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The impact of financial statement audit quality and the moderating role of political connections on environmental transparency in listed real estate firms in Vietnam

Abstract

Research background and purpose: Amidst growing pressure for Environmental, Social, and Governance (ESG) transparency, this study questions the effectiveness of formal governance mechanisms, such as high-quality audits, when they operate within a complex institutional environment where informal relationships play a significant role. Therefore, the purpose of this study is to examine the impact of financial statement audit quality on environmental transparency, while also investigating the moderating role of political connections in this relationship within listed real estate firms in Vietnam.

Design/methodology/approach: The study employs a panel data regression method with a Fixed Effects Model (FEM) on an unbalanced sample of 654 firm-year observations from 70 firms over the period 2015-2024. Audit quality is measured by a dummy variable for Big4 firms, while political connections are identified through the manual collection of leadership background data. The reliability of the findings is reinforced by a series of robustness checks, including the System GMM model and Driscoll-Kraay standard errors.

Findings: The research findings indicate that audit quality has a positive and statistically significant impact on the level of environmental transparency, confirming the existence of a "disciplinary spillover effect." However, the core finding is that this positive impact is significantly weakened by the presence of political connections in the leadership. Further analysis also reveals that this "shielding" effect is most pronounced in private firms, while it is not statistically significant in state-owned enterprises.

Value added and limitations: The study's contribution lies in elucidating the complex interaction between formal (auditing) and informal (political connections) institutions, while also identifying a critical boundary condition for the effectiveness of governance tools. These findings carry important implications, cautioning investors and policymakers that relying solely on formal governance mechanisms is insufficient. Nevertheless, the study is limited by its focus on the real estate sector and its use of a binary measure for audit quality, opening avenues for future research.

Keywords: *audit quality; real estate firms; political connections; environmental transparency*

JEL Classification: M42, G34, Q56, D72, R30

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1. Introduction

Over the past decade, corporate transparency demands have undergone a profound shift, extending beyond the framework of traditional financial reports to encompass Environmental, Social, and Governance (ESG) aspects (Dhaliwal et al., 2011; Suddaby & Panwar, 2022). Pressure from investors, regulators, and society has pushed firms not only to act more responsibly but also to transparently disclose these activities (Zahroh & Hersugondo, 2021). In Vietnam, a rapidly growing emerging market, the commitment to achieve net-zero emissions by 2050 at COP26 has underscored the importance of environmental transparency. In this context, the real estate sector, with its immense impacts on land use, energy consumption, and carbon emissions (Glaeser & Kahn, 2010; Yang & Fang, 2020), faces particular scrutiny and plays a central role in the nation's sustainable development agenda.

To meet these pressures, corporate governance theories suggest that adopting strong monitoring mechanisms, such as hiring high-quality audit firms, creates a "disciplinary spillover effect," promoting transparency across all dimensions, including the environmental domain. This argument, rooted in the auditor's monitoring role in mitigating information asymmetry under agency theory (DeAngelo, 1981; King & McKennie, 2023), suggests that a rigorous financial audit can indirectly compel management to have greater accountability for non-financial activities. However, the universality of this causal relationship may be challenged in markets where formal rules often coexist with, and are sometimes overshadowed by, informal institutions.

This issue is representative of a broader phenomenon in emerging markets, which are often characterized by underdeveloped formal institutions alongside influential, relationship-based networks (Khanna & Palepu, 2010; Aboelela, 2025). In such environments, examining the interplay between global corporate governance standards and the enduring influence of local informal systems is critically important. Accordingly, this study examines Vietnam's real estate sector as a representative case study, aiming to provide valuable lessons for other emerging economies navigating similar institutional conditions, from Southeast Asia to Eastern Europe and Latin America.

This raises a critical practical question, especially in a transitional economy like Vietnam: What happens when a formal, globally standardized governance mechanism (audit quality) operates in the presence of an informal, locally distinct institutional factor (political connections)? Is the monitoring power of a reputable auditor sufficient to promote environmental transparency, or will it be neutralized by the invisible "shield" that political relationships provide to firms (Faccio, 2006; Heflin & Wallace, 2024; Khelil et al., 2022), especially in a sensitive sector like real estate? By simultaneously considering these two factors within the same analytical framework, this study not only seeks to fill a gap in the existing literature, which often examines them separately, but

also contributes to exploring one of the most complex dynamics shaping sustainable corporate governance in Vietnam. Accordingly, the focus of the research shifts from identifying the main effect of auditing to understanding the conditional factors that determine its effectiveness, posing the question: "Under what conditions does auditing work, and when does it not?"

Specifically, this study specifically examines how financial statement audit quality impacts environmental transparency, and how this relationship is moderated by political connections among listed real estate firms in Vietnam. This single-country, single-sector context was deliberately chosen because it serves as a "critical case" for testing institutional theory. The Vietnamese real estate sector is an arena where the tension between formal rules (e.g., environmental regulations, audit requirements) and informal influences (political ties) is particularly acute.

This focused approach allows for a deep, context-rich investigation that large-scale, cross-country studies often cannot provide (Yin, 2018). By analyzing the mechanisms of this institutional interaction, the study aims to contribute to governance theory with empirical evidence on the boundary conditions of auditing's spillover effects. Simultaneously, it seeks to offer practical insights to support the decisions of investors and policymakers navigating this complex business environment.

Beyond the introduction, the remainder of the paper is structured as follows. Section 2 presents a theoretical overview and develops the hypotheses. Section 3 describes the research methodology. Section 4 presents and analyzes the results. Section 5 discusses the results, and finally, Section 6 provides the conclusion, implications, and limitations of the study.

2. Theoretical framework and hypothesis development

2.1. Theoretical framework

This study is built upon the convergence of two foundational theories in the fields of accounting and governance: Agency Theory and Legitimacy Theory. Agency Theory, focusing on the relationship between owners and managers, posits that effective monitoring mechanisms are necessary to minimize agency costs arising from information asymmetry and conflicts of interest (Watts & Zimmerman, 1978; Hadiputra & Windijarto, 2023). Within this framework, a high-quality audit is considered an external monitoring tool that not only ensures the integrity of financial statements but also creates a "disciplinary spillover effect," compelling management to enhance accountability in other areas, including environmental activities.

Meanwhile, Legitimacy Theory offers a complementary perspective, focusing on the relationship between the firm and society. This theory suggests that organizations constantly seek to ensure their activities align with societal norms and expectations

to maintain their existence and growth (Deegan, 2002). Disclosing environmental information and hiring a reputable audit firm are both strategic actions aimed at seeking and maintaining legitimacy. These two theories do not operate independently; they reinforce each other. The drive to seek legitimacy (Legitimacy Theory) motivates firms to send a strong signal of good governance by selecting a high-quality audit. This signal only becomes credible when the internal monitoring mechanism of the audit (Agency Theory) genuinely creates discipline, leading to consistent transparency in both financial and non-financial domains.

2.2. Review of related studies

The literature related to the topic of this paper can be classified into three main streams: studies on the spillover effects of audit quality, determinants of environmental transparency, and the role of political connections in corporate governance.

The first stream of research focuses on audit quality and its spillover effects. A large body of work has confirmed that high-quality audits, often represented by Big4 firms, are positively associated with higher financial reporting quality and lower levels of earnings management (Knechel et al., 2013; Lestari & Aeni, 2019; Tache, 2021; Mwangi, 2024; Pham et al., 2025). Beyond this traditional role, recent studies have begun to explore the "disciplinary spillover effect" of high-quality audits on non-financial areas. For instance, Kolsi et al. (2022) found that larger audit firms positively impact the level of corporate social responsibility (CSR) disclosure, encouraging companies to undertake more voluntary transparency measures. Consistent with this argument, firms audited by large auditors also exhibit higher transparency across a broad spectrum, enhancing disclosure on economic, environmental, and social dimensions (Pucheta-Martínez et al., 2019; Dakhli, 2022; Mahmoodi et al., 2023). However, the mechanisms and boundary conditions of this spillover effect, particularly for the environmental domain, remain a topic requiring further clarification.

The second stream of research examines the determinants and consequences of environmental transparency. Studies show that pressure from stakeholders, board characteristics, and the legal environment are significant factors driving firms to disclose environmental information (Clarkson et al., 2008; Nicolò et al., 2022; Wong et al., 2021). In terms of consequences, higher environmental transparency has been shown to reduce the cost of equity capital and enhance investor trust (Dhaliwal et al., 2011). Although these studies have identified many driving factors, the role of a fundamental governance mechanism like financial statement audit quality has not been systematically considered as a direct predictor of environmental transparency.

The third, and the stream that creates the specific context for this study, analyzes the role of political connections. Globally, politically connected firms often receive benefits

such as government financial support (Faccio, 2006), including easier access to contracts and loans, a phenomenon particularly prevalent in emerging markets (Rijanto, 2022; Wang et al., 2019). In Vietnam, this role is even more complex; political connections can be both a resource that helps firms easily access licenses and preferential capital, and a shielding mechanism that helps them avoid market scrutiny and legal regulations (Ngo & Ha, 2024; Linh, 2023). This "shielding" role raises a critical question: is it strong enough to neutralize the disciplinary pressure from a formal governance mechanism like a high-quality audit?

Synthesizing these three research streams reveals a clear gap: while studies have separately examined the impact of audit quality on non-financial reporting and the role of political connections in corporate governance, the interaction between these two factors on environmental transparency remains an unexplored area. This study seeks to fill that gap by examining whether political connections moderate the relationship between audit quality and environmental transparency in the specific context of the Vietnamese real estate sector.

2.3. Hypothesis development

From an agency theory perspective, a high-quality independent audit serves as an essential monitoring mechanism to reduce information asymmetry between managers and stakeholders. This monitoring role is not confined to financial data. Highly reputable auditors, especially from the Big Four group, not only possess superior technical expertise but are also highly sensitive to litigation risks and reputational damage. Therefore, when assessing risks in financial statements, they are compelled to thoroughly examine contingent liabilities and material risks related to the environment, such as fines from regulatory bodies or remediation costs, which could cause material misstatements. This scrutiny creates an indirect disciplinary pressure that motivates management to improve data collection, formalize policies, and enhance external environmental disclosure to account for their risk management activities.

This disciplinary spillover effect has been documented in empirical studies, showing that higher audit quality is associated with broader and more reliable corporate social responsibility disclosure (Zhang & Bi, 2022; Poudel, 2015; Hapsoro et al., 2020). This relationship is expected to be particularly significant in the context of Vietnam's real estate sector, an industry with a large environmental footprint operating in an institutional environment where law enforcement is still uneven. In such a context, the rigorous oversight of a high-quality auditor acts as a crucial substitute governance mechanism, compensating for weak external institutional pressure and thereby compelling firms to be more transparent about their environmental impacts to mitigate potential financial and reputational damages. Therefore, the following hypothesis is proposed:

H1. Financial statement audit quality has a positive impact on the level of environmental transparency of listed real estate firms in Vietnam.

According to institutional theory, firms seek to achieve legitimacy by complying with pressures from the institutional environment. However, political connections can act as a shielding mechanism, allowing firms to minimize compliance with these pressures. Specifically, firms with strong political connections may believe they will receive preferential treatment in environmental law enforcement or be subject to less scrutiny from regulatory agencies. Consequently, when a high-quality auditor points out potential financial risks from environmental issues, the management of these firms may downplay their materiality, believing their connections can mitigate the consequences. This erodes the disciplinary impact of the audit. Empirical studies also show that political connections can weaken the effectiveness of external governance mechanisms, such as the role of auditing in promoting non-financial disclosure (Ngo & Ha, 2024; Pang & Wang, 2021; Pascual-Fuster & Crespí-Cladera, 2018). This negative moderating effect is predicted to be particularly strong in Vietnam's real estate sector, an industry deeply dependent on government decisions regarding land planning and project licensing. In this context, political connections are not just an advantage but can also be seen as an "insurance shield" against legal risks, significantly neutralizing the pressure to improve environmental transparency generated by a high-quality auditor. Thus, the following hypothesis is proposed:

H2. Political connections weaken the positive impact of financial statement audit quality on the level of environmental transparency of listed real estate firms in Vietnam.

3. Research methodology

3.1. Sample and data collection

The research sample comprises firms in the real estate sector listed on the Ho Chi Minh Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX). The study period spans 10 years, from 2015 to 2024. The selection of this period is deliberate, starting from 2015 when the 2014 Law on Enterprises and the 2014 Law on Investment officially took effect, marking a significant period of legal reform. Concurrently, Circular 155/2015/TT-BTC on information disclosure in the stock market was issued, imposing higher transparency requirements. This period also covers diverse economic cycles, including stable growth, volatility due to the COVID-19 pandemic, and the subsequent recovery phase, allowing us to control for the impact of macroeconomic shocks.

Data were collected from multiple reliable sources. Financial data, audit information, and ownership structure were extracted from the FiinPro database (https://fiinpro.com/fiinpro-x). Data on environmental transparency, political connections, and other governance information were manually collected from annual reports, sustainability reports, corporate governance reports, and prospectuses of the companies. The initial sample included all 82 listed real estate companies. Twelve companies were excluded for the following reasons: 5 firms were delisted during the study period, 4 had missing financial or audit data for more than three consecutive years, and 3 did not have accessible annual reports or governance reports, making the manual collection of data on environmental transparency and political connections impossible. The final sample is an unbalanced panel data set comprising 70 companies, forming 654 firm-year observations. To mitigate the influence of outliers, all continuous variables in the model were winsorized at the 1st and 99th percentiles.

3.2. Variable measurement

The dependent variable, Environmental Transparency (ET), is measured using a self-constructed disclosure index. The construction of this index is necessary due to the lack of a standardized and comprehensive ESG rating system in Vietnam. The procedure employed in this study follows practices in previous studies (e.g., Clarkson et al., 2008). Specifically, a checklist of 25 information items was developed based on the Global Reporting Initiative (GRI) standards, focusing on indicators highly relevant to the real estate industry such as GRI 302 (Energy), GRI 303 (Water and Effluents), GRI 305 (Emissions), and GRI 306 (Waste and Materials). To measure not only the quantity but also the quality of disclosure, a 4-point weighted scale was used, adapted from Al-Tuwaijri et al. (2004): 0 points for non-disclosure; 1 point for general, qualitative disclosure; 2 points for quantitative disclosure; and 3 points for quantitative disclosure accompanied by targets, time-series comparisons, or independent assurance. The total score of a company in a given year is the value of the ET variable.

To measure the independent variable, audit quality, this study follows classic studies classic studies (such as DeAngelo, 1981; Francis & Krishnan, 1999) by using Big 4 affiliation as our primary proxy. Although there is an ongoing debate in the literature as to whether Big 4 affiliation is a perfect proxy for audit quality, particularly given the notable audit failures involving these large firms. However, it is argued that this proxy remains appropriate and robust for this study for three main reasons. First, consistent with the classic argument by DeAngelo (1981), Big 4 firms possess greater resources, stricter internal quality controls, and higher reputational capital at stake, which create stronger incentives to conduct rigorous audits. Second, this proxy continues to be widely

used in recent high-impact studies, confirming its ongoing relevance (e.g., DeFond & Zhang, 2014; Lennox & Wu, 2018). Finally, to mitigate concerns about the limitations of this binary measure, a robustness check is performed using a continuous variable - the natural logarithm of audit fees - which is another common proxy reflecting audit effort and quality.

For the moderating variable, Political Connections (PC), measurement required a manual, meticulous, and systematic data collection process to ensure accuracy and objectivity, as this is a sensitive variable not available in standard databases. Specifically, for each firm-year observation, a complete list of members was first compiled of the Board of Directors (BOD) and the Board of Management (BOM) from the company's Annual Report and Corporate Governance Report. Next, the biography and work history of each individual were cross-checked and verified through multiple public, reliable sources including: (i) the company's prospectus (which often provides detailed resumes of key leaders); (ii) the official web portals of the Government, the National Assembly, and central-level provinces/cities; and (iii) archives of reputable press agencies. A company was coded as having political connections (PC=1) for a specific year if, in that year, at least one member of its BOD or BOM was identified as being or having been: a Member of the Central Committee of the Communist Party, a Minister or Vice-Minister, a Member of the National Assembly, or a high-ranking provincial/city leader (such as Chairman/Vice-Chairman of the People's Council or People's Committee). If, after a thorough review, no such connection was found for any member, the company was coded as 0 (PC=0). This multi-source verification process helps minimize errors and enhances the reliability of the political connection measure, a core element of the analysis.

Table 1. **Definition and measurement of variables**

Variable type	Symbol	Definition and measurement	Expected sign	Main reference(s)
Dependent variable	ET	Environmental Transparency Index, calculated as the sum of scores from a 25-item checklist based on GRI standards, with each item scored on a 0-3 scale		Clarkson et al. (2008); Al-Tuwaijri et al. (2004)
Independent variable	AQ (BIG4)	A dummy variable that equals 1 if the firm is audited by Deloitte, PwC, EY, or KPMG; 0 otherwise	+	DeAngelo (1981); Francis & Krishnan (1999); Lennox & Wu (2018)

Moderating variable	PC	A dummy variable that equals 1 if at least one member of the Board of Directors or Board of Management is or was a Member of the Central Committee of the Communist Party, a Minister/Vice-Minister, a Member of the National Assembly, or a high-ranking provincial/city leader; 0 otherwise		Faccio (2006)
Interaction term	AQ*PC	The product of the BIG4 and PC variables	-	Pang & Wang (2021)
Control variables	SIZE	Natural logarithm of total assets	+	Clarkson et al. (2008)
	LEV	Total debt to total assets	+/-	Brammer & Pavelin (2008)
	ROA	Net income to total assets	+	Brammer & Pavelin (2008)
	AGE	Natural logarithm of firm age	+	Pindado & Requejo (2015)
	STATE_OWN	The percentage of shares owned by the state	+/-	Pang & Wang (2021)

Source: own study

The independent, moderating, and control variables are defined and measured as presented in Table 1.

3.3. Research models

To test the hypotheses, the following two panel data regression models are used:

Model 1 (Testing H1):

$$ET\_it = \beta_0 + \beta_1 AQ\_it + \beta_2 SIZE\_it + \beta_3 LEV\_it + \beta_4 ROA\_it + \beta_5 AGE\_it + \beta_6 STATE\_OWN\_it + \alpha\_i + \delta\_t + \varepsilon\_it$$

Model 2 (Testing H2):

$$ET\_it = \beta_0 + \beta_1 AQ\_it + \beta_2 PC\_it + \beta_3 *(AQ\_it * PC\_it) + \beta_4 SIZE\_it + \beta_5 LEV\_it + \beta_6 ROA\_it + \beta_7 AGE\_it + \beta_8 *STATE\_OWN\_it + \alpha\_i + \delta\_t + \varepsilon\_it$$

where:
- i denotes the firm, ranging from 1 to 70,
- t denotes the year, ranging from 2015 to 2024,
- ET_it is the Environmental Transparency index for firm i in year t,
- AQ_it is the audit quality proxy for firm i in year t,
- PC_it is the political connection proxy for firm i in year t.

The remaining variables are controls as defined in Table 1.
- α_i represents firm-fixed effects to control for time-invariant unobserved heterogeneity,
- δ_t represents year-fixed effects to control for common time-specific shocks,
- ε_{it} is the idiosyncratic error term.

3.4. Analytical method

First, descriptive statistics and Pearson correlation analysis are performed to examine the basic characteristics of the sample and initial signs of multicollinearity. The Variance Inflation Factor (VIF) is also calculated to ensure that multicollinearity is not a serious issue in the regression models.

Due to the panel nature of the data, panel data regression methods are used. The Hausman test will be conducted to choose between the Fixed Effects Model (FEM) and the Random Effects Model (REM). The FEM is preferred because it can control for unobserved, time-invariant characteristics of each firm (e.g., corporate culture, inherent managerial competence), thereby reducing the risk of omitted variable bias.

A potential concern in panel data analysis, especially with industry-specific samples, is the existence of cross-sectional dependence. This occurs when macroeconomic shocks or industry-specific events (e.g., changes in credit policy for real estate, market fluctuations, or the COVID-19 pandemic) simultaneously affect all firms in the sample. If not controlled for, this cross-sectional dependence can lead to biased standard error estimates, resulting in erroneous conclusions about statistical significance. To thoroughly address potential heteroskedasticity, autocorrelation, and cross-sectional dependence, the model is re-estimated using Driscoll–Kraay (1998) standard errors. This method produces standard errors that are robust not only to the presence of heteroskedasticity and autocorrelation but also to very general forms of cross-sectional dependence.

To enhance the reliability of the results, a series of robustness checks is performed. First, to address potential endogeneity (e.g., more transparency-oriented firms may proactively choose Big4 auditors), the Arellano-Bover/Blundell-Bond System Generalized Method of Moments (System GMM) regression model. Second, to test the validity of the variable construction, an alternative measure for audit quality is used,

the natural logarithm of audit fees (AUDIT_FEES). Finally, to examine differences between firm groups, separate analyses are conducted for state-owned and non-state-owned firms to see if the moderating role of political connections differs across different ownership contexts.

Statistical and regression analyses are performed using Stata version 17.

4. Research results

4.1. Descriptive statistics

Table 2 below presents the descriptive statistics of the variables used in the study.

Table 2. **Descriptive statistics of research variables**

Variable	N	Mean	Std. Dev.	Min	Max
ET	654	12.54	8.21	0.00	48.50
AQ (BIG4)	654	0.48	0.48	0.00	1.00
PC	654	0.31	0.46	0.00	1.00
SIZE	654	29.53	1.95	27.11	33.82
LEV	654	0.58	0.15	0.11	0.86
ROA	654	0.04	0.06	-0.15	0.21
AGE	654	2.85	0.65	1.61	3.76
STATE_OWN	654	0.12	0.18	0.00	0.65

Source: own study

Notably, the mean value of the Environmental Transparency (ET) index is 12.54, on a maximum scale of 75. This figure indicates that the level of environmental information disclosure by Vietnamese real estate firms is generally quite low. Regarding the main variables, the mean of the dummy variable AQ (BIG4) is 0.48, which indicates that 48% of the firm-year observations in the sample are audited by a Big4 firm. Similarly, the mean of PC is 0.31, meaning that firms with political connections account for 31% of the observations. This shows a significant presence of both factors in the research sample and provides a solid basis for analyzing their interaction effects.

4.2. Correlation analysis and multicollinearity test

Table 3 presents the Pearson correlation matrix among the research variables.

Table 3. **Pearson correlation matrix and Variance Inflation Factor (VIF)**

Variable	1	2	3	4	5	6	7	8	VIF
(1) ET	1.000								
(2) AQ	0.358***	1.000							1.82
(3) PC	-0.051	0.089*	1.000						1.15
(4) SIZE	0.512***	0.401***	0.215***	1.000					2.78
(5) LEV	-0.082*	-0.114**	0.063	0.255***	1.000				1.24
(6) ROA	0.245***	0.178***	-0.039	0.154**	-0.312***	1.000			1.19
(7) AGE	0.159***	0.121**	0.077	0.301***	0.098*	0.055	1.000		1.21
(8) STATE_OWN	0.073	0.025	0.142**	0.288***	0.167***	-0.091*	0.105**	1.000	1.16

Note: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The VIF column presents the Variance Inflation Factor for each variable in the full model (Model 2). The mean VIF is 1.51.

Source: own study

The results show that the Audit Quality (AQ) variable has a positive and statistically significant correlation with the Environmental Transparency (ET) variable ($r = 0.358$, $p < 0.01$), providing preliminary evidence in support of hypothesis H1. Additionally, firm size (SIZE) and performance (ROA) also have positive and statistically significant correlations with ET, consistent with theory and previous research suggesting that larger and more profitable firms have more resources and incentives to disclose information.

To further validate the preliminary relationship between audit quality and environmental transparency, and addressing the potential limitations of Pearson correlation with a binary variable, an independent samples t-test was conducted. The results show that the mean Environmental Transparency (ET) score for firms audited by Big4 firms (Mean = 15.88, SD = 8.54) is significantly higher than that for firms audited by non-Big4 firms (Mean = 9.45, SD = 6.32). This difference is statistically significant ($t = 9.21$, $p < 0.001$), providing robust preliminary support for H1 and corroborating the correlation analysis.

To check for multicollinearity, the Variance Inflation Factor (VIF) was calculated for all independent variables in the regression model. The results in the last row of Table 3 show that the highest VIF value is 2.78 (for the SIZE variable) and the mean VIF is 1.51, both of which are well below the common threshold of 10. This indicates that multicollinearity is not a serious problem in this study, and the regression estimates will not be affected by this issue.

4.3. Main regression results

Before analyzing the results, tests were performed to select the appropriate model. The F-test results show that the FEM is more suitable than the Pooled OLS regression model at a 1% significance level. More importantly, the Hausman test result is also highly statistically significant ($\chi^2 = 45.81$, $p < 0.01$), indicating that the unobserved individual characteristics of each firm are correlated with the explanatory variables. Therefore, the FEM is a more appropriate and efficient estimation choice compared to the REM.

Table 4 presents the FEM regression results to test the research hypotheses.

Table 4. **Impact of audit quality and political connections on environmental transparency**

	(2)	(3)
Variable	**ET**	**ET**
AQ (BIG4)	**3.652***** (1.105)	**3.810***** (1.152)
PC		-0.851 (0.988)
AQ * PC		**-2.155**** (1.063)
SIZE	**3.891***** (0.762)	**3.805***** (0.771)
LEV	-1.204 (1.655)	-1.189 (1.651)
ROA	**14.118**** (6.791)	**14.201**** (6.785)
AGE	0.853 (0.802)	0.866 (0.800)
STATE_OWN	1.602 (2.079)	1.954 (2.081)
Constant	-95.214*** (21.681)	-94.882*** (21.705)
Year Effects	Yes	Yes
Firm Effects	Yes	Yes

Observations	654	654
Number of firms	70	70
R-squared (within)	0.412	0.421
F-statistic	19.21***	18.98***
Hausman test (χ^2)		45.81***

Note: Robust standard errors clustered by firm are presented in parentheses

Source: own study

The result in column (1) of Table 4 shows that the coefficient of the AQ variable is positive and statistically significant at the 1% level ($\beta = 3.652$, $p < 0.01$). This indicates that firms audited by the Big4 have a significantly higher level of environmental transparency compared to other firms, after controlling for other factors. Specifically, choosing a Big4 auditor increases the environmental transparency index by approximately 3.652 points. This result provides strong empirical evidence supporting hypothesis H1, confirming the existence of a "disciplinary spillover effect" from financial statement auditing to the domain of environmental information disclosure.

Column (2) presents the results of testing the moderating role of political connections. The coefficient of the interaction term (AQ*PC) is negative and statistically significant at the 5% level ($\beta = -2.155$, $p < 0.05$). This result shows that political connections weaken the positive impact of audit quality on environmental transparency. Specifically, while the positive impact of a Big4 audit on firms without political connections is 3.810 points, this impact decreases to only 1.655 points (3.810 - 2.155) for firms with political connections. This suggests that political connections act as a "shield," protecting firms from the transparency pressure exerted by high-quality auditors. Therefore, hypothesis H2 is supported.

4.4. Robustness checks

To strengthen the reliability of the main findings, several robustness checks were conducted. Table 5 summarizes the results from three different testing methods: (i) using the System GMM model to control for potential endogeneity; (ii) using an alternative measure for audit quality; and (iii) using Driscoll-Kraay standard errors to control for cross-sectional dependence.

Table 5. **Robustness tests**

	(1)	(2)	(3)
Variable	**System GMM**	**FEM - Replacement measure**	**FEM - Driscoll-Kraay SEs**
	ET	**ET**	**ET**
L.ET	**0.415***** (0.098)		
AQ (BIG4)	**2.985***** (1.051)		**3.810***** (1.250)
AQ * PC	**-1.950**** (0.943)		**-2.155**** (1.095)
AUDIT_FEES		**1.521**** (0.688)	
AUDIT_FEES * PC		**-0.984*** (0.571)	
PC	-0.792 (0.855)	-0.805 (0.981)	-0.851 (1.012)
SIZE	**2.511**** (1.120)	**3.755***** (0.782)	**3.805***** (0.815)
LEV	-0.988 (1.850)	-1.150 (1.649)	-1.189 (1.721)
ROA	**12.054*** (7.114)	**14.310**** (6.802)	**14.201**** (6.995)
AGE	0.654 (0.910)	0.849 (0.805)	0.866 (0.833)
STATE_OWN	1.433 (2.251)	1.998 (2.091)	1.954 (2.158)
Observations	584	654	654
Number of firms	70	70	70
R-squared (within)		0.418	0.421
AR(2) test (p-value)	0.351		
Hansen test (p-value)	0.218		

Note: Robust standard errors are presented in parentheses. Column (1): Results from the System GMM model. The lagged dependent variable (L.ET) is included in the model. The number of observations decreases due to the differencing process and the use of instrumental variables. Column (2): Results from the FEM, using the natural logarithm of audit fees (AUDIT_FEES) as an alternative measure for audit quality (AQ). Column (3): Results from the FEM, re-estimating the main model (Table 4, column 3) with Driscoll-Kraay (1998) standard errors to address heteroskedasticity, autocorrelation, and cross-sectional dependence.

Source: own study

First, column (1) shows that after controlling for endogeneity using System GMM, the coefficient of AQ remains positive (2.985) and the coefficient of AQ*PC remains negative (-1.950), both statistically significant. The AR(2) and Hansen diagnostic tests both indicate that the model and the instruments used are valid, confirming that the main results are not biased by endogeneity.

Second, column (2) replaces the BIG4 variable with the natural logarithm of audit fees (AUDIT_FEES). The results show that audit fees have a positive impact on ET, and political connections still weaken this relationship (the coefficient of AUDIT_FEES*PC is negative and statistically significant). This demonstrates that the study's conclusions are not dependent on a single definition of audit quality.

Third, column (3) uses Driscoll-Kraay standard errors. The coefficients of interest retain the same sign and statistical significance as in the main model, showing that the results are robust to the presence of various forms of heteroskedasticity, autocorrelation, and cross-sectional dependence.

Overall, the results from these rigorous tests are consistent with the main findings, thereby confirming the robustness and reliability of the research conclusions.

4.5. Additional analysis: the role of state ownership

To investigate whether the "shielding" effect of political connections differs between types of firms, the sample was divided into two subgroups: (i) state-owned enterprises (SOEs, accounting for 21% of observations) and (ii) private firms (POEs, accounting for 79% of observations). The interaction model (Model 2) was then re-run on each subsample.

Table 6. **Analysis of the moderating role of political connection by ownership type**

	(1)	(2)
Variable	**SOEs**	**POEs**
	ET	**ET**
AQ (BIG4)	2.541 (1.852)	**4.150***** (1.201)
PC	-1.105 (1.522)	-1.055 (1.130)
AQ * PC	-0.562 (1.980)	**-2.890***** (1.095)
SIZE	**4.510**** (2.015)	**3.761***** (0.854)
LEV	-2.150 (2.899)	-1.102 (1.821)
ROA	13.881 (9.125)	**14.525**** (7.210)

AGE	1.025 (1.115)	0.814 (0.889)
Constant	-105.41*** (45.120)	-93.85*** (23.815)
Year Effects	Yes	Yes
Firm Effects	Yes	Yes
Observations	137	517
Number of firms	15	55
R-squared (within)	0.451	0.418

Note: Robust standard errors clustered by firm are presented in parentheses. The SOE sample includes firms with state ownership greater than 0. The POE sample includes the remaining firms.

Source: own study

The results in Table 6 show a remarkable difference. In column (2) for the POE group, the coefficient of the interaction term AQPC is negative, with a large magnitude (-2.890), and is statistically significant at the 1% level. This suggests that for private firms, political connections act as an effective substitute governance mechanism, significantly reducing the transparency pressure from high-quality auditors. Conversely, in column (1) for the SOE group, the coefficient of the interaction term AQPC is not statistically significant. Another noteworthy point is that the positive impact of audit quality itself (the AQ variable) is also only statistically significant in the private firm sample ($\beta = 4.150$, $p < 0.01$), while this effect is not statistically significant in the state-owned enterprise group. This further reinforces the argument that the governance context in these two types of firms is entirely different. It can be explained that in SOEs, the ownership structure itself is inherently linked to the state, so the individual impact of a political connection in the leadership may not create a clear difference in neutralizing pressure from auditors.

To illustrate this result more visually, Figure 1 presents an interaction plot, depicting the impact of audit quality (AQ) on environmental transparency (ET) at different levels of political connections (PC) for the two groups of firms.

The figure plots the predicted levels of Environmental Transparency (ET) on the vertical axis, based on the regression results from Table 6. The left panel shows that for private firms, the positive effect of a Big4 audit (the slope of the line) is strong for firms without political connections (solid line) but is significantly flattened for firms with political connections (dashed line). The right panel shows that for state-owned enterprises, the effect of a Big4 audit is muted and the moderating effect of political connections is negligible, as indicated by the two nearly parallel and flat lines.

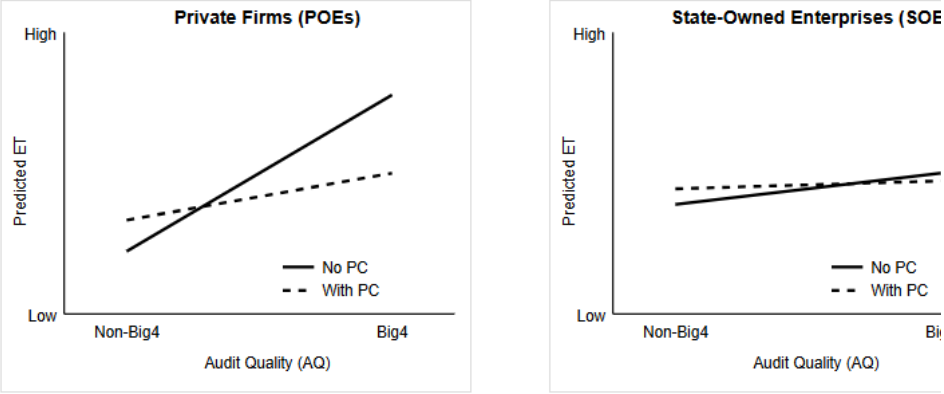

Figure 1. **Moderating effect of political connections by ownership type**

Source: own study

5. Discussion of results

This study yields two main findings, which open a deep dialogue with existing theoretical streams and empirical works. First, financial statement audit quality has a positive and significant impact on the level of environmental transparency. Second, and the core finding, this positive impact is systematically weakened by the presence of political connections in the leadership, especially in the private sector.

The first finding, confirming a positive relationship between audit quality and environmental transparency, provides strong empirical support for the "disciplinary spillover effect." This result resonates directly with the arguments of Kolsi et al. (2022) and Pucheta-Martínez et al. (2019), who found that reputable auditors enhance broader corporate social responsibility disclosures. This study extends this line of inquiry by isolating the environmental dimension within a high-impact industry in an emerging market. In a context like Vietnam, where regulatory enforcement can be inconsistent, the auditor's role transcends mere financial verification. It becomes a substitute governance mechanism, as predicted by agency theory, compelling firms to enhance transparency to mitigate litigation and reputational risks that Big4 auditors are particularly sensitive to (DeAngelo, 1981).

However, the study's primary contribution lies in its second finding: the significant attenuating effect of political connections. This result challenges the universal efficacy of formal governance mechanisms and provides a critical boundary condition for the spillover effect. While prior research has documented the benefits politically connected

firms receive (Faccio, 2006) or their tendency for lower disclosure quality (Ngo & Ha, 2024; Pang & Wang, 2021), this study is among the first to empirically model the direct interaction between audit quality and political connections. The results demonstrate that political ties do not just coexist with formal governance; they actively neutralize it. This finding provides a granular mechanism for the "shielding effect," suggesting that when managers of connected firms are confronted by auditors about potential environmental liabilities, they may discount these warnings, confident that their political capital can mitigate any regulatory or legal repercussions. This interactionist perspective offers a more nuanced view than studies that examine these factors in isolation.

A deeper analysis of the difference between SOEs and POEs further clarifies this mechanism. The "shielding" effect of political connections is most pronounced and powerful in the POE group. For a private firm, building and maintaining political connections is a proactive strategy to gain a competitive advantage and an "insurance policy" against legal risks. Thus, political connections become an effective substitute for good governance; the firm may not need to be overly transparent when it already has a strong "shield." Conversely, in SOEs, the firm itself is part of the state apparatus. The presence of a politically connected individual on the board does not create much of a marginal impact, as the entire organization already has an organic relationship with the political system. SOEs may even face dual pressures: to ensure business efficiency and to pioneer the implementation of state policies, including sustainable development goals. This complexity may be why the moderating effect of political connections is not statistically significant in the SOE group.

While the notion that political connections can be detrimental to transparency might seem intuitive, the contribution of this study is not merely to confirm this general intuition. Instead, the study contributes in three specific, nuanced ways. First, this study moves beyond analyzing main effects by empirically modeling the interaction between a formal, global governance tool (audit quality) and an informal, local institution (political connections), a dynamic rarely tested quantitatively. Second, by doing so, this study identifies a critical boundary condition for the effectiveness of high-quality audits, answering the call for more research on 'when' governance mechanisms work. The finding that the "disciplinary spillover effect" of auditing is neutralized in politically connected firms provides a specific mechanism that explains the mixed results in the broader governance literature. Third, the further analysis on ownership types reveals that this "shielding" effect is not monolithic; it is a strategic choice most potent in the private sector, adding another layer of contextual nuance to institutional theory. Therefore, the findings of this research are not merely 'predictable' but provide specific, testable, and theoretically grounded insights into the complex realities of corporate governance in emerging markets.

6. Conclusion and implications

To answer the research question regarding the impact of audit quality on environmental transparency and the moderating role of political connections, this study was conducted systematically. First, a theoretical framework and research hypotheses were built based on a combination of Agency Theory, Legitimacy Theory, and empirical studies on institutions. Second, a fixed-effects panel data regression model was used to test the main effect of audit quality on a sample of 654 firm-year observations from the Vietnamese real estate sector. Third, the moderating role of political connections was examined by introducing an interaction term into the model. Finally, Finally, a series of robustness checks and additional analyses by ownership type were performed to strengthen the reliability of the results.

Based on these steps, the study concludes that audit quality does indeed have a positive spillover effect, helping to enhance the environmental transparency of real estate firms. However, the effectiveness of this formal governance mechanism is significantly neutralized by the "shield" provided by political connections. Notably, this "shielding" role is most pronounced in private firms, while it is not apparent in state-owned enterprises. These results not only confirm the coexistence of informal and formal institutions in Vietnam but also highlight the boundary conditions for the effectiveness of internationally standardized governance tools.

From the above conclusions, this study offers important implications for both theory and practice.

Theoretically, the findings of this study offer two key suggestions. First, future researchers need to move beyond testing the main effects of individual governance mechanisms. Instead, more focus should be placed on developing complex theoretical models that consider the interaction between formal and informal institutions, especially in the context of emerging markets. The results show that ignoring informal institutional factors can lead to overly optimistic or incomplete conclusions about the effectiveness of governance tools. Second, this study encourages the development of context-sensitive governance theories. Rather than searching for a "best" universally applicable governance model, future theories should focus on identifying different governance configurations that are effective in specific institutional environments.

Practically, this study provides direct and actionable recommendations for various stakeholders:

(1) For investors, investment funds, and financial analysts: The findings of this study are a clear warning: do not rely solely on the "Big4" label as the only indicator of a firm's commitment to sustainability. When conducting due diligence, especially for private real estate firms in Vietnam and similar markets, investors must integrate the analysis of non-market factors into their risk assessment models. Specifically, the backgrounds of BOD and BOM members should be thoroughly screened to

identify the presence of political connections. This presence should be treated as a red flag, signaling a higher probability that the firm may be less transparent about its environmental risks, regardless of who its auditor is.

(2) For policymakers and regulatory bodies (State Securities Commission, Ministry of Environment and Natural Resources): This study shows that merely strengthening formal governance regulations (such as mandating independent audits) is insufficient to genuinely promote environmental transparency. Policymakers must design robust, independent, and fair environmental monitoring and law enforcement mechanisms capable of penetrating the "shield" of political relationships. Measures could include: (1) Increasing unannounced and independent environmental inspections; (2) Widely publicizing the results of inspections and environmental violations by firms; and (3) Establishing sufficiently deterrent penalties, applied equally to all types of firms, regardless of size or ownership structure.

(3) For audit firms, especially the Big4: The research results are a reminder of the challenges in maintaining audit quality in complex institutional environments. Audit firms need to raise awareness and build capacity for their auditors in assessing non-financial risks arising from informal institutional factors. When identifying a client with strong political connections, auditors should increase their level of professional skepticism, expand the audit scope regarding contingent environmental liabilities, and be more assertive in requiring management to provide adequate evidence and explanations.

This study, while achieving its objectives, has certain limitations that open valuable avenues for future research.

First, the study's scope is intentionally focused on a single country and industry—the real estate sector in Vietnam. This specificity necessitates caution when generalizing the findings, as the manifestation and influence of political connections can vary across different institutional contexts. However, it is argued that the core theoretical mechanism identified—the erosion of formal governance by powerful informal institutions—is a fundamental challenge in many emerging economies. Future research could build upon this work by testing the model's external validity in other environmentally sensitive industries (e.g., manufacturing, mining) and across different emerging markets to establish the broader applicability of the findings.

Second, the study employs a binary measure (Big4 vs. Non-Big4) as a proxy for audit quality. While this is a common approach, it simplifies a complex construct. Future scholarship could provide a more nuanced understanding by incorporating more detailed measures of auditor expertise, such as auditor industry specialization or auditor tenure.

Declaration of Generative AI and AI-assisted technologies in the writing process

While preparing this work, the author does not use any tool/service.

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