

Patient Capital as a Stabilizing Force in Mitigating Corporate Operational Risk

Cao Xuan^{1,a,*}

¹*College of Innovation and Entrepreneurship, Nanjing University of Industry Technology, Nanjing, China*

^a*caoxuan0078@hotmail.com*

**Corresponding author*

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Abstract: This paper examines how Strategic Equity Capital (SEC) stabilizes corporate operational risk, shifting the paradigm from value creation to risk mitigation. Utilizing Chinese A-share data (2014–2024), we find that SEC significantly reduces operational volatility. Mechanism tests unveil a symmetric dual pathway: an "offensive" path improving innovation efficiency and a "defensive" path strengthening internal controls. This risk-reduction effect is more pronounced in growth-stage, high-growth, and concentrated-ownership firms. Our findings provide a "governance premium" rationale for fostering long-term investment ecosystems to enhance corporate resilience.

1. Introduction

Operational Risk poses a fundamental threat to corporate survival [1], [2]. While previous studies examine risk driving factors regarding shareholding structures [3], CEO traits [4], and internal governance [5], the role of capital's "patience" in shaping risk preferences remains largely unexamined.

"Patient Capital" pursues long-term gains while resisting short-term fluctuations [6]. Current research highlights its "value-creation" impacts, including fostering innovation [7], enhancing new quality productivity [8], and improving governance [9]. However, its role as a "risk mitigator" is underexplored. Although patient capital includes stable equity and relational debt [8], we focus on Strategic Equity Capital (SEC), proxied by strategic institutional investors, because equity holders align with long-term value via "Voice" rather than "Exit," offering superior risk-sharing mechanisms.

Institutional investors are highly heterogeneous. While long-term institutions provide positive monitoring [10], "transactional" investors with informational advantages engage in frequent trading, worsening managerial myopia [11]. Similarly, those with business ties may prioritize commercial interests, leading to unstable shareholdings [12]. Conversely, independent strategic investors focus on long-term development.

Critical gaps remain: extant studies fail to uncover the underlying governance mechanisms; focus predominantly on market-based risks [13] rather than fundamental operational risk; and

overlook innovation efficiency.

This study addresses these gaps. First, we shift the paradigm from value creation to systematic risk reduction. Second, we identify a symmetric dual pathway: an "offensive" route optimizing innovation efficiency and a "defensive" route improving internal control quality. Finally, we provide a unified framework based on China's unique market transition, uncovering the micro-foundations of patient capital's governance.

2. Related literature and hypotheses

This section develops the analytical framework based on agency-cost and information-asymmetry theories to examine how patient capital directly mitigates corporate operational risk and operates through two mediating pathways.

2.1 Patient capital and the mitigation of operational risk: the direct effect

Managerial myopia, driven by principal-agent conflicts and quarterly earnings pressures, often leads to earnings manipulation and excessive risk-taking, which intensifies operational volatility [10]. This volatility is further exacerbated by information asymmetry, which induces moral hazard and inflates capital costs.

Patient capital, characterized by long-term, strategic equity, directly addresses these twin challenges. From an agency perspective, these long-term investors provide active monitoring [14] and shield management from short-term market pressures, enabling strategies with longer gestation periods. From an information perspective, their commitment signals firm quality, reduces information asymmetry, and alleviates financing constraints. Empirically, patient capital enhances resilience during crises [15] and fosters fundamental project evaluation to avoid excessive risks [16]. Thus, we propose:

H1: Patient capital significantly mitigates corporate operational risk.

2.2 The mediating channel of innovation efficiency

Innovation is inherently risky and plagued by financing hurdles due to information asymmetry. Short-term capital pressures often force firms to cut R&D or pursue low-risk, incremental projects. Crucially, patient capital contributes to firms by improving innovation efficiency, converting inputs into valuable outputs, rather than merely increasing expenditures, which can induce financial strain [17].

Theoretically, patient capital cushions management from short-termism, provides sustained funding, and establishes collaborative risk-sharing frameworks [18]. Superior innovation efficiency subsequently builds stronger competitive moats, stabilizes market positions, and secures cash flows, thereby reducing vulnerability to technological obsolescence. Therefore, we propose:

H2: Patient capital reduces corporate operational risk by enhancing innovation efficiency.

2.3 The mediating channel of internal control quality

Weak internal controls exacerbate operational and compliance risks. Given their substantial stakes, patient capital investors actively lower these agency costs by advocating for board independence, rigorous internal audits, and transparent disclosure. Such high-quality internal controls curtail managers' opportunistic, risky behavior [19] and drive a strategic shift toward active risk optimization [20]. Ultimately, robust internal controls mitigate operational risk by preventing fraud, ensuring data reliability, and enabling early threat detection. Therefore, we propose:

H3: Patient capital reduces corporate operational risk by improving internal control quality.

3. Methodology

3.1 Sample selection and data sources

Our initial sample comprises Chinese A-share listed firms from 2014 to 2024, with financial data from CSMAR and internal control indices from Dibo. We excluded financial, negative-net-asset, ST/*ST, and missing-data observations. Continuous variables were winsorized at the 1st and 99th percentiles. The final unbalanced panel contains 16,035 firm-year observations.

3.2 Variable definitions

3.2.1 Dependent variable: operational risk

Operational risk is measured as earnings volatility following F. He et al. (2023). We calculate the rolling standard deviation of industry-adjusted EBITDA over a four-year period [2]. Its cumulative distribution function serves as the final risk indicator to improve distributional characteristics. The specific calculation formula is as follows:

$$\delta_{i,t} = \sqrt{\frac{1}{T-1} \sum_{t=1}^T (E_{i,t} - \frac{1}{T} \sum_{t=1}^T E_{i,t})^2} \quad |T=4$$

$$E_{i,t} = \frac{EBIT_{i,t}}{A_{i,t-1}}$$

$E_{i,t}$ is the operational risk of company i in year t ; $EBIT_{i,t}$ is the earnings before interest and taxes of company i in year t ; $A_{i,t-1}$ is the total assets of company i in year $t-1$.

3.2.2 Independent variable: patient capital (PC)

Following prior studies [10], strategic equity is proxied by strategic institutional ownership. We divide each institutional investor's shareholding proportion by its three-year standard deviation. Firms exceeding or equalling the annual industry median are classified as having strategic institutional investors; others are categorized as transactional.

3.2.3 Mediating variables

Innovation Efficiency (RDeff) is measured via Data Envelopment Analysis (DEA), using R&D expenditure-to-revenue ratio as input and log-transformed patent applications as output.

Internal Control Quality (ICQ) is proxied by the natural logarithm of the Dibo Internal Control Index.

3.2.4 Control variables

The following control variables are chosen in this paper: firm size (Size), financial leverage (Lev), revenue growth (Growth), profitability (ROA), top shareholder ownership (Top1), and firm age (FirmAge). Table 1 shows all variables.

Table 1: Variable definition

Type	Variables	Symbol	Measures
Dependent Variable	Operational Risk	Risk	Calculate the standard deviation of the rolling values of the EBITDA margin from year t-4 to t-1 (four years) to measure operational risk and compute its cumulative distribution probability to represent operational risk.
Independent Variable	Patient Capital	PC	Shareholding ratio of strategic institutional investors
Mediating Variable	Innovation Efficiency	RDeff	Innovation efficiency, as measured by the DEA
	Internal Control	ICQ	ln(Dibo Internal Control Index Score)
Control variables	Firm Size	Size	Natural logarithm of total assets
	Financial Leverage	Lev	Total Liabilities at Year-End / Total Assets at Year-End
	Profitability	ROA	Net Profit / Average of Total Assets
	Top Shareholder Ownership	Top1	Number of shares held by the top shareholder / Total number of shares
	Revenue Growth	Growth	(Current Year Operating Revenue / Previous Year Operating Revenue) - 1
	Firm Age	FirmAge	ln(Current Year - Year Company Founded + 1)

3.2.5 Descriptive statistics

Table 2: Descriptive statistics

Variables	N	Mean	SD	Min	Max
Risk	16,035	47.510	27.921	0.983	98.481
PC	16,035	27.195	30.267	0.000	90.086
RDeff	16,035	39.304	14.745	7.263	79.463
ICQ	16,035	6.459	0.146	5.705	6.705
Size	16,035	22.688	1.267	20.306	26.593
Lev	16,035	0.446	0.189	0.075	0.884
Growth	16,035	0.125	0.324	-0.490	1.818
ROA	16,035	0.031	0.065	-0.231	0.212
Top1	16,035	0.313	0.142	0.074	0.696
FirmAge	16,035	3.062	0.262	2.303	3.664

Table 2 presents descriptive statistics. Corporate operational risk (Risk) averages 47.510 (SD = 27.921; range: 0.983–98.481), showing substantial heterogeneity. Patient capital (PC) has a mean of 27.195 and an SD of 30.267 (range: 0–90.086), indicating a wide cross-sectional variation in

strategic institutional ownership.

3.3 Model specification and empirical strategy

The following benchmark regression equation was developed to assess the influence of patient capital on corporate operational risk:

$$Risk_{i,t} = \alpha_0 + \alpha_1 PC_{i,t} + \alpha_2 Controls_{i,t} + \sum Industry + \sum Year + \varepsilon_{i,t}$$

Subscripts *i* and *t* denote firm and year. $Risk_{i,t}$, $PC_{i,t}$, and $Controls_{i,t}$ represent corporate operational risk, patient capital, and control variables, respectively. We control for industry and time fixed effects

4. Empirical analysis

4.1 Baseline regression

Table 3 shows baseline regression results. Across all specifications, the patient capital (PC) coefficient is negative and significant at the 1% level. In the fully controlled Column 4, the coefficient is -0.091, confirming that patient capital significantly mitigates corporate operational risk, supporting H1.

Table 3: Baseline regression results

	(1)	(2)	(3)	(4)
	Risk	Risk	Risk	Risk
PC	-0.132***	-0.126***	-0.082***	-0.091***
	(-18.32)	(-17.55)	(-9.60)	(-10.72)
Control Variables	NO	NO	YES	YES
Industry/Year Fixed Effect	NO	YES	NO	YES
<i>N</i>	16035	16035	16035	16035
R^2	0.021	0.052	0.041	0.064
adj. R^2	0.021	0.051	0.040	0.062
F	335.593	307.889	95.811	71.351

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

4.2 Robustness analysis

To verify the reliability of the core empirical results, this study conducts multiple robustness tests. The results of these tests are shown in Table 4.

4.2.1 Replacing the dependent variable

For robustness, we replace the dependent variable with the Altman Z-score. In Table 4, Column (1), the coefficient on PC is 0.006, significant at the 1% level. Because higher Z-scores signal lower bankruptcy risk, this positive effect confirms that patient capital enhances financial stability, corroborating our primary findings.

Table 4: The results of the robustness analysis

	(1)	(2)	(3)
	Replace the dependent variable.	Change Cluster Level - Provincial Level	Change Data Range
	AltmanZ	Risk	Risk
PC	0.006***	-0.091***	-0.088***
	(4.58)	(-8.43)	(-9.96)
Control Variables	YES	YES	YES
Industry/Year	YES	YES	YES
<i>N</i>	16,035	16,035	14,786
<i>R</i> ²	0.483	0.064	0.066
adj. <i>R</i> ²	0.482	0.062	0.064
F	730.429	20.529	71.567

4.2.2 Changing cluster level - provincial level

To account for regional cross-sectional dependence, Table 4 Column (2) reports standard errors clustered at the provincial level. The PC coefficient remains -0.091 and significant at the 1% level, confirming that our main findings are robust.

4.2.3 Changing data range

To eliminate interference from the 2015 stock market volatility, we re-estimate the model excluding 2015 observations (*N* = 14,786). As shown in Table 4 Column (3), the PC coefficient is -0.088 and significant at the 1% level, proving that the risk-mitigating effect of patient capital is not driven by anomalous periodic conditions.

4.3 Endogeneity test

4.3.1 The time-lagged effects of patient capital on operational risk

To address reverse causality, Table 5 reports results using time-lagged independent variables. The coefficients for one-period (L.PC) and two-period (L2.PC) lagged patient capital are -0.093 and -0.101, respectively, both statistically significant. These persistent dampening effects strengthen the causal inference that patient capital reduces corporate operational risk.

Table 5: The results of the endogeneity test

	(1)	(2)	(3)	(4)	(5)
	Independent variable lag period		Instrument Variables Estimation- 2SLS		PSM Test
	One-period	Two-period	First stage	Second stage	Propensity score
VARIABLES	Risk	Risk	PC	Risk	Risk
L.PC	-0.093***				
	(-9.73)				
L2.PC		-0.101***			
		(-9.54)			
PC_IV1			0.578***		

			(5.68)		
PC_IV2			0.553***		
			(61.04)		
PC				-0.168***	-0.089***
				(-9.7)	(-9.14)
Control Variables	YES	YES	YES	YES	YES
Industry/Year	YES	YES	YES	YES	YES
Kleibergen-Paap rk LM				2218.734 [0.0000]	
Cragg-Donald Wald F				2936.782 {19.93}	
Hansen J				[0.8378]	
Endogeneity test				[0.0000]	
Observations	12,597	10,103	12,597	12,597	11,102
R-squared	0.065	0.074		0.025	0.060

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

4.3.2 Instrument variables (IV) estimation

To address endogeneity, we perform 2SLS estimation using industry-average strategic equity (PC_IV1) and lagged PC (PC_IV2) as instruments (Di et al., 2025). The reason for choosing these is twofold: both variables have a strong theoretical link to the current period's PC, reflecting ongoing industry trends and continuous capital investment. Additionally, both instruments meet exogeneity criteria, the industry mean is unlikely to affect a firm's idiosyncratic risk directly, and the lagged variable is unaffected by the reverse influence of current-period error terms. Table 5 Columns (3) and (4) report the results. The first stage confirms strong instrument relevance. In the second stage, the PC coefficient is -0.168 and significant at the 1% level, confirming a negative causal impact on operational risk.

Econometric tests validate our instruments: the Kleibergen-Paap rk LM statistic rejects under-identification; the Cragg-Donald F statistic rules out weak instruments; and the Hansen J test ($p = 0.8378$) supports instrument exogeneity, justifying the IV approach.

4.3.3 Propensity score matching (PSM) analysis

To address self-selection bias, we employ 1:1 nearest-neighbor propensity score matching (PSM), dividing the sample into treatment ($PC > \text{industry-year mean}$) and control ($PC \leq \text{industry-year mean}$) groups. As shown in Table 5 Column (5), the matched-sample PC coefficient is -0.089 and significant at the 1% level, confirming our robust findings.

5. Mechanism analysis

To explore the underlying mechanisms, this section empirically tests whether patient capital mitigates corporate operational risk through the dual mediating pathways of innovation efficiency and internal control quality.

5.1 The Mediating effect of innovation efficiency

Patient capital mitigates operational risk by fostering innovation efficiency (RDeff), relieving short-term pressures to allow long-term R&D investment. Table 6 Columns (1) and (2) support this

pathway. PC significantly boosts RDeff (coefficient = 0.010, $p < 0.01$). When both are regressed against operational risk, the coefficients for PC and RDeff are both significantly negative, confirming the mediating role of innovation efficiency.

Table 6: The results of mechanism analysis

	(1)	(2)	(3)	(4)
	Innovation Efficiency		Internal Control	
	RDeff	Risk	ICQ	Risk
PC	0.010***	-0.090***	0.0002***	-0.087***
	(2.84)	(-10.61)	(4.82)	(-10.33)
RDeff		-0.090***		
		(-4.53)		
ICQ				-18.667***
				(-11.27)
Control Variables	YES	YES	YES	YES
Industry/Year Fixed Effect	YES	YES	YES	YES
<i>N</i>	16035	16035	16035	16035
<i>R</i> ²	0.460	0.065	0.167	0.072
adj. <i>R</i> ²	0.459	0.063	0.165	0.070
<i>F</i>	1187.752	66.098	305.285	79.545

Bootstrap tests (Table 7, Column 3) confirm the robust mediating role of innovation efficiency (RDeff). The indirect effect of patient capital is -0.001494 ($p < 0.01$; 95% CI excludes zero), while the direct effect remains significantly negative. These results validate H2, demonstrating that patient capital reduces operational risk by enhancing innovation efficiency.

Table 7: The results of mechanism analysis-Bootstrap test

		Observed coefficient	Bootstrap std. err.	<i>z</i>	$P > z $	Normal-based [95% conf. interval]	
RDeff	Indirect	-0.001494	0.000450	-3.3200	0.001000	-0.002376	-0.000613
	Direct	-0.080711	0.008506	-9.4900	0.000000	-0.097383	-0.064039
	Total_eff	-0.082205	0.008481	-9.6900	0.000000	-0.098826	-0.065583
ICQ	Indirect	-0.003875	0.000799	-4.8500	0.000000	-0.005441	-0.002310
	Direct	-0.078330	0.008826	-8.8700	0.000000	-0.095629	-0.061030
	Total_eff	-0.082205	0.008777	-9.3700	0.000000	-0.099407	-0.065003

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

5.2 The Mediating effect of internal control

Patient capital also reduces operational risk by enhancing internal control quality (ICQ), allowing management to focus on long-term governance. Table 6 Columns (3) and (4) support this, showing that PC significantly improves ICQ, and ICQ exhibits a notably negative coefficient (-18.667) against risk.

Bootstrap tests (Table 7) confirm a significant indirect effect of -0.003875 ($p < 0.01$; 95% CI excludes zero), accounting for 4.7% of the total effect. This validates ICQ as another vital transmission pathway.

6. Heterogeneity analysis

To explore boundary conditions, we conduct subgroup analyses across three dimensions: firm life cycle, equity concentration, and growth potential, categorized by annual industry medians. Fisher's Permutation Test is employed to evaluate the statistical significance of coefficient differences between groups.

6.1 Heterogeneity analysis in the corporate life cycle

To test the role of the firm life cycle, the sample is split into growth and mature stages based on the median firm age. Regressions show a larger PC coefficient for growth-stage firms (-0.108) than mature ones (-0.078), both significant at the 1% level (empirical p-value for difference = 0.031). Crucially, growth-stage firms face higher uncertainty and tighter financing constraints; thus, stable patient capital yields higher marginal benefits by alleviating resource shortages and curbing short-sighted risks compared to more resilient, mature peers.

Table 8: The result of heterogeneity analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	Firm Life Cycle		Shareholding		Corporate growth	
	Growth	Maturity	Low	High	Low	High
	Risk	Risk	Risk	Risk	Risk	Risk
PC	-0.108***	-0.078***	-0.072***	-0.102***	-0.073***	-0.103***
	(-8.92)	(-6.60)	(-5.16)	(-9.69)	(-5.95)	(-8.95)
Control Variables	YES	YES	YES	YES	YES	YES
Industry/Year Fixed	YES	YES	YES	YES	YES	YES
<i>P-value for inter-group</i>	0.031		0.032		0.033	
<i>N</i>	7690	8345	8017	8018	8017	8018
<i>R²</i>	0.067	0.067	0.074	0.072	0.087	0.086
adj. <i>R²</i>	0.063	0.063	0.070	0.068	0.083	0.082
F	28.035	42.280	47.503	22.656	71.767	49.400

Note: The P-value for inter-group coefficient differences was calculated using the bootstrap-based Fisher's combined test, based on 1000 repeated samples.

6.2 Heterogeneity analysis in the shareholding concentration

To examine governance boundary conditions, the sample is split by the median of the largest shareholder's ownership (Top1). Table 8 Columns (3) and (4) show a larger PC coefficient for high ownership concentration firms (-0.102) than low concentration ones (-0.072), both significant at the 1% level (p-value for difference = 0.032). Mechanistically, in concentrated ownership firms, patient capital acts as an external balancing force to mitigate major shareholder agency conflicts and enhance governance quality, whereas its monitoring role is limited under dispersed ownership.

6.3 Heterogeneity analysis in corporate growth potential

To test growth heterogeneity, the sample is split by the median of operating revenue growth. Regressions show a stronger PC effect for high-growth firms (-0.103) than low-growth ones (-0.073), both statistically significant (p-value for difference = 0.033). Mechanistically, high-growth firms face greater financial fragility and aggressive scaling risks. Patient capital provides crucial

long-term financing that satisfies their massive capital demands while effectively guiding management away from myopic, risky decisions to ensure sustainable expansion.

In summary, the risk-reducing effect of patient capital is highly context-dependent. Its value is significantly amplified in firms characterized by a growth stage, high ownership concentration, or high growth potential, where long-term capital delivers greater strategic risk-management benefits.

7. Discussion

The empirical evidence presented in this study provides several key insights for regulators, corporate practitioners, and market participants.

7.1 For regulators and policymakers: cultivating a patient ecosystem

Evaluation Reform: Regulators should extend institutional performance evaluation cycles (e.g., from quarterly to multi-year horizons) to alleviate short-term arbitrage pressures and foster strategic equity capital.

Targeted Incentives: Policymakers should implement differential steering, such as tax rebates for long-term holdings or green channels for refinancing, to direct strategic capital toward growth-phase and high-potential firms where its risk-mitigating effect is maximized.

Market Stability: Fostering a patient market ecosystem harnesses strategic institutional investors as market ballasts to reduce systemic volatility.

7.2 For corporate managers: strategic shareholder governance

Shareholder Selection: Managers should optimize ownership structures by actively attracting long-term strategic investors. The identity of shareholders ("who holds the shares") provides a governance premium that shields firms against operational shocks.

Dual-Pathway Optimization: Management should leverage patient capital to execute dual strategies: defensively, utilize investor monitoring to enhance internal control quality; offensively, exploit their risk-bearing capacity to boost innovation efficiency and convert R&D into technological advantages.

7.3 For investors: redefining value investing

Risk-Adjusted Returns: Investors must recognize that patience lowers operational risk and financial distress, thereby delivering superior long-term, risk-adjusted stability.

From "Exit" to "Voice": The findings encourage a shift from passive selling ("Exit") to active corporate governance engagement ("Voice"). By participating in internal oversight and innovation monitoring, strategic investors directly mitigate portfolio cash-flow unpredictability, safeguarding long-term returns.

8. Conclusion

Based on data from A-share-listed companies in China between 2014 and 2024, this study empirically examines the effect of patient capital on corporate operational risk. The findings indicate that patient capital has a notable negative effect on operational risk. This relationship operates through two distinct mechanisms: enhancing innovation efficiency and improving the quality of internal controls. These results remain consistent after addressing endogeneity issues and conducting several robustness tests. Additionally, the risk-reduction effect is more pronounced for

companies in the growth phase, those with a higher shareholding concentration, and those with greater growth potential.

This study has certain limitations. The results are based on data from China's A-share market, and their applicability to other institutional settings needs further validation. Additionally, the measurement of patient capital in this study mainly reflects stable equity, which may not fully represent its multifaceted nature. Future research could develop more detailed indicators and examine these dynamics in different market environments.

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References

- [1] V. V. Acharya, Y. Amihud, and L. Litov, 'Creditor rights and corporate risk-taking', *J. Financ. Econ.*, vol. 102, no. 1, pp. 150–166, Oct. 2011, doi: 10.1016/j.jfineco.2011.04.001.
- [2] K. John, L. Litov, and B. Yeung, 'Corporate Governance and Risk-Taking', *The Journal of Finance*, vol. 63, no. 4, pp. 1679–1728, Aug. 2008, doi: 10.1111/j.1540-6261.2008.01372.x.
- [3] M. Faccio, R. Mura, and M.-T. Marchica, 'Large Shareholder Diversification and Corporate Risk-Taking', *SSRN Journal*, 2011, doi: 10.2139/ssrn.1980165.
- [4] M. Faccio, M.-T. Marchica, and R. Mura, 'CEO gender, corporate risk-taking, and the efficiency of capital allocation', *Journal of Corporate Finance*, vol. 39, pp. 193–209, Aug. 2016, doi: 10.1016/j.jcorpfin.2016.02.008.
- [5] D. Anantharaman and Y. G. Lee, 'Managerial risk taking incentives and corporate pension policy', *Journal of Financial Economics*, vol. 111, no. 2, pp. 328–351, Feb. 2014, doi: 10.1016/j.jfineco.2013.10.009.
- [6] R. Deeg, I. Hardie, and S. Maxfield, 'What is patient capital, and where does it exist?', *Socio-Econ. Rev.*, vol. 14, no. 4, pp. 615–625, Oct. 2016, doi: 10.1093/ser/mww030.
- [7] Y. Liu, Y. Shen, J. Wang, and Q. Wang, 'Passive institutional investors and corporate innovation', *SSRN Electron. J.*, pp. 1–52, 2019, doi: 10.2139/ssrn.3415513.
- [8] X. Wang, Y. Cheng, and B. Li, 'Patient capital and firms' new quality productivity: a dynamic capabilities perspective', *Finance Res. Lett.*, vol. 86, p. 108787, Dec. 2025, doi: 10.1016/j.frl.2025.108787.
- [9] H. Zhang, X. Zhang, H. Tan, and Y. Tu, 'Institutional investors' shareholding, corporate governance, and corporate innovation investment', *Int. Rev. Econ. Finance*, vol. 96, p. 103643, Nov. 2024, doi: 10.1016/j.iref.2024.103643.
- [10] Y. Li, X. Huang, and H. Luo, 'Patient capital and green total factor productivity: evidence from chinese listed companies', *PLOS One*, vol. 20, no. 9, p. e0331262, Sep. 2025, doi: 10.1371/journal.pone.0331262.
- [11] P. Han, F. Niu, and W. Su, 'Influencing factors of institutional investors shareholding stability', *Sage Open*, vol. 11, no. 4, p. 21582440211050400, Oct. 2021, doi: 10.1177/21582440211050400.
- [12] B. Deng, Z. Peng, and K. Huang, 'ESG rating declines and stock price crash risk', *Appl. Econ. Lett.*, pp. 1–7, Dec. 2024, doi: 10.1080/13504851.2024.2448250.
- [13] J. Cao, B. Han, and Q. Wang, 'Institutional investment constraints and stock prices.', *Journal of Financial and Quantitative Analysis*, vol. 52, pp. 465–489, 2005.
- [14] H. Zhang, W. Zhang, and X. Yi, 'Patient capital and corporate digital transformation: evidence from Chinese a-share listed firms', *Pac.-Basin Finance J.*, vol. 95, p. 102977, Jan. 2026, doi: 10.1016/j.pacfin.2025.102977.
- [15] H. Du, H. Dai, and W. Bu, 'Patient capital and the high-quality development of manufacturing firms: the mediating role of industrial and supply chain resilience', *Finance Res. Lett.*, vol. 87, p. 108963, Jan. 2026, doi: 10.1016/j.frl.2025.108963.
- [16] V. Chonn Ching, 'Globalizing patient capital: the political economy of Chinese finance in the Americas', *Perspect. Polit.*, vol. 20, no. 2, pp. 769–771, Jun. 2022, doi: 10.1017/S1537592722000524.
- [17] X. Wang and Y. L. Wang, 'The impact of top management team functional background on firm performance: Evidence from listed companies in China's information technology industry', *Nankai Business Review*, vol. 16(4), pp. 80–93, 2013.
- [18] Y. Huang and Q. Zhang, 'Patient capital and corporate ESG performance: empirical evidence from the Chinese stock market', *Int. Rev. Econ. Finance*, vol. 103, p. 104453, Oct. 2025, doi: 10.1016/j.iref.2025.104453.
- [19] F. He, C. Ding, W. Yue, and G. Liu, 'ESG performance and corporate risk-taking: evidence from China', *Int. Rev.*

Financ. Anal., vol. 87, p. 102550, May 2023, doi: 10.1016/j.irfa.2023.102550.

[20] N. Yang and Y. Tu, 'Can the application of artificial intelligence improve corporate governance level of listed companies? The moderating role and heterogeneity of patient capital', *Int. Rev. Financ. Anal.*, vol. 110, p. 104869, Feb. 2026, doi: 10.1016/j.irfa.2025.104869.