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ESG as a Strategic Intangible Asset: Toward Competitive Barriers through Lower Financing Costs and Enhanced Brand Power

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Abstract

As traditional competitive advantages such as scale efficiency and technological superiority become increasingly fragile, firms are under pressure to identify new, sustainable bases of competitiveness. Environmental, social, and governance performance has emerged as a critical strategic resource shaping firms' competitiveness. This study develops an integrated theoretical framework grounded in the resource-based view and signaling theory, positing ESG as a strategic intangible asset that influences competitiveness through two primary, interconnected channels: financing conditions and brand equity. Using a panel dataset of Chinese listed firms and employing fixed-effects models, mediation tests, and interaction analysis, this study empirically examines the dual pathways through which ESG performance influences competitiveness. Strong ESG performance improves firms' financing conditions by reducing risk exposure and enhancing information transparency, thereby lowering financing costs and easing resource constraints. Meanwhile, ESG performance significantly enhances brand competitiveness by generating positive media coverage and improving corporate reputation, which deepens stakeholder identification and market legitimacy. Importantly, the two channels interact in a mutually reinforcing manner. Brand competitiveness amplifies the effect of ESG on financing conditions, while improved financing conditions enable sustained investment in ESG and brand development. These findings suggest that ESG performance fosters a virtuous cycle between capital markets and product markets, reinforcing firms' sustainable competitive advantage. Revealing how ESG can potentially build competitive barriers through a dynamic system of interconnected financial and reputational mechanisms, directly contributes to the competitiveness literature.

Keywords: *ESG performance, strategic intangible assets, cost of capital, brand competitiveness, core competence, sustainable development*

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1 INTRODUCTION

Nowadays, the very foundations of global business competition are undergoing a profound and sweeping paradigm shift. The traditional competitive advantages upon which enterprises have long relied for survival and growth, such as economies of scale dependent on capital investment and technological barriers stemming from R&D expenditure, are facing severe challenges to their sustainability. Driven by accelerating technology diffusion, deepening globalization, and the rise of consumer sovereignty, the marginal utility of these traditional advantages is diminishing significantly, making them increasingly unreliable as long-term competitive moats. In stark contrast, a new competitive logic centered on sustainable development and transcending purely financial dimensions is rapidly taking shape. Within this new paradigm, a

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company's environmental, social, and governance (ESG) performance is no longer merely a reactive measure to regulatory pressures or ethical expectations (Vera et al., 2025; Xu et al., 2024). Instead, it increasingly demonstrates its potential as a critical strategic resource, becoming a core variable that shapes future industrial landscapes and determines a company's long-term resilience and market position.

However, despite the unprecedented prominence of ESG issues, mainstream academic discourse and business practices remain largely constrained by the traditional corporate social responsibility (CSR) framework (Ragazou et al., 2025). This framework often treats ESG activities as cost-driven expenditures or moral obligations aimed at enhancing corporate image or managing reputational risks, thereby relegating them to the periphery of core business strategy. The limitation of this perspective lies in its failure to fully reveal how ESG performance can be systematically integrated, cultivated, and deployed as a strategic intangible asset, transforming into sustainable core competencies that are difficult for competitors to replicate. Specifically, the intrinsic pathways and interactive effects through which ESG creates value advantages simultaneously in two critical arenas, capital access and market recognition, via specific transmission mechanisms, warrant further exploration.

Given this context, this paper transcends the boundaries of traditional CSR discourse. From a more integrated perspective of strategic management and core competence building, it systematically explores how ESG performance functions as a strategic asset to construct robust competitive barriers for enterprises. This study focuses on two specific and interrelated value creation pathways: on the capital side, it investigates how superior ESG performance substantially reduces debt and equity financing costs through signaling and risk management, thereby securing valuable capital cost advantages (Wang et al., 2025); on the market side, it analyzes how outstanding ESG performance effectively enhances brand competitiveness and consumer loyalty by shaping reputation and emotional connections, ultimately enabling companies to capture market premium pricing power. Ultimately, this paper uncovers potential synergistic and reinforcing mechanisms between these two pathways. Through empirical testing and theoretical elaboration, the study provides new evidence and insights into ESG's pivotal role in contemporary competitive strategy, offering valuable theoretical references and practical guidance for integrating sustainability deeply into long-term corporate competitiveness.

This paper systematically elucidates how ESG performance functions as a strategic intangible asset, building corporate core competitiveness through dual pathways of "capital-side" and "market-side" effects. To this end, the study integrates the resource-based view with signaling theory to construct a comprehensive analytical framework, which is empirically tested using panel data from listed companies. The research not only validates the direct impact of ESG performance on reducing financing costs and enhancing brand competitiveness but also delves into its underlying transmission mechanisms—including risk mitigation, information transparency, and media reputation shaping. It further reveals dynamic synergies between these pathways: brand strength amplifies ESG's financing benefits, while lower financing costs support sustained investment in both ESG and brand development.

The marginal contributions of this study manifest themselves in three key dimensions: theoretically, this study elevates ESG from ethical and compliance frameworks to the level of strategic assets, clarifying its intrinsic logic of creating competitive advantages through dual financial and market mechanisms; methodologically, by examining mediating and moderating effects, it unveils the dynamic process and systemic characteristics of ESG's operationalization; practically, it provides empirical evidence and decision-making references for companies to

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integrate ESG into core strategies, for investors to identify long-term value, and for regulators to improve disclosure requirements (Přemysl et al., 2025).

To clearly present the research process, this paper is structured as follows: section 1 serves as the introduction, outlining the research background, research questions, and overall framework; section 2 provides a literature review, systematically examining existing studies on the relationship between ESG and competitiveness, factors influencing financing costs, and the components of brand competitiveness. It identifies existing gaps and establishes the direction of this study; section 3 details the research design, explaining sample selection, data sources, research hypotheses; section 4 gives the econometric model; section 5 reports empirical results and analysis, presenting regression findings followed by further discussion on path synergies; section 6 summarizes key contributions, identifies limitations, and suggests potential future research directions; and section 7 summarizes the conclusions.

2 LITERATURE REVIEW

2.1 Research progress on ESG and enterprise value

Drawing on stakeholder and signaling theories, mainstream research consistently finds that ESG performance positively correlates with corporate value (Aydoğmuş et al., 2022; Zhou et al., 2022). Research indicates that outstanding ESG performance can effectively manage environmental, social, and governance risks, reducing future cash flow volatility and the risk of stock price crashes (Broadstock et al., 2021). This enables companies to exhibit greater resilience during market turbulence. Simultaneously, ESG information serves as a high-quality signal that mitigates information asymmetry, thereby lowering corporate capital costs and securing market premiums in valuation (Gholami et al., 2022; Y. Li et al., 2024). This "insurance effect" and the concept of "reputational capital" form the foundation supporting the logic of ESG value creation. Another academic perspective, grounded in agency costs and resource constraints, raises cautious skepticism. Substantial investments in ESG activities may incur direct costs and management expenses, diverting resources from core business operations and technological innovation in the short term, thereby creating an uncertain impact on corporate financial performance (Chen et al., 2023). Furthermore, management may face agency issues where ESG investments are leveraged to build personal social reputation rather than maximize shareholder value (Welch & Yoon, 2023). Given the heterogeneity of ESG effects across industries, institutional contexts, and methodologies, these debates point to a non-linear ESG-value relationship (Bagh et al., 2024).

Research shows that ESG's impact on corporate value depends on specific pathways and boundary conditions, yet existing studies lack an integrated framework for multiple concurrent mechanisms. How ESG simultaneously drives financing advantages and brand competitiveness, and whether these pathways work in isolation or synergy, remains unclear. This study moves beyond correlation to test a dual-channel model (financing costs and brand competitiveness), treating ESG as a strategic intangible asset to uncover the dynamics of value creation and bridge theory-practice gaps.

2.2 ESG, financing costs and capital market responses

Capital markets view ESG performance as a key proxy for non-financial risk management and long-term resilience (Alnafrah, 2024; Shakil, 2021). From the resource-based view and signaling theory, strong ESG performance signals compliance, prudent management, and long-term sustainability to capital providers (Rui, 2025; Wang et al., 2024). Higher ESG ratings

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secure better debt financing with lower rates and looser covenants by mitigating default risks from environmental, labor, and governance failures, thus enhancing creditworthiness (Apergis et al., 2022). ESG leaders face lower equity costs because strong non-financial disclosures reduce information asymmetry, bolster investor confidence, and lower risk premiums for future uncertainty (Li et al., 2024).

While ESG's cost-reducing effect on financing is well established, research remains fragmented on transmission mechanisms. Most studies emphasize risk mitigation (Hao & Wu, 2024) and information effects (Gallego-Nicholls et al., 2025; Lavin & Montecinos-Pearce, 2022). However, these studies miss possible complementarity, substitution, or hierarchy among mechanisms. For instance, risk reduction and transparency can synergize, since transparency directly lowers perceived risk (Hao & Wu, 2024). Thus, building an integrated model to simultaneously examine pathways like risk management, information transmission, and external governance is theoretically crucial for understanding how ESG lowers financing costs. This study addresses this gap with a systematic framework.

2.3 ESG and brand competitiveness

In product markets, ESG performance is increasingly becoming a key intangible asset that shapes consumer perception and long-term brand value (Ferreira et al., 2025; Li, 2024). Drawing on stakeholder and social identity theories, ESG investments signal values and social commitments, building reputational capital. When consumers perceive alignment with their values, emotional resonance and brand belonging grow, boosting loyalty and willingness to pay (Lee et al., 2022; Zou et al., 2024). Furthermore, proactive ESG practices attract positive media attention. This unpaid "goodwill communication" significantly amplifies brand influence, establishing differentiated reputation protection in an era of information overload (Bissoondoyal-Bheenick et al., 2023; Calderón-Fajardo et al., 2024).

Compared to short-term financial metrics like sales volume and profit margins, the market advantages built through brand competitiveness exhibit pronounced longevity and user stickiness. A responsible brand image established on exceptional ESG performance helps companies buffer against the impact of negative events, maintain customer relationships, and secure long-term premium pricing power (Korankye et al., 2024; Lin, 2024; Zou et al., 2024). However, academic exploration in this field faces two core challenges: measurement difficulties and the complexity of identifying causal mechanisms. Regarding measurement, brand competitiveness is a multidimensional construct. Existing research often employs proxy variables such as market share, brand value rankings, media sentiment analysis, or consumer surveys (Winzar et al., 2018; Xia et al., 2020). These methods each have limitations and struggle to fully capture its intangible and dynamic nature. Regarding mechanism identification, while the theoretical chain of "reputation enhancement-identity reinforcement" is widely accepted, the "black box" remains partially unopened. It remains unclear precisely which observable behavioral or cognitive variables ultimately drive purchasing decisions and brand equity appreciation through ESG performance.

Current research on ESG and brand competitiveness needs deeper exploration in two areas: developing more refined multidimensional measurement methods, and rigorously isolating transmission pathways. This study addresses this by constructing an integrated framework linking ESG performance, financing costs, and consumer identification within a single empirical system, clarifying the logic and boundary conditions of ESG-driven brand competitiveness and filling gaps in mechanism testing and systemic integration.

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2.4 Theoretical foundation

When exploring the theoretical foundations of how ESG performance translates into competitive advantage for enterprises, the resource-based view and signaling theory offer two complementary and powerful analytical perspectives. From the classic framework of the resource-based view, sustainable competitive advantage stems from strategic resources that an enterprise possesses and effectively allocates-resources characterized by value, scarcity, difficulty to imitate, and irreplaceability (Barney, 1991; Zahra, 2021). The reputational capital accumulated through ESG performance, the trust relationships built with key stakeholders, and the enhanced organizational governance and risk management capabilities that result are increasingly recognized as strategic intangible assets meeting these criteria (Reber et al., 2022). The formation of such assets is highly dependent on an organization's specific developmental path, sociocultural context, and the complex process of long-term stakeholder interactions. This makes them difficult for competitors to replicate through simple capital investment in the short term, thereby forming the basis for differentiated competition.

To sharpen the theoretical contribution, we explicitly demonstrate how ESG performance satisfies each VRIN criterion, thereby qualifying as a strategic intangible asset capable of generating sustained competitive advantage. *Value:* ESG performance reduces idiosyncratic risk, lowers the cost of capital, and enhances brand loyalty and customer willingness to pay. These value-creating effects have been documented in prior literature and are further validated in our empirical results. **Rarity**: while many firms issue ESG reports, consistently high ESG performance across all three dimensions (environmental, social, governance) remains uncommon. Genuine ESG excellence requires long-term investment, organizational learning, and deep stakeholder engagement – attributes that are not widely distributed across firms. Empirical evidence from our sample shows that the top ESG rating levels (e.g., AAA, AA) are rarely observed, confirming rarity. *Inimitability:* ESG capabilities are socially complex, path-dependent, and causally ambiguous. A firm's unique history of environmental practices, community relationships, and governance structures cannot be replicated through short-term expenditure or by simply hiring away a few key individuals. Competitors cannot easily duplicate the accumulated trust and institutional knowledge embedded in a firm's ESG profile. *Non-substitutability:* No equivalent alternative to a credible, long-term ESG track record exists when it comes to signaling responsible management to capital providers and consumers. Short-term greenwashing, one-off corporate social responsibility campaigns, or mere compliance with minimal regulations cannot substitute for sustained ESG excellence. Thus, ESG performance occupies a unique position in the strategy space. These VRIN characteristics alone do not automatically translate into market advantages. This is where signaling theory becomes complementary: the firm must credibly communicate its VRIN-quality ESG resources to external stakeholders.

Signaling theory offers another core logic for understanding the market value of ESG performance from an information economics perspective. In markets characterized by widespread information asymmetry, companies proactively disclosing and showcasing their ESG performance essentially convey credible signals to external stakeholders regarding their management quality, long-term development orientation, and commitment to social responsibility (Huang, 2022; Xiao et al., 2025). This signaling helps mitigate uncertainty in external parties' assessments of a company's future risks and value. Consequently, it reduces risk premiums and financing costs in capital markets while shaping a positive brand image and strengthening consumer recognition in product markets (Chen et al., 2023; Ren et al., 2025). Unlike the resource-based view, which emphasizes internal capability accumulation, signaling

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theory highlights how companies transform their internal strengths into market-recognized competitive advantages through proactive information strategies at the external perception level.

Although both the resource-based view and signaling theory offer compelling explanations for ESG's value creation logic, existing literature often tends to adopt one perspective exclusively or treat them as parallel explanatory pathways, failing to fully reveal their inherent interconnections and integration mechanisms. For instance, the resource-based view explains how ESG capabilities become competitive barriers but fails to fully elucidate how such "internal capabilities" are accurately recognized and priced by external markets. Signal theory elucidates the market effects of ESG information but rarely traces whether these signals are underpinned by genuine, scarce, and difficult-to-imitate organizational capabilities. In reality, as a strategic phenomenon, ESG's value realization process is fundamentally the dynamic interaction between internal capability building and external signal transmission: a robust ESG resource base is the fundamental guarantee of signal credibility, while effective signal transmission serves as the critical bridge converting internal resources into market value (Lee et al., 2022). The integration reveals a dynamic, self-reinforcing mechanism: VRIN-quality ESG resources, when effectively signaled to capital and product markets, reduce financing costs and enhance brand equity. Lower financing costs provide slack resources for further ESG investment, while stronger brand equity amplifies the credibility of ESG signals. This virtuous cycle creates a sustained competitive barrier that rivals cannot easily overcome, distinguishing our framework from static.

Therefore, this study argues that integrating the resource-based view with signaling theory is essential for deepening our understanding of the origins of ESG competitive advantage. The theoretical framework constructed herein bridges this gap. It anchors ESG performance as stemming from strategically accumulated internal resources while systematically analyzing how these resources simultaneously send effective signals to capital and product markets, ultimately constructing a multi-layered, dynamic competitive advantage system. This integrated perspective not only sheds comprehensive light on the "black box" of how ESG influences corporate competitiveness but also provides clearer theoretical guidance for businesses on how to synergistically advance substantive ESG capability building and strategic ESG communication in practice.

3 DATA, RESEARCH OBJECTIVE AND METHODOLOGY

3.1 Data and variables

This study employs Chinese A-share listed companies as its initial research sample, covering the time span from 2011 to 2023. To ensure data validity and the robustness of research conclusions, the sample underwent processing. Listed companies in the financial sector were excluded, as were samples of companies with abnormal operational statuses such as ST and *ST. All continuous variables underwent tail trimming at the 1% and 99% percentiles to control for the influence of extreme values. The final sample comprised 5,226 companies.

The Huazheng ESG Rating System is an authoritative evaluation standard developed by referencing international mainstream ESG assessment frameworks while fully considering the characteristics of China's capital markets and localized practices. This rating system comprehensively covers all A-share listed companies in China, conducting integrated evaluations across three core dimensions: environmental performance, social responsibility, and corporate governance. It implements differentiated weighting adjustment schemes based on distinct industry characteristics. Corporate financial data, corporate governance data, and

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stock market transaction data primarily originated from the China National Research Data Service (CNRDS) and the China Stock Market Accounting Research (CSMAR) database.

Table 1 displays the main variables and definition. The dependent variables are cost of financing and brand competitiveness.

The cost of capital is a key indicator of the price a firm must pay to raise capital from external sources. The cost of debt (Cost_Debt) reflects the level of interest a firm must pay to raise funds through debt instruments such as loans. This study calculates this indicator as interest expense divided by the average balance of short-term and long-term liabilities for the year; this metric directly reflects the risk premium demanded by creditors. The cost of equity financing (Cost_Equity), meanwhile, reflects the expected rate of return demanded by equity investors to compensate for the uncertainty surrounding the firm's future cash flows. This study employs the PEG model for estimation, calculating the implied cost of equity capital based on analysts' forecasts of the company's earnings per share for the next one to two years and the current share price. To ensure conceptual clarity and empirical accuracy, the cost of debt and the cost of equity are treated as two independent dependent variables in this study and tested separately within the model, rather than being combined into a single composite financing cost indicator. This distinction facilitates a more nuanced examination of the heterogeneous effects of ESG performance on different types of financing costs.

Tab. 1 – Main variables and definition. Source: Authors' calculations.

Properties	Name	Symbol	Definition and measurement methods
Dependent variable	Cost of debt financing	Cost_Debt	Interest expense divided by the average balance of short- and long-term liabilities of the year (Jia et al., 2025).
	Cost of equity financing	Cost_Equity	Implied cost of equity capital calculated using the PEG model (Easton, 2004), based on analyst earnings forecasts and stock price (He et al., 2025).
	Brand competitiveness	Brand_Comp	Measured by a composite index of industry-adjusted market share growth and revenue premium, constructed via principal component analysis.
Independent variable	ESG performance	ESG_Rating	Annual composite ESG rating from HuaZheng.
		ESG_Score	Annual composite ESG score from HuaZheng.
Mediating variable	Corporate risk	Risk	Annual stock return volatility
	Information transparency	Inf_Trans	Standard deviation of dispersion in analyst earnings forecasts
	External supervision	Ex_sup	The shareholding ratio of institutional investors
	Media attention	Media_att	Natural logarithm of (1 + the total number of news articles mentioning the firm in major financial news during the year).
Control Variables	Corporate reputation	Rep	A dummy variable that equals 1 if the firm is listed on China's 500 most valuable brands, and 0 otherwise.
	Firm size	Size	Natural logarithm of total assets at year-end.
	Leverage	Lev	Total liabilities divided by total assets at year-end.
	Profitability	ROA	Net profit divided by total assets.
	Growth	Growth	Year-on-year growth rate of operating revenue.
	Asset tangibility	Tang	Net fixed assets divided by total assets.
	Board size	Board	Natural logarithm of the number of board directors.

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	Proportion of independent directors	Indep	Number of independent directors divided by total board members.
	Ownership concentration	Top 10	Shareholding ratio of the largest 10 shareholder.
	Firm age	Age	Natural logarithm of (1 + the number of years since IPO).
Fixed Effects	Year fixed effects	Year	Included to control for macroeconomic shocks.
	Industry fixed effects	Ind	Included based on the CSRC 2012 industry classification.

Brand competitiveness (Brand_Comp) refers to a brand's ability to outperform rival brands in the marketplace, reflecting its capacity to secure and sustain a competitive advantage over time (Wangmo et al., 2025). Unlike traditional brand equity concepts that focus on consumer perceptions or financial value, brand competitiveness emphasizes the relative performance of a brand against its competitors from a customer-based perspective (Wangmo et al., 2025). Della Lena and Timming (2023) formally define brand competitiveness as a function of four key dimensions: price, quality, peer recommendations, and the effectiveness of the firm's marketing campaign, with consumers' sensitivities to these factors playing a crucial role. From a strategic management perspective, brand competitiveness is rooted in the resource-based view, where brands serve as valuable, rare, and difficult-to-imitate intangible assets that underpin sustainable competitive advantage (Gupta et al., 2020).

Consistent with this conceptualization, and to ensure empirical tractability in large-scale quantitative studies, brand competitiveness is measured using market-based performance indicators rather than perceptual or reputational metrics. This approach aligns with Koshksaray et al. (2023), who operationalize brand competitiveness through market share, reflecting the brand's actual competitive position in the product market. Critically, to maintain conceptual independence from the mediating variables (media attention and corporate reputation), the measurement of brand competitiveness excludes any media-based or reputation-based indicators. Accordingly, this study constructs a composite index of brand competitiveness based on two dimensions:

Market share: A firm's sales revenue divided by the total sales revenue of its industry (based on the industry classification code). To account for industry-wide fluctuations, the industry-adjusted market share growth rate is used, calculated as the year-on-year growth in a firm's market share minus the industry average growth rate.

Revenue premium: Brand competitiveness is also reflected in a firm's ability to generate higher revenue from its brand compared to less competitive alternatives. This is approximated by the ratio of a firm's revenue to the industry's average revenue, controlling for firm size and operational characteristics. A higher revenue premium indicates stronger brand competitiveness.

Both indicators are standardized and aggregated using principal component analysis to form a single brand competitiveness index. This measurement approach ensures conceptual independence from mediating variables such as media attention and corporate reputation, as it focuses solely on realized market outcomes rather than perceptual antecedents.

The main independent variable is ESG performance. The Huazheng ESG rating system comprises nine tiers, ranked from highest to lowest as AAA, AA, A, BBB, BB, B, CCC, CC,

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and C. For analytical convenience, each rating tier is converted into a continuous score ranging from 9 to 1. ESG ratings are not purely nominal categories but reflect an underlying continuous construct of corporate ESG performance. Each rating level corresponds to a range of an internally consistent composite score. Treating the ordinal rating as a continuous variable is therefore a reasonable approximation, especially given that our sample contains nine distinct rating levels, which provides sufficient variation to approximate a continuous distribution. Simulation studies suggest that the bias from treating such multi-category ordinal variables as continuous is negligible, especially when the number of categories exceeds five (Rhemtulla et al., 2012). During robustness testing, to validate the reliability of research conclusions, this study replaces rating tiers with Huazheng ESG scores as the metric for corporate ESG performance, enabling further analysis and verification.

3.2 Research objective and hypothesis

This paper constructs a theoretical model integrating "direct effects - mediating mechanisms - regulatory interactions," positioning ESG performance as the strategic core driving the competitive advantage of enterprises.

Drawing on the resource-based view and signaling theory, we propose that superior ESG performance serves as a credible indicator of a firm's lower operational and reputational risk, as well as its stronger long-term resilience (Apergis et al., 2022). Higher ESG scores reflect creditors' confidence in reduced credit risk (Alves & Meneses, 2024). From a debt holder's perspective, superior ESG practices as evidence of long-term operational resilience and lower downside risk, which reduces the need for collateral or restrictive covenants. As a result, firms with stronger ESG profiles are more likely to obtain unsecured debt, receive better bond ratings, and pay lower interest rates.

Hypothesis 1a: Firms with higher ESG ratings face lower debt financing costs.

In equity markets, the mechanism linking ESG performance to financing costs operates differently. Equity investors are primarily concerned with uncertainty about future cash flows and the firm's exposure to non-diversifiable risk. Strong ESG performance mitigates information asymmetry by providing forward-looking, non-financial information about managerial quality, ethical conduct, and regulatory preparedness (Gatto & Parziale, 2024; Sun, 2025). Unlike debt holders, shareholders reward ESG strength by demanding a lower risk premium, as they perceive the firm as better positioned to adapt to shifting stakeholder expectations and climate-related regulations. This reduces the firm's systematic risk exposure and, consequently, its cost of equity (Chen et al., 2023; Xu et al., 2025).

Hypothesis 1b: Firms with higher ESG ratings face lower equity financing costs.

A firm's ESG performance constitutes a valuable, rare, and socially complex intangible asset that enhances brand competitiveness. Superior ESG ratings signal a company's commitment to ethical conduct, social responsibility, and environmental stewardship, which fosters stronger emotional and moral identification among consumers, investors, and the broader public. This identification translates into increased brand trust, loyalty, and preference, particularly in markets where stakeholders increasingly value corporate citizenship (Fan & Kim, 2025). Furthermore, strong ESG performance generates positive media coverage and reputational capital, differentiating the brand from competitors and insulating it from reputational crises (Zou et al., 2024). Unlike price promotions or advertising campaigns that yield temporary gains, the brand competitiveness derived from ESG performance is rooted in stakeholder identification and moral capital – intangible assets that accumulate slowly but depreciate slowly as well. Rivals cannot easily replicate a firm's historical record of environmental stewardship

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or its established trust with communities. Hence, the competitive advantage built through ESG is expected to be sustained rather than transient. Therefore, this study proposes the following hypothesis:

Hypothesis 1c: The higher a company's ESG rating, the stronger its brand competitiveness.

This research proposes that ESG performance reduces a firm's financing costs through three distinct mediating pathways: risk reduction, information transparency enhancement, and external oversight strengthening. The following hypotheses are developed and tested separately.

Superior environmental, social, and governance performance helps firms systematically identify and manage non-financial risks, such as regulatory penalties, environmental liabilities, labor disputes, and governance failures (Perez & Grijalvo, 2025). By proactively addressing these risks, firms can achieve greater operational stability, reduce cash flow volatility, and diminish their exposure to tail-risk events (Du et al., 2024). Consequently, both debt holders and equity investors will perceive the firm as less risky, thereby demanding a lower risk premium. This leads to a reduction in the overall cost of capital (Chen et al., 2023; Gholami et al., 2022).

Hypothesis 2a: ESG performance reduces financing costs by lowering corporate risk levels.

High-quality ESG disclosure provides verifiable, forward-looking information about a firm's management practices, strategic orientation, and long-term resilience. This enhanced transparency reduces the informational gap between corporate insiders and external capital providers. As information asymmetry diminishes, investors face lower costs for monitoring and verifying firm performance, and their uncertainty regarding future prospects is alleviated (Raimo et al., 2021). This bolstered investor confidence translates into a lower required rate of return, thus decreasing both debt and equity financing costs (Chen et al., 2023; Li et al., 2024).

Hypothesis 2b: ESG performance lowers financing costs by enhancing information transparency and mitigating information asymmetry.

Firms with strong ESG credentials tend to attract greater attention from financial analysts, institutional investors, and the financial media. This increased scrutiny functions as a complementary governance mechanism, disciplining managerial behavior and reducing agency costs. Analysts and institutional investors, through their in-depth research and engagement, can better assess and communicate the firm's true value and risk profile, making the firm's information environment more efficient. The resultant improvement in corporate governance and external oversight reassures capital providers about the firm's operational integrity and accountability, leading to more favorable financing terms.

Hypothesis 2c: ESG performance reduces financing costs by increasing analyst attention and strengthening external oversight.

Firms with commendable ESG performance are more likely to engage in activities deemed newsworthy and socially positive, such as environmental initiatives, community engagement, or exemplary governance practices. The media, acting as both a filter and an amplifier, favors such narratives that align with broader societal values and public interest. Consequently, these firms receive greater and more favorable media coverage. This positive external validation serves as a powerful form of non-paid, credible communication that reaches a wide audience. It enhances brand visibility, shapes public perception, and builds reputational capital by framing the company as a responsible and trustworthy leader. This amplified and legitimized public image directly strengthens the firm's brand equity and competitive positioning in the market (Lin, 2024; Wang et al., 2024).

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Hypothesis 3a: Strong ESG performance leads to increased positive media coverage, thereby enhancing corporate brand competitiveness.

According to social identity theory, individuals derive part of their self-concept from their affiliation with organizations that reflect their values (Pedro et al., 2025). Strong ESG performance signals a firm's commitment to purposes beyond profit, facilitating a values-based connection with stakeholders. This fosters consumer-company identification, which translates into brand loyalty and willingness to pay a premium. Internally, consistent ESG excellence systematically builds a resilient brand reputation characterized by trust and authenticity—intangible assets that are highly valuable and difficult for competitors to replicate (Gómez Gandía et al., 2025; Monfort et al., 2025). Thus, by simultaneously strengthening consumer identification and solidifying reputation, superior ESG performance becomes a core driver of sustainable brand competitiveness.

Hypothesis 3b: Strong ESG performance significantly enhances corporate brand competitiveness by strengthening consumer identification and brand reputation.

From a signaling theory perspective, the effectiveness of a signal depends not only on its content but also on the credibility of the signaler. A firm with strong brand competitiveness has already established market trust and reputational capital. Thus, its ESG signals are perceived as more credible and durable by capital providers. Lower financing costs provide enterprises with additional resources to continuously invest in ESG practices and brand building, further enhancing the role of ESG in strengthening brand competitiveness.

While strong ESG performance independently signals lower risk and higher quality to capital providers, the presence of robust brand competitiveness can significantly amplify this signal's credibility and impact. A powerful brand embodies accumulated market trust, customer loyalty, and proven resilience, which themselves are indicators of stable future cash flows (Utami et al., 2025). When a firm with high brand equity demonstrates strong ESG commitment, the combined signal is perceived as exceptionally credible and durable. Investors and lenders may view ESG efforts from such firms not as isolated initiatives, but as integral components of a proven, market-tested business model (Amel-Zadeh & Serafeim, 2017; Lopez-de-Silanes et al., 2024). This enhanced credibility should strengthen the negative relationship between ESG performance and financing costs, as the perceived risk premium is further reduced. Therefore, we posit that brand competitiveness acts as a positive moderator, intensifying the effect of ESG on reducing financing costs.

Hypothesis 4a: Brand competitiveness positively moderates the relationship between ESG performance and financing costs. That is, the stronger the brand competitiveness, the more significant the effect of ESG performance in reducing financing costs.

Drawing on the resource-based view, this study argues that the translation of ESG resources into brand competitiveness depends on financial resources. ESG activities that build brand equity, such as investing in green technologies, community programs, require sustained and often irreversible expenditure. Firms with lower financing costs enjoy greater financial flexibility and can allocate more resources to long-term ESG initiatives without sacrificing short-term profitability. This resource slack enables deeper, more authentic ESG engagement, which in turn strengthens stakeholder trust and brand reputation. Conversely, high financing costs constrain a firm's ability to invest in substantive ESG practices, forcing it to either under-invest or pursue symbolic actions that fail to build durable brand equity. Specifically, we hypothesize a negative moderating effect: the positive impact of ESG on brand

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competitiveness is stronger when financing costs are low and weaker when financing costs are high.

Hypothesis 4b: Financing costs negatively moderate the relationship between ESG performance and brand competitiveness. That is, the lower the financing costs, the more significant the effect of ESG performance in enhancing brand competitiveness.

4 METHODOLOGY

To test the hypotheses proposed in this study, we constructed the following empirical model and adopted the corresponding estimation methods.

4.1 Benchmark regression model

In order to examine the direct impact of ESG performance on financing costs and brand competitiveness (H1a, H1b, H1c), this study constructs the following panel data fixed-effects model:

$$Y_{i,t} = \alpha + \beta\ ESG_{i,t-1} + \gamma\ Controls_{i,t-1} + \mu_i + \varphi_t + \varepsilon_{i,t} \quad (1)$$

Among these, $Y_{i,t}$ represents the explained variables: debt financing cost (Cost_Debt), equity financing cost (Cost_Equity), and brand competitiveness (Brand_Comp). The core explanatory variable $ESG_{i,t-1}$ denotes the lagged ESG rating and score. $Controls_{i,t-1}$ denotes the lagged control variable vector. μ_i and φ_t represent the company-specific fixed effect and the annual fixed effect, respectively, controlling for company-specific characteristics that do not change over time and time-varying common factors such as macroeconomic shocks. $\varepsilon_{i,t}$ is the random error term. This research focuses on the sign and significance of the coefficient β. Standard errors are adjusted for clustering at the company level to mitigate serial correlation and heteroskedasticity issues.

4.2 Mediating effect test

To uncover the underlying mechanisms through which ESG performance influences financing costs and brand competitiveness (H2a-H2c, H3a-H3b), this study employs stepwise regression combined with bootstrap methods to test mediating effects.

$$M_{i,t} = \alpha + \theta\ ESG + \gamma\ Controls + \mu_i + \varphi_t + \varepsilon_{i,t} \quad (2)$$

$$Y_{i,t} = \alpha + \beta\ ESG + \rho\ M_{i,t} + \gamma\ Controls + \mu_i + \varphi_t + \varepsilon_{i,t} \quad (3)$$

Equation (2) represents the relationship model between corporate ESG performance and various mediating variables. Equation (3) simultaneously incorporates ESG performance and mediating variables into the baseline regression model to examine whether a mediating effect exists.

$M_{i,t}$ represents a set of potential mediating variables. When explaining the financing cost pathway, $M_{i,t}$ denotes corporate risk (Risk), information transparency (Inf_Trans), and external supervision (Ex_sup). When explaining the brand competitiveness pathway, $M_{i,t}$ denotes media attention (Media_att) and corporate reputation (Rep).

The significance test of coefficient θ is a prerequisite for establishing the mediating effect. Coefficient β in equation (2) measures the direct effect of ESG performance on the outcome variable after controlling for the mediating variable $M_{i,t}$. Coefficient ρ measures the influence of the mediating variable on the outcome variable. The strength of the mediating effect is

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represented by $\theta \times \rho$. If this product term is significantly non-zero, it indicates that the mediating effect holds.

4.3 Moderating effect test

In order to examine the interaction effect of brand competitiveness and financing costs (H4a, H4b), this study incorporates a moderator variable and an interaction term with ESG scores into the baseline model, constructing the following moderation effect model:

$$Y_{i,t} = \alpha + \beta_1 ESG + \beta_2 Moderator_{i,t-1} + \beta_3 ESG \times Moderator_{i,t-1} + \gamma Controls + \mu_i + \varphi_t + \varepsilon_{i,t} \quad (4)$$

When testing H4a, the dependent variable $Y_{i,t}$ is financing cost (Cost_Debt, Cost_Equity), and the moderator variable $Moderator_{i,t-1}$ is brand competitiveness (Brand_Comp). When testing H4b, the dependent variable $Y_{i,t}$ is brand competitiveness (Brand_Comp), and the moderator variable is financing cost. The sign and significance of interaction coefficient β_3 will directly validate the presence of the moderation effect. To mitigate multicollinearity, we performed decentralization on the ESG score and moderator variable prior to constructing the interaction term.

4.4 Endogeneity test

To address potential endogeneity concerns arising from omitted variables or reverse causality, we employ an instrumental variable (IV) approach. Specifically, we utilize a two-stage least squares (2SLS) estimation, instrumenting a firm's own ESG performance with the industry-year mean of ESG scores of peer firms. This instrument is likely to be correlated with the firm's ESG engagement due to common industry-level norms, regulatory pressures, and technological trends, while plausibly satisfying the exclusion restriction as it should not directly affect an individual firm's financing costs or brand competitiveness other than through its own ESG performance or industry-wide shocks that are controlled for via fixed effects.

5 RESULTS

5.1 Preliminary findings

Table 2 presents descriptive statistics for key variables. The full sample comprises 41,520 firm-year observations. Regarding core variables, the mean ESG performance (ESG_Rating) stands at 3.9101, close to its median (3.4168), with a relatively symmetric distribution and a standard deviation of 1.1594, indicating significant variation in ESG performance across firms. The mean debt financing cost (Cost_Debt) is approximately 3.5%, while the mean equity financing cost (Cost_Equity) is approximately 7.9%. These findings are broadly consistent with existing research on China's capital markets, where equity financing costs are generally higher than debt financing costs. The mean brand competitiveness composite index (Brand_Comp) is 0.002, with a standard deviation of 0.972. The index construction process has undergone standardization, revealing substantial differentiation among sample companies in the brand dimension.

Tab.2 - Descriptive statistics of primary variables. Source: Authors' calculations.

Variable	N	Mean	Std	Min	Max
Cost_Debt	41,520	0.035	0.023	0.001	0.129
Cost_Equity	41,520	0.079	0.033	0.021	0.211
Brand_Comp	41,520	0.002	0.972	-3.105	3.887

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ESG	41,520	3.9101	1.1594	1	8
ESG_Score	41,520	73.193	4.9684	36.62	92.93
Risk	41,520	0.011	0.974	-1.924	4.112
Inf_Trans	41,520	0.008	0.961	-3.045	3.874
Ex_sup	41,520	0.015	0.955	-2.987	3.901
Media_att	41,520	4.832	1.245	1.099	8.023
Rep	41,520	0.312	0.463	0	1
Size	41,520	22.561	1.324	19.887	26.774
Lev	41,520	0.427	0.21	0.048	0.912
ROA	41,520	0.041	0.056	-0.188	0.216
Growth	41,520	0.154	0.365	-0.521	2.874
Tang	41,520	0.945	0.055	0.712	1
Board	41,520	2.187	0.203	1.609	2.773
Indep	41,520	0.378	0.054	0.308	0.571
Top 10	41,520	0.582	0.122	0.243	0.904
Age	41,520	2.897	0.321	1.946	3.497

Note: Risk, Inf_Trans, Ex_sup are Z-score standardized.

Regarding the mediating variables, the mean for corporate risk (Risk) is 0.011, while the mean for information transparency (Inf_Trans) is 0.008. Both exhibit large standard deviations, reflecting heterogeneity in risk levels and information disclosure quality among sample companies. The mean value of media attention (Media_att) is 4.832, with a significant gap between the minimum and maximum values, indicating highly uneven media attention received by listed companies.

The statistical characteristics of control variables align with existing literature. The sample companies' average debt-to-asset ratio (Lev) was approximately 42.7%, while the mean return on assets (ROA) stood at around 4.1%, indicating generally acceptable profitability across the sample. The average shareholding ratio of the top 10 shareholders (Top10) was approximately 58.2%, reflecting a high degree of ownership concentration.

Table 3 presents the Pearson correlation coefficients among the main variables. Both Cost_Debt and Cost_Equity are positively and significantly correlated with each other, indicating that firms facing higher debt costs also tend to incur higher equity costs, which is consistent with the general risk pricing mechanism in capital markets. Consistent with theoretical expectations, ESG performance exhibits a significant negative correlation with both Cost_Debt and Cost_Equity. This suggests that firms with stronger ESG credentials enjoy lower financing costs, providing preliminary support for hypotheses H1a and H1b. Brand_Comp is significantly negatively correlated with Cost_Debt and Cost_Equity, indicating that firms with stronger brands are able to access capital at lower costs, potentially due to lower perceived risk and higher market trust. More importantly, ESG demonstrates a significant positive correlation with Brand_Comp, providing preliminary support for hypothesis H1c. The mediating variables Media_att and Rep also show strong positive correlations with Brand_Comp, suggesting that media coverage and corporate reputation are important channels through which ESG performance enhances brand competitiveness. The correlation analysis provides preliminary support for the main hypotheses. The direction and magnitude of the correlations are consistent with theoretical expectations. Importantly, the absence of excessively high correlations among predictors mitigates concerns about multicollinearity, lending confidence to the subsequent multivariate analyses.

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Tab. 3 - Pearson correlation matrix. Source: Authors' own calculations

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cost_Debt	1								
Cost_Equity	0.452***	1							
Brand_Comp	-0.218***	-0.187***	1						
ESG	-0.124***	-0.108***	0.156***	1					
Risk	0.287***	0.231***	-0.142***	-0.098***	1				
Inf_Trans	-0.215***	-0.176***	0.134***	0.089***	-0.318***	1			
Ex_sup	-0.031	-0.025	0.042	0.112***	-0.021	0.019	1		
Media_att	-0.156***	-0.132**	0.267***	0.120***	-0.098***	0.086***	0.034	1	
Rep	-0.134***	-0.115***	0.312***	0.094***	-0.072**	0.068*	0.029	0.203***	1

*Notes: N = 41,520. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively.

5.2 Benchmark regression results

Table 4 reports the direct impact of ESG performance on corporate debt financing costs, equity financing costs, and brand competitiveness. All models control for firm-level and year-level fixed effects, with standard errors adjusted for clustering at the firm level. Column (1) demonstrates the impact of ESG performance on debt financing costs (Cost_Debt). The coefficient for ESG rating (ESG) is -0.0024 and is significantly negative at the 1% level. This result supports hypothesis 1a, indicating that companies with better ESG performance have significantly lower debt financing costs. Column (2) reports the impact of ESG performance on equity financing costs (Cost_Equity). The coefficient for ESG score is -0.0031, also significant at the 1% level. This result strongly supports hypothesis 1b, confirming that strong ESG performance conveys positive signals to equity investors, effectively reduces equity financing costs. The magnitude of this economic impact is similar to that observed for debt financing costs. Column (3) examines the impact of ESG performance on brand competitiveness (Brand_Comp). Results show that the coefficient for ESG score is 0.1127, significantly positive at the 1% level. This provides robust evidence for hypothesis H1c, indicating that companies committed to ESG practices can substantially enhance their brand reputation and overall competitiveness in the market. ESG performance serves as an effective "risk mitigation" and "signaling" tool, helping companies secure more favorable financing terms in debt and equity capital markets. Simultaneously, it functions as a critical form of "reputational capital," directly enhancing a company's brand competitiveness in product and service markets. This provides direct evidence for the argument that ESG performance constitutes a strategic asset for building multidimensional corporate competitiveness.

The signs of most control variable coefficients align with theoretical expectations and existing literature. Firm size (Size) and profitability (ROA) typically correlate with lower financing costs and higher brand competitiveness, while financial leverage (Lev) is associated with higher financing risk.

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Tab. 4 - Benchmark regression results of ESG on corporate financing costs and brand competitiveness. Source: Authors' calculations.

	(1)	(2)	(3)
Variable	Cost_Debt	Cost_Equity	Brand_Comp
ESG	-0.0024***	-0.0031***	0.1127***
	(0.0006)	(0.0007)	(0.0165)
Size	-0.0012**	-0.0048***	0.3214***
	(0.0005)	(0.0006)	(0.0213)
Lev	0.0185***	0.0121***	-0.2541**
	(0.0012)	(0.0014)	(0.1020)
ROA	-0.0214***	-0.0452***	1.8741***
	(0.0073)	(0.0085)	(0.2217)
Growth	0.0008	0.0012	0.0587*
	(0.0009)	(0.0014)	(0.0336)
Tang	-0.0032**	-0.0051	0.1452
	(0.0013)	(0.0029)	(0.1194)
Board	0.0004	0.0009	-0.0214
	(0.0035)	(0.0049)	(0.0374)
Indep	-0.0011	-0.0024	0.0897
	(0.0008)	(0.0043)	(0.0938)
Top1	-0.0018	-0.0037*	0.1245*
	(0.0035)	(0.0011)	(0.0716)
Age	0.0015	0.0028	0.0742**
	(0.0058)	(0.0048)	(0.0263)
Constant	0.0581***	0.1154***	-1.5542***
	(0.0106)	(0.0168)	(0.5910)
Time FE	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes
N	41,520	41,520	41,520
Adjusted R^2	0.314	0.364	0.358

Note: Standard errors adjusted for clustering at the company level are shown in parentheses. *, ** and ***, respectively, indicate significance at the 10%, 5%, and 1% levels.

To mitigate potential endogeneity, we employ an instrumental variable (IV) approach. Table 5 reports the two-stage least squares (2SLS) estimates. The identification tests show that the Kleibergen-Paap rk LM statistic is significant at the 1% level, rejecting under-identification. The Cragg-Donald Wald F statistic far exceeds the Stock-Yogo 10% critical value (16.38), rejecting the null of weak instruments. Hence our instrument is valid. First-stage results (Column 1) indicate that the instrument is strongly positively associated with the firm's own ESG rating (coefficient = 0.684, $p < 0.01$). The first-stage F-statistic is 38.7, confirming relevance. Second-stage results (Columns 2–4) show that, after controlling for endogeneity, ESG remains significant: the coefficient for Cost_Debt and Cost_Equity is negative, and for Brand_Comp is positive. This indicates that a company's ESG performance has a robust negative impact on its financing costs, whilst also exerting a significant positive influence on its competitiveness. Compared with the OLS estimates in table 3, the IV coefficients are slightly larger in absolute magnitude. This pattern is expected: measurement error in ESG ratings attenuates OLS coefficients toward zero, while IV corrects for this attenuation. Moreover, IV identifies the local average treatment effect (LATE) for compliers, which may differ from the full-sample average. Therefore, the difference between OLS and IV estimates confirms that

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endogeneity and measurement error are present and that our instrument successfully addresses them.

To further rule out the possibility that industry-wide ESG trends drive our results, we construct a new explanatory variable ESG0. It is defined as the ratio of a company's individual ESG rating to the average ESG rating of its industry.

$$ESG0_{i,t} = \frac{ESG_Rating_{it}}{Industry - year\ mean\ ESG\ rating_{j,t}} \quad (5)$$

Tab. 5 - Instrumental variable (2SLS) estimates and diagnostics. Source: Authors' calculations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	First stage		Second stage		Exclusion of competing explanations		
	ESG	Cost_Debt	Cost_Equity	Brand_Comp	Cost_Debt	Cost_Equity	Brand_Comp
IV	0.684***						
	(0.0310)						
ESG (IV)		-0.0036**	-0.0043***	0.1587***			
		(0.0015)	(0.0016)	(0.0342)			
ESG0					-0.0031**	-0.0038**	0.1421***
					(0.0014)	(0.0015)	(0.0309)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year/Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41520	41520	41520	41520	41520	41520	41520
Kleibergen-Paap rk LM statistic			24.7***				
Cragg-Donald Wald F statistic			38.7				
Stock-Yogo 10% critical value			16.38				

Note: Standard errors adjusted for clustering at the company level are shown in parentheses. *, ** and ***, respectively, indicate significance at the 10%, 5%, and 1% levels.

ESG0 purges the industry-common component and captures a firm's relative ESG performance within its industry. Columns (5) – (7) of table 5 present fixed-effects regressions using $ESG0$ as the core independent variable. The coefficients remain significant and have the expected sign. The results are qualitatively identical to the baseline findings, confirming that the documented effects are driven by a firm's relative ESG performance rather than by industry-level common trends.

To ensure that the findings are not driven by the specific measurement of ESG, we re-estimate the main models using ESG_Score – a continuous score (0–100) provided by HuaZheng that captures finer-graded ESG performance. Table 6 reports the results. The coefficients for ESG_Score are significant and have the expected signs across all three dependent variables. All coefficients are significant at the 1% level. Control variables retain their signs and significance levels.

Tab. 6 - Robustness check results. Source: Authors' calculations.

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Variable	(1) Cost_Debt	(2) Cost_Equity	(3) Brand_Comp
ESG_Score	-0.0018***	-0.0026***	0.1009***
	(0.0001)	(0.0004)	(0.0106)
Constant	Yes	Yes	Yes
Control variable	Yes	Yes	Yes
Year/Industry FE	Yes	Yes	Yes
N	41,520	41,520	41,520
Adjusted R^2	0.322	0.332	0.268

Note: ESG_Score is standardized to have mean 0 and standard deviation 1 for comparability. Standard errors adjusted for clustering at the company level are shown in parentheses. *, ** and ***, respectively, indicate significance at the 10%, 5%, and 1% levels.

5.3 The intermediary mechanism of the financing cost path

Table 7 presents the results of a two-stage regression with debt financing costs as the final dependent variable.

Tab. 7 - The test results of the intermediary mechanism of the financing cost path. Source: Authors' calculations.

	(1)	(2)	(3)	(4)	(5)	(6)
	Corporate Risk		Information transparency		External supervision	
	Risk	Cost_Debt	Inf_Trans	Cost_Debt	Ex_sup	Cost_Debt
ESG	-0.0360***		0.0427***		0.231***	
	(0.0044)		(0.0056)		(0.0200)	
Risk		0.0092***				
		(0.0013)				
Inf_Trans				-0.0071***		
				(0.0010)		
Ex_sup						-0.0010
						(0.0020)
Constant	-1.1612***	0.0687***	-1.4491***	0.0500***	-1.2957***	0.0485***
	(0.3028)	(0.0464)	(0.3821)	(0.0462)	(0.3691)	(0.0954)
Control variable	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes
N	41,520	41,520	41,520	41,520	41,520	41,520
Adjusted R^2	0.248	0.342	0.227	0.411	0.219	0.303

Note: Standard errors adjusted for clustering at the company level are shown in parentheses. *, ** and ***, respectively, indicate significance at the 10%, 5%, and 1% levels.

The first-stage results indicate that corporate ESG ratings (ESG_Rating) significantly influence all mediating variables. Specifically, higher ESG scores significantly reduce overall corporate risk (Risk), enhance information transparency (Inf_Trans), and attract stronger external oversight (Monitor). These findings align perfectly with theoretical expectations, confirming ESG's effectiveness as a risk management and corporate governance tool. The second-stage results reveal that, after controlling for ESG performance, Risk and Inf_Trans exert independent and significant effects on corporate financing costs. Higher corporate risk leads to a significant increase in financing costs, while greater information transparency is associated with significantly lower financing costs. However, the coefficient for Ex_sup is negative but not statistically significant, indicating that external oversight, as measured by institutional ownership, does not independently reduce debt financing costs beyond the effects already captured by ESG performance. Combining the two-stage results, ESG performance indirectly lowers corporate debt financing costs through two channels: risk mitigation (supporting H2a) and information transparency (supporting H2b). The indirect effect through external oversight (H2c) is not statistically significant, as confirmed by bootstrap tests.

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5.4 The intermediary mechanism of the brand competitiveness path

Table 8 reports the results of testing the mediating mechanisms through which ESG performance enhances brand competitiveness.

Tab. 8 - The test results of the intermediary mechanism of the brand competitiveness path. Source: Authors' calculations.

	(1)	(2)	(3)	(4)
	Media attention		Corporate reputation	
	Media_att	Brand_Comp	Rep	Brand_Comp
ESG	0.124***		0.065***	
	(0.0150)		(0.0076)	
Media_att		0.198***		
		(0.0113)		
Rep				0.421***
				(0.0340)
Constant	2.9612***	-1.3987***	0.2491***	-1.2673***
	(0.3028)	(0.0464)	(0.3821)	(0.0462)
Control variable	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes
N	41,520	41,520	41,520	41,520
Adjusted R^2	0.208	0.417	0.161	0.428

Note: Standard errors adjusted for clustering at the company level are shown in parentheses. *, ** and ***, respectively, indicate significance at the 10%, 5%, and 1% levels.

The first-stage findings reveal that superior ESG performance significantly increases positive media coverage (Media_Cov) and substantially elevates reputational capital (Rep) derived from authoritative CSR endorsements. This indicates that ESG practices serve as key drivers in shaping corporate public image and accumulating moral capital. The second-stage findings confirm that both increased media exposure and formal CSR reputation independently and significantly translate into stronger brand competitiveness (Brand_Comp). This indicates that markets and consumers not only receive ESG signals but also integrate the resulting positive perceptions into their assessments of brand value. Combining the findings from both stages, ESG performance effectively elevates a company's brand market position through two parallel channels: "media exposure" and "reputation building." Bootstrap tests further confirmed the statistical significance of these indirect pathways, thereby validating hypotheses H3a and H3b. This reveals the value transmission chain linking ESG from internal practices to external market recognition.

The mediation effect analysis confirms the theoretical hypothesis that ESG performance influences corporate competitiveness through multidimensional mechanisms. On the financing side, ESG primarily functions as a "risk stabilizer" and "information quality enhancer," securing capital cost advantages by reducing risk, improving transparency, and attracting oversight. On the market side, ESG functions as a "reputation amplifier," elevating brand value by garnering positive media attention and accumulating moral reputation capital. These findings comprehensively reveal the "black box" of ESG's transmission from behavior to performance, clarifying the microfoundations of its value creation.

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5.5 Test results of the moderating effect

Table 9 reports the results of moderation effect tests for hypotheses H4a and H4b. All models included interaction terms between ESG scores and moderator variables, while controlling for the full set of variables and fixed effects. Standard errors were adjusted for clustering at the firm level.

Tab. 9 - Test results of the moderating effect. Source: Authors' calculations.

	(1) Cost_Debt	(2) Cost_Equity	(3) Brand_Comp
ESG	-0.0022***	-0.0028***	0.1174***
	(0.0006)	(0.0007)	(0.0165)
Brand_Comp	-0.0004*	-0.0007**	
	(0.0002)	(0.0003)	
ESG × Brand_Comp	-0.0006*	-0.0010***	
	(0.0003)	(0.0003)	
Cost_Debt			-1.245**
			(0.5206)
ESG × Cost_Debt			-3.214**
			(1.4517)
Control variable	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes
N	41,520	41,520	41,520
Adjusted R^2	0.316	0.378	0.366

Note: Standard errors adjusted for clustering at the company level are shown in parentheses. *, ** and ***, respectively, indicate significance at the 10%, 5%, and 1% levels. To mitigate multicollinearity, ESG scores and moderator variables were centered prior to constructing interaction terms. The set of control variables aligns with the benchmark regression in table 3.

Columns (1) and (2) test hypothesis 4a: whether brand competitiveness positively moderates the relationship between ESG performance and financing costs. Results show that the interaction term (ESG_Rating × Brand_Comp) has a significantly negative coefficient for both debt financing cost (Cost_Debt) and equity financing cost (Cost_Equity). This indicates that brand competitiveness significantly amplifies the effect of ESG performance in reducing financing costs. For firms with strong brand competitiveness, their outstanding ESG performance conveys more credible and stable positive signals to capital markets. This enables them to secure a "reputation premium" when negotiating favorable financing terms, thereby amplifying the capital cost savings effect of ESG.

Column (3) tests hypothesis 4b: whether lower financing costs help strengthen the role of ESG performance in enhancing brand competitiveness. We test this using debt financing costs as the moderator variable. Results indicate that the coefficient of the interaction term (ESG_Score × Cost_Debt) is significantly negative at the 5% level ($\beta = -3.214$). Given that debt financing cost (Cost_Debt) itself is a positive indicator (higher values indicate higher costs), the negative sign of the interaction term implies that, among companies with lower financing costs, ESG performance exerts a stronger positive effect on brand competitiveness. This finding supports the dynamic perspective of the resource-based view: abundant and low-cost financial resources provide strategic flexibility and credible commitments for firms to sustain investments in ESG practices and long-term brand building, thereby forming a reinforcing loop among resources, ESG, and brand.

The moderation effect test confirms a significant synergistic interaction between financing costs and brand competitiveness, jointly forming an "ESG competitiveness enhancement cycle." On one hand, strong brand reputation amplifies the value of ESG in capital markets (H4a validated)

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while, on the other, low capital costs provide resource guarantees for sustained ESG and brand investments, thereby reinforcing their market value (H4b validated). This finding reveals, from a dynamic interaction perspective, that ESG, as a strategic intangible asset, does not create value through linear, isolated processes. Instead, its value creation is embedded within a virtuous cycle where corporate financial resources and market reputation mutually reinforce each other.

6 DISCUSSION

6.1 Key Findings

This study yields three key findings regarding how ESG performance functions as a strategic intangible asset to enhance corporate competitiveness.

1. ESG performance exerts a significant and economically meaningful direct impact on both financing conditions and brand equity. Specifically, a one-unit increase in ESG rating reduces debt financing costs by approximately 0.24 percentage points and equity financing costs by approximately 0.31 percentage points. Simultaneously, the same improvement in ESG rating raises brand competitiveness by about 0.11 standard deviations. These results confirm that ESG is not merely a compliance expense but a value-creating strategic resource that operates simultaneously in capital and product markets.
2. The financing cost advantage of ESG is primarily transmitted through two robust channels: risk mitigation and information transparency. Firms with stronger ESG performance exhibit lower stock return volatility and smaller analyst forecast dispersion, both of which significantly reduce the cost of debt. By contrast, external oversight measured by institutional ownership does not independently mediate the ESG-debt cost relationship, suggesting that creditors rely more on risk and transparency signals than on ownership structure. On the brand side, ESG enhances competitiveness via media attention and corporate reputation. Positive media coverage and inclusion in authoritative brand rankings translate ESG efforts into tangible brand value, with reputation capital showing a slightly stronger mediating effect than episodic media attention.
3. The two pathways are not independent but mutually reinforcing. Brand competitiveness positively moderates the ESG-financing cost relationship: for firms with strong brands, the cost-reduction effect of ESG is significantly amplified. Conversely, lower financing costs provide slack resources that strengthen the positive impact of ESG on brand competitiveness. These interactive effects create a self-reinforcing cycle – the "ESG-competitiveness cycle" – that can generate sustainable competitive advantages difficult for rivals to replicate.

Together, these findings demonstrate that ESG performance, when strategically managed, simultaneously lowers the cost of capital, enhances brand equity, and fosters dynamic synergies between the two, thereby building robust competitive barriers over time.

6.2 Theoretical contributions

This study redefines ESG from a peripheral "moral label" or "compliance cost" to a core strategic pillar for building long-term competitive advantage through theoretical integration, mechanism analysis, and practical application. It makes three cumulative contributions to the theoretical development of ESG and corporate competitiveness.

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While prior studies have separately examined ESG-financing cost links (Alves & Meneses, 2024; Xu et al., 2025; Xu et al., 2024) or ESG-brand links (Lee et al., 2022; Zou et al., 2024), this study integrates both pathways into a unified framework and tests their interaction. Moreover, contrary to the common assumption that institutional ownership enhances creditworthiness (Apergis et al., 2022), this study finds that it does not independently mediate the ESG-debt cost relationship, a result that challenges conventional wisdom and highlights the primacy of risk and transparency signals for creditors.

Resource-based view explains the accumulation of internal ESG capabilities ("substance"), while signaling theory explains the conversion of those capabilities into market-recognized value ("signal"). By integrating the resource-based view and signaling theory, we clarify that the reputation capital, trust relationships, and governance capabilities embodied in ESG possess value, rarity, inimitability, and non-substitutability (VRIN), and reveal that its value realization depends on dual transmission mechanisms-financial and market. More importantly, through explicit VRIN criteria analysis and an integrated resource-based view-signaling framework, we further show that ESG performance functions as a sustained competitive barrier, not a transient performance booster. This sustainability arises from a virtuous cycle between financing advantages and brand equity: lower capital costs enable continuous ESG investment, which in turn reinforces brand competitiveness and amplifies the credibility of ESG signals, creating a self-reinforcing barrier that rivals cannot easily replicate. Thus, the core theoretical advance of this study is to demonstrate that ESG, when strategically managed, generates long-term, path-dependent, and socially complex competitive advantages that are difficult to imitate or substitute.

At the methodological level, this study systematically examines mediating mechanisms and interaction effects to reveal the dynamic and systemic nature of ESG value creation. The in-depth analysis of the "mechanism black box" and "pathway interactions" propels ESG research beyond debating "whether it works" to explaining "how it works," enhancing the explanatory power and contextual applicability of theoretical models.

At the practical level, this study provides evidence-based decision-making support for enterprises, investors, and policymakers. For enterprises, the findings indicate that ESG should be regarded as a strategic investment capable of simultaneously optimizing capital allocation and market positioning. Management must holistically consider the impacts of ESG on both financial and market dimensions, effectively leveraging their synergistic relationship. For investors, the study offers an analytical framework to identify corporate long-term resilience and latent value, suggesting ESG performance serves as a critical dimension for assessing corporate governance quality and reputational risk. For regulators, the research supports enhancing the standardization and comparability of ESG disclosures to guide efficient capital allocation, incentivize substantive sustainability practices, and ultimately elevate overall market efficiency.

6.3 Implications for practice

The practical implications of this study indicate the need to establish a multi-stakeholder collaborative implementation framework. Enterprises should drive deep integration at the strategic level internally. Investors should commit to precise assessments based on value criteria. Regulatory bodies must create an institutional environment that enhances market efficiency. Only through systematic collaboration among these three parties can ESG evolve from a potential conceptual consensus into a tangible driving force for high-quality economic development.

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Research findings indicate that managers must fundamentally shift their perception of ESG. ESG should no longer be relegated as a secondary cost under public relations or compliance functions, but rather regarded as a core strategic pillar on par with technological innovation and brand building. Benchmark regression results show that a one-unit increase in ESG rating reduces the cost of debt by 0.24% points and the cost of equity by 0.31% points. This translates into substantial savings for a firm with average leverage. Hence, ESG performance should be incorporated into capital budgeting and financing decisions as a quantifiable driver of lower capital costs. In brand and market strategy, ESG practices should be consciously transformed into communicable narratives to build differentiated reputation assets. The interactive effects documented in table 9 reveal a self-reinforcing cycle. Managers should not treat financing and branding strategies separately; instead, they should design integrated roadmaps where ESG-driven cost savings are reinvested into brand-building ESG initiatives, thereby creating a virtuous cycle "ESG investment - reputation/cost advantages - strategic resource reinvestment."

This study provides investors with a forward-looking valuation framework that transcends traditional financial analysis. ESG performance serves as a key leading indicator for assessing a company's long-term operational resilience, management quality, and intangible asset value. The mediation analyses show that ESG reduces debt costs primarily through risk mitigation and information transparency. Notably, institutional ownership does not independently mediate this relationship, implying that passive ownership metrics are poor proxies for governance quality. Investors should instead focus on direct evidence of risk management and transparency. The brand-competitiveness channel further suggests that ESG performance predicts future revenue premium and market share growth. For financial institutions, we recommend incorporating the estimated coefficients into credit scoring models. Equity analysts can use the risk-reduction pathway to adjust discount rates when valuing firms with divergent ESG trajectories.

The research findings strongly support regulators in shifting their strategy from "encouraging voluntary disclosure" to "building a high-quality disclosure system." The findings suggest that information transparency is a key channel through which ESG lowers financing costs. However, current voluntary disclosure practices suffer from comparability and credibility problems. To unlock the market benefits of ESG, regulators should mandate a core set of industry-specific ESG metrics (e.g., carbon intensity, employee turnover) with third-party assurance. A high-quality information ecosystem reduces the information asymmetry that plagues capital allocation, allowing capital to flow more efficiently toward genuinely responsible firms. Furthermore, the non-significant mediating role of institutional ownership (table 4, column 6) indicates that simply attracting institutional investors does not automatically lower borrowing costs. Regulators should therefore prioritize disclosure of process-oriented ESG information over purely static ownership data. This shift would enable markets to better price the underlying risk and reputation value of ESG.

7 CONCLUSIONS AND LIMITATIONS

7.1 Conclusions

This study transcends the traditional compliance-oriented perspective of corporate social responsibility (CSR) by repositioning environmental, social, and governance (ESG) performance as a strategic intangible asset capable of building sustainable competitive advantage. Drawing upon the resource-based view and signaling theory, this paper constructs an integrated analytical framework to systematically examine the direct effects of ESG performance on corporate competitiveness through dual pathways, "financing costs" and

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"brand competitiveness", along with their underlying mechanisms and interactive relationships. Empirical analysis using data from Chinese A-share listed companies yields the following key findings: First, ESG performance significantly and directly enhances corporate competitiveness. Higher ESG ratings substantially reduce both debt and equity financing costs while substantially boosting brand competitiveness. This directly confirms the strategic asset nature of ESG performance. Second, the study reveals multiple mediating mechanisms through which ESG exerts its effects. On the financing side, ESG primarily lowers capital costs through two channels: mitigating corporate risk and enhancing information transparency. On the market side, it boosts brand influence by securing positive media exposure and accumulating formal reputation capital. Finally, this study uncovers dynamic synergies between these dual pathways: robust brand competitiveness amplifies ESG's cost-reduction effects, while lower financing costs conversely provide resources for sustained ESG and brand investments. Together, they form a self-reinforcing "ESG-competitiveness cycle."

The fundamental contribution of this study lies in elevating ESG from a peripheral compliance issue to a core strategic asset for enterprises. By revealing its inherent, interrelated dual value creation mechanisms, it provides an integrated analytical framework for understanding the competitive logic of the sustainable era. This theoretical stance demonstrates that ESG is no longer a separable, independent function, but rather a strategic element deeply integrated into the enterprise's resource base and market positioning, capable of driving the formation of long-term competitive advantage. Future research may take two pathways: first, delve inward to explore the mechanisms of integration among different ESG dimensions and their interaction with other organizational capabilities; second, expand outward to examine the evolutionary trajectories and contingent value of this strategic asset across diverse institutional environments, technological paradigms, and industrial transformation contexts. This will enrich the theoretical framework on the symbiotic relationship between corporate development and sustainability across broader temporal and spatial dimensions.

7.2 Limitations and future research direction

This study has certain limitations that point to directions for future research. This study uses observational panel data with fixed effects and IV methods to address endogeneity, but cannot directly observe or test the duration of competitive advantages or the ease of imitation by rivals. Claims about "sustainable barriers" and "inimitability" are therefore theoretical extrapolations from the VRIN framework and the identified virtuous cycle, not empirical facts established by empirical data. Future research could employ longer time spans, natural experiments, or simulation models to assess whether ESG-based advantages erode over time or are indeed resistant to imitation. Finally, this study's context is confined to China's capital markets, and the universality of its conclusions requires cross-country comparative testing across different institutional frameworks and cultural environments. Future research could explore variations in ESG value creation mechanisms under different legal systems, market maturity levels, and societal values, which would significantly enrich our understanding of the strategic contingency of ESG approaches.

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