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Research Article

Does Market Environment Foster Sustainable Competitiveness? The Mediating Role of Corporate Innovation in Chinese Private Firms

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Abstract

In the context of economic uncertainty and institutional transformation in emerging economies, understanding how market environments influence firm performance has become increasingly important. This study examines the impact of the market environment on the sustainable profitability of Chinese private firms, with particular emphasis on the mediating role of corporate innovation. Using panel data from 4,635 Chinese private firms listed on the Shanghai and Shenzhen stock exchanges during 2015–2024, this study employs fixed-effects panel regression and a two-stage least squares (2SLS) approach to address potential endogeneity. The results show that a favorable market environment such as government governance quality, legal system development, financial assistance, and openness to international trade significantly enhances firm sustainable profitability. Firm innovation plays a partial mediating role, indicating that improved institutional conditions stimulate innovation, which in turn contributes to sustainable profitability. These findings remain robust after controlling for firm-level and regional factors. This study contributes to the literature by integrating transaction cost theory and the resource-based view to explain how institutional quality affects firm performance through innovation mechanisms. The findings highlight the importance of optimizing market environments and innovation-supporting institutions to promote the long-term competitiveness and sustainable development of private enterprises in emerging economies.

Keywords: Market environment; Corporate innovation; Sustainable profitability performance; Institutional quality, Private firms, China.

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1 INTRODUCTION

Improving the quality of the market environment has become a central policy objective worldwide, as institutional conditions significantly shape investment decisions, firm behavior, and long-term economic development outcomes. Over nearly two decades, the World Bank's Doing Business reports have influenced global policy debates on regulatory reform, institutional efficiency, and enterprise development. Many countries have used these reports to benchmark and enhance their market environments to attract investment and support private sector growth. According to the World Bank (2020), China achieved a market environment score of 77.9, ranking 31st globally, reflecting substantial progress in regulatory efficiency and institutional reforms. Despite this progress, China's overall market environment continues to lag behind many developed nations, particularly in the areas of legal enforcement, financial accessibility, and institutional transparency, which are critical for firm competitiveness (He et al., 2021).

Private enterprises in China contribute substantially to employment creation, technological innovation, and economic dynamism. They are widely recognized as key drivers of growth, particularly at a time when China is transitioning from traditional growth drivers toward innovation-driven and high-quality development. Flexible organizational structures and market responsiveness position private firms to act as engines of structural transformation (Matuszak & Kabaciński, 2021). National statistics indicate that the private economy's contribution to China's GDP has risen from 60.6% in 2018 to 66.4% in 2022, underscoring its expanding role in national economic output (Wang et al., 2023). At the same time, policy momentum in 2024–2025 has reflected a renewed emphasis on supporting private business growth; for example, China formally enacted the Private Sector Promotion Law in May 2025 to strengthen legal protections and enable more equitable market access for private firms (NPC, 2025).

However, private firms have faced mounting challenges in recent years. The global economic slowdown, ongoing disruptions from the COVID-19 pandemic, and rising geopolitical tensions have exerted downward pressure on profitability and investment activity (Pham et al., 2024; Qian & Fan, 2020). Reports from international business surveys indicate that Chinese companies perceive deteriorating market conditions abroad, adding uncertainty to export and investment strategies (Reuters, 2025). Moreover, corporate profitability in China more broadly was reported to have declined for a third consecutive year into 2024, reflecting weak demand, price pressures, and operational constraints across sectors, with implications for both private and state-owned enterprises (Financial Times, 2025). These developments underscore the reality that institutional quality and external market forces continue to shape the competitive landscape in ways that complicate private firms' efforts to sustain profitability.

In this context, innovation has emerged as one of the most important pathways for firms seeking sustained competitiveness. A substantial body of literature highlights the positive relationship between innovation activities—such as R&D investment, patent development, and technological upgrading—and firm performance outcomes, including productivity, profitability, and market valuation (Farida & Setiawan, 2022; Kruglov & Shaw, 2024). However, corporate innovation itself is highly sensitive to external institutional conditions. A supportive market environment that ensures legal protection for intellectual property, eases financing constraints, and expands access to foreign markets can incentivize firms to increase innovation efforts. Conversely, institutional weaknesses can stifle innovation and attenuate its performance benefits. This suggests that corporate innovation may serve as a key mechanism through which the market environment affects firm profitability, although empirical evidence remains limited, particularly in the context of emerging economies undergoing institutional transition (Dong & Zhang, 2022).

Despite growing scholarly attention to the relationship between market environments and firm performance, two important gaps persist. First, existing research often focuses on broad segments of the business sector or mixed ownership structures, with relatively limited emphasis on private firms, whose innovation dynamics and institutional vulnerabilities differ meaningfully from those of state-owned enterprises. Second, while innovation is widely acknowledged as a driver of performance, relatively few studies have explicitly examined its mediating role in the relationship between institutional quality and firm profitability, especially in rapidly changing contexts such as China's reform-era economy (Genin et al., 2021; Cui et al., 2025).

Therefore, this study has two primary objectives. First, it investigates the direct effects of the market environment—measured by government governance quality, legal system development, financial assistance, and openness to international trade—on the profitability of Chinese private firms. Second, it examines whether corporate innovation mediates the relationship between the market environment and firm profitability. By integrating insights from transaction cost theory (TCT) and the resource-based view (RBC), this research provides a comprehensive theoretical

framework for understanding how institutional conditions may influence sustainable competitive advantage through innovation mechanisms.

This study contributes to the literature in three keyways. Theoretically, it advances understanding of the institutional determinants of firm performance by elucidating the mediating role of corporate innovation in an emerging economy. Empirically, it provides firm-level evidence from a large sample of Chinese private enterprises, yielding nuanced insights into how different dimensions of the market environment affect sustainable profitability outcomes. From a policy perspective, the findings offer actionable implications for governments and stakeholders seeking to optimize institutional environments to support private sector growth, innovation investment, and competitive resilience.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature and develops testable hypotheses. Section 3 describes the data sources, variable measurement, and empirical methods. Section 4 presents the results and discusses their implications. Section 5 concludes with policy recommendations and directions for future research.

2 LITERATURE REVIEW

2.1 Market Environment and Firm Profitability

The relationship between the market environment and firm profitability has been widely examined in institutional economics and strategic management literature. From the perspective of transaction cost theory, the market environment influences firm performance by shaping transaction costs associated with regulation, contract enforcement, financing, and market access (Masten, 1993). In environments characterized by weak governance or institutional inefficiencies, firms face higher uncertainty, compliance costs, and coordination difficulties, which negatively affect profitability (Cheng et al., 2023). Conversely, improvements in institutional quality can reduce transaction costs and enhance operational efficiency, thereby supporting firm profitability. Government governance constitutes a critical component of the market environment. Effective government governance enhances administrative efficiency, regulatory transparency, and public service provision, which reduces firms' compliance burdens and uncertainty (Zhu & Yu, 2024). Empirical evidence suggests that efficient government services allow firms to allocate more resources toward productive activities rather than regulatory navigation, ultimately improving profitability (Zhao & Jiao, 2022). Recent studies further confirm that digitalized and service-oriented government reforms significantly enhance firm performance by lowering institutional frictions, particularly for private enterprises that lack preferential policy support (Dong & Zhang, 2022; Zhu & Yu, 2024).

Legal system development is another fundamental institutional determinant of firm profitability. A strong legal environment enhances property rights protection, contract enforcement, and intellectual property safeguards, reducing the risk of asset expropriation and opportunistic behavior (He et al., 2020; Contractor et al., 2020). Such institutional protections improve firms' expected returns on investment and increase financial stability. Recent empirical studies using cross-country and firm-level data confirm that stronger legal institutions are positively associated with higher firm profitability and investment efficiency, especially in emerging markets undergoing institutional reform (Cui et al., 2022; Alkaraan et al., 2024). Financial assistance also plays a crucial role in shaping firm profitability by alleviating financing constraints and reducing capital costs. Using data from Vietnamese real estate firms, Bui (2020) demonstrates that improved access to financial services significantly enhances firm profitability by supporting investment and operational expansion. Similar findings are reported in recent studies, which show that financial development reduces transaction costs in capital markets and enables firms to undertake productivity-enhancing investments (Sanga & Aziakpono, 2022; Pham et al., 2024). For private firms in particular, access to formal financial channels is essential for sustaining profitability in competitive markets.

In addition, openness to international markets, reflected in investments abroad and trade integration, expands firms' market scope and growth opportunities. Liang et al. (2012) argue that internationalization provides firms with access to larger markets, diversified demand, and economies of scale. Recent evidence suggests that firms operating in more open trade environments exhibit stronger profitability due to enhanced export opportunities, learning effects, and global value chain participation (Mahmood et al., 2024; Kruglov & Shaw, 2024). Accordingly, a favorable market environment characterized by openness and integration into global markets can significantly enhance firm profitability. Based on the above discussion, this study examines how multiple dimensions of the market environment—government governance, legal construction, financial assistance, and investments abroad—affect the profitability of Chinese private firms. Therefore, the following hypotheses are proposed:

H1a: Government governance is positively related to the profitability of private firms.

H1b: Legal construction is positively related to the profitability of private firms.

H1c: Financial assistance is positively related to the profitability of private firms.

H1d: Investments abroad are positively related to the profitability of private firms.

2.2 Market Environment, Corporate Innovation and Firm Profitability

While the market environment directly influences firm profitability, it also shapes firms' innovation behavior, which is a key driver of sustainable competitiveness. From the perspective of the resource-based view (RBV), firms achieve sustained competitive advantage by developing valuable, rare, inimitable, and non-substitutable resources, among which innovation capability is particularly critical (Grant, 1991). The market environment affects firms' ability to accumulate and deploy such resources by influencing incentives, resource availability, and risk exposure. Government governance plays a central role in fostering corporate innovation by shaping competitive conditions and information transparency. Ren et al. (2022) argue that effective governance reduces market distortions and encourages fair competition, which incentivizes firms to invest in innovation rather than rent-seeking behavior. Recent studies further suggest that digital governance reforms and innovation-oriented public services significantly enhance firms' innovation output, particularly in private enterprises that rely heavily on market-based incentives (Zhu & Yu, 2024).

Legal system development is equally important for innovation activities. Strong intellectual property protection reduces the risk of imitation, increases the expected returns from R&D investment, and encourages firms to engage in long-term innovation strategies (Wang & Hagedoorn, 2014; Xiang et al., 2023). Empirical evidence from emerging economies confirms that improved legal institutions are associated with higher patent output and innovation efficiency (Genin et al., 2021; Cui et al., 2025). Financial assistance constitutes another key determinant of corporate innovation. Innovation activities are capital-intensive and often characterized by high uncertainty and long payback periods. Access to external finance enables firms to overcome funding constraints and sustain R&D investment (Zhou, 2021). Sanga and Aziakpono (2022) demonstrate that financial development significantly enhances innovation performance by facilitating long-term investment and risk-sharing mechanisms. Recent studies further indicate that financial inclusion and targeted credit policies play a critical role in promoting innovation among private firms (Pham et al., 2024). Finally, openness to international markets provides firms with access to advanced technologies, managerial expertise, and global knowledge networks. Exposure to international competition and foreign markets enhances firms' learning opportunities and innovation capabilities (Pandey et al., 2022). Recent empirical evidence suggests that trade openness and outward investment significantly stimulate innovation by facilitating technology spillovers and global knowledge diffusion (Mahmood et al., 2024; Kruglov & Shaw, 2024).

According to the resource-based view, innovation enhances firm performance by improving productivity, product differentiation, and market competitiveness (Bakar & Ahmad, 2010; Lukovszki et al., 2021). Innovation enables firms to respond to changing consumer preferences, technological advancements, and competitive pressures, thereby supporting sustainable profitability. Empirical studies provide consistent evidence that innovation investment yields positive financial returns. Opoku-Mensah et al. (2021) emphasize that R&D investment, skilled human capital, and advanced technologies generate long-term economic value for firms. Using data from Indonesian SMEs, Farida and Setiawan (2022) find that technological innovation significantly improves financial performance by enhancing product quality and market positioning (Alkaraan et al., 2024; Li & Cao, 2025). Importantly, innovation not only directly enhances profitability but also serves as a transmission mechanism through which institutional conditions affect firm performance. A favorable market environment encourages innovation investment, which in turn improves firm profitability. This mediating role of corporate innovation has been increasingly recognized in recent studies, especially in emerging economies where institutional reforms are ongoing (Genin et al., 2021; Cui et al., 2025). Based on the above analysis, this study incorporates corporate innovation as a mediating variable to examine the mechanisms through which the market environment influences the profitability of Chinese private firms. Accordingly, the following hypotheses are proposed:

H2a: Corporate innovation mediates the relationship between government governance and firm profitability.

H2b: Corporate innovation mediates the relationship between legal construction and firm profitability.

H2c: Corporate innovation mediates the relationship between financial assistance and firm profitability.

H2d: Corporate innovation mediates the relationship between investments abroad and firm profitability.

3 RESEARCH METHODOLOGY

This study examines the relationship between the market environment and the sustainable profitability of private firms in China using firm-level panel data. The research sample consists of A-share private companies listed on the Shanghai and Shenzhen Stock Exchanges over the period 2015 to 2024. This period is particularly suitable for analysis, as it captures significant institutional reforms, market-oriented transformation, and external economic shocks, including the post-COVID recovery phase. The sample selection procedure follows several standard screening steps to ensure data reliability and consistency. First, state-owned enterprises and other non-private firms are excluded based on the identity of the ultimate controlling shareholder, retaining only firms controlled by private capital. Second, firms designated as *ST* (special treatment) are excluded due to abnormal financial conditions. Third, firms with missing or incomplete financial data are removed. Fourth, firms in the financial industry are excluded because of their distinct regulatory environment and financial structures. After applying these criteria, the final balanced sample comprises 4,635 private firms, yielding 25,465 firm-year observations. Data on firm-level financial characteristics are obtained from the WIND database, which is widely used in empirical research on Chinese listed firms. Data on the market environment are collected from the China Statistical Yearbook, the Chinese Marketization Index, and provincial statistical yearbooks. These sources provide comprehensive and authoritative information on regional institutional conditions across China. Table 1 summarizes the definitions, measurements, and data sources of all variables used in this study. The operationalization of each variable follows established practices in the literature to ensure consistency, reliability, and comparability with prior empirical research.

Table 1. Variable Measurement and Sources

Variable Type	Variable Name	Symbol	Measurement	Expected Effect	Data Source
Dependent Variable	Sustainable firm profitability	ROA	Net profit divided by total assets	—	WIND database
Independent Variables (Market Environment)	Government governance	GOV	Natural logarithm of local fiscal general budget expenditure	+	China Statistical Yearbook; Sun & Liu (2006)
	Legal construction	LEG	Index of market intermediary development and legal environment	+	Chinese Marketization Index; Wang et al. (2022)
	Financial assistance	FIN	Natural logarithm of total RMB loans issued by financial institutions	+	China Statistical Yearbook; Sun & Wang (2022)
	Investments abroad	INV	Ratio of total import and export value to regional GDP	+	Provincial Statistical Yearbooks; Shao et al. (2022)
Mediating Variable	Corporate innovation	TEC	Natural logarithm of (number of patent applications + 1)	+	WIND database; Wang & Hagedoorn (2014)
Control Variables	Firm size	SIZ	Natural logarithm of total assets	+	WIND database; Gong & Jin (2023)
	Leverage	LEV	Total liabilities divided by total assets	−	WIND database; Dong & Zhang (2022)
	Revenue growth	GRO	Growth rate of operating income	+	WIND database; Sun & Wang (2022)
	Firm age	AGE	Natural logarithm of years since establishment	±	WIND database; Atayah et al. (2022)
	Urbanization rate	URB	Proportion of urban population in total population	+	China Statistical Yearbook; Sato & Yamamoto (2005)
	Residents' income level	INC	Ratio of regional disposable income per capita to per capita GDP	+	Provincial Statistical Yearbooks; Lin & Mi (2023)

Source(s): *Authors' design and computation.*

3.1 Empirical Models

3.2 Baseline Model

To examine the impact of the market environment on firm profitability, this study employs a fixed-effects panel regression model. The baseline specification is as follows:

$$\mathrm{ROA_{ijt}} = \alpha_0 + \alpha_1 \mathrm{MAR_{jt}} + \sum \mathrm{CV_{ijt}} + \sum \mathrm{Year_t} + \sum \mathrm{Ind_i} + \varepsilon_{\mathrm{ijt}} \text{.....} \textit{(Eq. 1)}$$

where $i$denotes firm, $j$denotes province, and $t$denotes year. ROA_{ijt}represents firm profitability. MAR_{jt}denotes the market environment variables, including GOV, LEG, FIN, and INV. CV_{ijt}represents the vector of control variables. Industry fixed effects (Ind_i) and year fixed effects ($Year_t$) are included to control for unobserved heterogeneity across industries and time.

3.3 Mediation Effect Model

To examine the mediating role of corporate innovation, this study follows the widely adopted stepwise mediation approach proposed by Baron and Kenny (1986), which remains commonly applied in management and economics research (Anning-Dorson, 2018; Altameemi & Al Slehat, 2022). The second-step regression examines the effect of the market environment on corporate innovation:

$$TEC_{ijt} = \alpha_0 + \alpha_1 MAR_{jt} + \sum CV_{ijt} + \sum Year_t + \sum Ind_i + \varepsilon_{ijt} \text{.....} \textit{(Eq. 2)}$$

The third-step regression incorporates both the market environment and corporate innovation to test the mediation effect:

$$ROA_{ijt} = \alpha_0 + \alpha_1 MAR_{jt} + \theta_2 TEC_{ijt} + \sum CV_{ijt} + \sum Year_t + \sum Ind_i + \varepsilon_{ijt} \text{.....} \textit{(Eq. 3)}$$

If the market environment significantly affects profitability in Equation (1), significantly affects innovation in Equation (2), and the coefficient of innovation is significant in Equation (3) with a reduced coefficient for the market environment, corporate innovation is considered to play a mediating role.

3.4 Endogeneity Considerations

To address potential endogeneity concerns arising from reverse causality and omitted variables, this study employs a two-stage least squares (2SLS) estimation strategy. One-year lagged values of the market environment variables are used as instrumental variables. Lagged institutional indicators are theoretically justified due to institutional persistence and temporal rigidity, and they are widely used in firm-level institutional studies.

4 DATA ANALYSIS

4.1 Descriptive Statistics

Table 2 reports the descriptive statistics of the main variables. The total number of observations for each variable is 30,351. The mean value of ROA is 0.043, indicating that, on average, private firms generate a net return of 4.3% on total assets during the sample period. The standard deviation of ROA is 0.064, suggesting substantial variation in profitability across firms, which may reflect heterogeneity in business models, operational efficiency, and market positioning. The mean value of GOV is 8.992, with a minimum of 7.433 and a maximum of 9.826. The distribution is slightly skewed toward the upper bound, indicating relatively strong government governance across regions. Higher GOV values reflect better public infrastructure, administrative efficiency, and information transparency, which are conducive to improving firm-level operational performance.

Table 2. Descriptive Statistics

Main Variables	Obs	Mean	Std. Dev.	Min	Max
ROA	30351	0.043	0.064	-0.207	0.214
GOV	30351	8.992	0.495	7.433	9.826
LEG	30351	11.736	3.304	2.750	19.341
INV	30351	0.476	0.297	0.040	1.178
FIN	30351	11.159	0.755	8.827	12.439
TEC	30351	1.838	1.676	0.000	6.163

Note. *ROA = sustainable firm profitability; GOV = government governance; LEG = legal construction; INV = investments abroad; FIN = financial assistance; TEC = corporate innovation.* ***Source.*** *Authors' calculations.*

The mean value of LEG is 11.736, while its maximum reaches 19.341, suggesting that the legal environment in China has improved substantially during the study period, although notable regional variation remains. Both INV and FIN exhibit moderate dispersion, with standard deviations considerably smaller than their respective means, indicating relatively stable levels of trade openness and financial assistance across regions. The mean value of TEC is 1.838 and is skewed toward the lower bound, implying that innovation output among private firms remains uneven, with many firms exhibiting limited patent activity.

4.2 Multicollinearity Test

Table 3 presents the results of the variance inflation factor (VIF) tests for the regression models examining the relationships among the market environment, corporate innovation, and firm profitability. According to Gujarati and Porter (2009), VIF values below 10 indicate that multicollinearity is not a serious concern. The reported VIF values range from 1.02 to 3.64, which are well below the critical threshold. These results indicate that multicollinearity among the explanatory variables is minimal and does not bias the estimated coefficients. Therefore, the regression models employed in this study are statistically reliable.

Table 3. Variance Inflation Factor (VIF) Test

Variables	VIF(ROA)					VIF(TEC)				
GOV	1.10					1.10				
LEG		1.67					1.67			
INV			3.58					3.58		
FIN				1.41					1.41	
TEC					1.07					
SIZ	1.55	1.55	1.56	1.55	1.61	1.55	1.55	1.56	1.55	
LEV	1.44	1.44	1.45	1.44	1.45	1.44	1.44	1.45	1.44	
AGE	1.36	1.35	1.34	1.36	1.40	1.36	1.35	1.34	1.36	
URB	1.10	1.67	3.64	1.39	1.03	1.10	1.67	3.64	1.39	
INC	1.02	1.02	1.02	1.02	1.02	1.10	1.02	1.02	1.02	
GRO	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	
Mean VIF	1.23	1.39	1.95	1.31	1.23	1.02	1.39	1.95	1.31	

Note. *GOV = government governance; LEG = legal construction; INV = investments abroad; FIN = financial assistance; TEC = corporate innovation; SIZ = firm size; LEV = leverage; AGE = firm age; GRO = revenue growth; URB = urbanization rate; INC = residents' income level.* ***Source.*** *Authors' calculations.*

4.3 Regression Results

To address potential endogeneity arising from reverse causality and omitted variables, this study employs a two-stage least squares (2SLS) estimation approach. One-year lagged values of GOV, LEG, INV, and FIN are used as instrumental variables. These lagged institutional indicators are theoretically justified due to institutional persistence and are widely adopted in firm-level institutional research. The validity of the instrumental variables is assessed using the Cragg–Donald Wald F statistic. As suggested by Stock and Yogo (2005), an F statistic greater than 10 indicates that the instruments are not weak. As shown in Tables 3–5, all Cragg–Donald Wald F statistics exceed this threshold, confirming the strength of the selected instruments. Table 4 reports the baseline regression results. In Model (1), the coefficient of GOV is positive and significant at the 1% level ($\beta = 0.003$), indicating that improvements in government governance significantly enhance firm profitability. Model (2) shows that LEG also has a positive and significant effect on ROA ($\beta = 0.002$). Similarly, INV and FIN exhibit positive and statistically significant coefficients in Models (3) and (4), respectively. These findings indicate that all dimensions of the market environment positively affect private firm profitability, supporting H1a–H1d.

4.4 Analysis of Mediation Effects

Following the stepwise mediation framework proposed by Baron and Kenny (1986), this study examines whether corporate innovation mediates the relationship between the market environment and firm profitability. Table 5 presents the second-step regression results, where TEC is regressed on the market environment variables. The coefficients of GOV, LEG, INV, and FIN are all positive and statistically significant at the 1% level, indicating that a favorable market environment significantly promotes corporate innovation. These results confirm that the second condition for mediation is satisfied and are consistent with prior empirical evidence.

Table 4. First Step of the Mediation Effect Test

Model	(1)	(2)	(3)	(4)
VARIABLES	ROA	ROA	ROA	ROA
GOV	0.003***			
	(3.251)			
LEG		0.002***		
		(7.483)		
INV			0.010***	
			(3.163)	
FIN				0.003***
				(5.470)
SIZ	0.016***	0.016***	0.016***	0.016***
	(43.199)	(43.371)	(43.207)	(43.291)
AGE	-0.013***	-0.013***	-0.013***	-0.013***
	(-26.481)	(-26.329)	(-26.625)	(-26.030)
GRO	0.050***	0.050***	0.050***	0.050***
	(38.804)	(38.784)	(38.778)	(38.849)
LEV	-0.152***	-0.152***	-0.152***	-0.152***
	(-61.467)	(-61.411)	(-61.438)	(-61.506)
URB	-0.016***	-0.037***	-0.038***	-0.024***
	(-5.364)	(-8.592)	(-4.777)	(-6.907)
INC	-0.000	0.004	-0.007	0.000
	(-0.013)	(0.549)	(-1.086)	(0.047)
Constant	-0.256***	-0.237***	-0.222***	-0.264***
	(-23.010)	(-27.794)	(-24.157)	(-25.793)
Year Effect	YES	YES	YES	YES
Ind Effect	YES	YES	YES	YES
Observations	25,465	25,465	25,465	25,465
R-squared	0.305	0.306	0.305	0.305
r2_a	0.304	0.305	0.304	0.304
F	218.927***	220.868***	218.405***	220.444***
Cragg-Donald Wald F statistic	1.3e+06	1.1e+05	1.6e+05	2.1e+06

Note. *t-values are reported in parentheses. *** p < .01, ** p < .05, * p < .10. All models include control variables, year fixed effects, and industry fixed effects.* ***Source.*** *Authors' calculations.*

Table 6 reports the third-step regression results, which include both the market environment variables and TEC. The coefficients of TEC remain positive and highly significant across all models, while the coefficients of GOV, LEG, INV, and FIN decrease in magnitude but remain statistically significant. This pattern indicates partial mediation, confirming that corporate innovation serves as an important transmission mechanism through which the market environment affects firm profitability. Overall, the mediation analysis supports H2a–H2d, demonstrating that improvements in government governance, legal construction, financial assistance, and openness to international markets enhance firm profitability both directly and indirectly through corporate innovation.

Table 5. Second Step of the Mediation Effect Test

Model	(1)	(2)	(3)	(4)
VARIABLES	TEC	TEC	TEC	TEC
GOV	0.329***			
	(16.002)			
LEG		0.070***		
		(12.171)		
INV			0.822***	
			(10.015)	
FIN				0.257***
				(16.593)
Constant	-9.503***	-6.897***	-5.819***	-9.093***

	(-33.281)	(-30.138)	(-23.501)	(-33.958)
Control variables	YES	YES	YES	YES
Year Effect	YES	YES	YES	YES
Ind Effect	YES	YES	YES	YES
Observations	25,465	25,465	25,465	25,465
R-squared	0.321	0.317	0.317	0.321
r2_a	0.320	0.316	0.316	0.320
F	454.334***	447.484***	451.733***	454.412***
Cragg-Donald Wald F statistic	1.3e+06	1.1e+05	1.6e+05	2.1e+06

Note. *t-values are reported in parentheses. *** p < .01, ** p < .05, * p < .10. All models include control variables, year fixed effects, and industry fixed effects.* ***Source.*** *Authors' calculations.*

Table 6. Third Step of the Mediation Effect Test

Model	(1)	(2)	(3)	(4)
VARIABLES	ROA	ROA	ROA	ROA
GOV	0.002**			
	(1.996)			
LEG		0.001***		
		(6.507)		
INV			0.007**	
			(2.325)	
FIN				0.003***
				(4.170)
TEC	0.003***	0.003***	0.003***	0.003***
	(13.406)	(13.062)	(13.455)	(13.155)
Constant	-0.225***	-0.216***	-0.203***	-0.235***
	(-20.097)	(-25.020)	(-21.990)	(-22.784)
Control variables	YES	YES	YES	YES
Year Effect	YES	YES	YES	YES
Ind Effect	YES	YES	YES	YES
Observations	25,465	25,465	25,465	25,465
R-squared	0.310	0.310	0.310	0.310
r2_a	0.309	0.309	0.309	0.309
F	217.887***	219.899***	217.645***	219.202***
Cragg-Donald Wald F statistic	1.3e+06	1.1e+05	1.6e+05	2.1e+06

Note. *t-values are reported in parentheses. *** p < .01, ** p < .05, * p < .10. All models include control variables, year fixed effects, and industry fixed effects.* ***Source.*** *Authors' calculations.*

4.5 Discussion of Results

The empirical results demonstrate that government governance, legal construction, financial assistance and investments abroad each have a positive and statistically significant effect on firm profitability. These findings are consistent with and extend prior studies grounded in transaction cost theory, which argue that institutional quality reduces uncertainty, lowers transaction and compliance costs, and improves firms' operational efficiency (Williamson, 1985; Gaganis et al., 2019). Specifically, the positive effect of GOV aligns with Dong and Zhang (2022) and Zhu and Yu (2024), who find that improvements in government efficiency and service-oriented governance significantly enhance firm performance by reducing administrative burdens and institutional frictions. This study extends their findings by focusing exclusively on private firms, which are typically more sensitive to governance quality due to their limited access to preferential policies. The significant role of LEG corroborates earlier evidence that stronger legal institutions—particularly in terms of contract enforcement and intellectual property protection—enhance firm profitability by safeguarding assets and reducing opportunistic behavior (He et al., 2020; Cui et al., 2022). The present study further shows that legal construction remains a crucial determinant of profitability even when endogeneity is addressed, highlighting the robustness of legal institutions as a foundation for private-sector development. The positive impact of FIN is consistent with studies showing that improved access to finance alleviates capital constraints and enables firms to undertake productivity-enhancing investments (Bui, 2020; Sanga & Aziakpono, 2022). For private firms in China, which often face discrimination in credit allocation, financial assistance plays a particularly important role in sustaining

profitability. Similarly, the positive effect of INV supports prior findings that trade openness and international engagement enhance firm performance through market expansion, learning effects, and participation in global value chains (Liang et al., 2012; Mahmood et al., 2024).

Beyond the direct effects, this study finds that corporate innovation partially mediates the relationship between the market environment and firm profitability. This result adds an important mechanism-based explanation to the existing literature, which has often examined institutional quality and firm performance without explicitly modeling the innovation channel. The positive effects of GOV, LEG, FIN, and INV on TEC are consistent with studies showing that supportive institutions enhance firms' incentives and capabilities to innovate (Genin et al., 2021; Cui et al., 2025). Effective governance reduces market distortions and encourages firms to invest in innovation rather than rent-seeking behavior, while strong legal protection increases the expected returns to R&D by mitigating imitation risks (Wang & Hagedoorn, 2014; Xiang et al., 2023). Financial assistance eases the financing constraints associated with innovation's high uncertainty and long payback periods, and openness to international markets facilitates technology spillovers and knowledge diffusion (Pandey et al., 2022; Kruglov & Shaw, 2024). Consistent with the resource-based view, the results further show that TEC has a positive and significant effect on ROA, supporting the argument that innovation capability is a strategic resource that enhances productivity, differentiation, and long-term competitiveness (Grant, 1991; Farida & Setiawan, 2022). This finding aligns with empirical evidence from emerging economies demonstrating that innovation investment yields tangible financial returns (Opoku-Mensah et al., 2021; Li & Cao, 2025). Importantly, the observed partial mediation indicates that the market environment affects profitability through both efficiency-based channels emphasized by transaction cost theory and capability-building channels highlighted by the resource-based view. This dual mechanism extends prior research by showing that institutional improvements not only reduce costs but also actively shape firms' strategic behavior.

5 STUDY IMPLICATIONS

Based on the empirical evidence presented in this study, several important implications can be drawn for policymakers and firm managers. First, the results highlight the critical role of government governance in enhancing private firm profitability. Policymakers should continue to improve administrative efficiency, regulatory transparency, and public service quality. Reducing unnecessary approval procedures and strengthening service-oriented governance can lower transaction costs and create a more predictable business environment for private enterprises. Second, the positive effects of legal construction underscore the importance of strengthening contract enforcement and intellectual property protection. A credible and well-functioning legal system increases firms' confidence in long-term investment and innovation by ensuring that returns on R&D and other strategic investments can be effectively appropriated. Continued legal reforms are therefore essential for sustaining private sector growth. Third, the findings emphasize the significance of financial assistance in alleviating financing constraints faced by private firms. Governments and financial institutions should expand inclusive finance, improve credit allocation mechanisms, and promote innovation-oriented lending. Reducing discrimination against private firms in capital markets can support both innovation investment and profitability. Fourth, the positive impact of investments abroad suggests that trade facilitation and openness policies remain important. Encouraging private firms to engage in international trade and outward investment can enhance learning effects, technology spillovers, and market diversification, thereby strengthening competitiveness and financial performance. For managers of private firms, the results indicate that corporate innovation is a key strategic mechanism for transforming favorable institutional conditions into sustainable profitability. Firms should actively respond to improvements in governance, legal protection, and financial conditions by increasing R&D investment, strengthening innovation capabilities, and pursuing technological upgrading. Firms that align innovation strategies with changes in the market environment are more likely to achieve long-term competitive advantages.

6 CONCLUSION

This study investigates how the market environment affects the sustainable profitability of Chinese private firms and examines the mediating role of corporate innovation. Using firm-level panel data from 4,635 A-share private firms and applying a two-stage least squares mediation framework, the study provides robust empirical evidence on both the direct and indirect mechanisms linking institutional conditions to firm performance. The results show that improvements in government governance, legal construction, financial assistance, and openness to international markets significantly enhance private firm profitability. Moreover, corporate innovation partially mediates these relationships, indicating that the market environment influences profitability not only by reducing transaction costs but also by fostering innovation-based competitive advantages. These findings integrate transaction cost theory and the resource-based view into a unified framework that explains how institutional quality shapes firm-level outcomes in a transitional economy. By

focusing specifically on private enterprises, this study contributes to the literature by offering targeted insights into a sector that is highly sensitive to institutional conditions yet underrepresented in prior research. The findings demonstrate that optimizing the market environment is essential not only for improving firm profitability but also for promoting innovation-driven and high-quality economic development.

6.1 Limitations and Directions for Future Research

Despite its contributions, this study has several limitations that provide opportunities for future research. First, the measurement of the market environment relies on available institutional indicators, which may not fully capture all dimensions of institutional quality. Future research could develop more comprehensive and multidimensional indices to better reflect the complexity of the market environment. Second, the sample consists only of listed private firms, which may differ from non-listed private enterprises in terms of governance structure, financing access, and innovation capacity. Future studies could extend the analysis to non-listed firms to enhance the generalizability of the findings. Third, although this study focuses on corporate innovation as a mediating mechanism, other channels—such as digital transformation, managerial capability, or organizational flexibility—may also play important roles. Future research could explore additional mediators or moderators to provide a more nuanced understanding of how the market environment affects firm performance. Finally, future studies could examine regional and industry heterogeneity to assess whether the effects of the market environment and innovation differ across sectors or institutional contexts.

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