1.56)
<i>reportlag_M</i> × <i>SOE</i> / <i>L.lnreportlag</i> × <i>SOE</i>	-0.0030** (-2.39)	-0.0065* (-1.69)
Controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
Obs.	24,238	20,187
N	3,562	3,302

Table 3. (continued)

Within R ²	0.0213	0.0220
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Next, use the lagged explanatory variable for testing. The method involves using the Stata program to shift the original explanatory variable, *lnreportlag*, backward by one period, which means using the timeliness of disclosure from the previous year to explain the debt financing costs in the current year. The main purpose of constructing this variable is to mitigate potential endogenous problems caused by reverse causality. Enterprises with higher debt financing costs may have a stronger incentive to delay disclosure, which leads to contemporaneous estimation bias. Column (2) in Table 3 reports the regression results with *L.lnreportlag* as the core explanatory variable. While the lagged disclosure indicator generates an insignificant baseline coefficient, the interaction term *L.lnreportlag*×*SOE* has a relatively large negative coefficient at the 10% significance level. This supports the moderating role of ownership. This finding proves that ownership effects remain effective. The performance of the control variables is basically consistent with the baseline model.

5. Conclusion

Descriptive results show delayed disclosure prevails among most sample firms and verify ownership's influence on annual report release timeliness: SOEs have a shorter average disclosure lag and are more likely to disclose information in time compared with non-SOEs. The baseline regression indicates that annual report disclosure lag significantly increases the cost of corporate debt financing, and the nature of property rights plays a significant negative moderating role: SOEs can effectively weaken the increase in financing costs caused by delayed disclosure, while non-SOEs are more sensitive to disclosure lags. The robustness tests by replacing variables, lagging explanatory variables by one period, etc., verify the reliability of the conclusion, and the main effect and moderating effect remain stable. The hypotheses proposed in this paper are thus confirmed.

Overall, improving the timeliness of annual report disclosure helps to enhance the information environment and reduce financing costs, which is of great practical significance for promoting the efficient operation of the capital market and the high-quality development of enterprises. For enterprises, the timeliness of annual report disclosure is an effective way to reduce debt financing costs. Enterprises should optimize the preparation and audit process of annual reports, shorten the disclosure lag, proactively convey high-quality information signals, reduce the risk premium caused by information asymmetry, and alleviate financing disadvantages through timely disclosure.

Authors contribution

All the authors contributed equally, and their names were listed in alphabetical order.

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