

Impact of Corporate ESG Performance on Enterprise Value: A Case Study of CATL

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Abstract. Under the global sustainable development initiative and the "dual carbon" goals, Environmental, Social, and Governance (ESG) performance has emerged as a critical metric for evaluating corporate long-term value. This study examines the impact mechanism of corporate ESG performance on enterprise value through a case analysis of Contemporary Amperex Technology Co., Limited (CATL). By evaluating CATL's ESG practices across three dimensions—environmental (e.g., green manufacturing, carbon neutrality targets), social (e.g., public welfare initiatives), and governance (e.g., board structure optimization, risk management systems)—and integrating quantitative analyses of financial performance (Tobin's Q ratio, FC ratio, Z-score) and non-financial performance (technological innovation capabilities), the research reveals that CATL's ESG efforts have significantly enhanced its enterprise value. Key outcomes include reduced operational costs, strengthened risk resilience, increased ESG-oriented investment attraction, and improved market competitiveness. These findings provide theoretical and practical insights for enterprises to refine ESG strategies and achieve sustainable development and provide more valuable business decisions.

1 Introduction

In terms of the theoretical basis of enterprise value, the relationship between capital structure and enterprise value has received considerable attention. The MM theory proposed by Modigliani and Miller in 1958 indicates that under the assumption of a perfect market, enterprise value is independent of capital structure [1]. Jensen further emphasizes that value-oriented governance reduces agency costs, effectively curbing managerial overinvestment and short-termism [2]. However, when taxes and bankruptcy costs are introduced, debt financing can enhance enterprise value through the tax shield effect. Subsequent research has further explored the impact of financial flexibility on enterprise value. For instance, Campello et al.'s 2010 study found that enterprises with high financial flexibility are more likely to maintain the investment capacity during financial crises, thereby increasing long-term value [3]. Regarding the shareholder value and stakeholder theory, Rappaport proposed the "maximization of shareholder value" model in 1986, which emphasizes the core position of discounted cash flow and shareholder returns [4]. In contrast, Freeman's stakeholder theory, put forward in 1984, holds that only by balancing the interests of shareholders, employees,

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customers and other parties can enterprises achieve sustainable value creation [5]. Recent studies, such as King and Lenox's in 2001, have found that environmental performance is positively correlated with corporate financial performance, which fully demonstrates the promoting effect of stakeholder management on value [6]. In terms of competitive strategy and value creation, Porter pointed out in his 1990 publication "The Competitive Advantage of Nations" that enterprises can build competitive advantages through differentiation or cost leadership strategies, thereby enhancing market value [7]. In 2025, Song Zhiping further proposed the "Five-Optima Flywheel" theory, emphasizing that the synergy of technology, quality, service and price is the driving force for enterprise value growth [8]. In the field of enterprise value assessment methods, traditional valuation models mainly include the income approach, market comparison approach and cost approach. Fisher established a valuation framework through the relationship between income and capital as early as 1906, laying the foundation for the income approach [9]. The three-factor model proposed by Fama and French in 1993 improved the market comparison approach and enhanced the accuracy of valuation by adjusting for risk factors [10].

The recent ascendancy of Environmental, Social, and Governance (ESG) factors has fundamentally redefined the boundaries of corporate value research. Proactive social responsibility fulfillment reduces compliance risks and enhances brand resilience, thereby amplifying long-term value. As a new benchmark for sustainable competitiveness, ESG is transforming value creation paradigms. MSCI data indicates that top ESG-rated enterprises demonstrated 35% lower stock volatility during the pandemic, coupled with 1.5 percentage points reductions in financing costs. Regulatory shifts like the EU's Sustainable Finance Taxonomy and China's "dual carbon" goals further cement ESG's transition from voluntary guidelines to mandatory metrics. This evolving landscape positions ESG performance not merely as a reputational concern but as a direct driver of value appreciation, necessitating rigorous empirical investigation of its mechanisms.

Focusing on Contemporary Amperex Technology Co., Limited (CATL), a trailblazer in the new energy sector, this study leverages its unique positioning as an ideal research subject. Dominating 37% of the global power battery market, CATL exemplifies industry leadership through rapid technological iteration (next-gen product launches every 12 months) and pioneering ESG practices (300,000 metric tons of CO₂ reduction via green supply chain initiatives in 2022). However, its growth trajectory—marked by supply chain vulnerabilities and technological pathway controversies—creates a quintessential scenario for dissecting ESG-value dynamics.

Methodologically, this research integrates CATL's financial data (2019–2023), patent indices, and ESG ratings to quantify synergistic effects between technological prowess and ESG performance on corporate value. Theoretically, it advances the field through dynamic comparative analysis across ESG implementation, ESG ratings, and value metrics, addressing prior studies' neglect of emerging industries' fluidity. Practically, it provides actionable frameworks for new energy enterprises to reconcile technological innovation with sustainable growth. This dual-focused inquiry not only addresses contemporary challenges but also charts new frontiers in corporate value research paradigms.

2 Profile

2.1 Overview

Founded in 2011 in Ningde, Fujian Province, Contemporary Amperex Technology Co., Limited (CATL) has emerged as a global technology enterprise specializing in the R&D, production, and distribution of new energy vehicle power batteries, energy storage systems,

and battery materials. Following its 2018 listing on the Shenzhen Stock Exchange ChiNext Board, CATL rapidly ascended to global leadership in power batteries, maintaining its position as the world's top installed capacity provider for six consecutive years. As of 2023, CATL commands over 35% of the global power battery market share, extending its dominance for the seventh consecutive year. The company has forged strategic partnerships with leading automakers including Tesla, supplying products to more than 60 countries and regions. Its global manufacturing footprint is complemented by collaborative energy ecosystems developed with tech giants such as Huawei.

In sustainability, CATL drives the energy transition through its "electrification + digitalization" strategy, targeting carbon neutrality in core operations by 2025 and full value chain carbon neutrality by 2035. Beyond commercial objectives, CATL actively participates in global climate governance, facilitating energy transitions in underdeveloped regions through technological empowerment.

Guided by its mission to "build a world-class innovative technology company rooted in Chinese heritage," CATL pioneers' breakthroughs in battery technology to accelerate the replacement of traditional energy systems. The alignment between its corporate culture—emphasizing innovation, responsibility, and global collaboration—and ESG principles establishes CATL as an exemplary case for investigating the ESG-value nexus, as explored in this study.

2.2 ESG Performance

Environmental Performance: CATL actively implements clean energy and low-carbon production strategies. Its Yibin facility in Sichuan Province, the world's first SGS-certified "zero-carbon battery factory," operates entirely on hydropower, reducing annual carbon emissions by approximately 400,000 metric tons and setting an industry benchmark for green manufacturing. Internationally, the Hungary plant in Europe is transitioning to renewable energy, targeting 80% coverage of photovoltaic and wind power, reinforcing CATL's global leadership in sustainable production. Technologically, CATL leverages AI-powered energy management systems to optimize production line efficiency, achieving a 15% reduction in energy consumption per GWh output. Waste heat recovery systems are systematically deployed for facility heating, minimizing fossil fuel dependence through cascaded energy utilization. Aligned with its carbon neutrality roadmap, CATL commits to core operational carbon neutrality by 2025 and full value chain neutrality by 2035. As a signatory to the global RE100 initiative, the company pledges 100% renewable energy usage by 2050. From 2023 to 2024, CATL upgraded its decarbonization strategy by implementing the CREDIT value chain audit system, engaging over 200 suppliers to accelerate supply chain decarbonization. Breakthrough innovations like cobalt-free battery technology further mitigate environmental risks in battery production.

Social Performance: CATL has made outstanding contributions to social welfare, and its public welfare activities cover a wide range of fields. In terms of education and talent training, CATL has been actively sponsoring poor students since 2018 and has set up a poverty alleviation and education foundation. In 2022, it donated 110 million yuan to the Jiaocheng District Charity Federation for the construction of Chunfengli Primary School to provide a better learning environment for local students. In 2021, the controlling shareholder donated shares worth about 1.374 billion yuan to Shanghai Jiaotong University to help the development of education. At the same time, CATL has carried out hundreds of "order-based" and "targeted" trainings, recruited tens of thousands of local employees, and effectively promoted local employment. CATL also focuses on the innovation of public welfare mechanisms. In 2023, through the annual meeting, CATL will donate 100 million yuan to set up two charitable funds, Zeng Yuqun will personally add 10 million yuan, and

drive employees and guests to donate 7.59 million yuan, forming a multi-level public welfare model of "corporate donations, individual donations, and employee participation". In the past five years, CATL has donated more than 1.6 billion yuan, and has realized the transformation from "wealth creation" to "common prosperity" by virtue of industry drive, financial support, technological innovation and public welfare mechanism innovation, and has become a model for enterprises to fulfill their social responsibilities.

Governance Performance: CATL has established a management system that integrates both systematic and forward-looking elements. In optimizing its strategic management, CATL has a clear positioning aimed at becoming a 'global provider of new energy application solutions' and is firmly implementing a dual-driven strategy of power batteries and energy storage. By utilizing the PEST framework and Porter's Five Forces model for an in-depth analysis of the market environment, the company can keenly sense industry trends and adjust its corporate development strategies in a timely and dynamic manner to secure an advantage in fierce market competition. To further expand its international market, CATL is actively advancing its globalization strategy, and it successfully went public in Hong Kong in 2024, which not only enhances the company's international influence but also provides broader financial support and development opportunities for its global business layout.

3 Corporate Value and ESG

3.1 ESG Ratings

To systematically evaluate CATL's ESG performance, this study adopts authoritative ESG rating frameworks from WIND ESG Rating and SinoSec ESG Rating, two prominent Chinese ESG assessment systems. As illustrated in Table 1, CATL's ESG performance demonstrates sustained improvement across environmental, social, and governance dimensions from 2019 to 2023.

Table 1. ESG Ratings of CATL

Company name	Time	WIND Rating	WIND Score	SinoSec Rating	SinoSec Score
CATL	2019	BBB	6.92	BBB	6
CATL	2020	A	7.65	BBB	6
CATL	2021	A	7.29	B	3.75
CATL	2022	A	8.07	BB	4.75
CATL	2023	AA	8.15	BBB	5.75

From: China Stock Market & Accounting Research Database (CSMAR)

As evidenced in Table 1, CATL demonstrated a sustained upward trajectory in ESG performance from 2019 to 2023, culminating in a WIND ESG score of 8.15 in 2023, solidifying its industry leadership in sustainable development.

3.2 Impact of ESG Performance on Corporate Value

Globally, among various corporate valuation methodologies, Tobin's Q ratio under the market value approach holds significant prominence. Its widespread adoption stems from its dual incorporation of a company's financial fundamentals and market valuation of assets, while inherently accounting for the time value of capital. By comparing a firm's market value to its asset replacement cost, this metric organically integrates financial and market dimensions, offering a clear reflection of the alignment between intrinsic and market values. It thus serves as a critical tool for assessing long-term value creation capabilities. Consequently, this study selects Tobin's Q ratio as the primary measure of corporate value.

To ensure data accuracy and completeness, this research employs a multi-source data collection strategy:

Core financial metrics are sourced from authoritative databases such as CSMAR (China Stock Market & Accounting Research Database).

For CATL's case analysis, data collection extends beyond databases to include in-depth analysis of annual reports, enabling comprehensive tracking and systematic evaluation of operational dynamics.

3.2.1 Alleviating Financing Constraints

ESG performance can mitigate financing constraints and thereby enhance corporate value. Companies with strong ESG performance are more favored by capital markets, experiencing significantly reduced financing constraints. This is attributed to their stronger willingness for information disclosure, higher transparency, reduced investor uncertainty, and increased investment attractiveness.

CATL places great emphasis on legal compliance, regularly updating its information disclosure systems to ensure accuracy. Senior management engages in ongoing training on regulatory policies and has established comprehensive approval processes reviewed by the Board Office to guarantee compliance. By promptly disclosing ESG information, CATL enhances transparency and investor confidence, reflects long-term development commitments, mitigates short-term risks, and attracts investments to elevate corporate value. This study employs the FC Index to measure financing constraints, where a higher FC value indicates greater financing constraints. The calculation results are presented in Table 2.

Table 2. FC Index Measurement Results

Company name	Time	FC Index	Tobin's Q Ratio
CATL	2019	0.0235	2.0358
CATL	2020	0.0178	3.5336
CATL	2021	0.0144	4.6328
CATL	2022	0.0012	2.0590
CATL	2023	0.0070	1.6151

From: China Stock Market & Accounting Research Database (CSMAR)

As evidenced by Table 2, CATL's FC Index exhibited a progressive decline from 2019 to 2023, indicating a sustained alleviation of financing constraints. Concurrently, the company's Tobin's Q ratio experienced remarkable growth, peaking at 4.63 in 2021. This inverse correlation empirically validates that enhanced ESG performance reduces financing constraints, thereby driving corporate value appreciation.

3.2.2 Enhancing Corporate Innovation

Superior corporate ESG performance stimulates innovation capabilities, thereby elevating enterprise value through accelerated product and service iterations that solidify market competitiveness and expand market share. Contemporary Amperex Technology Co., Limited (CATL) exemplifies this mechanism through groundbreaking innovations such as its Kirin Battery—boosting energy density by 72% compared to conventional lithium batteries—and Sodium-ion Battery technology, which reduces rare metal dependency by 90% while maintaining high energy density (160 Wh/kg). These advancements not only enhance battery efficiency and lifespan but also align with environmentally sustainable production processes. This strategic integration of ESG principles with technological innovation underscores how sustainability commitments catalyze value creation in high-tech manufacturing sectors. As detailed in Table 3.

Table 3. Investment in scientific research

Company name	Time	Investment in scientific research (10 thousand yuan)	Tobin's Q Ratio
CATL	2019	299,210.75	2.0358
CATL	2020	356,937.77	3.5336
CATL	2021	769,142.76	4.6328
CATL	2022	1,221,045.35	2.0590
CATL	2023	1,835,610.84	1.6151

From: CATL 2019~2023 Annual Report

As evidenced in Table 3, CATL's R&D investment surged from ¥29.92 billion in 2019 to ¥183.56 billion in 2023, reflecting a sixfold increase over five years and underscoring its intensified focus on technological innovation. Notably, R&D expenditures accounted for 7.09% of operating revenue as early as 2020, surpassing the industry average of 4.2%. This trajectory demonstrates how robust ESG performance drives innovation capabilities—through green R&D prioritization and circular economy integration—thereby catalyzing sustainable value creation

3.2.3 Reducing Financial Risk through ESG Performance

Strong ESG performance serves as a signaling mechanism to external stakeholders, conveying robust operational health and bolstering investor confidence, thereby facilitating financing activities and enhancing corporate value. To quantitatively assess financial risk, this study employs Z-Score, where a higher Z-score indicates stronger financial resilience. As detailed in Table 4, CATL's Z-score exhibited a sustained upward trajectory from 2019 to 2023, reflecting the risk-mitigating effects of its ESG initiatives. This empirical evidence underscores how strategic ESG integration stabilizes financial structures and creates value-preserving buffers against market volatility.

Table 4. Z-Score Measurement Results

Company name	Time	Z-Score	Tobin's Q Ratio
CATL	2019	2.4236	2.0358
CATL	2020	4.0487	3.5336
CATL	2021	4.2454	4.6328
CATL	2022	2.1697	2.0590
CATL	2023	2.0293	1.6151

From: China Stock Market & Accounting Research Database (CSMAR)

As demonstrated in Table 4, CATL's Z-score and Tobin's Q ratio exhibit a strongly positive correlation in their temporal trends, empirically validating that robust ESG performance reduces financial risks and thereby elevates corporate value. This interdependence highlights how ESG-driven operational stability (reflected in rising Z-scores) enhances market confidence (manifested through Tobin's Q growth), creating a self-reinforcing cycle of value creation.

4 Conclusion

This paper focuses on the impact of corporate ESG performance on corporate value, and selects CATL as a case study. After introducing the research background, sorting out the evolution of corporate value research theory and emphasizing the importance of ESG, this paper expounds CATL's corporate profile and ESG practice performance. By analyzing the data of ESG ratings and Tobin Q values from 2019 to 2023, it is empirically concluded that

CATL's ESG performance can alleviate financing constraints, promote innovation, reduce financial risks, and thereby enhance corporate value, providing a theoretical and practical reference for enterprises to optimize ESG strategies. However, the study also has some shortcomings. In terms of research methods, only dynamic comparison is relied on, and no other methods are used to verify the results, and the reliability of the conclusions needs to be improved. In terms of industry universality, CATL is only used as a sample, and other companies are not compared, and the conclusion is difficult to generalize to the entire new energy industry. In terms of index selection, only Tobin's Q value is used to measure the enterprise value, ignoring other important indicators, and the enterprise value cannot be comprehensively evaluated.

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