

# *The Impact of Symbolic and Substantive Environmental Expenditures on Accounting Stability: A Comparative Case Study of Environmental Leaders and Environmental Followers*

**Shiqi Zheng**

*School of Management and Economics, Beijing Jiaotong University, Weihai, China  
23726038@bjtu.edu.cn*

**Abstract.** The core research objective of this study is to analyze the different environmental expenditure patterns chosen by enterprises based on their strategic positioning - specifically including symbolic expenditures and substantive expenditures - and their differential effects on the formation of enterprise accounting stability. This study is based on the theories of legitimacy, agency, and stakeholders, and selects two typical enterprises for comparative case studies: one is the environmental-leading company, Baoshan Iron and Steel Co., Ltd., and the other is the environmental-following company, Shandong Iron and Steel Co., Ltd. Through the research, it is concluded that the environmental-leading enterprises that adhere to a long-term development strategy will further enhance their accounting stability by conducting substantive environmental expenditures and capitalizing them; while the environmental-following enterprises, whose core goals are short-term compliance and improving the external image of the company, mostly have symbolic expenditures and handle them as expenses, which will weaken the accounting stability of the enterprises. This study not only constructs a systematic method for identifying and regulating the symbolic environmental responsibility behaviors of enterprises, but also proposes targeted practical suggestions for enterprise supervision, corporate governance, and the improvement of accounting information disclosure standards.

**Keywords:** Environmental Expenditure, Symbolic Expenditure, Substantive Expenditure, Accounting Conservatism, Environmental Leaders

## **1. Introduction**

In the context of increasingly serious global environmental problems, China proposed the "dual carbon" goals in 2020, aiming to achieve carbon peaking before 2030 and carbon neutrality before 2060. Companies are facing increasingly stringent environmental information disclosure requirements, and environmental performance has transformed from a matter of corporate social responsibility into a crucial factor for maintaining long-term competitiveness. Meanwhile, the establishment of the EU Carbon Border Adjustment Mechanism (CBAM) has added external

pressure to corporate environmental management. The EU plans to propose anti-circumvention measures for CBAM before the end of 2025, indicating a shift in regulatory requirements from compliance primarily based on initial data reporting to companies bearing actual carbon costs. The core of the regulatory requirements is quite clear. Enterprises are required to purchase and submit carbon border adjustment mechanism certificates based on the approved emission volume [1]. This is a direct financial obligation for the enterprises. The compliance costs for high-carbon industries such as steel have suddenly increased, which will pose significant challenges to the management of enterprises. Enterprises make long-term development plans by investing in environmental protection technologies such as green technologies, and the funds they invest are often substantial. This will directly lead to a significant decline in their short-term profits. However, if they deliberately control the cost of environmental protection investment, it will reduce their future market competitiveness. In response to this situation, enterprises adopt different approaches. This is because their own strategic positioning is different. Some enterprises will adopt proactive and forward-looking development strategies. They will integrate environmental protection requirements into their long-term development plans. They will continuously increase environmental protection investment. They will transform potential compliance pressures into competitive advantages. Based on this, they can form a differentiated barrier between themselves and their peers. However, the practices of most enterprises are rather passive. The environmental protection-related decisions and investments made by enterprises are often the direct result of external regulatory pressure. The aim of enterprises is to meet current requirements at the lowest cost and ensure the normal operation of their production and business. However, this passive compliance approach to maintaining the enterprise's image has made the authenticity and actual effectiveness of the enterprise's environmental protection work a key issue. In actual operations, the contradiction between the enterprise's environmental protection commitments and actual actions has become increasingly prominent. Such "greenwashing" behavior has posed a challenge to regulatory agencies, as they find it difficult to identify such actions and cannot better maintain market fairness. At the same time, it also makes it difficult for investors to judge the true environmental performance of the enterprise and accurately identify the long-term risks it may have.

Scholars study corporate environmental behavior now usually look at environmental expenditures as a whole. They do not tell the real "symbolic" and "substantive" motivations apart [2]. The researchers did not conduct a thorough and detailed analysis of environmental expenditures. It is not an easy task to accurately define and regulate "green marketing" behaviors. Some studies have begun to focus on the differences in environmental strategies. They divided enterprises into two categories: "environmental leaders" and "environmental followers". Most of the relevant empirical evidence comes from developed countries. However, this study was conducted in developing countries. China has strict "dual carbon" policy regulations. The environmental behaviors of enterprises may have completely different driving logics and manifestations. García et al. pointed out: External pressure does exist [2]. Environmental disasters are one of them. Under these pressures, enterprises will make expenditures on corporate social responsibility. These expenditures are either symbolic or substantive, depending on the different strategic motivations of the enterprises. Different strategic choices will affect the financial performance of the enterprises. They will also affect the accounting conservatism in financial reports. The existing research methods have certain functions. They show the overall path from motivation to accounting results. The analysis of the existing research has limitations. It mainly uses quantitative analysis of large-scale samples. It does not deeply analyze certain contents. These contents include the strategic motivations of different types of enterprises. Also, it includes the decision-making process of these enterprises.

These enterprises are like leaders and followers of the environment. The analysis is conducted under a specific policy background. The existing research lacks a complete path. This path is from the enterprise's environmental strategy to the choice of accounting policies. This study has a clear objective. It explores different influencing mechanisms. These mechanisms belong to symbolic and substantive environmental expenditures within the framework of accounting conservatism. The study is analyzed through a comparative approach. It compares environmental leaders and environmental followers. This comparison is conducted under the background of China's "dual carbon" policy.

RQ1: How does a company's environmental strategic position (leader or follower) affect its accounting conservatism by changing the type of environmental expenditures (symbolic or substantive)?

RQ2: What impacts do symbolic and substantive environmental expenditures each have on accounting conservatism in environmental leader companies and environmental follower companies?

At present, the "dual carbon" goal is being continuously advanced. Distinguishing between the substantive and symbolic environmental protection expenditures of enterprises is crucial for regulatory work and investment decisions. Based on this, this study focuses on exploring how the two environmental protection strategic positioning (environmental leadership enterprises and environmental follower enterprises) in the context of the dual carbon policy prompt enterprises to choose different types of environmental protection expenditures - that is, symbolic expenditures and substantive expenditures. At the same time, this study will further analyze the specific ways in which these expenditures affect accounting stability. The study adopts a comparative case analysis method, supported by legitimacy theory, agency theory, and stakeholder theory, to build a theoretical analysis framework for symbolic and substantive environmental protection expenditures. The study selects Baoshan Iron and Steel as the case of an environmental leadership enterprise and Shandong Iron and Steel as the case of an environmental follower enterprise. The core purpose is to clarify the internal logic of the complete chain of "environmental strategic positioning → environmental expenditure type → accounting stability". The core value of this study lies in supplementing and deepening the existing research. Currently, there have been many discussions and studies on issues related to environmental expenditures, but most studies adopt quantitative analysis methods. Regarding the mechanisms by which the two types of environmental protection expenditures affect accounting stability, the current research lacks depth and fails to reveal the specific paths and mechanisms through which these expenditures affect accounting stability in different strategic environments of leading environmental protection enterprises and follower enterprises. Based on this, this research can provide important practical references for regulatory authorities to accurately implement policies, for investors to identify the true environmental performance of enterprises, and for enterprises to effectively manage their own environmental expenditures.

## **2. Theoretical framework**

### **2.1. Theoretical basis of symbolic and substantive environmental expenditures**

#### **2.1.1. Legitimacy theory**

Legitimacy theory holds one core point. Enterprises need to follow social norms and values to survive and develop well. Ali et al. did research on developing countries in 2022 [3]. They pointed

out that regulatory pressure and government pressure are important external factors. These factors push companies to release information about their environmental performance.

China is advancing the "dual carbon" goals now. Under this policy background, companies face legitimacy pressure from different stakeholders. The government and investors are the main ones among these stakeholders. This kind of pressure makes companies take two totally different strategic paths. The first path is to make substantive environmental expenditures. Companies will put money into real and concrete investments, like pollution control equipment. They do this to keep their legitimacy in the long run. The second path is to make symbolic environmental expenditures. Companies face legitimacy pressure in this situation too. They will carry out environmental protection publicity activities. They do this to keep a good external image for the company. They also do this to avoid short-term operational risks, and they will do all this at the lowest possible cost. Companies make different strategic choices. These choices will make them adopt different accounting policies. Companies that choose substantive environmental expenditures have sustainable cash flow. This cash flow can support their daily operations and investment activities. So these companies tend to use conservative accounting policies. They use these policies to reflect the risks and benefits of long-term investments in an objective way. By doing so, they can strengthen their legitimacy and credibility in the market. On the contrary, companies that choose symbolic environmental expenditures are driven by short-term opportunistic motives. They want to keep a good profit performance in the current period. So these companies are more likely to use aggressive accounting policies. For example, they may confirm their revenue too early. This kind of accounting policy choice will lead to a drop in the level of the company's accounting conservatism.

### **2.1.2. Agency theory and stakeholder theory**

From the perspective of agency theory, managers may replace substantive environmental investment with superficial environmental publicity to pursue short-term performance [4]. From the viewpoint of stakeholder theory, substantive environmental expenditure is a tangible response to the expectations of stakeholders, such as employees and the government. Governments and investors tend to focus more on the substantive environmental performance and long-term risks of enterprises, which drives firms to make substantive environmental investments. This is the core channel connecting environmental expenditure with accounting conservatism. By timely recognizing losses and risks and prudently reflecting long-term investments and risks, accounting conservatism can effectively mitigate the agency problem and reduce information risks for stakeholders. Thus, from an agency point of view, greener firms with better management will be prone to making meaningful investments and adopting cautious accounting methods, while environmental laggard firms that are associated with high agency costs exhibit expository spending. Such distinct strategy positioning decisions result in the adoption of diverse degrees of accounting prudence.

### **2.2. Theoretical mechanism of the impact of symbolic and substantive environmental expenditures on accounting stability**

Companies face pressure from the environment (i. e. , government regulation) and respond with what is termed "symbolic," not "substantive" environmental management, that is , gaining legitimacy from low cost and symbolic ways like the environment report, rather than taking real action to protect the environment which needs a lot of investments [5]. Symbolic expenses have a short term and passive life and are generally expensed during the time of the expense, having a direct impact on current profits. Symbolic costs tend to be manipulated by managers in order to

manage earnings pressures in the short-run period, and they have an accounting value which is not aligned with the firm's real economic situation to some degree, makes it hard for users of financial statements to determine with accuracy what is happening with the company's continuing operations, and undermines accounting reliability. In contrast to these reactive costs, substantive investments are those that are protracted in time and forward-looking; they mitigate operational risk by investing in technology. The capitalization portion converts a single large expense to small depreciation charges in the future, thereby reducing earnings variability, resulting in a more predictable stream of cash flows and earnings, and easing the short-run pressures for performance because they communicate real signals, thus providing the basis of reasonable accounting recognition, and increases accounting stability.

### 3. Research design and case selection

This study selects Baosteel Co., Ltd. and Shandong Iron and Steel Co., Ltd. as comparative cases to explore the differentiated impact of symbolic and substantive environmental expenditures on accounting conservatism. The reason for this selection is that both companies belong to the steel industry and share similar environmental policies and regulatory environments related to the dual carbon goals. Moreover, two enterprises have been listed in Shanghai stock exchange, which has same rule of information disclosure and account standard, thus assuring the comparability of the data.

Both firms have a systematic difference on the position of environment strategy, and there are many evidences to show that Baosteel Co., Ltd. is an archetypal green pioneer. In 2023, the Huangshi Municipal People's Government stated that several of its Baosteel plants are listed among "National Green Factories" [6]. In addition, as a leader of this industry, it has often been called "the first-rate iron and steel company in SSE" by authoritative financial media like China Securities Journal , Shanghai Securities News . and has been lauded for the progress it is making on greening up. Third, Baosteel always gets a good score from the third party ESG rating agency: for example, SynTao green finance has continuously rated Baosteel's ESG as A- or above, well above the industry level. Even more important is that Baosteels Co., Ltd. 's annual reports as well as its social responsibility reports disclose very detailed information regarding investment in environmental protection. Take Baosteel as an example, it reported the total investment on environmental protection is 15.96 billion yuan in its 2022 annual report and sustainability report. Thanks to such huge investments made by enterprises on environment protection, their emission of pollutants keeps declining, highlighting the substantive nature of its environmental efforts [7].

By comparison, Shandong Iron and Steel is a typical environmental follower, with its environmental management expenditure focusing primarily on meeting regulatory requirements. On the same third-party ESG rating system, Shandong Iron & Steel has consistently been rated at the low to medium level of its industry. For example, the company's ESG rating in the China Securities Index is Grade C, which stands in sharp contrast to Baosteel's high rating, indicating that public recognition of Shandong Iron and Steel's environmental performance is relatively low. Shandong Iron and Steel's investment in environmental protection is mainly focused on cost saving and compliance pressure. For instance, according to its sustainability report, the company's goal-setting aligns with the national overall plan, lacking a commitment to achieve emission reduction targets in advance. For example, it aims to reach carbon neutrality by 2050, and its technologies mainly rely on mature processes such as "blast furnace injection of coke oven gas", with little investment in and research on cutting-edge decarbonization technologies [8]. This goal and technological R&D effort reflect a mode of environmental management that meets regulatory requirements and cuts

operational costs through energy consumption reduction, rather than carrying out substantive green innovation, which stands in stark contrast to Baosteel's environmental strategy. This shows that the operation of pollution control facilities at Shandong Iron and Steel accounts for a large proportion of its total environmental expenditure and has prominent symbolic significance.

This study sets the research period from 2018 to 2022, aiming to compare the differentiated responses of the two companies under the same external policy pressure of the "dual carbon" strategy.

## **4. Case study**

### **4.1. Strategic positioning determines the nature of expenditures**

#### **4.1.1. Baosteel's environmental leadership, strategic positioning, and substantive expenditures**

Baosteel Co., Ltd. has a well-specified green development strategy, which includes transforming into a best-practice environmental leader as well as a technology century of steel in its sustainable development vision [9]. According to this sustainable development vision, Baosteel environmental expenditures are of large scale, capitals, and substantive ones. This vision gives the company an opportunity to make change in its environmental investment not only to the end-of-pipe treatment but to look at the future environmental investments by proposing high environmental and technological goals that motivate the company incur long-term investments in low carbon metallurgical technologies and green product development. As an illustration, capitalized environmental expenditures of Baosteel amounted to 4.33 billion yuan in 2019 [9], and capitalized project investments were 7.03 billion yuan in 2022 [7]. The fact that these capitalized environmental expenditures are very high suggests that the management is of the opinion that the long-term investment in environmental activities can have an economic payoff to the company which shows that Baosteel is now strategic in its intention of investing in green technologies as capital that may yield returns in the future. The major investments of Baosteel are in streamlining the production processes and advanced technologies. It is establishing huge photovoltaic power plants and coming up with low-carbon metallurgical technologies including hydrogen-based blast furnaces [7]. Such investments are not merely expenditure of the costs to comply with the existing rules and regulations, at the moment, but to own the technologically advanced forms of expenditure in the long-run, they are substantive expenditures.

#### **4.1.2. Shandong Iron and Steel's strategic positioning as an environmental follower and symbolic expenditures**

Shandong Iron and Steel's environmental strategy follows the model of an environmental follower. The company's environmental expenditures are primarily aimed at meeting external policy pressures, with the strategic objective of implementing "maintain A, create A, and build A" measures to meet the national environmental performance grading standards [9]. Shandong Iron and Steel's strategic positioning leads to its environmental expenditures being primarily compliance costs treated as expenses. For example, in 2022, its environmental protection expenditures included 2.494 billion yuan in expenses and only 314 million yuan in capitalized expenditures. These expenditures mainly targeted the modification of pollution control equipment at specific emission points, such as flue gas desulfurization for heating furnaces [10]. The extremely high proportion of environmental protection expenditures treated as expenses indicates that management believes these investments

are primarily to avoid fines and production stoppage risks, and that the economic value these environmental expenditures will create for the company in the future cannot be reliably measured; therefore, they are considered symbolic expenditures.

#### 4.2. Accounting treatment of expenditure nature drives

The accounting treatment of environmental expenditures by Baosteel and Shandong Iron & Steel differs significantly, mainly due to the distinct nature of such expenditures. As a leading enterprise in the environmental protection sector, Baosteel has made substantial environmental investments that generate future cash inflows. Thus, its accounting treatment tends to capitalize these expenditures to match the economic benefits of long-term environmental assets. These environmental investments are entitled to the balance sheet as an asset, it adds value to the non-current assets and in the income statement listed as an asset in the form of a depreciation of assets and amortization over time it evenly adjusts the profits and earnings in the current period become much more stable. Conversely, as an environmental follower, Shandong Iron & Steel mostly makes symbolic spending as a way of complying, and economic returns are used in the present period. It has a favor towards expensing form of accounting where the entire amount of the expenditure is considered in the income statement which leads to an increase in the volatility of current period profits.

Table 1. The impact of accounting treatments of Baosteel and Shandong Iron and Steel on financial statements

Comparison Dimension	Baosteel (Environmental Leader)	SHAN DONG IRON AND STEEL COMPANY LTD. (Environmental Follower)
Accounting Treatment Tendency	Tends to capitalize	Tends to expense
Nature of Expenditure & Innovation Orientation	Investment in cutting-edge technology China's first full-plant wastewater zero-discharge system (Baoshan Iron & Steel Co., Ltd, 2020) Hydrogen-based shaft furnace and other low-carbon metallurgy projects (Baoshan Iron & Steel Co., Ltd, 2023)	Expenditure mainly to meet compliance requirements Steelmaking plant environmental upgrades (budget ¥18. 3 million) Ironmaking plant raw material yard road improvement (budget ¥8. 98 million) (Shandong Iron & Steel Co., Ltd. 2023)
R&D and Green Products	In 2024, Baosteel's R&D expenditure reached ¥250. 12 billion, establishing a low-carbon metallurgy technology roadmap centered on HyCROF and hydrogen-based shaft furnace [11].	Technology applications are mainly mature solutions Coke dry quenching process and other industry-standard technologies [12].
Financial Statement Impact	Formation of long-term assets, affecting future profit and loss through depreciation	Directly included in current period profit and loss

As Table 1 illustrates, considering the representative low-carbon metallurgical projects of Baosteel using the example of the so-called hydrogen-based shaft furnace, the investments are targeted to construct the long-term technological benefits of the company. The associated huge amounts of R&D as well as construction expenditures of 250. 12 billion yuan are capitalized as long-term assets. This is directly reflected in the substantial increase in balance sheet items such as

construction in progress, thus forming an asset structure characterized by technological intensity; on the income statement, costs are allocated across periods through future depreciation and amortization, thereby reducing significant fluctuations. In contrast, the expenditures of the representatives of Shandong Iron and steel, like on environmental improvement and renovation of its steel plants, mainly aim at fulfilling compliance requirements, employing mature technologies, with definite budgets and rather modest scale. Expenses of this kind are charged. This discourages the matching long-term development in the balance sheet; the related costs are fully recognized in the present period which affects directly the profit of the current year and makes more profits dependent on the environmental expenditures and more volatile.

### **4.3. Accounting treatment paths ultimately affect accounting conservatism**

#### **4.3.1. Baosteel achieves long-term conservatism through substantive expenditures and capitalization**

The substantial environmental protection expenditures of Baosteel will be capitalized to form long-term assets. As can be seen from the charts in Baosteel's public reports, the environmental protection projects invested by the company have improved the environmental performance. The charts show that the greenhouse gas emissions have been decreasing year by year [13]. This environmental achievement stems from the substantial capital investment, significantly reducing the risks of contingent liabilities such as environmental fines and carbon taxes that may arise in the future. Therefore, in the long run, Baosteel's environmental investment has reduced harmful gas emissions and lowered the risk of future environmental fines, ensuring that the financial statements do not overestimate asset values or underestimate liabilities, thereby strengthening the substantive accounting soundness.

#### **4.3.2. Shandong Iron and Steel adheres to short-term conservative practices via symbolic expenditures and expensing**

The symbolic expenditures of Shandong Iron and Steel Company will be directly recorded in the current income statement to prevent overstatement of the current profits. In the short term, this accounting treatment ensures the robustness of the financial statements. However, while this accounting treatment maintains the conservatism of the financial statements in the short term, the lack of long-term environmental asset investment means that, under China's "dual carbon" goals and increasingly stringent environmental requirements, the company will face higher environmental liability risks in the future, or its lack of cutting-edge green technology may reduce its long-term competitiveness and expose it to production risks.

## **5. Conclusion**

A company's environmental strategic positioning, such as being an environmental leader or follower, determines whether its environmental expenditures are substantive or symbolic. These different types of expenditures, through different accounting treatment paths, ultimately have a systematic impact on the company's accounting conservatism. Baosteel, as an "environmental leader" strategic positioning that led its management to undertake substantive environmental expenditures. These expenditures, through capitalization to form environmental assets, reduced future environmental liability risks, thus contributing to long-term accounting conservatism. Shandong Iron and Steel, as an "environmental follower,"s strategic goal merely to meet existing social norms through symbolic

expenditures, tending to expense environmental expenditures. While this met the requirements of current conservatism, the lack of substantive investment in environmental assets leaves its long-term financial reporting facing potential environmental risks and uncertainties.

In the case of companies, the management cannot assume that the environment costs are only symbolic to improve the image of the company to the outside world, but an investment in the long-run economic gains. The companies need to develop internal management practices to make substantive ESG key performance indicators, like the rate of resource recycling, included into the long-term incentive evaluation system of the management, where the results of environmental investment and the individual performance are tightly linked. Second, by reporting their substantive environmental investments, the companies can demonstrate to the market that they are constantly innovating and researching the green technologies to reduce the risks in the long term and improve their competitiveness, thus obtaining the confidence and loyalty of the investors and other stakeholders.

Regulatory agencies and investors should develop a more transparent, easier to use, and trustworthy information data reporting system, where third-party certification centers would be encouraged to certify and report critical company information, and the information made available will become more valuable. Secondly, ESG ratings need to be used along with a careful assessment of the capital structure of the company and actual positive change of negative reports about the environmental situation so that the distinction between substantive and symbolic investments and publicity could be better drawn. The regulators and the investors should share the same signals of corporate values to the market and ultimately, the companies may concentrate on developing actual, enduring, and precious economic undertakings.

This study selected only two state-owned listed companies in the steel industry as cases, so the applicability of the conclusions drawn is limited and may not fully cover the actual situations of other polluting industries. Secondly, the classification of environmental expenditures mainly relies on the accounting treatment of capitalization and expensing, without taking into account expenditures that have both compliance and long-term attributes. This may affect the comprehensiveness of the research conclusions. Future research can be extended in the following aspects: first, expand the sample scope to include industries with different pollution levels and companies of various scales, thus enhancing the generalizability and representativeness of the conclusions. Secondly, the research can also explore how to utilize appropriate accounting standards to encourage enterprises to make substantive investments under the policy background of the dual carbon goals, thereby improving the quality of market information.

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