

Greenwashing under Environment Social Government Rating Systems: Theoretical Foundations, Mechanisms, and Empirical Research

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Abstract. Nowadays, as people pay increasing attention to environmental governance issues, the Environment, Social, Governance (ESG) rating system has developed rapidly. This rating system has played a significant role in guiding capital towards sustainable investments. However, the widespread occurrence of greenwashing undermines the credibility of its rating system. Therefore, this article will review the theoretical framework, mechanisms, and empirical research results of greenwashing through ESG ratings, revealing the contradictions between enterprises and the rating methodology, and indicating that greenwashing is not only a strategic choice at the enterprise level but also a structural problem rooted in the flaws of the rating system. Additionally, by examining the theories of legitimacy, institutions, agency, and signals, this article integrates internal and external perspectives and further explains mechanisms such as selective disclosure, symbolic compliance, rating arbitrage, supply chain transfer, and absence of external supervision. Empirical research reveals that phenomena such as inconsistent ratings, market misunderstandings, and regulatory gaps have exacerbated greenwashing. The review concludes by calling for improved data quality, strengthened regulatory efforts, and the construction of a comprehensive theoretical framework to guide future research and policymaking.

Keywords: ESG Rating Systems, greenwashing, Theoretical Foundations, Mechanisms, Empirical Research.

1. Introduction

In recent years, increasing environmental disasters, such as rising greenhouse gas emissions, major earthquakes like those that devastated coastal cities, and tsunamis, have caused significant loss of life and property, heightening awareness of our surroundings. Meanwhile, globally, the Environmental, Social, and Governance (ESG) rating system is regarded as an important tool for guiding capital towards sustainable investments. However, as the scale of ESG investments expands rapidly, the phenomenon of greenwashing has become increasingly prominent [1].

In addition, although academic research has accumulated a wealth of findings in revealing greenwashing phenomena, there are still significant differences in analytical logic. On the one hand, researchers point out that companies employ two opposite strategies in sustainability disclosure: exaggeration and over-caution, known as manifesting as overclaiming or underclaiming in sustainability disclosure behavior [2]. Many studies have emphasized that greenwashing is not only the result of individual corporate strategies but is also closely related to the structural flaws of the ESG rating system itself, which can undermine the credibility and effectiveness of sustainability assessments across industries. For instance, the correlation coefficient between different rating agencies is only 0.54, indicating significant differences in their standards and methodologies [3]. This divergence has weakened the informational content of the ratings as a market signal [4]. This rating disparity, in turn, provides opportunities for corporate greenwashing.

The use of ESG ratings can contribute to greenwashing, as shown by their impact on the market, regulation, and public perception. This reveals the need for a comprehensive framework to address these issues. For instance, given the necessity of establishing an integrated assessment system, a thorough examination of the ESG greenwashing phenomenon holds practical significance and theoretical value. In the capital market, the rating system aims to condense the complex and multi-

dimensional performance into decision-making reference signals, thereby weakening the resource allocation advantage of sustainable finance. Moreover, the heterogeneity of classification systems and weight schemes across different jurisdictions further exacerbates the comparability problem, triggering rating management behaviors that shift the focus from operational transformation of enterprises to score optimization [5]. At the same time, for policymakers, excessive reliance on opaque models and voluntary disclosure mechanisms blurs the boundaries between credible qualification screening and disclosure performance rewards, raising deep doubts about how rules define scope definitions, standardization selection, and uncertainties. At the social level, the persistent disconnection between sustainability rhetoric and actual outcomes is eroding public trust, weakening the supervisory pressure from consumers and civil society, and may trigger counter-effects on the corporate responsibility agenda and even broader sustainability policies. Conceptually, existing academic research remains scattered across various perspectives, including legitimacy, institutions, agency, and signal transmission [2].

This paper critically reviews the literature to reveal the contradictions of ESG ratings, greenwashing and provides references for future scholarship and policy design. Future research and policymakers must address these multifaceted challenges to advance more accurate and effective ESG evaluation.

2. Theoretical foundations

2.1. Legitimacy theory

In the existing research, the greenwashing phenomenon is usually explained under the framework of legitimacy theory. According to this theory, enterprises must present a responsible and sustainable image to maintain legitimacy in society and gain external recognition [1]. However, in fact, many enterprises do not really implement environmental improvement in their operations, but create an appearance of environmental protection through marketing, advertising, and labeling, thus meeting the expectations of investors, consumers, and regulators. This logic has also been supported by empirical research and cases. For example, research shows that external market demand, the incentive structure at the organizational level, and cognitive bias at the individual level may drive enterprises to adopt a greenwashing strategy in the absence of strict supervision [1]. General Electric's Ecomagination campaign and LG Electronics energy efficiency labeling scandal are typical cases: enterprises have created a green image through publicity, but they have not met the environmental protection standards in essence. These phenomena show that greenwashing is not a completely disorderly behavior, but a rational response taken by enterprises in the face of social expectations and legitimacy pressure.

2.2. Institutional theory

In addition, institutional theory provides another perspective for understanding ESG greenwashing. The research put forward that organizations will converge under the pressure of external institutions, showing similarities, even if this convergence may not improve efficiency, but it is in response to external expectations [2]. In the field of ESG, this means that enterprises may show a high degree of consistency in reporting and disclosure, thus maintaining legitimacy. At the same time, Hawn and Ioannou pointed out that due to the significant differences in ESG standards between countries and industries, enterprises often take a compromise approach to deal with complex requirements, only meeting superficial compliance rather than really changing business models. This non-uniform institutional environment intensifies the performance compliance of enterprises, making them look similar externally, but their internal practices are uneven [6]. Combining the two viewpoints, it can see that ESG greenwashing is not an isolated phenomenon, but the result of the interaction between the logic of institutional isomorphism and the reality of institutional fragmentation: enterprises often lack substantial sustainable improvement when they create a unified green image under institutional pressure.

2.3. Agency theory

At the same time, the agency theory was first put forward by Jensen and Meckling to explain the information asymmetry and interest conflict between shareholders and managers due to the separation of ownership and control [7]. Shareholders usually want enterprises to pursue long-term value, but managers tend to care more about short-term benefits, reputation, and bonuses. Under this framework, management may adopt strategies that are not in line with long-term interests to meet personal incentives or short-term goals. Dyck's research further proves this point, and they find that the environment and social performance of enterprises are highly dependent on the supervision of shareholders, especially institutional investors [8]. Without external pressure, management will not actively promote real sustainable improvement, but will more likely rely on superficial and outward-oriented actions to create a green image of the enterprise. This shows that ESG greenwashing is not only a strategy for enterprises to cope with external system and market pressure, but also the result of corporate internal governance defects. The extension of the agency problem in the context of sustainable development reveals the deep motivation for management to choose greenwashing under asymmetric incentives and constraints.

2.4. Signal theory

When studying greenwashing, it can also use this to understand corporate behavior. Signal theory emphasizes that enterprises will convey their environmental responsibilities to the outside through various "signals", such as issuing green reports or promoting environmental protection projects. However, the cost of these signals is often not high, which makes it difficult for the market and stakeholders to distinguish between substantive improvement and symbolic display. For example, Kim and Lyon's research shows that enterprises often exaggerate, weaken, or selectively disclose information, which makes it difficult to truly evaluate their environmental performance [9]. In this case, it is easier for enterprises to create a positive external image through greenwashing, without having to bear the high cost of substantial improvement.

In general, while various theories attempt to explain the motives behind greenwashing, each approach has its shortcomings. Some theories focus predominantly on external pressures, while others emphasize internal motivations, yet few offer a comprehensive framework that integrates both perspectives. Consequently, the relationship between greenwashing practices and ESG ratings remains a contentious issue in academic research.

3. Mechanisms of greenwashing under ESG ratings

In addition, under the ESG rating system, greenwashing is not an abstract concept, but a concrete practice adopted by enterprises

3.1. Manipulation of information disclosure

The first is the manipulation of information disclosure. Many companies will select the information that is beneficial to them in the sustainable development report, enlarge the good aspects, and dilute or even ignore the negative information [10]. Similarly, Christensen further emphasized that due to the lack of uniform disclosure standards, enterprises can operate flexibly within the scope permitted by law. They can even play word games, providing only vague or superficial information. This uncertainty not only weakens the transparency of disclosure but also provides institutional space for enterprises to conduct greenwashing [5]. On the whole, incomplete and inconsistent information disclosure has become one of the main channels for enterprises to conduct greenwashing.

Specifically, this is usually manifested in three ways: selective disclosure, data manipulation, and excessive reliance on third-party identification. Specifically, many greenwashing practices begin with how enterprises present their sustainability reports. Under pressure, enterprises often provide selective, incomplete, or biased disclosure information, highlighting favourable indicators while obscuring negative impacts [10]. When the reporting scope extends beyond the enterprise boundaries

to the supply chain, verification becomes particularly difficult, and thus, when the audit trail is hard to establish, users may overestimate the reliability of the report [5]. In practice, even without direct fraud, the use of template-based expressions and arbitrary manipulation in methods and scope can quietly seep in, undermining transparency. Although third-party verification is helpful, the levels of verification agencies vary, and voluntary verification alone is difficult to form effective constraints, leaving room for enterprises to manage their image [5]. Eventually, reports may emerge that appear glamorous on the surface but may not reflect substantive operational changes.

3.2. Symbolic acceptance

The second approach is symbolic acceptance. These enterprises usually do not make substantive changes. Instead, they respond to institutional or stakeholder pressure with symbolic strategies that create a green image. Such strategies may include establishing voluntary self-regulatory programs, making extensive commitments, or emphasizing selective positive achievements while downplaying negative ones [11]. These actions leave a favourable impression on external audiences but rarely change the company's core operations or business model. In this sense, symbolic compliance serves as a facade. It provides legitimacy and diverts attention from the criticized areas. However, the basic practices remain largely unchanged.

3.3. Greenwashing assistance at the rating agency level

The third approach is to utilize rating arbitrage. Its basis lies in the differences in assessment scope, measurement standards, and weight allocation among ESG rating agencies. For instance, due to the varying focus of each agency on different indicator systems and standardization methods, companies can adopt strategies to cater to the rating agencies: concentrating on disclosing information, formulating policies, and adjusting low-cost processes on indicators that are known to receive rewards, while ignoring more difficult operational improvements [3]. In practice, this means that companies place more emphasis on optimizing their scores rather than the substance. Although this model can enhance their superficial performance, it is difficult to bring about reliable environmental or social benefits. Furthermore, from the perspective of commercial conflicts, institutions sell data and ratings to investors, while the evaluated enterprises increasingly interact with the rating agencies through feedback, data correction, and related consulting products. This structure may trigger potential conflicts and give rise to a huge motivation for product differentiation. If the rating methods are overly similar, the ratings will become commoditized products and lose their value to investors. If the methods differ too much, enterprises can compare and choose the most favorable rating framework for their own image. As a result, a persistent pattern of disagreement emerges, and enterprises learn through trial and error which disclosures, certifications, and additional items can most effectively enhance the scores adopted by the target capital providers. It is precisely this learning cycle that gives rise to the rating arbitrage space. Furthermore, as most rating agencies refuse to disclose their weighting schemes, they treat the model architecture, factor weights, rules for filling in missing data, dispute deduction mechanisms, and industry standardization procedures as proprietary technologies. Therefore, due to the lack of transparency in the category scoring weights, aggregation methods, and model update times, it is difficult for the outside world to verify whether the high scores represent real improvement or methodological drift. Contrarily, the opacity has not prevented manipulation; instead, it has shifted the focus from rule compliance to signal detection: issuers test and disclose information under different frameworks, retaining the means that can improve the score, even if the actual impact remains unchanged. When companies mainly increase their ratings by adjusting the disclosure content rather than their operational methods, rating arbitrage becomes another form of greenwashing.

3.4. Conflict transition

In addition to these, there is a fourth form of greenwashing that occurs within the supply chain. For instance, some multinational companies do not reduce pollution in their core business but instead

outsource the most environmentally damaging activities to suppliers or countries with weaker regulations. Then, in their reports, they emphasize the concept of maintaining a green supply chain, as Testa pointed out. This approach does not represent a real reduction in environmental impact; instead, it shifts pollution beyond the company's immediate boundaries, making the company appear more sustainable on paper without addressing the fundamental issues [12].

3.5. Lack of external supervision

The fifth factor is the lack of external supervision. In many jurisdictions, environmental, social, and governance disclosures and audits are largely voluntary rather than mandatory, resulting in significant differences in the availability and reliability of the reported data. External certification helps restore the credibility of sustainability reports [13]. In practice, the effectiveness of certification varies depending on the provider and scope [14]. The effectiveness of mandatory sustainability reporting depends on the implementation capability and institutional background [5]. A systematic review found that mandatory reporting reforms have brought about diverse but gradually improving results [15].

These mechanisms demonstrate that greenwashing is intentional, driven by incentives such as scores linked to capital and reputation, methodological discretion in defining boundaries and indicators, and a lack of transparency regarding data sources and assurance processes.

4. Empirical findings

Apart from studying the mechanisms and methods, some scholars have also conducted empirical research to analyze greenwashing, mainly focusing on three aspects.

The research shows that there are significant differences in the scores given by different rating agencies on the ESG performance of the same enterprise. Berg's research results show that the correlation between different rating agencies is only between 0.38 and 0.71, with an average of about 0.54. This low consistency shows that the ESG rating system itself has structural defects [3]. Different ratings not only weaken its reliability as a market signal, but also provide opportunities for enterprises to selectively cater to different rating standards and take advantage of system loopholes, which may indirectly encourage greenwashing behavior. In other words, the greenwashing problem is not entirely due to the manipulation of enterprises, but also closely related to the inherent imperfection of the rating system itself.

Additionally, in the early stages of the market, such symbolic green disclosures may receive positive feedback from investors, as they often view environmental claims as credible indicators of a company's sense of responsibility and forward-looking management [4]. However, these effects are fragile and fleeting. Over time, weak guarantee mechanisms, inconsistent measurement practices, and selective disclosure will undermine the credibility of such statements. Once superficial or exaggerated improvements are exposed, the company's reputation will be eroded, and reputation costs will rise, which may subsequently have an impact on broader market stability [16].

Furthermore, the research has found that the institutional environment is also a significant factor influencing greenwashing. In countries with unstable systems and inconsistent standards, enterprises are more likely to create a responsible image through symbolic disclosures or external CSR actions, but these actions often lack substantive content [6]. On the contrary, in systems with strict regulations and stronger investor protection, the space for enterprises to engage in greenwashing is significantly limited. Relevant studies have also verified this from the perspective of investors. Dyck discovered that investors from countries with sound institutions and strong social norms can push enterprises to improve their actual ESG performance, thereby reducing the occurrence of greenwashing; while in systems with weaker institutional environments, greenwashing is more likely to occur [8].

In addition to market reaction and institutional environment, there are some studies focusing on the limitations of data and methodology. Christensen pointed out that at present, ESG data lacks independent auditing and uniform standards, and the information quality is significantly different,

which makes it difficult for academic circles to accurately measure the real scale of greenwashing [5]. In other words, our understanding of greenwashing may only stay in a small part [17].

So, these empirical studies have revealed the various aspects of greenwashing within the ESG rating system, but they have also highlighted the challenges in the research: limited data, inconsistent indicators, and imperfect methods. These issues make us realize that greenwashing may be more widespread and complex than what existing studies have revealed.

5. Conclusion

Overall, from multiple perspectives, including theory, operation, and empirical research, the interaction between ESG ratings and green whitewashing is complex and mutually reinforcing. Although existing theories and studies have revealed some questions, when considered individually, they still cannot fully explain why there is often a discrepancy between words, indicators, and actions. Mechanisms such as selective disclosure, symbolic compliance, supply chain transfer, weak external supervision, and rating arbitrage reveal how enterprises strategically utilize the methodological discretion and opacity of rating models to improve their scores without undergoing substantive changes. Empirical evidence, such as low correlation among raters, short-term misunderstanding by the market regarding green signals, and imbalanced institutional environments, further highlights systemic flaws. In summary, these findings indicate that the greenwashing phenomenon is not accidental but deeply rooted in the structural system of sustainability assessment, certification, and monetization. This paper integrates the above research context and advocates for the establishment of a comprehensive framework, improvement of data quality and credibility, and refinement of comparability methodologies to restore the effectiveness of the rating system and enable capital allocation to more accurately align with real environmental and social outcomes.

Additionally, the existing literature indicates that greenwashing is not solely the result of corporate manipulation. To a large extent, it is a structural issue inherent in ESG ratings themselves. Future research should construct a comprehensive theoretical framework and improve data quality. For example, Christensen emphasized that mandatory sustainability reporting has yielded mixed but gradually improving results, suggesting that regulatory reforms can serve as a testing ground to assess whether transparency drives substantive change or merely symbolic compliance. Also, Carter analyses the proposed Scope 3 as a unique case, and researcher observe whether mandatory transparency will encourage genuine corporate transformation or merely reshape reporting strategies. These steps would help more accurately reduce the scale of greenwashing. Only in this way can ESG rating become a reliable signal that truly guides sustainable development.

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