International Business & Economics Studies
ISSN 2640-9852 (Print) ISSN 2640-9860 (Online)
Vol. 8, No. 4, 2026
www.scholink.org/ojs/index.php/ibes

Original Paper

When Tax Avoidance Turns Green: Managerial Discretion and Behavioural Consistency in Corporate Greenwashing

Cao Xuan[1*]

[1] School of Innovation and Entrepreneurship, Nanjing University Of Industry Technology, Nanjing, China

Received: October 22, 2026 Accepted: November 08, 2026 Online Published: November 26, 2026

doi:10.22158/ibes.v8n4p277 URL: http://dx.doi.org/10.22158/ibes.v8n4p277

Abstract

Corporate tax avoidance and greenwashing may reflect a shared pattern of organisational hypocrisy. Moving beyond conventional ESG disclosure measures, this study examines their relationship through a behavioural consistency perspective. Using Chinese A-share listed firms (2018-2024), we find a positive association between tax avoidance and greenwashing, mediated by weakened corporate governance and attenuated by patient capital. The association is stronger among non-state-owned, smaller and non-heavy-polluting firms, where oversight is weaker. By conceptualising both practices as expressions of organisational opportunism, this study shifts attention from disclosure quantity to the gap between corporate claims and actions, highlighting the role of patient capital in constraining cross-domain opportunistic behaviour.

Keywords

Tax avoidance, Greenwashing, ESG-tax hypocrisy, Behavioral consistency, Governance for integrity, Patient capital

1. Introduction

Some firms aggressively minimise tax liabilities while simultaneously promoting ambitious environmental commitments. Are tax avoidance and greenwashing independent choices or expressions of a shared organisational logic? Existing studies offer conflicting findings: ethical consistency research suggests a negative relationship (Yoon, Lee, & Cho 2021), whereas legitimacy theory predicts a positive association, viewing CSR disclosure as compensation for legitimacy losses (Nasih et al., 2024) We argue that both behaviours reflect organisational hypocrisy: a deliberate divergence between corporate claims and actual practices for private gain. Rather than viewing greenwashing as merely a lack of ESG capabilities, we conceptualise tax avoidance and greenwashing as manifestations of shared

corporate opportunism. Although recent studies identify links between tax avoidance and symbolic environmental disclosure (Bilicka et al., 2025; Nasih et al., 2024), the organisational mechanisms underlying this relationship remain insufficiently understood.

Drawing on behavioural consistency theory (Berrone, Fosfuri, & Gelabert, 2017), we propose that firms exhibit similar opportunistic tendencies across domains, particularly when managerial discretion is high and external constraints are weak.

Using Chinese A-share listed firms from 2018 to 2024, this study makes four contributions. First, it measures greenwashing through the say-do gap rather than conventional ESG scores or disclosure volume. Second, it introduces behavioural consistency to explain the shared opportunistic logic linking tax avoidance and greenwashing. Third, it identifies patient capital, including long-term investors and relationship lenders, as an important governance mechanism. Finally, it demonstrates stronger associations among tax-aggressive, non-state-owned, smaller and non-heavy-polluting firms, highlighting the role of managerial discretion and institutional constraints.

2. Literature Review, Theory and Hypothesis Development

2.1 Theoretical Foundation: An Integrative Framework

Agency theory explains tax avoidance through managerial opportunism and information asymmetry(Desai and Dharmapala 2006), while legitimacy theory views greenwashing as a means of managing stakeholder perceptions (Eckberg et al., 2026; Freeman, 1984). The compensation perspective suggests that firms increase CSR disclosure to offset legitimacy losses associated with tax avoidance (Xu et al., 2022).

However, these perspectives overlook the shared behavioural foundations of both practices. Drawing on organisational hypocrisy, we argue that tax avoidance and greenwashing reflect a common opportunistic tendency to decouple formal commitments from actual conduct for private gain.

2.2 Behavioural Consistency and Greenwashing

Behavioural consistency suggests that opportunistic practices may extend across corporate domains through three mechanisms.

Cognitive mechanism. Managers accustomed to aggressive tax strategies may develop decision-making schemas that prioritise expediency over substantive integrity, normalising symbolic environmental compliance (Berrone et al., 2013).

Organisational culture mechanism. Tax avoidance may foster organisational opacity and normalised deviance, weakening ethical standards and internal oversight, thereby facilitating misleading environmental disclosures (Balakrishnan, Blouin, & Guay, 2019).

Resource allocation mechanism. Aggressive tax planning diverts managerial attention and organisational resources from internal monitoring and substantive environmental investment, potentially encouraging low-cost symbolic disclosure (Sun et al., 2023).

Collectively, these mechanisms suggest that tax avoidance reinforces organisational conditions

conducive to greenwashing, with weakened corporate governance serving as a key transmission channel.

H1: Corporate tax avoidance is positively associated with greenwashing.

H2: Corporate governance mediates this relationship, whereby tax avoidance weakens governance and increases greenwashing.

2.3 The Moderating Role of Patient Capital

Patient capital, including long-term equity investment and relationship-based lending, may constrain opportunistic behaviour through long-term orientation and enhanced monitoring(Huang & Zhang, 2025).

First, patient investors and lenders prioritise sustainable value creation, discouraging short-term opportunism and symbolic environmental practices (Houston & Shan, 2019). Second, their sustained engagement reduces information asymmetry, strengthens oversight and raises the costs of concealing misconduct. These governance benefits may counteract the opacity associated with aggressive tax planning (Balakrishnan, Blouin, & Guay, 2019), weakening its association with greenwashing.

H3: Patient capital negatively moderates the positive association between tax avoidance and greenwashing.

2.4 Positioning within Recent Literature

Recent studies link tax avoidance to sustainability-related disclosures in Indonesia and the UK (Bilicka et al., 2025; Nasih et al., 2024). However, existing research largely focuses on disclosure quality, readability or reporting indices rather than discrepancies between claims and actual environmental performance (Gerged, Kehbuma, & Beddewela, 2025; Xu et al., 2022).

Our study extends this literature in three ways. First, it measures greenwashing through the environmental say–do gap. Second, it applies behavioural consistency theory to explain the relationship through corporate governance mechanisms. Third, using Chinese A-share listed firms, it examines how ownership, firm size and pollution intensity shape opportunistic consistency under varying institutional constraints.

The research framework is presented in Figure 1.

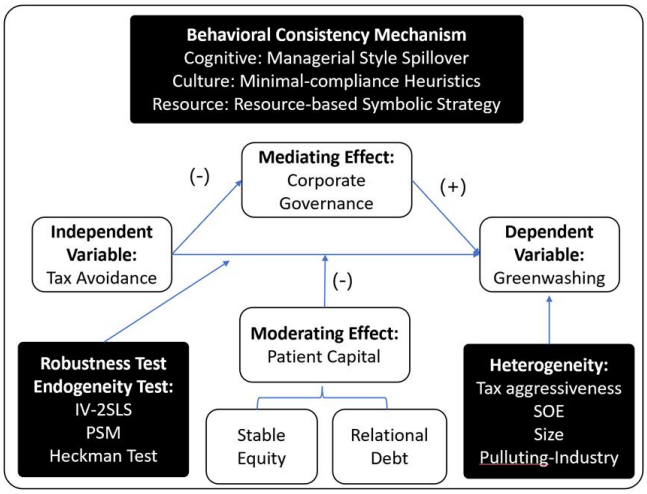

Figure 1. The Research Framework

3. Methodology

3.1 Sample Selection and Data Sources

The initial sample covers Chinese A-share listed firms from 2018 to 2024. Firm-level financial, tax, governance and patient capital data are obtained from CSMAR and Wind, while ESG ratings are collected from Bloomberg and Huazheng to measure greenwashing.

The sample excludes financial firms, ST and *ST companies, and observations with missing core variables. All continuous variables are winsorized at the 1st and 99th percentiles. The final unbalanced panel comprises 4,461 firm-year observations.

3.2 Variable Definitions

3.2.1. Dependent Variable: Greenwashing(Gws)

Greenwashing refers to corporate communications that exaggerate or misrepresent a firm's genuine environmental performance. Following established methodologies (Hu et al., 2023), a firm's level of greenwashing is measured as the divergence between its environmental disclosure and its substantive environmental performance. Specifically, the greenwashing score (Gws) for firm i in year t is constructed as:

$$Gws_{i,t} = \left(\frac{ESG_{i,t} - \overline{ESG}_{dis}}{\sigma_{dis}}\right) - \left(\frac{ESG_{i,t} - \overline{ESG}_{per}}{\sigma_{per}}\right)$$

The first component captures a firm's relative position in the annual cross-sectional distribution of environmental disclosure scores (ESG_{dis}), normalized by the annual mean ($\overline{ESG}_{dis}$) and standard deviation (σ_{dis}). The second component similarly measures its relative position in the distribution of substantive environmental performance score (ESG_{per}). A higher Gws indicates a greater discrepancy between publicized commitments and actual performance. In practice, the environmental disclosure score (ESG_{dis}) is proxied by the Bloomberg environmental rating. In contrast, the environmental actual performance scores (ESG_{per}) is proxied by the Huazheng environmental rating.

3.2.2 Independent Variable: Tax Avoidance (LRATE_diff)

Following prior literature, the aggressiveness of corporate tax avoidance is captured by the difference between the statutory tax rate a firm faces and its effective tax rate. Specifically, the ETR differential (RATE_diff) is calculated as the statutory tax rate minus the firm's Generally Accepted Accounting Principles Effective Tax Rate (GAAP ETR), where GAAP ETR equals total income tax expense divided by pre-tax accounting profit. A higher value indicates a greater degree of tax avoidance.

However, as noted by Dyreng (2008), annual effective tax rates can be noisy due to factors such as tax refunds and multi-year tax disputes. Therefore, following the approach in prior studies (Hanlon & Heitzman, 2010; Ye, 2014), our main explanatory variable, Long-run ETR differential (LRATE_diff), is defined as the five-year moving average of RATE_diff from year t-4 to year t. This measure aims to reflect a firm's persistent tax avoidance behaviour.

For robustness tests, an alternative proxy based on the book-tax difference (BTD) is also employed. BTD is defined as (pre-tax book income minus estimated taxable income) scaled by total assets at the end of the year. A larger BTD suggests greater divergence between book and taxable income, which is often associated with tax avoidance activities (Hanlon & Heitzman 2010). Additionally, the contemporaneous measure RATE_diff is used as a substitute explanatory variable in robustness analyses.

3.2.3 Mediating Variables: Corporate Governance Quality (Gov_Index)

This study constructs a composite governance index based on a multidimensional framework encompassing shareholder oversight, the board of directors, and executive incentives(Lin and Ge 2023), consistent with the aggregation of key governance attributes (Kerr et al., 2024). Applying principal component analysis (PCA) to nine underlying indicators(Yan, Qian, and Qi 2018), we use the first principal component as our comprehensive governance measure (Gov_Index).

The specific indicators are defined as follows:

(1) Shareholder Dimension: (a) Ownership share of the largest shareholder; (b) Equity restriction ratio (combined shareholding of the 2nd to 10th largest shareholders divided by the largest shareholder's stake); (c) A dummy variable for state-owned enterprises; (d) Institutional investor ownership ratio.

(2) Board of Directors Dimension: The board is central to governance(Klein 2002). We include indicators related to its structure and independence, which are essential elements of strong governance: (a) Board independence(proportion of independent directors), associated with monitoring effectiveness; (b) Board size; (c) CEO duality, a dummy variable equal to 1 if the CEO also chairs the board(Kerr et al., 2024).

(3) Incentive Mechanism Dimension: To align managerial interests, we include (a) Shareholding ratio of senior management, and (b) Total compensation of the top three executives(Lin and Ge 2023).

This synthesised Gov_Index provides a parsimonious measure of a firm's overall internal governance quality.

3.2.4 Moderating Variables: Patient Capital

Following the prevalent classification in the literature, patient capital is delineated into two key dimensions: relational debt and strategic equity. The measurement for each dimension is constructed as follows.

Relational Debt (PC_Debt)： This dimension captures the extent of a firm's reliance on committed, long-term debt financing. Reflecting the approach of the existing study (H. Zhang, Zhang, & Yi, 2026) and considering instruments such as corporate bonds and financial leases, it is measured as the ratio of a firm's long-term liabilities (including long-term loans, bonds payable, and long-term payables) to its total liabilities (David, O'Brien, & Yoshikawa, 2008). A higher ratio indicates a greater dependence on relational debt, which typically involves more stable creditor-investor relationships.

Strategic Equity (PC_Equity)： This dimension identifies equity held by institutional investors with a demonstrably long-term orientation. The identification procedure, adapted for Chinese listed firms, involves several steps. First, the total holding duration (T) of an institutional investor k in a firm i over the sample period is calculated($T_{ki} = \sum_{2018}^{2024} Hold_{kit}$). Next, the investor's firm-specific holding duration is compared to its own average holding duration across all its investments ($AVT_{ki} = \frac{1}{N}\sum_{i=1}^{N} T_{ki}$,), where N represents the number of firms in the institution's portfolio during the same period. An institution is classified as a strategic investor for a specific firm if its holding duration in that firm exceeds its cross-firm average. Finally, the variable PC_Equity for a firm is defined as the aggregate shareholding proportion of all such identified strategic institutional investors in that firm-year. This measure reflects the concentration of ownership among committed, patient equity providers (H. Zhang, Zhang, & Yi, 2026).

3.2.5 Control Variables

The following control variables are selected in this paper: firm size (Size), financial leverage (Lev), profitability (ROA), firm age (FirmAge), and board independence (Indep). Table 1 reports all variables:

Table 1. Variable Definition

Type	Variables	Symbol	Measures
Dependent Variable	Greenwashing Score	Gws	Divergence between its environmental disclosure and its substantive environmental performance
Independent Variable	Tax Avoidance	LRATE_diff	The five-year moving average of RATE_diff from year t-4 to t,
		RATE_diff	RATE_diff=statutory tax rate - the firm's GAAP ETR
		BTD	(pre-tax book income minus estimated taxable income) scaled by total assets at the

			end of the year
Mediating Variables	Corporate Governance Index	Gov_Index	A composite corporate governance index constructed using Principal Component Analysis (PCA).
Moderating Variables	Patient Capital	PC_Equity	The aggregate shareholding proportion of all institutions classified as strategic investors for the listed company.
		PC_Debt	A firm's long-term liabilities/its total liabilities
Control Variables	Firm Size	Size	Natural logarithm of total assets
	Financial Leverage	Lev	Total Liabilities at Year-End / Total Assets at Year-End
	Profitability	ROA	Net Profit / Average of Total Assets
	Firm Age	FirmAge	ln(Current Year - Year Company Founded + 1)
	Board Independence	Indep	The proportion of Independent Directors

3.2.6 Descriptive Statistics

Table 2 reports descriptive statistics for 4,461 firm-year observations. Gws has a mean of -0.0151 but substantial dispersion, indicating considerable firm-level heterogeneity. LRATE_diff averages 0.0093, with alternative tax avoidance measures (RATE_diff and BTD) showing similar patterns. Gov_Index averages 0.4052. Patient capital is reflected in mean values of 0.385 for strategic equity holdings (PC_Equity) and 0.1804 for relational debt (PC_Debt).

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std.dev.	Min	Max
Gws	4461	-0.0151	1.0500	-2.5895	2.6777
LRATE_diff	4461	0.0093	0.0798	-0.2497	0.1849
RATE_diff	4461	0.0142	0.1081	-0.4157	0.2211
BTD	4461	0.0073	0.0304	-0.0728	0.1057
Gov_Index	4461	0.4052	0.9042	-1.5771	2.1121
PC_Equity	4461	0.3850	0.2995	0.0000	0.9263
PC_Debt	4461	0.1804	0.1804	0.0000	0.7260
Size	4461	23.7016	1.2106	21.3494	27.3911

Lev	4461	0.4597	0.1834	0.0820	0.8430
ROA	4461	0.0618	0.0517	0.0017	0.2575
FirmAge	4461	3.1514	0.2529	2.3979	3.6889
Indep	4461	0.3785	0.0758	0.2381	0.6000

3.3 Model Specification and Empirical Strategy

The following baseline regression model is specified to test the main hypothesis empirically:

$$Gws_{i,t} = \alpha_0 + \alpha_1 LRATE_diff_{i,t} + \alpha_2 Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (1)$$

where i and t denote firm and year, respectively. The dependent variable, $Gws_{i,t}$ is the greenwashing score for firm i in year t. The key explanatory variable, $LRATE_diff_{i,t}$ measures the firm's long-run tax avoidance. A vector of firm-level control variables is included. The model incorporates industry ($\sum Industry$) and year ($\sum Year$) fixed effects. $\varepsilon_{i,t}$ denotes error term.

4. Empirical Analysis

4.1 Baseline Regression

The baseline regression results examining the impact of tax avoidance on corporate greenwashing are presented in Table 3. The dependent variable is Gws in all four model specifications. Column (1) presents the results obtained with only the core explanatory variable, LRATE_diff. Column (2) adds industry and year fixed effects. Column (3) introduces a set of firm-level control variables, and Column (4) includes both the control variables and fixed effects.

The coefficient on LRATE_diff is positive and statistically significant at the 1% level across all specifications. The estimates range from 0.539 to 0.791. This result provides strong initial support for our hypothesis, indicating that greater tax avoidance is associated with higher levels of corporate greenwashing. The inclusion of control variables and fixed effects in the full model (Column 4) yields a coefficient of 0.607, which remains highly significant.

Table 3. Baseline Regression Results

	(1)	**(2)**	**(3)**	**(4)**
Variables	**Gws**	**Gws**	**Gws**	**Gws**
LRATE_diff	0.691***	0.791***	0.539***	0.607***
	(3.68)	(3.94)	(2.76)	(2.92)
Size			0.080***	0.081***
			(4.99)	(4.78)
Lev			-0.028	-0.029
			(-0.26)	(-0.25)
ROA			0.756**	0.725**

			(2.15)	(1.98)
FirmAge			-0.102	-0.109
			(-1.57)	(-1.60)
Indep			-0.095	-0.135
			(-0.47)	(-0.65)
Constant	-0.022	-0.022	-1.602***	-1.572***
	(-1.36)	(-1.42)	(-3.86)	(-3.52)
Industry/Year Fixed Effect	No	Yes	No	Yes
N	4461	4461	4461	4461
R^2	0.003	0.007	0.011	0.015
adj. R^2	0.003	0.001	0.010	0.008
F	13.510	15.507	8.520	8.389

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses denote t-values; the same applies below.

4.2 Robustness Analysis

This study performs multiple robustness tests to verify the reliability of the core empirical results.

4.2.1 Alternative Measures of Tax Avoidance

To ensure robustness, we employ alternative tax avoidance proxies, consistent with the approach of using multiple measures (Hanlon & Heitzman, 2010). Replacing the primary measure (LRATE_diff) with the contemporaneous ETR differential (RATE_diff) in column (1) and the book-tax difference (BTD) in column (2) yields coefficients of 0.337 and 1.493, respectively. Both remain statistically significant at the 5% and 1% levels, confirming that the positive association is not sensitive to the specific measure of tax avoidance.

4.2.2 Excluding the COVID-19 Period

A potential concern is that the extraordinary conditions during the COVID-19 pandemic (2021-2022) may have distorted corporate ESG behaviours and reporting as an exogenous shock. To mitigate this concern, we exclude observations from 2021-2022. The core result remains robust in this reduced sample (N=3,324), with the coefficient on LRATE_diff staying positive and significant (0.631, $p<0.05$). This confirms the finding is not driven by the anomalous pandemic period.

Table 4. The Results of the Robustness Analysis

	(1)	**(2)**	**(3)**
	Replace the independent variable.		**Change Data Range**

Variables	Gws	Gws	Gws
RATE_diff	0.337**		
	(2.26)		
BTD		1.493***	
		(2.59)	
LRATE_diff			0.631**
			(2.53)
Controls	YES	YES	YES
Constant	-1.609***	-1.602***	-2.249***
	(-3.61)	(-3.59)	(-4.11)
Industry/Year Fixed Effect	YES	YES	YES
N	4461	4461	3324
R^2	0.014	0.014	0.019
adj. R^2	0.007	0.008	0.010
F	7.809	8.083	7.985

4.3 Endogeneity test- Instrument Variables (IV) Estimation

To address potential endogeneity, we employ two-stage least squares (2SLS) estimation using two instrumental variables: the industry-year average (IV1_IndTA) and one-period lag (IV2_LagTA) of LRATE_diff, following Zhang and Liu (J. Zhang & Liu, 2024). Both instruments are expected to correlate with firm-level tax avoidance while remaining plausibly exogenous to current greenwashing. Table 5 reports the results. Both instruments significantly predict tax avoidance at the 1% level. The Cragg–Donald F-statistic (9482.563) and Kleibergen-Paap rk LM statistic (580.021) support instrument relevance and identification, while the Hansen J test ($p = 0.7778$) does not reject the overidentifying restrictions. The second-stage coefficient of LRATE_diff remains positive and significant ($\beta = 0.6269$, $p < 0.05$), consistent with the baseline findings and providing further support for H1.

Table 5. The Results of the Endogeneity Test

VARIABLES	(1)	(2)
	IV-2SLS	
	First stage: LRATE_diff	Second stage: Gws
IV1_IndTA	0.1445***	
	(2.9121)	
IV2_LagTA	0.9264***	
	(99.7569)	

	(1)	(2)
LRATE_diff		0.6269**
		(2.1094)
Controls	YES	YES
Industry/Year Fixed Effect	YES	YES
Kleibergen-Paap rk LM		580.021
		[0.0000]
Cragg-Donald Wald F		9482.563
		{19.93}
Hansen J		[0.7778]
Observations	2,691	2,691
R-squared		0.014

Note: Values in [] indicate p-values, while values in {} denote the critical values for the Stock-Yogo test at the 10% significance level.

5. Mechanism Analysis

This paper examines the mechanisms linking tax avoidance to greenwashing by analysing both internal and external factors. Internally, we test corporate governance as a mediating channel. Externally, we assess the moderating role of patient capital. Corresponding models are constructed and tested.

The mediating effect of internal corporate governance is tested using mode(2) as follows:

$$Gov_Index_{i,t} = \beta_0 + \beta_1 LRATE_diff_{i,t} + \beta_2 Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (2)$$

$$Gws_{i,t} = \varphi_0 + \varphi_1 LRATE_diff_{i,t} + \varphi_2 Gov_Index_{i,t} + \varphi_3 Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (3)$$

The moderating effect of external patient capital is tested using Model (4)

$$Gws_{i,t} = \varphi_0 + \varphi_1 LRATE_diff_{i,t} + \varphi_2 Moderator_{i,t} + \varphi_3 LRATE_diff_{i,t} * Moderator_{i,t} + \varphi_4 Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t} \quad (4)$$

Where the moderator ($Moderator$) is represented by two distinct variables: PC_Equity (stable equity) and PC_Debt (relational debt), the model includes the interaction term between tax avoidance and the respective form of patient capital (LRATE_diff × Moderator). The interaction term represents the moderating effect of tax avoidance on a firm's greenwashing.

5.1 The Mediating Effect of Corporate Governance

We examine the mediating role of corporate governance using three-step regressions and bootstrap tests. Table 6 shows that tax avoidance (LRATE_diff) is negatively associated with governance quality (β = -0.314, Column 2). When both variables are included (Column 3), governance remains negatively associated with greenwashing (β = -0.055), while the coefficient of LRATE_diff remains positive and

significant (β= 0.590) but decreases relative to the baseline (Column 1). These findings are consistent with partial mediation through weakened corporate governance.

Table 6. The Regression Result of Mediating Analysis

	(1)	(2)	(3)
Variables	**Gws**	**Gov_Index**	**Gws**
LRATE_diff	0.607***	-0.314**	0.590***
	(2.92)	(-2.07)	(2.84)
Gov_Index			-0.055***
			(-2.73)
Controls	YES	YES	YES
Constant	-1.572***	-4.952***	-1.843***
	(-3.52)	(-16.75)	(-4.00)
Industry/Year Fixed Effec	YES	YES	YES
N	4461	4461	4461
R^2	0.015	0.295	0.016
adj. R^2	0.008	0.290	0.009
F	8.389	139.269	8.148

To formally test the significance of the indirect pathway, a bootstrap test with 1,000 replications was performed. The results, shown in Table 7, confirm a statistically significant indirect effect. The estimated indirect effect of tax avoidance on greenwashing through Gov_Index is 0.0241, with a 95% confidence interval that does not contain zero [0.0004, 0.0478]. Both the direct effect (0.5152) and the total effect (0.5393) remain significant.

Table 7. The Results of Mediating Analysis-Bootstrap Test

		Observed coefficient	**Bootstrap std. err.**	**z**	**P>|z|**	**Normal-based [95% conf. interval]**	
Gov_Index	Indirect	0.024106	0.012104	1.99	0.046	0.000382	0.047830
	Direct	0.515163	0.199032	2.59	0.01	0.125067	0.905258
	Total_eff	0.539269	0.198960	2.71	0.007	0.149315	0.929223

Note: Results are based on bootstrap with 1,000 replications.

5.2 The Moderating Effect of Patient Capital

Table 8 reports the moderating effects of patient capital. The interaction terms between tax avoidance (LRATE_diff) and both strategic equity (PC_Equity: β = -1.324, p < 0.05) and relational debt (PC_Debt:

β =-4.608, p < 0.01) are significantly negative. These findings support H3, indicating that both forms of patient capital weaken the positive association between tax avoidance and greenwashing, highlighting their role in constraining corporate opportunism.

Table 8. The Regression Result of Moderating Analysis

	(1)	(2)
Varibles	**Gws**	**Gws**
LRATE_diff	1.106***	1.481***
	(3.53)	(5.20)
PC_Equity	0.045	
	(0.80)	
c.LRATE_diff#c.PC_Equity	-1.324**	
	(-2.10)	
PC_Debt		0.030
		(0.27)
c.LRATE_diff#c.PC_Debt		-4.608***
		(-4.51)
Controls	YES	YES
Constant	-1.546***	-1.587***
	(-3.39)	(-3.52)
Industry/Year Fixed Effect	YES	YES
N	4461	4461
R^2	0.016	0.019
adj. R^2	0.009	0.012
F	6.767	8.619

6. Heterogeneity Analysis

To delineate the boundary conditions of the main relationship, this paper further examines how the effect of tax avoidance on greenwashing varies across critical firm characteristics. Heterogeneity tests are conducted along four dimensions: (1) the aggressiveness of tax avoidance, (2) the nature of ownership (state vs. non-state), (3) firm size, and (4) industry pollution intensity (heavy-polluting vs. non-heavy-polluting). These analyses reveal contexts where the link between tax avoidance and greenwashing is most pronounced.

6.1 Heterogeneity Analysis in the Tax Avoid Aggressiveness

The effect of tax avoidance on greenwashing is examined across subsamples stratified by avoidance intensity. Firms with a positive LRATE_diff (indicating tax aggressiveness) are compared to those with

a non-positive value.

Results in Table 9 column(1) and column(2) reveal pronounced heterogeneity. The coefficient for LRATE_diff is positive and significant (1.410, p<0.01) in the tax-aggressive subsample, while negative and insignificant (-0.059) in the control group. This indicates that the positive effect is concentrated among firms that actively avoid taxes. A plausible interpretation is that tax-aggressive firms exhibit a stronger inherent tendency toward opportunistic reporting and an opaque culture, in which tax avoidance reflects or reinforces managerial attitudes and governance weaknesses that also facilitate symbolic environmental actions.

6.2 Heterogeneity Analysis in the Ownership Type

The sample is further divided based on the firm's ultimate controller into state-owned enterprises (SOEs) and non-state-owned enterprises (NSOEs). This analysis examines how differences in institutional constraints, political oversight, and market pressures between these ownership types condition the core relationship.

The results, presented in Columns (3) and (4) of Table 9, show a distinct pattern. The coefficient for LRATE_diff is positive and significant for NSOEs (1.014, p<0.01) but insignificant for SOEs (0.289). This suggests the tax avoidance-greenwashing link is primarily observed in non-state firms. A plausible explanation lies in differing institutional constraints. SOEs face stricter regulatory oversight and bear explicit social and political objectives, which may independently constrain both aggressive tax avoidance and overt greenwashing, thereby weakening the observed link. In contrast, NSOEs, operating under greater market competition, may find joint engagement in both strategies a more feasible approach to managing financial and reputational outcomes simultaneously.

Table 9. The Result of Heterogeneity Analysis(1)

	(1)	**(2)**	**(3)**	**(4)**
	Tax Avoid Aggressiveness		**Ownership_Type**	
	TA_Aggressive	**TA_Moderate**	**Sate_Owned**	**Non_Sate_Owned**
Variables	**Gws**	**Gws**	**Gws**	**Gws**
LRATE_diff	1.410***	-0.059	0.289	1.014***
	(3.17)	(-0.14)	(0.96)	(3.32)
Controls	YES	YES	YES	YES
Constant	-1.553***	-1.737**	-2.828***	-1.583**
	(-2.92)	(-2.17)	(-4.15)	(-2.44)
Industry/Year Fixed Effect	YES	YES	YES	YES
N	2701	1760	2111	2350
R^2	0.027	0.028	0.024	0.030

adj. R^2	0.016	0.011	0.011	0.018
F	5.346	2.834	4.208	7.674

6.3 Heterogeneity Analysis in Firm Size

The effect of corporate tax avoidance on greenwashing may be conditioned by firm size, as size is closely associated with resource availability, public visibility, and regulatory scrutiny. To test for this heterogeneity, the full sample is divided into large and median/small firms based on the annual median of the natural logarithm of total assets—columns (1) and (2) of Table 11 present the subsample regression results.

The coefficient for LRATE_diff is positive and significant for median/small firms (0.670, $p < 0.05$) but insignificant for large firms (0.458). This indicates that smaller firms primarily drive the positive relationship. A plausible explanation is differential external pressure: larger firms face more intense scrutiny from regulators, the media, and investors regarding both tax and environmental practices, which may constrain their ability to engage in aggressive tax avoidance while simultaneously making symbolic disclosures. Smaller firms, with relatively less external monitoring, may have greater latitude to link these strategies.

6.4 Heterogeneity Analysis in Heavy-Polluting Industries

We examine industry heterogeneity by distinguishing heavy-polluting from non-heavy-polluting firms, following China's Guidelines for Environmental Information Disclosure of Listed Companies. Table 10 (Columns 3-4) shows a significant positive association between tax avoidance and greenwashing among non-heavy-polluting firms ($\beta = 1.206$, $p < 0.01$), but not among heavy polluters ($\beta = 0.056$, insignificant). This pattern may reflect stricter environmental oversight in heavily polluting industries, which limits discretionary greenwashing, whereas weaker scrutiny in other sectors allows opportunistic behaviour to extend to environmental disclosure.

Table 10. The Result of Heterogeneity Analysis(2)

	(1)	**(2)**	**(3)**	**(4)**
	Firm Size		**Heavy-polluting Industries**	
	Large	**Median/ Small**	**Heavy Polluter**	**Non_Heavy Polluter**
Variables	**Gws**	**Gws**	**Gws**	**Gws**
LRATE_diff	0.458	0.670**	0.056	1.206***
	(1.54)	(2.24)	(0.19)	(3.98)
Controls	YES	YES	YES	YES
Constant	-1.793**	-3.124***	-2.411***	-1.061*
	(-2.20)	(-3.18)	(-3.41)	(-1.79)

Industry/Year Fixed Effect	YES	YES	YES	YES
N	2232	2229	2086	2375
R2	0.016	0.033	0.009	0.028
adj. R2	0.003	0.020	0.001	0.017
F	3.029	5.843	2.310	9.345

The heterogeneity analysis reveals a clear and telling pattern. The positive link between tax avoidance and greenwashing is markedly stronger among firms that are more tax-aggressive, non-state-owned, smaller, and operating in non–heavy-polluting industries. In other words, this behavioural alignment—using tax avoidance and ESG claims in tandem—becomes most pronounced where managerial discretion is high, external monitoring is weaker, and environmental scrutiny is less mandatory.

These conditional findings reinforce our core argument: tax avoidance is not merely a financial choice but a manifestation of the same underlying managerial type, consistent with our notion of behavioural consistency.

7. Conclusion

Using Chinese A-share listed firms, this study finds a significant positive association between corporate tax avoidance and greenwashing, mediated by weakened corporate governance and moderated by patient capital. The association is stronger among tax-aggressive, non-state-owned, smaller and non-heavy-polluting firms, where managerial discretion is greater and external oversight is weaker.

Theoretically, these findings extend the behavioural consistency perspective by demonstrating that tax avoidance and greenwashing may reflect a shared opportunistic disposition across financial and environmental domains. Practically, they highlight the importance of integrated regulatory oversight and long-term investor engagement in curbing opportunistic behaviour. Firms should also recognise that aggressive tax practices may undermine internal governance and foster broader ethical misconduct.

This study is limited to China's institutional context. Future research could examine whether these relationships persist across different legal, cultural and regulatory environments.

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