Research on the Impact of Sun Paper's ESG Information Disclosure on Corporate Financing Costs

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Abstract: With the advancement of new development concepts and the "dual carbon" goal, the importance of green development is increasing, and corporate ESG information disclosure is receiving more and more attention. Against the backdrop of increasing global risks, traditional financial information is no longer sufficient to meet investors' comprehensive needs for evaluating companies, and the role of non-financial information such as ESG is becoming increasingly crucial. Investors have become increasingly reliant on non-financial information and demand higher risk return, which has pushed up the cost of corporate financing and made alleviating financing constraints a hot topic in both academia and practice.

This article takes Sun Paper, a leading enterprise in the paper industry, as an example to explore the impact and mechanism of ESG information disclosure on its financing costs. By reviewing relevant literature and utilizing theories such as sustainable development, information asymmetry, agency delegation, and signal transmission, a theoretical analysis framework for the impact of ESG on financing costs is constructed. Starting from the industry background and company overview, the case section introduces the development process, content quality, and financing status of Sun Paper's ESG disclosure. Then, it analyzes the impact of ESG disclosure on debt financing, equity financing, and comprehensive financing costs from four paths: investor risk perception, financial risk, information risk, and agency risk.

Keywords: ESG disclosure; Debt financing cost; Equity financing cost; Comprehensive financing cost; Risk premium

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1 Introduction

The 20th National Congress of the Communist Party of China emphasized the need to fully, accurately, and comprehensively implement the new development concept, adhere to high-level opening up to the outside world, and accelerate the construction of a new development pattern of "dual circulation". In the new development concept, "green" is an important component, and promoting the formation of a green development mode and achieving the "dual carbon" goal has become a social consensus. As micro economic entities, enterprises should actively practice ESG concepts and strengthen ESG information disclosure.

ESG (Environmental, Social, Governance) stems from the recognition of the importance of sustainable development. Since its introduction by the United Nations Environment Programme in 2004, the ESG concept has been continuously deepening globally. Since 2003, China has successively introduced multiple ESG related regulations. In May 2024, the three major exchanges released the "Guidelines for Sustainable Development Reports of Listed Companies", marking the mandatory stage of ESG disclosure in A-shares.

In this context, this article takes Sun Paper, a leading enterprise in the paper industry, as an example to analyze the impact mechanism of its ESG information disclosure on corporate financing costs. It explores the effects of debt, equity, and comprehensive financing costs, aiming to provide case support for the study of the relationship between ESG and financing costs, and to provide reference for improving corporate credit quality, improving policy systems, and guiding sustainable investment.

2 Conceptual Framework and Theoretical Foundations

2.1 Definitions

2.1.1 ESG and Disclosure

ESG (Environmental, Social Responsibility, and Governance) was first proposed by the United Nations Environment Programme in 2004, advocating for businesses to prioritize sustainable development. Environment (E) focuses on the actions of enterprises in energy conservation, emission reduction, waste management, and addressing climate change; Social responsibility (S) emphasizes the ethical and legal responsibilities that companies should fulfill to stakeholders such as shareholders, creditors, supply chains, and the public; Governance (G) involves improving modern management systems to ensure the long-term stable operation of enterprises. ESG information disclosure refers to the disclosure of a company's practices and achievements in the three dimensions of E, S, and G through sustainable development reports and other channels. It can be divided into two aspects: disclosure content and disclosure quality: the content covers environmental, social, and governance behaviors; Quality is reflected in the accuracy, completeness, reliability, and comparability of information. With the widespread promotion of ESG concepts worldwide, regulatory agencies at home and abroad have successively issued multiple guidelines and policies to continuously standardize disclosure requirements and promote the gradual transition of ESG information disclosure from voluntary to mandatory.

2.1.2 financing cost

Financing is one of the important activities in enterprise financial management. Enterprises raise funds from investors (shareholders and creditors) through certain channels, aiming to meet the needs of daily production and investment projects. This article refers to Jiang Ping's "Corporate Financial Management" to define financing costs: from the perspective of fundraisers, financing costs are the remuneration paid by enterprises to the owners of funds in order to obtain the right to use funds, including interest on loans, dividends paid to shareholders, etc; From the perspective of investors, financing cost is the necessary rate of return required by investors, which is generally related to the risk premium level evaluated by investors. When investors face higher investment risks, they often demand higher investment returns to compensate for the additional risks they face, that is, higher risk premium levels, which leads to an increase in the financing costs of the enterprise. Financing costs are divided into debt financing costs and equity financing costs according to different financing methods of enterprises.

The cost of debt financing refers to all the expenses that a company needs to pay in the process of obtaining funds through borrowing, mainly including transaction costs and interest payments. The cost of debt financing is also a necessary rate of return required by creditors for their lending funds, mainly determined by the potential default risk of the debtor. If creditors evaluate that the enterprise has strong debt repayment ability and low default risk, their required risk premium will be correspondingly reduced. Due to the tax deductible and leverage effect of debt financing, its financing cost is often lower than that of equity financing. Therefore, companies can increase debt financing as much as possible under appropriate capital structure to reduce overall financing costs.

The cost of equity financing refers to the total cost incurred by a company in the process of obtaining funds through the sale of equity, mainly including stock issuance expenses and dividends paid. The cost of equity financing is also a necessary rate of return required by shareholders for their equity investments. Due to the fact that shareholders are unable to receive fixed interest income like creditors, and their priority in receiving returns is lower than that of creditors, they face higher investment risks. Therefore, the required rate of return is often higher than that of creditors.

2.2 Theoretical Foundations

2.2.1 Sustainable Development Theory

The theory of sustainable development emphasizes meeting contemporary needs without compromising the development capacity of future generations, and pursuing a balance between economy, society, and environment. China has experienced a development stage of "pollution first, treatment later", but with the introduction of the "Two Mountains Theory", "Green Development" concept, and "Dual Carbon" goals, sustainable development has become an important guide for promoting high-quality economic development. ESG, as a core practice of sustainable development at the corporate level, comprehensively reflects a company's sustainability through three dimensions: environmental, social, and governance. Improving ESG performance and strengthening information disclosure can enhance external recognition of its long-term value. For shareholders, the stronger the sustainable development capability of the enterprise, the more stable the long-term stock price, and the more guaranteed the expected return, thereby reducing the necessary rate of return and lowering the cost of equity financing. For creditors, stable ESG performance often means better cash flow and debt paying ability, so they are more willing to provide preferential loans, thereby reducing debt financing costs.

2.2.2 Information Asymmetry Theory

The theory of information asymmetry was first proposed by Akerlo (f 1970) in studying the phenomenon of transaction failure in the second-hand car market. It now refers to the phenomenon of market failure in market economic activities, where individuals with sufficient information have more advantages than those with insufficient information due to differences in their understanding of information. The common negative impacts mainly include adverse selection and moral hazard. Due to the existence of information asymmetry, buyers engage in reverse selection by suppressing prices, leading to the phenomenon of "bad money driving out good money" in the market over time. Moral hazard refers to the situation where the party with more information often engages in irresponsible behavior, while the party with less information is unable to obtain it, thereby triggering moral hazard. Information asymmetry is manifested in enterprises as the situation of information asymmetry between internal personnel represented by management and external personnel represented by creditors and shareholders.

ESG information disclosure by enterprises can greatly improve information asymmetry and its negative impacts. On the one hand, the disclosure of ESG information by enterprises can reflect the fulfillment of their responsibilities to stakeholders such as shareholders, creditors, the general public, and supply chain parties. This increases the non-financial information disclosure of enterprises, compensates for the shortcomings of traditional financial indicators, and increases the transparency of enterprise information. It is beneficial for shareholders and creditors to comprehensively understand the current situation of the enterprise, accurately evaluate the sustainable development ability and long-term value of the enterprise, and make investment decisions with lower investment risks, thereby reducing the risk premium level accordingly. On the other hand, proactive information disclosure by enterprises reduces the additional information investigation and supervision costs required by creditors and shareholders, lowers their difficulty in obtaining information, and thus reduces the required returns.

2.2.3 Signaling Theory

Spence (1973) proposed the signal transmission model based on the theory of information asymmetry, from which the signal transmission theory was derived. This theory refers to the situation where, under the premise of information asymmetry, the party with more information sends a credible signal to the party with less information, conveying implicit information about their own quality or characteristics to help the other party make decisions and avoid adverse selection problems caused by asymmetric information. In the capital market, any behavior of a company sends an invisible signal to the market. The quality of the signal directly affects the reputation of the enterprise, thereby affecting market attention

Enterprises disclose ESG information and non-financial information, which not only alleviates information asymmetry, but also sends a signal of high-quality development to the capital market. Management pays attention to the long-term development of the enterprise, and while ensuring daily production and operation activities, the enterprise can also pay attention to ecological environment protection, actively assume social responsibility, and improve corporate governance . This signal can enhance a company's reputation, making it easier for investors to distinguish and choose excellent companies for investment in the capital market. It is beneficial for obtaining investor preferences and enhancing investor confidence.

3 Case Study: Sun Paper

3.1 Overview of the paper industry

The paper industry refers to the sector that converts raw materials into paper or other paper products through a series of processes, encompassing a complete cycle of "processing and producing pulp - using pulp to make paper - further processing with paper or paperboard". As one of the national pillar industries, the paper industry is an important basic raw material industry. The pulp, paper, and paper products in the industrial chain are not only cultural carriers and necessities of life, but also serve as basic materials in fields such as technology, agriculture, and industry. Its industry involves fields such as electronics, machinery, and energy.

Overall, as one of the heavily polluting manufacturing industries, the characteristics of the paper industry determine that the probability of unexpected events occurring in the areas of environment, social responsibility, and governance is higher than in other industries. This means that paper industry enterprises face greater risks in violating ESG-related laws and regulations compared to some tertiary industries such as finance and the Internet industry. They are more likely to be punished by regulatory authorities, which can have a negative impact on their daily operations and reputation, increasing investors' investment risks. Therefore, investors will pay more attention to the ESG information of this industry to reduce investment risks. Therefore, studying the impact of ESG information disclosure on financing costs of paper industry enterprises can help them enhance their awareness of ESG information disclosure, increase the transparency of ESG information, and thereby alleviate the problem of "expensive financing" for enterprises.

3.2 Introduction to Sun Paper Industry

Shandong Sun Paper Group Co., Ltd. (abbreviated as "Sun Paper") was founded in 1982 and listed on the SME board of the Shenzhen Stock Exchange on November 16, 2006. Sun Paper's main business covers the production and sales of machine-made paper, paper products, wood pulp, and paperboard. Its product line is diverse and includes cultural paper, packaging paper, fast-moving consumer goods, specialty paper, food paper, and pulp products. It is one of the enterprises with the most comprehensive product configurations in China's paper industry. The company boasts well-known brands such as "Golden Sun" and "Tianyang", with "Golden Sun" being a well-known trademark. In recent years, Sun Paper has demonstrated outstanding performance, with operating income and net profit consistently exceeding the industry average. In 2023, it achieved revenue of 39.54 billion yuan, net profit of 3.101 billion yuan, and a total market value of 4 billion yuan. Its multiple indicators ranked first in the industry, firmly establishing its leading position in the paper industry. Figure 3-1 shows Sun Paper's operating income and net profit over the past eight years. It can be seen that both Sun Paper's net profit and operating income exceed the industry average, indicating its leading position in the industry. In 2023, Sun Paper achieved revenue of 39.54 billion yuan, net profit of 3.101 billion yuan, and a total market value of 4 billion yuan, all ranking first in the industry, making it one of the leading enterprises in the paper industry.

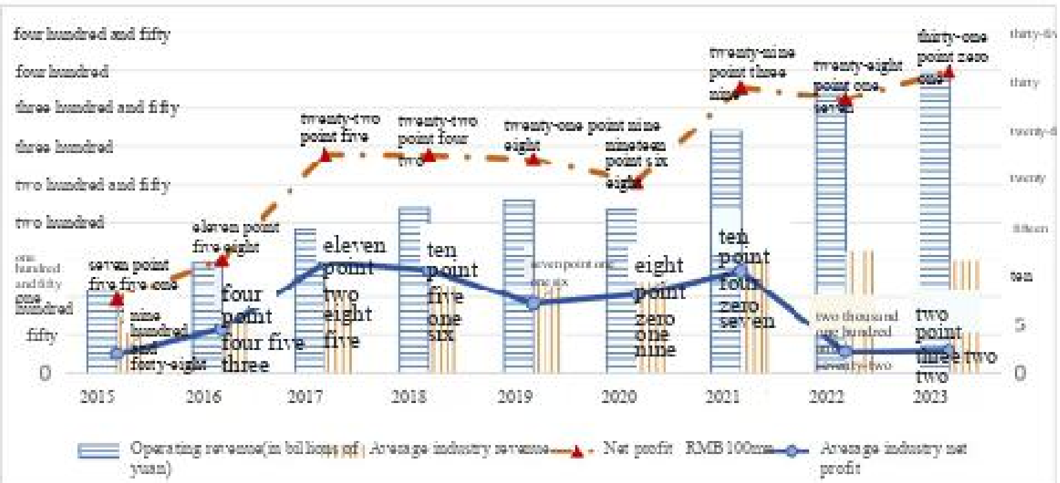
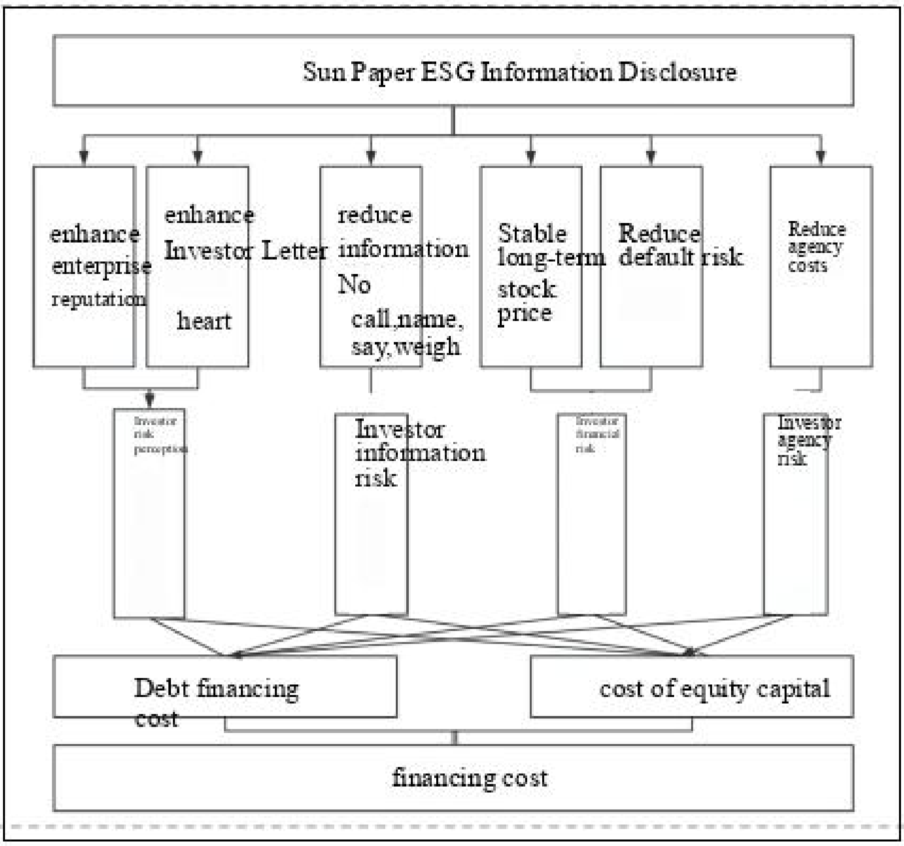


Table 3.2 Operating income and net profit of Sun Paper Industry compared with industry averages

4 Analysis of the Impact Path of ESG Information Disclosure on Financing Costs

Based on the definition of financing costs, it can be inferred that for investors, the financing costs of a company represent the required rate of return they demand. The magnitude of financing costs is primarily influenced by the investment risks assessed by investors. The lower the investment risk, the correspondingly lower the risk premium level demanded by investors, thereby reducing the financing costs of the company. Therefore, this chapter, from the perspective of the investment risks faced by investors, takes Sun Paper Industry as an example to analyze whether the company's ESG information disclosure, as a signal of the company's non-financial status transmitted to the outside world, can affect the company's financing costs through four paths: investor risk perception, investor financial risk, investor information risk, and investor agency risk



This article assesses the reputation of Sun Paper based on the honorary titles it has received over the past three years, particularly in terms of brand value, as shown in the table. Over the past three years, Sun Paper has received multiple honorary titles related to "premium brand", indicating its high brand value. It has also been selected as a green enterprise and one of the top 100 ESG enterprises, which is recognition from the outside world, including government departments. Sun Paper's excellent ESG information disclosure has established a good brand image and reputation, especially in terms of green development. This not only helps attract green investment from the capital market but also exerts a reputation insurance effect, reducing investors' risk perception and thus lowering their required risk premium levels and financing costs.

Sun Paper's total assets and operating income have continued to grow from 2015 to 2023, with average annual growth rates of 12.49% and 17.57%, respectively. Total assets grew significantly in 2015, 2017, and 2021, at rates of 21.02%, 29.03%, and 19.16%, respectively; operating income increased rapidly in 2016, 2019, and 2020, at rates of 16.85%, 13.10%, and 14.20%, respectively. As of 2023, total assets and operating income had increased by 256.34% and 365.1% compared to 2015, indicating a stable and positive overall development trend. Through active ESG information disclosure, Sun Paper has significantly enhanced its sustainable development capabilities and corporate value. Since incorporating ESG into the responsibilities of its strategic committee in 2020, the company has further strengthened the implementation momentum of its long-term development strategy. For shareholders, comprehensive ESG disclosure enhances operational stability and long-term profit prospects, raises expectations for corporate value, and reduces financial risks. For creditors, ESG performance improves the company's long-term debt repayment ability, reduces default and bankruptcy risks, and ensures the safety of interest and principal payments. As investors' financial risks decrease, their required risk premiums correspondingly decrease, thereby reducing the company's equity and debt financing costs. Therefore, better ESG information disclosure enhances sustainable development capabilities and effectively reduces financing costs by lowering investors' risk perception. V. Analysis of the Impact of ESG Information Disclosure on Financing Costs

5 Empirical Results

5.1 Debt Financing Costs

The debt financing costs of Sun Paper over the past eight years are shown in Table 5.4. It can be seen that the debt financing costs of Sun Paper have generally shown a downward trend, decreasing from 4.27% in 2015 to 2.73% in 2023, a decrease of about 1.54 percentage points. The lowest point was in 2021, at approximately 2.52%, with a slight rebound in 2022 followed by a rapid decline in 2023. Combined with the increasing transparency of Sun Paper's ESG information, it can be preliminarily concluded that Sun Paper's ESG information disclosure behavior has a negative impact on debt financing costs.

Table 5.1: Debt financing costs of Sun Paper from 2015 to 2023

Year	Interest expense (in billions of yuan)	Total liabilities (in billions of yuan)	Debt financing costs
2015 年	5.260	123.2	4.27%
2016 年	5.226	118.5	4.41%
2017 年	5.706	152.3	3.75%
2018 年	6.626	168.9	3.92%
2019 年	5.563	176.0	3.16%
2020 年	5.247	196.3	2.67%
2021 年	6.023	239.2	2.52%
2022 年	7.365	248.5	2.96%
2023 年	6.670	244.0	2.73%

As a relatively authoritative third-party ESG rating agency in China, Huazheng has established a comprehensive ESG evaluation system that scores and evaluates corporate ESG information disclosure from the dimensions of environment, social responsibility, and governance. The study on the impact of ESG information disclosure on corporate financing costs - taking Sun Paper as an example - ultimately summarizes the evaluation grades. Therefore, this article selects Huazheng's ESG ratings from 2015 to 2023 to measure the ESG information disclosure of Sun Paper. In order to better compare the impact of changes in ESG information disclosure on debt financing costs, this article assigns scores to the ratings: "AAA" is given 9 points, "AA" is given 8 points, and so on, with "C" being given 1 point. The scores assigned to Sun Paper and the results of debt financing costs are plotted into a trend chart.

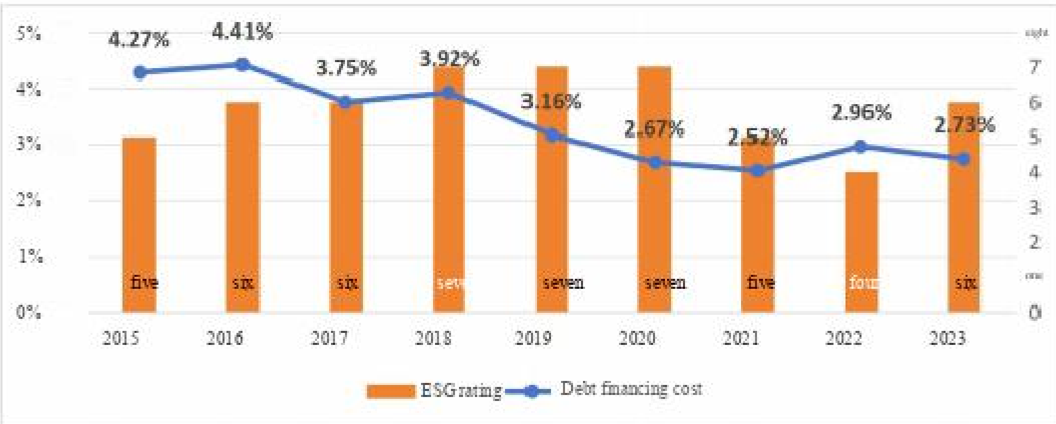


Table 5.2 Trend of Debt Financing Cost Changes for Sun Paper Industry from 2019 to 2023

Between 2015 and 2020, Sun Paper's ESG rating continued to improve, and its debt financing costs correspondingly decreased from 4.27% to 2.67%, indicating that the improvement in ESG disclosure quality effectively reduced financing costs. Although the rating dropped from "A" to "BB" in 2021, debt financing costs did not increase but decreased instead, reflecting the reputation insurance effect brought by long-term good information transparency, which cushioned the negative impact of the rating downgrade. When the rating further dropped to "B" in 2022, debt financing costs rose to 2.96%; however, in 2023, the company released an 80,000-word ESG report with significantly improved content, and the rating rebounded to "BBB", returning to the ranks of excellent disclosure enterprises, with debt financing costs also falling to 2.73%. Overall, there is a significant inverse relationship between the quality of ESG information disclosure and debt financing costs.

5.2 Cost of equity financing

Mao Xinshu et al. (2012) compared the equity capital cost models calculated using different methods and found that the ex-ante equity capital cost measurement model outperforms the ex-post model, especially the PEG model, which can better consider the impact of various risk factors. Therefore, this paper adopts the PEG model to measure the equity financing cost of Sun Paper Industry.

$$\text{Cost of equity financing} = \sqrt{\frac{EPS_{t+2} - EPS_{t+1}}{P_0}}$$

Where and represent the mean analyst forecasts for earnings per share for the next one and two years, respectively, and is the closing stock price at the end of the current period.

Table 5.3 Changes in PEG of Sun Paper from 2015 to 2023

年份	EPS_{t+1}	EPS_{t+2}	P_0	PEG
2015	0.32	0.38	5.63	9.85%
2016	0.51	0.62	6.68	13.16%
2017	0.82	1.01	9.28	14.32%
2018	1.19	1.34	5.70	16.69%
2019	0.94	1.08	9.84	12.10%
2020	1.07	1.25	14.43	11.07%
2021	1.54	1.69	11.49	11.51%
2022	1.28	1.40	11.52	10.25%
2023	1.28	1.46	12.17	12.13%

As can be seen from Table 5.3, the cost of equity financing for Sun Paper rose from 9.85% to 16.69% from 2015 to 2018, and then continued to decline, reaching 12.13% by 2023. The period from 2015 to 2018 marked the growth stage of the company's ESG information disclosure, during which shareholders paid limited attention to non-financial information. After 2019, due to the impact of macro factors such as the pandemic, investment risks increased, and shareholders placed greater emphasis on non-financial information such as ESG to comprehensively evaluate the company. Sun Paper, with its long-term good ESG disclosure, effectively reduced information asymmetry and shareholder risk perception, enabling the cost of equity financing to continue to decline despite adverse conditions, indicating that ESG information disclosure has a negative impact on the cost of equity financing.

6 Conclusions

Against the backdrop of escalating investment risks and the increasingly prominent importance of non-financial information, it is of practical significance to study how ESG information disclosure can alleviate the problem of corporate financing costs. Taking Sun Paper as an example, this paper explores the impact of its ESG disclosure on financing costs and draws the following conclusions:

(1) ESG information disclosure helps reduce corporate financing costs. Good ESG performance can expand bank credit, lower loan interest rates, and reduce debt financing costs; at the same time, it enhances the long-term value of the enterprise and shareholder confidence, supports long-term-oriented dividend policies, and thereby reduces equity financing costs. This impact has a certain lag effect on equity and comprehensive financing costs.

(2) ESG primarily influences financing costs through four pathways: reducing investors' risk perception, enhancing financial risk (boosting profitability and debt-paying ability), mitigating information risk (increasing transparency), and minimizing agency risk (easing principal-agent conflicts). Consequently, investors lower their risk premium demands, thereby easing the financing burden on enterprises.

(3) Although there has been an improvement in the awareness of ESG disclosure in the current paper-making industry,

overall, passive disclosure remains the norm, with varying levels of quality, particularly in the environmental dimension. Even leading companies like Sun Paper Group still need to enhance the comparability and certain environmental indicators in their ESG reports.

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