



# The Role of Corporate Profit Margins in Promoting Green Innovation

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**Abstract.** Against the backdrop of China's vigorous promotion of new-quality productive forces and the comprehensive green transformation of its economy and society, the synergistic development of corporate profitability and green innovation (CGI) has attracted significant attention. This study uses Chinese A-share listed companies from 2011 to 2024 as its sample and employs a two-way fixed-effects model to empirically examine the impact of corporate profit margins on CGI. The results indicate that corporate profit margins have a significant positive impact on CGI. Higher profitability provides enterprises with stable internal funding, alleviates financing constraints, and enhances risk-bearing capacity, thereby promoting green R&D investment and green patent output. Heterogeneity analysis reveals that this promotional effect is more pronounced in central and western regions, non-high-tech industries, and high-pollution areas. This study enriches the existing literature on how corporate financial performance drives CGI, providing empirical evidence and policy implications for firms to optimize resource allocation, for governments to formulate differentiated green incentive policies, and for fostering the synergistic development of corporate profitability and green transformation.

**Keywords:** Corporate Profit Margins, Green Innovation, OLS.

## 1 Introduction

In research on corporate green innovation (CGI) and resource allocation efficiency, a key theoretical and empirical question is whether CGI can enhance a company's resource utilization efficiency. Based on the strategic directives outlined in the 2025 Chinese Government Work Report—including “developing new-quality productive forces in accordance with local conditions and accelerating the construction of a modern industrial system,” as well as “coordinate advancing carbon reduction, pollution control, ecological conservation, and economic growth, and accelerating the comprehensive green transformation of economic and social development”—innovation-driven development and green transformation have become crucial pathways to high-quality development. At the same time, General Secretary Xi Jinping has emphasized that central enterprises must, on this new journey, deeply recognize their mission, better serve the overall national development agenda, promote high-quality economic and social development, safeguard and improve people's livelihoods, actively fulfill their social

responsibilities, and contribute to the cause of Chinese-style modernization. Against this backdrop of current realities and policy directions, this paper aims to systematically examine the impact of CGI on resource utilization efficiency and its underlying mechanisms. It seeks to provide new empirical evidence for enhancing corporate performance in China, deepen understanding of the economic consequences of CGI, and offer theoretical support for optimizing corporate policy design and effectively incentivizing CGI behavior.

## 2 Literature Review

In their research on corporate profit margins, scholars have conducted multifaceted explorations of various influencing factors. Tian Shuo and Qi Dandan (2019) <sup>[1]</sup> utilized merged data from China's customs import-export database and industrial enterprise database for the period 2000–2007. Their empirical analysis found that both the appreciation of the RMB exchange rate and exchange rate volatility have negative effects on the profits of exporting firms, with the impact of exchange rate volatility being more significant. This conclusion exhibits heterogeneity across firms of different ownership types and varying degrees of industry competition. Ren Tongyu et al. [2] constructed a spatial equilibrium model incorporating value-added tax (VAT) and government expenditure. Based on data from prefecture-level and higher cities from 2015 to 2020, their study indicated that tax and fee reduction policies generally promoted an increase in corporate profits. However, the policy's effectiveness was jointly determined by the ratio of local government expenditure to GDP and the share of VAT revenue. Labor supply conditions and wage levels also influenced the policy's effects.

Research on CGI has primarily focused on the combined effects of the external environment, policy instruments, and firms' own capabilities. Wang Yaopeng et al. [3] used a sample of Chinese listed companies from 2008 to 2022 to construct an anti-globalization index based on political, economic, and social dimensions. Their findings revealed that anti-globalization exerts a negative impact on CGI, with this effect being more pronounced in firms with low marketization levels, low digitalization levels, and high pollution levels. Meanwhile, absorptive capacity and innovation capacity negatively moderate this relationship, while adaptive capacity exerts a positive moderating effect. Li Junchao et al. [4] Using the 2018 revision of the "Guidelines for Corporate Governance of Listed Companies" to establish an ESG disclosure framework as a quasi-experimental design, a study employing the difference-in-differences method demonstrated that ESG disclosure policies can promote CGI in state-owned enterprises by improving corporate ESG performance, strengthening executives' green awareness, and refining environmental protection systems. Government governance capacity and media oversight exert positive moderating effects, and the policy has positive impacts on substantive innovation, collaborative innovation, and innovation quality. Furthermore, relevant studies have confirmed that CGI can help enterprises improve environmental performance and enhance market competitiveness, serving as a key pathway for enterprises to respond to the "dual carbon" goals and achieve sustainable development.

### 3 Research Hypotheses

As a key indicator of operational efficiency, corporate profit margins exert a complex and significant influence on CGI through factors such as capital security, risk tolerance, and strategic choices. Moderate and stable profit margins can provide enterprises with sufficient internal funds, alleviate financing constraints, and enhance risk-bearing capacity, making them more willing to engage in green procurement[5], invest in long-term projects such as green R&D[6] and environmental upgrades, and proactively enhance their competitiveness through CGI; Conversely, when profit margins are too low, firms constrained by survival pressures typically reduce R&D and environmental investments, making it difficult to undertake CGI projects characterized by long cycles and high uncertainty. At the same time, excessively high profit margins may also have a dampening effect; some highly profitable firms are prone to path dependence and managerial inertia, lacking the motivation to innovate, and may even prioritize short-term gains over green investments due to agency problems. This relationship is further moderated by factors such as industry, regulatory intensity, and the nature of property rights, and the two influence each other bidirectionally. Although CGI may increase costs in the short term, it can ultimately boost corporate profit margins in the long term through cost reduction, efficiency gains, and market advantages, thereby achieving a virtuous cycle between financial performance and green development. The following hypotheses are proposed for testing:

H1: Increased corporate profit margins have driven CGI.

### 4 Research Design

#### (1) Empirical Model

To empirically test the impact of corporate profit margins on CGI, drawing on previous research, this study establishes the following two-way fixed-effects model:

$$CGI = \alpha + \beta NetProfit + \varepsilon \quad (1)$$

In (1), NetProfit represents the firm's profit margin, while CGI represents CGI. The coefficient  $\beta$  measures the extent to which CGI affects its profit margin and serves as a random error term.

#### (2) Relevant Variables

**Dependent Variable:** Corporate Profit Margin (NetProfit), measured using net profit from the company's balance sheet. **Corporate Green Innovation (CGI):** measured using the logarithm of the number of green patents granted to the firm plus one.

#### (3) Data Sources

This study treats CGI as an exogenous shock and empirically examines the impact of corporate profit margins on CGI. The data were compiled from publicly available sources, including the CSMAR database and annual reports of listed companies, covering a sample of Chinese A-share listed companies from 2011 to 2024. The statistical scope of the data is limited to listed companies. Table 1 presents the descriptive statistics for the variables.

**Table 1.** Descriptive Statistics

| VARIABLES | (1)<br>N | (2)<br>mean | (3)<br>sd | (4)<br>min | (5)<br>p50 |
|-----------|----------|-------------|-----------|------------|------------|
| NetProfit | 38,396   | 0.0806      | 0.1169    | -0.7654    | 0.0766     |
| CGI       | 39,027   | 0.6725      | 0.9448    | 0.0000     | 0.0000     |

## 5 Analysis of Benchmark Result

The benchmark estimates of the impact of firm profit margins on CGI are presented in Table 2. As shown in the three models in Table 2, the coefficients for CGI are all positive. This indicates that firm profit margins effectively promote CGI, thereby supporting research hypothesis H1. Firms with high profit margins are better positioned to meet the environmental compliance requirements and green preferences of governments, investors, and consumers, and to enhance their legitimacy and brand premium through CGI.

**Table 2.** Benchmark Result

|           | (1)<br>CGI              | (2)<br>CGI              | (3)<br>CGI              |
|-----------|-------------------------|-------------------------|-------------------------|
| NetProfit | 0.5000***<br>(15.7129)  | 0.6044***<br>(18.6065)  | 0.4503***<br>(14.7183)  |
| cons      | 0.6513***<br>(125.6207) | 0.6429***<br>(125.0573) | 0.6546***<br>(176.7743) |
| Firm      | No                      | No                      | Yes                     |
| Year      | No                      | Yes                     | Yes                     |
| N         | 36631                   | 36631                   | 36479                   |
| r2        | 0.0038                  | 0.0301                  | 0.7076                  |

*t* statistics in parentheses, \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , the same applies below.

## 6 Heterogeneity Test

Regional development imbalances have long been a persistent issue in China, with cities in different geographical locations exhibiting significant differences in many aspects[7]. The extent to which corporate profit margins promote CGI varies significantly across the eastern, central, and western regions. This stems fundamentally from systemic differences in regional resource endowments, the stringency of environmental regulations, market environments, industrial structures, and financing conditions. Consequently, even at the same profit margin levels, there are regional disparities in firms' motivations, capabilities, and constraints regarding CGI.

As table 3 shown: whether a company operates in a high-tech industry fundamentally alters the cost structure, risk attributes, expected returns, and resource dependencies of

CGI. Consequently, even when profit margins are identical, there are significant differences in firms' motivations and capabilities regarding CGI investment.

In high-pollution regions, environmental regulations are stricter, compliance costs are higher, and social oversight pressure is greater. As a result, increases in corporate profit margins can be effectively channeled into green innovation investments to meet environmental requirements, thereby exerting a stronger promotional effect. In contrast, in non-high-pollution regions, regulatory intensity is weaker and the marginal returns on CGI are lower. Even when profitable, firms in these areas tend to prioritize short-term expansion, and the driving effect of profit margins on CGI is relatively weaker.

**Table 3.** Heterogeneity Test Result

|           | (1)                     | (2)                    | (3)                     | (4)                    | (5)                    | (6)                     |
|-----------|-------------------------|------------------------|-------------------------|------------------------|------------------------|-------------------------|
|           | CGI                     | CGI                    | CGI                     | CGI                    | CGI                    | CGI                     |
| NetProfit | 0.3854***<br>(11.2407)  | 0.6025***<br>(8.8951)  | 0.4400***<br>(11.0108)  | 0.4626***<br>(9.4800)  | 0.7764***<br>(8.8613)  | 0.3544***<br>(11.0531)  |
| cons      | 0.6583***<br>(156.2286) | 0.6474***<br>(84.0324) | 0.7208***<br>(146.9035) | 0.5426***<br>(97.0106) | 0.6843***<br>(74.9045) | 0.6487***<br>(161.3294) |
| Firm      | Yes                     | Yes                    | Yes                     | Yes                    | Yes                    | Yes                     |
| Year      | Yes                     | Yes                    | Yes                     | Yes                    | Yes                    | Yes                     |
| N         | 27207                   | 9269                   | 22945                   | 13458                  | 7688                   | 28739                   |
| r2        | 0.7194                  | 0.6796                 | 0.7049                  | 0.7233                 | 0.6598                 | 0.7267                  |

## 7 Conclusions and Recommendations

### (1) Research Conclusions

Corporate profit margins significantly enhance CGI. The results of the benchmark regression indicate that the coefficient for corporate profit margins is significantly positive, suggesting that profit margins effectively drive the growth of CGI, thereby validating Hypothesis H1. Higher profit margins provide a financial buffer for enterprises to bear the long-term costs and uncertainties associated with CGI, encouraging them to shift from passive compliance to actively pursuing green technological innovation, and ultimately raising the overall level of CGI.

### (2) Policy Recommendations

To enhance the level of CGI, a multi-pronged approach should be adopted to strengthen the role of profitability in driving innovation. On the one hand, efforts should be made to continuously optimize the business environment and strengthen fiscal, tax, and financial support to stabilize corporate profitability and bolster internal funds, thereby laying a financial foundation for green R&D and low-carbon transformation. On the other hand, a policy framework that balances incentives and constraints must be refined. Through tax incentives and R&D subsidies, enterprises should be guided to allocate more profits toward CGI, while simultaneously strengthening environmental regulations and market oversight to compel enterprises to proactively undertake technological upgrades. Differentiated policies should be implemented based on regional

development and industry-specific pollution characteristics. We must improve intellectual property protection and strengthen collaboration mechanisms among industry, academia, and research institutions to facilitate the conversion of profits into CGI. Ultimately, this will foster a virtuous cycle where corporate profitability and CGI mutually reinforce and synergistically enhance one another.

## References

1. Tian Shuo, Qi Dandan. A Study on the Impact of RMB Exchange Rate Fluctuations on the Profits of Exporting Enterprises [J]. *World Economy and Politics Forum*, 2019 (5):44-61. <https://doi.org/10.3969/j.issn.1007-1369.2019.05.004>.
2. Ren Tongyu, Xie Jianguo, Hong Xiaoyu. Tax and Fee Cuts, Government Expenditures, and Corporate Profits [J]. *Research on Economics and Management*, 2023, 44 (3):89-108. <https://doi.org/10.13502/j.cnki.issn1000-7636.2023.03.006>.
3. Wang Yaopeng, Zhang Yue, Xiang Ziwei, Wen Quan. Deglobalization and Corporate Green Innovation from a Multidimensional Dynamic Capabilities Perspective: “Swimming Against the Current” or “Going with the Flow” [J/OL]. *Science of Science and Science and Technology Management*, 2026. <https://link.cnki.net/doi/10.20201/j.cnki.sstsm.20260210.002>
4. Li Junchao, Ren Guangqian, Zhao Mengjie. ESG Information Disclosure Policy and Green Innovation in State-Owned Enterprises—A Quasi-Natural Experiment Based on the Revision of the Code of Corporate Governance for Listed Companies[J]. *Economic System Reform*, 2026 (1):153-161. <https://doi.org/10.12451/202602.00535>
5. Jiang Xin, Hu Wentao, Xu Wenli, et al. How Government Green Procurement Stimulates Corporate Green Innovation [J]. *Research on Quantitative Economics and Technical Economics*, 2024, 41(11): 200-220. DOI:10.13653/j.cnki.jqte.20240812.003.
6. Wu Xuefen, Liu Xianyu, Wang Ziyi, et al. The Impact of R&D Expenditures on Corporate Profits [J]. *Cooperative Economy and Technology*, 2025(7): 133-135. <https://doi.org/10.13665/j.cnki.hzjjykj.2025.07.040>.
7. Bu Han, Gao Yuandong, Xun Zhou. How Does Big Data Affect the Labor Share of Income?—Evidence from National-Level Comprehensive Big Data Pilot Zones [J]. *Southern Economy*, 2023(11):6282. <https://doi.org/10.19592/j.cnki.scje.410261>.

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