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Patient Capital, Innovation Performance, and Their Impact on Enterprise Resilience

-- Based on Data from A-Share Manufacturing Listed Companies in China

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Abstract: In recent years, enterprise resilience has become a critical topic in management and economic research, particularly in the context of economic fluctuations, industry shocks, and unexpected events (e.g., pandemics, financial crises). This study examines the impact of patient capital on enterprise resilience using data from Chinese A-share manufacturing listed companies from 2013 to 2023. The findings reveal that patient capital significantly enhances enterprise resilience by providing long-term, stable financial support. Mediation analysis indicates that improved innovation efficiency and alleviated financing constraints are two key pathways, each contributing over 30%. Additionally, first-tier agency costs negatively moderate the effect of patient capital, with high agency costs weakening its positive impact. Heterogeneity tests show that patient capital has a more pronounced effect on non-digital core industries and non-high-tech enterprises. These findings provide empirical support for policymakers in designing differentiated capital guidance strategies, for enterprises in optimizing governance structures, and for investors in making long-term value-oriented decisions, thereby expanding the financial economics perspective on enterprise resilience research.

Keywords: Patient Capital; Enterprise Resilience; Innovation Performance; Heterogeneity Analysis.

1. Introduction

In recent years, global economic uncertainty has significantly increased due to frequent "black swan" events such as trade conflicts, geopolitical tensions, and technological blockades. Against this backdrop, enterprise resilience—defined as the ability to withstand shocks, adapt to changes, and achieve sustainable growth—has emerged as a central issue for academia and policymakers. The 20th National Congress of the Communist Party of China emphasized "accelerating the construction of a manufacturing powerhouse," highlighting the importance of the real economy in shaping future strategic advantages. However, enhancing the resilience of manufacturing enterprises remains a pressing challenge.

Simultaneously, the conflict between capital market short-termism and long-term enterprise development has intensified. Traditional capital often prioritizes immediate returns over long-term value creation, constraining innovation and strategic adjustments. In response, Chinese policymakers have advocated for "patient capital" to align financial support with long-term industrial development. Patient capital, characterized by long-term orientation, risk tolerance, and relational embeddedness, mitigates financing constraints, fosters innovation, and improves corporate governance [1]. Yet, how patient capital specifically influences enterprise resilience—particularly its mechanisms and boundary conditions—remains underexplored.

Existing research on enterprise resilience focuses on internal factors like digital transformation [2] and ESG performance [3], while neglecting the role of capital structure. Although some studies suggest that internal capital markets [4] and stable equity structures [7] may affect resilience, systematic analysis is lacking. Moreover, patient capital research predominantly examines its direct impact on innovation efficiency [8], overlooking its potential in dynamic capability-building and crisis response. Crucially, the mediating mechanisms (e.g., innovation efficiency, financing constraints) and moderating conditions (e.g., agency costs) remain insufficiently explored, limiting actionable policy insights.

This study addresses these gaps by analyzing A-share manufacturing listed companies (2012–2023) through panel data models, fixed-effects regression, instrumental variable methods, and mediation/moderation analyses. Key findings include:

Patient capital significantly enhances enterprise resilience, even after addressing endogeneity.

Innovation efficiency and financing constraints are dual mediating pathways, each contributing >30%.

High agency costs weaken the positive effect of patient capital.

Patient capital's impact is stronger in non-digital and non-high-tech sectors.

Theoretical contributions:

Integrates resource-based view and dynamic capability theory to propose a "capital attributes → capability-building → resilience" framework.

Identifies innovation and financing as dual mediating mechanisms.

Offers industry-specific policy recommendations for capital allocation.

Practical implications:

Policymakers: Target patient capital toward traditional manufacturing via tax incentives and innovation infrastructure.

Enterprises: Optimize equity structures and reduce agency costs.

Investors: Prioritize firms with long-term capital alignment and dynamic capabilities.

2. Theoretical Analysis and Hypotheses

2.1. Theoretical Foundations

2.1.1. Concept and Characteristics of Patient Capital

Patient Capital refers to an investment form that does not prioritize short-term returns but focuses on long-term value creation, characterized by three core features: long-term orientation, risk tolerance, and relational embeddedness [1]. Its connotation can be analyzed through the following dimensions:

Long-term orientation: The investment cycle typically spans over 5 years, supporting long-cycle projects such as technology R&D and infrastructure development (e.g., semiconductors, biomedicine) [7].

Risk tolerance: Accepts innovation failures and market fluctuations while avoiding maturity mismatches like "short-term loans for long-term investments" [7].

Relational embeddedness: Establishes long-term partnerships through deep engagement in corporate governance (e.g., board seats, strategic oversight), thereby reducing information asymmetry [8].

Its core characteristic lies in providing long-term stable financial support, encouraging enterprises to make substantial investments in talent development, risk management, and innovation-driven initiatives. According to the resource-based view, as a scarce resource, patient capital can enhance a firm's dynamic capabilities through stable funding and governance optimization [11]. Lin et al. [1] define patient capital as "relationship-based" investment capital that establishes long-term oriented (LTO) strategic partnerships with enterprises to share future development returns, noting that such capital primarily originates from banking sectors and institutional investors.

2.1.2. The Concept and Influencing Factors of Enterprise Resilience

The study of enterprise resilience originated with Meyer (1982), who introduced the concept of resilience from physics into the field of management. It is now commonly defined as an enterprise's ability to maintain stability and recover during crises [12]. The influencing factors can be categorized into three dimensions:

External Environment:

Institutional Environment: Social trust [13] and investor protection mechanisms [5] enhance resilience by reducing transaction costs and constraining major shareholder behavior.

Market Environment: Digital transformation infrastructure [14] and industrial chain collaboration [15] optimize innovation ecosystems and emergency response capabilities, respectively.

Internal Characteristics:

Resource Capabilities: Technological diversification [16] and innovation investment [17] exhibit an inverted U-shaped impact, while digital transformation (Fan Hejun et al., 2024) enhances risk resistance by reshaping dynamic capabilities.

Governance Structure: Internal capital markets [4], CEO attention allocation [19], and ESG performance [20] collectively improve resource allocation and decision-making efficiency.

Organizational Management: Exploratory innovation [21], top management team heterogeneity [22], and internal controls [14] strengthen innovation efficacy, strategic adaptability, and digital empowerment, respectively.

Interaction Effects:

Technology embargoes [23] stimulate innovation vitality in private enterprises.

Social credit [24] compensates for weak governance in certain firms.

Digital transformation [25] requires synergy with organizational capabilities to achieve resilience breakthroughs.

2.1.3. Theoretical Link Between Patient Capital and Enterprise Resilience

Based on dynamic capability theory, the enhancing effect of patient capital on enterprise resilience is primarily achieved through the following mechanisms:

First, from the resource provision perspective, patient capital effectively alleviates corporate financing constraints [4] by providing stable, long-term financial support, preventing liquidity crises during economic downturns. This sustained financial backing serves as a critical buffer, enabling firms to withstand external shocks.

Second, in terms of capability-building, patient capital facilitates the transformation of innovation investments into substantive technological breakthroughs (e.g., modular innovation and other high-risk, high-reward projects), significantly enhancing strategic flexibility [8]. This capability empowers firms to adapt more agilely to market shifts and technological disruptions.

Third, at the governance level, the long-term nature of patient capital helps curb managerial short-termism [7]. By optimizing resource allocation efficiency and improving corporate governance structures, it institutionalizes resilience-building. Notably, these effects may be moderated by first-tier agency costs.

Existing research demonstrates that patient capital positively impacts corporate development through multiple channels, including governance enhancement, financing constraint mitigation, and innovation promotion. However, direct studies on the relationship between patient capital and enterprise resilience remain scarce. In reality, patient capital elevates resilience precisely through its unique characteristics and holistic influence on firms.

Specifically, patient capital bolsters enterprise resilience across three key dimensions:

Stability Dimension: As a long-term funding source, patient capital provides a stable foundation for sustained growth. Its focus on long-term value over short-term gains enables firms to maintain strategic focus, preparing them for future challenges.

Risk Resilience Dimension: With its high risk tolerance, patient capital buffers against short-term market volatility, curbs speculative behavior, and strengthens firms' capacity to withstand and recover from external shocks.

Strategic Guidance Dimension: By refining governance structures and steering long-term strategic direction, patient capital fosters stable operations and market positioning, ultimately enhancing overall risk management and resilience.

2.2. Hypotheses

2.2.1. The Direct Effect of Patient Capital on Enterprise Resilience

Enterprise resilience refers to an organization's buffering capacity and recovery capability when facing external shocks, which is primarily reflected in two dimensions: "stability maintenance" and "growth." As a long-term-oriented form of capital, patient capital possesses unique advantages in enhancing enterprise resilience due to its characteristics of long-term investment horizon, risk tolerance, and strategic stability.

The investment stability of patient capital strengthens an enterprise's ability to maintain stability through multiple pathways:

Providing stable cash flow to ensure normal operations.

Enhancing market expansion and brand-building capabilities, thereby creating a reputation effect.

Reducing financing difficulties during crises.

Empirical studies show that enterprises supported by patient capital can maintain stable production during crises and resume normal operations more quickly. By mitigating the impact of short-term market fluctuations on business operations, improving risk management systems to enhance asset preservation, and optimizing corporate governance structures to promote scientific decision-making, patient capital collectively strengthens an enterprise's ability to recover rapidly after a crisis.

The long-term strategic orientation of patient capital enables enterprises not only to withstand shocks but also to achieve sustained post-crisis development by:

Supporting entry into emerging sectors and high-growth industries.

Improving resource allocation efficiency to cultivate new growth drivers.

Enhancing strategic flexibility to seize market opportunities.

Yang Guoyu et al. [27], based on a study of A-share listed companies, found that patient capital significantly enhances enterprise resilience. Chen Yalan [28] pointed out that patient capital strengthens an enterprise's risk resistance and continuous innovation capabilities through the "resource restructuring—risk buffering—goal alignment" mechanism. Based on the above analysis, Hypothesis H1 is proposed:

H1: Patient capital is positively correlated with enterprise resilience.

2.2.2. The Indirect Impact Mechanism of Patient Capital on Enterprise Resilience

Existing research indicates that patient capital indirectly enhances enterprise resilience through two key pathways: innovation performance and financing constraints [8].

Innovation Performance Pathway: As an important external governance mechanism, institutional investors leverage their professional analytical capabilities and long-term investment perspectives to effectively identify the long-term value of innovation investments [29]. When their shareholding exceeds a certain threshold, these investors actively participate in corporate governance, significantly mitigating managerial short-termism [30]. Among them, long-term funds within securities investment funds play a particularly prominent role in promoting innovation output [31].

Financing Constraint Pathway: Patient capital reduces corporate financing costs and alleviates information asymmetry by providing long-term stable funding and improving information disclosure quality [32]. Notably, patient capital aligns inherently with corporate management in terms of technological innovation and long-term development goals [7]. This institutional synergy provides a solid foundation for the innovation performance pathway.

Based on the above mechanism analysis, this paper proposes Hypothesis H2: Innovation performance plays a positive mediating role in the impact of patient capital on the resilience of small and medium-sized enterprises (SMEs). This hypothesis is supported by the "sophisticated institutional investor theory" of Dahya and McConnell [33] and the empirical evidence on shareholding threshold effects from Qi Jiebin et al. [34], which demonstrate that institutional investors significantly enhance corporate innovation when their shareholding reaches a certain level. Building on this analysis, we further propose:

H2a: Innovation performance positively mediates the relationship between patient capital and SME resilience.

Research shows that patient capital significantly reduces financing costs and alleviates short-term liquidity pressures by providing long-term stable funding [5]. Simultaneously, it improves information disclosure quality [8], mitigates information asymmetry between investors and firms, and strengthens external investor confidence. More importantly, the risk-tolerant nature of patient capital [1] enhances firms' access to financing during crises. This financing constraint alleviation mechanism provides critical financial support, enabling firms to maintain normal operations and recover swiftly post-crisis. Empirical studies confirm that patient capital aligns closely with managerial long-term objectives [7], and this strategic synergy further amplifies the effect of financing constraint mitigation. Based on the above theoretical and empirical evidence, this paper proposes:

H2b: Patient capital significantly enhances enterprise resilience by alleviating financing constraints through a mediating pathway.

2.2.3. The Moderating Effect of First-Tier Agency Costs

Existing research suggests that the positive impact of patient capital on enterprise resilience may be constrained by governance efficiency. From the perspective of agency theory, first-tier agency costs (AC), as a key measure of governance efficiency, exhibit a significant negative moderating effect on the relationship between patient capital and enterprise resilience [35] Specifically, high agency costs weaken the beneficial influence of patient capital through three mechanisms:

Exacerbating goal divergence between management and investors, thereby diluting the governance and oversight effects of patient capital [4];

Causing inefficient resource allocation, hindering the translation of innovation investments into substantive technological breakthroughs [36];

Inducing short-termism, undermining the execution of long-term strategies [37].

Empirical evidence shows that when agency costs (measured by the management expense ratio) are high, the marginal contribution of patient capital to enterprise resilience significantly declines ($\beta = -0.669$***, *p* < 0.01). This finding not only validates Williamson's [38] theoretical proposition on how governance costs affect capital utility but also highlights the importance of optimizing corporate governance mechanisms to unlock the full potential of patient capital. Based on this, we propose Hypothesis H3:

H3: First-tier agency costs (AC) negatively moderate the positive relationship between patient capital and enterprise resilience.

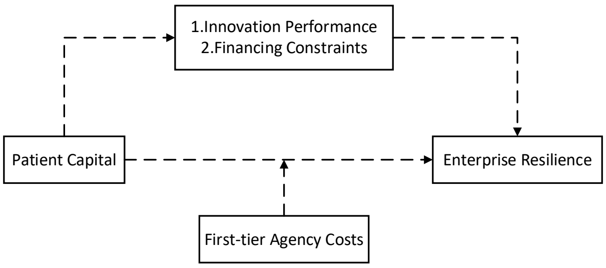

Figure 1. The Research Framework of This Paper

3. Data Organization and Research Design

3.1. Sample Selection and Data Sources

This study uses Chinese A-share manufacturing listed companies from 2013 to 2023 as the initial sample. The following adjustments were made:

Excluded firms in the financial and insurance sectors.

Excluded ST and *ST companies.

Excluded samples with missing data.

The final dataset consists of 9,928 firm-year observations, sourced from the CSMAR database.

3.2. Empirical Models

To examine the impact of patient capital on enterprise resilience, this study adopts the high-dimensional fixed-effects regression model, following the approach of Yang Fang et al. [39], and employs a stepwise regression method to empirically analyze the relationship among patient capital, innovation performance, and enterprise resilience.

The models are constructed as follows:

First, to test Hypothesis H1, the baseline model measures the relationship between enterprise resilience (Res) and patient capital (Invest):

$$\mathrm{Res}_{it} = \beta_0 + \beta_1 \mathrm{Invest}_{it} + \gamma \mathrm{Controls}_{it} + \mathrm{Year} + \mathrm{Firm} + \varepsilon_{it}$$

Secondly, we construct the mediation effect models for innovation performance (IE) and financing constraints (FC) to test whether H2a and H2b hold:

$$\mathrm{Ie}_{it} = \beta_0 + \beta_1 \mathrm{Invest}_{it} + \gamma \mathrm{Controls}_{it} + \mathrm{Year} + \mathrm{Firm} + \varepsilon_{it}$$

$$\mathrm{Fc}_{it} = \beta_0 + \beta_1 \mathrm{Invest}_{it} + \gamma \mathrm{Controls}_{it} + \mathrm{Year} + \mathrm{Firm} + \varepsilon_{it}$$

$$\mathrm{Res}_{it} = \beta_0 + \beta_1 \mathrm{Invest}_{it} + \beta_3 \mathrm{Ie}_{it} + \gamma \mathrm{Controls}_{it} + \mathrm{Year} + \mathrm{Firm} + \varepsilon_{it}$$

$$\mathrm{Res}_{it} = \beta_0 + \beta_1 \mathrm{Invest}_{it} + \beta_3 \mathrm{Fc}_{it} + \gamma \mathrm{Controls}_{it} + \mathrm{Year} + \mathrm{Firm} + \varepsilon_{it}$$

Finally, for H3, we build the following model to examine the moderating effect of first-tier agency costs (AC):

$$\mathrm{Res}_{it} = \beta_0 + \beta_1 \mathrm{Invest}_{it} + \beta_2 \mathrm{Invest}_{it} * \mathrm{AC}_{it} + \beta_3 \mathrm{AC}_{it} + \gamma \mathrm{Controls}_{it} + \mathrm{Year} + \mathrm{Firm} + \varepsilon_{it}$$

Where: Res_{it} represents the enterprise resilience of firm i in year t, Invest_{it} represents the proportion of patient capital investment of firm i in year t, Controls denotes control variables including: current ratio, firm nature (SOE), board size, proportion of independent directors, CEO duality, operating income growth rate, return on assets (ROA), Tobin's Q, Herfindahl-10 index, listing age, book-to-market ratio, debt-to-equity ratio, and management shareholding ratio, etc. Year and Firm represent the controlled year and firm fixed effects, respectively.

3.3. Variable Definitions

3.3.1. Dependent variable

Enterprise Resilience: Following the indirect measurement approach of Lai et al. [40] and drawing on the methodology of Ortiz & Bansal, enterprise resilience is conceptualized as a two-dimensional structure comprising low financial volatility and high growth capability:

Volatility: Measured by the standard deviation of quarterly stock returns over one year.

Growth: Measured by the cumulative growth in sales revenue over three years.

A lower volatility and higher growth indicate stronger enterprise resilience.

3.3.2. Independent variable

Patient capital (Invest): Based on the methodologies of Jiang et al. [8] and Wu et al. [7], institutional investors are categorized into high, medium, and low turnover groups according to their average turnover rate. The group with the lowest turnover is identified as stable institutional investors, and the proportion of their equity holdings (i.e., patient capital) relative to total equity is calculated.

This operational definition captures the core characteristic of patient capital as a long-term investment—prioritizing sustained returns and developmental prospects over short-term market fluctuations. By quantifying the proportion of stable equity, this measure effectively reflects the degree of long-term capital commitment and its impact on enterprise development.

3.3.3. Mediating Variables

Innovation Performance (IE): This study adopts the patent application intensity indicator to measure innovation performance (IE), following existing research. The calculation formula is: IE =Ln {(Number of Patent Applications) / [(Total R&D Expenditure over Three Years) / (Total Assets at Year-End)] +1}. This measurement method accounts for both innovation output (patent applications) and the scale of R&D investment [8, 17].

Financing Constraints (FC): Financing constraints are measured using the WW index, which is constructed based on six financial indicators, including cash flow, leverage ratio, and dividend payout ratio. This index comprehensively reflects the degree of external financing constraints faced by firms and has been widely applied in studies of Chinese listed companies [4, 16]. A higher WW index value indicates more severe financing constraints.

3.3.4. Moderating Variable

This study uses the management expense ratio as a proxy for first-tier agency costs (AC) [41]. This indicator is calculated as the ratio of management expenses to operating revenue and effectively reflects the efficiency losses and resource waste caused by principal-agent problems [4]. This measurement method has been widely adopted in the literature because a higher management expense ratio typically indicates more severe agency problems, including managerial overconsumption of perks and inefficient expansion due to opportunistic behavior [3].

3.3.5. Control Variables

The control variables selected in this study include: Current ratio, Firm nature (state-owned enterprise, SOE), Board size, Proportion of independent directors, CEO duality (whether the chairman also serves as the CEO), Revenue growth rate, Return on assets (ROA), Tobin’s Q, Herfindahl-10 index (measuring equity concentration), Listing age, Book-to-market ratio (BM), Debt-to-equity ratio (DER), Management shareholding ratio. The definitions of these variables are based on prior research by Hu et al. [5], Xiao et al. [3], and Luo et al. [14], ensuring control over potential influences from corporate financial characteristics, governance structures, and market performance on the empirical results.

Table 1. Variable Symbols and Definitions

Variable Name	Variable Symbol	Definition/Measurement
Enterprise Resilience	Res	Measured using entropy weighting method combining long-term performance growth and financial volatility
Patient Capital	Invest	Proportion of institutional investor shareholding
Innovation Input (Performance)	IE	IE = Ln [Number of patent applications÷(3-year R&D expenditure ÷ total assets at period-end) + 1]
Financing Constraints	FC	Whited-Wu (WW) Index
First-tier Agency Costs	AC	Management expense ratio (management expenses ÷ operating revenue)
Current Ratio	Current	Current assets ÷ current liabilities
Asset-Liability Ratio	Lev	Total liabilities ÷ total assets at period-end
Firm Nature	SOE	State-owned enterprise = 1, non-SOE = 0
Board Size	Board	Natural logarithm of the number of board members
Proportion of Independent Directors	Indep	Percentage of independent directors on the board
CEO Duality	Dual	Chairman concurrently serving as CEO = 1, otherwise = 0
Operating Revenue Growth Rate	Growth	(Current year revenue increase ÷ previous year total revenue) × 100%
Return on Assets (ROA)	ROA	Net profit ÷ average total assets
Tobin’s Q	Tobin'Q	Market value ÷ total assets
Herfindahl-10 Index	Herfindahl10	Sum of squared shareholding ratios of the top 10 major shareholders
Listing Age	ListAge	Ln (current year - listing year + 1)
Book-to-Market Ratio	BM	Book value ÷ market value
Debt-to-Equity Ratio	DER	Total liabilities ÷ owners’ equity at year-end
Management Shareholding Ratio	Mshare	Number of shares held by directors, supervisors, and executives ÷ total shares

4. Empirical Research

4.1. Descriptive Statistics

Table 2. Descriptive Statistics of Main Variables

VarName	Obs	Mean	SD	Min	Max
Res	9928	0.305	0.022	0.083	0.981
Invest	9928	0.446	0.231	0.000	0.989
IE	9928	3.481	1.632	-1.119	9.338
FC	9928	-1.039	0.173	-16.067	-0.574
AC	9928	0.075	0.106	0.003	7.284
Current	9928	1.769	1.894	0.032	104.667
Lev	9928	0.474	0.175	0.008	1.957
ROA	9928	0.033	0.072	-1.146	1.285
Growth	9928	0.231	4.529	-0.982	429.036
TobinQ	9928	1.927	1.606	0.662	92.299
BM	9928	1158.012	1108.057	10.919	16931.666
DER	9928	1.271	5.458	-236.323	205.890
ListAge	9928	2.492	0.587	1.099	3.526
SOE	9928	0.365	0.481	0.000	1.000
Board	9928	2.302	0.249	1.386	3.367
Indep	9928	0.383	0.076	0.188	0.800
Dual	9928	0.260	0.438	0.000	1.000
Herfindahl10	9928	0.144	0.106	0.002	0.810
Mshare	9928	0.118	0.455	0.000	16.929

Table 3 presents the descriptive statistics of the main variables. The mean value of enterprise resilience (Res) is 0.305, with a standard deviation of 0.022, and the minimum and maximum values are 0.083 and 0.981, respectively. This indicates significant variation in resilience levels across the sample firms, providing a robust basis for subsequent analysis.

The mean value of patient capital (Invest) is 0.446, with a standard deviation of 0.231, and its distribution ranges widely (0–0.989), reflecting differences among firms in attracting long-term capital. The mean values of innovation efficiency (IE) and financing constraints (FC) are 3.481 and -1.039, respectively, with relatively high standard deviations, suggesting notable divergence in firms' innovation inputs and financing capabilities.

The statistical characteristics of control variables, such as the asset-liability ratio (Lev) and return on assets (ROA), also align with expectations, offering reliable data support for model construction.

4.2. Correlation Analysis

The results of the correlation analysis show that enterprise resilience (Res) is significantly positively correlated with patient capital (Invest) (correlation coefficient = 0.174), exhibits a stronger positive correlation with innovation efficiency (IE) (0.248), and is significantly negatively correlated with financing constraints (FC) (-0.171). These findings preliminarily validate the research hypotheses, suggesting that patient capital may enhance enterprise resilience by improving innovation efficiency and alleviating financing constraints. Furthermore, the variance inflation factor (VIF) for all variables is below 2, indicating no severe multicollinearity issues in the model, thereby ensuring the reliability of the regression results.

Table 3. Correlation of Key Variables

	Res	Invest	IE	FC
Res	1			
Invest	0.174***	1		
IE	0.248***	0.191***	1	
FC	-0.171***	-0.164***	-0.219***	1

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4. Multicollinearity Test

Variable	VIF	1/VIF
Invest	1.810	0.553
Lev	1.800	0.557
Herfindahl10	1.610	0.621
SOE	1.530	0.655
BM	1.510	0.661
ListAge	1.480	0.676
Current	1.280	0.780
ROA	1.230	0.810
TobinQ	1.170	0.857
Board	1.130	0.886
Dual	1.120	0.896
Mshare	1.100	0.910
DER	1.050	0.956
Indep	1.040	0.957
Growth	1	0.997
Mean	VIF	1.320

4.3. Baseline Regression

The baseline regression results show that the coefficient of patient capital (Invest) on enterprise resilience (Res) is significantly positive at the 1% level (coefficient = 0.000102, t = 3.95), supporting Hypothesis H1. Among the control variables, the coefficients of the asset-liability ratio (Lev) and return on total assets (ROA) are significantly positive, indicating that financial health positively influences enterprise resilience. In contrast, the coefficient for state-owned enterprises (SOE) is significantly negative, possibly reflecting their lower governance efficiency. The model exhibits good fit ($R^2 = 0.435$), and the choice of the fixed-effects model is further supported by the F-test and Hausman test.

Table 5. Regression Results of Patient Capital on Enterprise Resilience

	Res	Res	Res
Invest	0.0131***	0.0107***	0.0103***
	(5.57)	(4.51)	(3.95)
Current		0.0000547	0.0000587
		(0.43)	(0.46)
Lev		0.0101***	0.0103***
		(4.36)	(4.32)
ROA		0.0400***	0.0403***
		(11.00)	(11.05)
Growth		0.0000856**	0.0000815*
		(1.98)	(1.88)
TobinQ		-0.00000645	-0.00000356
		(-0.03)	(-0.02)
BM		-4.16e-08	-3.81e-08
		(-0.11)	(-0.10)
DER			-0.0000132
			(-0.36)
ListAge			0.000281
			(0.17)
SOE			-0.00266*
			(-1.92)
Board			0.00138
			(1.29)
Indep			-0.00159
			(-0.50)
Dual			0.000877
			(1.29)
Herfindahl10			0.00267
			(0.53)
Mshare			-0.00176***
			(-2.61)
_cons	0.299***	0.294***	0.291***
	(279.88)	(171.65)	(56.46)
Firm	yes	yes	yes
Year	yes	yes	yes
N	9926	9926	9926
F	31***	23***	12***
r2	0.426	0.434	0.435
r2_a	0.344	0.353	0.353

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6. Model Specification Tests

Test Method	Test Value	P-value	Test Conclusion
F-test	4.34	0.000	Fixed-effects model is superior to pooled OLS model
LM test	4682.91	0.000	Random-effects model is superior to pooled OLS model
Hausman test	77.20	0.000	Fixed-effects model is superior to random-effects model

4.4. Endogeneity Test

Table 7. Instrumental Variable Estimation

	First Stage (Invest)	Second Stage (Res)
Invest		0.0235***
		(5.14)
Top5	0.965***	
	(64.10)	
Current	0.000180	0.0000579
	(0.41)	(0.45)
Lev	-0.0141*	0.0110***
	(-1.73)	(4.60)
ROA	0.0670***	0.0392***
	(5.39)	(10.72)
Growth	0.000126	0.0000781*
	(0.85)	(1.80)
TobinQ	0.00572***	-0.0000690
	(8.91)	(-0.36)
BM	-0.0000159***	0.000000168
	(-12.87)	(0.46)
DER	0.00000348	-0.0000120
	(0.03)	(-0.33)
ListAge	0.124***	-0.000216
	(21.35)	(-0.13)
SOE	0.0237***	-0.00302**
	(5.01)	(-2.17)
Board	0.00275	0.00121
	(0.76)	(1.13)
Indep	-0.0210*	-0.00111
	(-1.93)	(-0.35)
Dual	-0.00334	0.000916
	(-1.44)	(1.35)
Herfindahl10	-0.127***	-0.00737
	(-6.08)	(-1.28)
Mshare	-0.00901***	-0.00163**
	(-3.90)	(-2.40)
Firm	yes	yes
Year	yes	yes
N	9926	9926
F	467***	12***
r2	0.939	0.017
r2_a	0.931	-0.126

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Due to the potential bidirectional causality between enterprise resilience (Res) and patient capital (Invest)—where resilient firms are more likely to attract long-term investors, while patient capital may further enhance resilience—direct regression could lead to endogeneity bias. To address this issue, this study follows the approach of Qiu Rong et al. [6] and employs "ownership concentration" (the shareholding ratio of the top five shareholders, Top5) as an instrumental variable (IV) for patient capital. This selection is justified by two criteria:

Relevance: Firms with higher ownership concentration are more inclined to introduce long-term, stable institutional investors, making Top5 strongly correlated with patient capital holdings.

Exogeneity: The shareholding ratio of the top five shareholders is primarily determined by corporate governance structures and historical equity arrangements, with no direct link to the firm's current risk resilience (Res), satisfying the exclusion restriction.

The results of the instrumental variable approach show that in the first-stage regression, ownership concentration (Top5) as an IV for patient capital yields a significant coefficient (96.44, t=64.08), with an F-statistic of 4105.84, far exceeding the critical threshold. This confirms the strength of the instrument. In the second-stage regression, the coefficient for patient capital remains significantly positive (0.000235, t=5.14), indicating that the positive impact of patient capital on enterprise resilience persists after controlling for endogeneity.

Further validation confirms its effectiveness:

The Anderson LM test (χ^2=3191.22, p=0.000) demonstrates a significant correlation between the IV and the endogenous variable.

The Cragg-Donald Wald F-statistic (4105.84) substantially surpasses the Stock-Yogo critical value (16.38), ruling out weak instrument concerns.

The second-stage regression coefficient for patient capital remains positive and significant (β=0.000235, $p<0.01$), confirming the robustness of the core findings after addressing endogeneity.

4.5. Robustness Tests

Robustness tests were conducted by replacing the explanatory variable (following the approach of Jiang Zhongyu and Wu Fuxiang [8], using the proportion of relational debt as a substitute for the main explanatory variable, patient capital, where relational debt ratio = long-term loans / (long-term loans + short-term loans + bonds payable + notes payable)), performing one-period lagged regressions, and applying industry fixed effects to verify the reliability of the core findings. The coefficient for patient capital remained significantly positive across different models, and the signs and significance of the control variables showed no substantial changes. This indicates that the research results exhibit strong robustness with respect to model specifications and variable definitions.

Table 8. Robustness Tests

	Robust standard errors Res	Alternative explanatory variable Res	Lagged 1-year Res	Industry fixed effects Res
Invest	0.0103***		0.0133***	0.00966***
	(4.69)		(4.30)	(3.67)
Rdebt		0.00388***		
		(3.15)		
Current	0.0000587	0.0000153	0.0000247	0.0000553
	(1.39)	(0.12)	(0.13)	(0.43)
Lev	0.0103***	0.00937***	0.00274	0.0104***
	(5.76)	(3.94)	(0.98)	(4.35)
ROA	0.0403***	0.0409***	0.0153***	0.0395***
	(13.21)	(11.22)	(3.82)	(10.80)
Growth	0.0000815*	0.0000826*	-0.000679***	0.0000827*
	(1.91)	(1.91)	(-3.37)	(1.91)
TobinQ	-0.00000356	0.0000497	-0.0000122	0.00000948
	(-0.04)	(0.26)	(-0.04)	(0.05)
BM	-3.81e-08	-0.000000209	0.00000110***	-0.000000117
	(-0.06)	(-0.58)	(2.69)	(-0.32)
DER	-0.0000132	-0.0000137	-0.0000122	-0.0000154
	(-1.21)	(-0.38)	(-0.30)	(-0.42)
ListAge	0.000281	0.000659	-0.000383	0.000258
	(0.15)	(0.40)	(-0.17)	(0.15)
SOE	-0.00266***	-0.00257*	-0.00297*	-0.00180
	(-2.69)	(-1.85)	(-1.90)	(-1.29)
Board	0.00138	0.00152	0.00156	0.00125
	(1.45)	(1.43)	(1.33)	(1.18)
Indep	-0.00159	-0.00192	-0.00419	-0.00160
	(-0.47)	(-0.60)	(-1.21)	(-0.50)
Dual	0.000877*	0.000883	0.000704	0.000713
	(1.71)	(1.30)	(0.93)	(1.05)
Herfindahl10	0.00267	0.0103**	0.00514	0.00233
	(0.23)	(2.23)	(0.87)	(0.46)
Mshare	-0.00176	-0.00182***	-0.00129*	-0.000704
	(-1.25)	(-2.69)	(-1.83)	(-1.01)
_cons	0.291***	0.293***	0.295***	0.291***
	(47.52)	(57.30)	(43.14)	(56.31)
Firm	yes	yes	yes	yes
Year	yes	yes	yes	yes
Industry				yes
N	9926	9926	8319	9926
F	16***	11***	4***	11***
r2	0.435	0.435	0.432	0.441
r2_a	0.353	0.353	0.333	0.358

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5. Mechanism Tests and Heterogeneity Analysis

5.1. Mediation Effects

The mediation test results in Table 6 systematically reveal the intrinsic mechanisms through which patient capital enhances enterprise resilience. The study finds that patient capital strengthens resilience through two parallel pathways: "innovation efficiency improvement" and "financing constraint alleviation," with each pathway contributing over 30% of the mediation effect.

Innovation Pathway: Patient capital significantly improves innovation efficiency ($\beta = 0.682$, $t = 5.87$), consistent with the findings of Jiang Zhongyu [8], indicating that long-term capital support helps firms overcome the "valley of death" in R&D activities.

Financing Pathway: Patient capital effectively alleviates financing constraints ($\beta = -0.0462$, $t = -10.69$), validating the theoretical expectations of Lin Yifu and Wang Yan [1] regarding the relationship between capital maturity structure and financing costs.

Notably, even after controlling for these mediators, the direct effect of patient capital remains significant, suggesting the existence of other unobserved mechanisms, which provides direction for future research.

These findings offer critical insights for practice:

Enterprises should integrate patient capital into innovation management systems by establishing dedicated long-term

R&D funds.

Financial institutions can develop targeted financing products to align capital maturity with firms' innovation cycles.

Policymakers should enhance innovation infrastructure and reduce technology transfer costs to maximize the effectiveness of patient capital.

The results also resonate with dynamic capability theory, demonstrating that enterprise resilience requires synergistic coordination between capital support and capability-building.

Table 9. Mediation Effect Test of Patient Capital on Enterprise Resilience

	IE	Res	FC	Res
Invest	0.682***	0.00940***	-0.0462***	0.00693***
	(5.87)	(3.62)	(-10.69)	(2.67)
IE		0.00126***		
		(5.25)		
FC				-0.0720***
				(-11.24)
Current	-0.00128	0.0000604	-0.000409*	0.0000293
	(-0.22)	(0.47)	(-1.91)	(0.23)
Lev	0.127	0.0101***	-0.0123***	0.00939***
	(1.19)	(4.26)	(-3.10)	(3.98)
ROA	0.703***	0.0394***	-0.169***	0.0281***
	(4.31)	(10.81)	(-27.82)	(7.44)
Growth	0.00234	0.0000786*	-0.0349***	-0.00243***
	(1.21)	(1.82)	(-483.88)	(-10.68)
TobinQ	-0.0502***	0.0000596	0.00377***	0.000268
	(-5.95)	(0.32)	(12.02)	(1.42)
BM	0.0000407**	-8.93e-08	-0.00000462***	-0.000000371
	(2.50)	(-0.25)	(-7.63)	(-1.02)
DER	-0.00123	-0.0000117	-0.0000109	-0.0000140
	(-0.75)	(-0.32)	(-0.18)	(-0.39)
ListAge	0.0457	0.000224	-0.00424	-0.0000240
	(0.61)	(0.13)	(-1.53)	(-0.01)
SOE	0.00337	-0.00267*	0.00343	-0.00242*
	(0.05)	(-1.92)	(1.48)	(-1.75)
Board	0.00557	0.00137	-0.00216	0.00122
	(0.12)	(1.29)	(-1.21)	(1.15)
Indep	0.229	-0.00188	-0.00432	-0.00190
	(1.61)	(-0.59)	(-0.81)	(-0.60)
Dual	0.0490	0.000816	-0.00276**	0.000678
	(1.61)	(1.20)	(-2.45)	(1.01)
Herfindahl10	-0.0740	0.00276	0.00773	0.00322
	(-0.33)	(0.55)	(0.93)	(0.65)
Mshare	-0.00140	-0.00176***	0.00174	-0.00164**
	(-0.05)	(-2.61)	(1.54)	(-2.44)
_cons	2.930***	0.287***	-0.985***	0.220***
	(12.69)	(55.32)	(-114.69)	(27.11)
Firm	yes	yes	yes	yes
Year	yes	yes	yes	yes
N	9926	9926	9926	9926
F	7***	13***	15942***	19***
r2	0.792	0.437	0.974	0.444
r2_a	0.761	0.355	0.971	0.363

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.2. Moderating Effects

The moderating effect analysis reveals the critical role of corporate governance quality in the effectiveness of patient capital. The results show that the interaction term between first-tier agency costs (AC) and patient capital is significantly negative ($\beta = -0.0669$, *t* = -4.19), a finding with substantial theoretical and practical implications.

Theoretical Implications

This outcome validates the agency theory proposed by Jensen and Meckling [35], demonstrating that higher agency costs significantly weaken the governance effect of patient capital by exacerbating goal misalignment between management and investors. Specifically, high agency costs may suppress capital utility through three mechanisms:

Inducing managerial myopia, thereby hindering long-term innovation investment [36];

Distorting resource allocation and reducing capital efficiency [4];

Amplifying information asymmetry, undermining investor oversight efficacy [37].

Table 10. Test of the Moderating Effect of First-Tier Agency Costs

	Res
Invest	0.0108***
	(4.16)
AC_Invest	-0.0669***
	(-4.19)
AC	-0.00589**
	(-2.24)
Current	0.0000619
	(0.48)
Lev	0.0102***
	(4.30)
ROA	0.0401***
	(10.91)
Growth	0.0000829*
	(1.92)
TobinQ	-0.0000310
	(-0.16)
BM	1.82e-08
	(0.05)
DER	-0.0000114
	(-0.31)
ListAge	0.000323
	(0.19)
SOE	-0.00260*
	(-1.87)
Board	0.00134
	(1.26)
Indep	-0.00141
	(-0.45)
Dual	0.000889
	(1.31)
Herfindahl10	0.00226
	(0.45)
Mshare	-0.00170**
	(-2.38)
_cons	0.291***
	(56.49)
Firm	yes
Year	yes
N	9926
F	11***
r2	0.437
r2_a	0.354

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

This discovery provides clear guidance for optimizing capital allocation:

For investors: Prioritize firms with lower agency costs by thoroughly evaluating governance structures before investment.

For enterprises: Reduce agency costs through measures such as enhancing independent director systems and implementing equity incentives.

For policymakers: Incorporate agency cost metrics into patient capital policy assessments, e.g., offering additional tax incentives to firms with superior governance ratings.

Notably, the significantly positive coefficients of financial health indicators (ROA and Lev) among the control variables further indicate that sound financial conditions and low agency costs synergistically enhance the efficacy of patient capital. This suggests that enterprises must adopt a "dual-drive" strategy—balancing financial stability with governance optimization—to maximize resilience when introducing patient capital.

5.3. Heterogeneity Test

The results of the heterogeneity test reveal significant industry differences in the impact of patient capital (Invest) on enterprise resilience, providing important insights into the boundary conditions of capital effectiveness.

Comparison between Digital and Non-Digital Core Industries:

Patient capital exhibits a more pronounced positive effect in non-digital core industries ($\beta=0.0129$, $p<0.01$), while its impact in digital core industries is statistically insignificant ($\beta=0.00162$, $p>0.1$). This divergence may stem from inherent industry characteristics:

Digital economy firms typically feature asset-light structures, high liquidity, and rapid iteration. Their resilience relies more on technological innovation and market agility, reducing their dependence on long-term capital.

Traditional manufacturing (non-digital industries), however, requires patient capital to support long-cycle infrastructure development and technological upgrades, making capital more effective in these sectors.

Comparison between High-Tech and Non-High-Tech Industries:

The subgroup analysis further confirms this pattern:

Patient capital significantly enhances resilience in non-high-tech firms ($\beta=0.0110$, $p<0.01$).

Its effect on high-tech firms is negative and insignificant ($\beta=-0.00985$, $p>0.1$).

This finding engages with prior research in nuanced ways:

(1) High-tech firms engage in innovation activities characterized by high risk and uncertainty, which may lead patient capital to adopt a risk-averse stance [7].

(2) These firms often possess stronger internal financing capabilities and technological barriers, diminishing their reliance on external long-term capital [8].

Notably, control variables also exhibit systematic differences: In non-digital and non-high-tech industries, financial health indicators (e.g., Lev and ROA) show a stronger positive correlation with resilience, indicating that capital and financial stability synergize more effectively in traditional sectors.

Policy Implications

(1) For Policymakers: Implement differentiated strategies for capital allocation:

Traditional manufacturing: Enhance support through tax incentives and specialized funds.

Digital and high-tech industries: Focus on innovation infrastructure (e.g., R&D platforms) and intellectual property protection.

(2) For Enterprises:

Non-digital firms: Prioritize strategic investors to optimize capital structures.

High-tech firms: Balance short-term R&D investments with long-term capital returns.

Theoretical Alignment:

These results resonate with dynamic capability theory [11], highlighting fundamental differences in resilience-building paths:

Traditional industries: Depend on resource provision (e.g., patient capital).

Emerging industries: Emphasize capability development (e.g., technological innovation).

Future Research Directions:

Explore the matching mechanisms between industry characteristics and capital forms to refine capital allocation frameworks.

Table 11. Heterogeneity Test

	Digital Economy Core Industries	Non-Digital Economy Core Industries	High-Tech Industries	Non-High-Tech Industries
Invest	0.00162	0.0129***	-0.00985	0.0110***
	(0.27)	(4.43)	(-0.81)	(4.99)
Current	0.000677	0.0000424	-0.000449	0.0000576
	(0.82)	(0.32)	(-0.36)	(0.56)
Lev	0.0168**	0.00975***	0.0316***	0.00600***
	(2.42)	(3.75)	(2.60)	(2.94)
ROA	0.0417***	0.0405***	0.0624***	0.0324***
	(4.73)	(10.15)	(4.09)	(10.15)
Growth	0.0000464	0.0000821*	0.0000272	0.000414***
	(0.21)	(1.83)	(0.36)	(3.31)
TobinQ	-0.0000738	0.0000861	-0.000613	0.000118
	(-0.33)	(0.31)	(-0.54)	(0.76)
BM	0.00000500***	-0.000000441	-0.00000827***	0.00000138***
	(4.65)	(-1.12)	(-4.93)	(4.46)
DER	-0.0000566	-0.00000598	0.0000310	-0.0000210
	(-0.72)	(-0.15)	(0.26)	(-0.61)
ListAge	0.00414	0.000289	0.0152**	-0.00332**
	(0.99)	(0.16)	(2.25)	(-2.29)
SOE	-0.00270	-0.00248	0.00186	-0.000946
	(-0.84)	(-1.61)	(0.25)	(-0.81)
Board	-0.00288	0.00192	0.00734*	0.000130
	(-1.11)	(1.64)	(1.65)	(0.14)
Indep	-0.00615	-0.000841	-0.0186	0.00177
	(-0.83)	(-0.24)	(-1.41)	(0.64)
Dual	0.00144	0.000767	-0.00139	0.000877
	(0.87)	(1.04)	(-0.42)	(1.53)
Herfindahl10	-0.0100	0.00320	0.0684***	-0.0100**
	(-0.76)	(0.59)	(2.99)	(-2.35)
Mshare	0.00403	-0.00213***	0.000794	0.000521
	(1.41)	(-2.99)	(0.18)	(0.90)
_cons	0.290***	0.289***	0.246***	0.303***
	(22.65)	(50.92)	(10.90)	(67.73)
Firm	yes	yes	yes	yes
Year	yes	yes	yes	yes
N	1235	8685	1607	8313
F	3***	11***	5***	12***
r2	0.520	0.429	0.361	0.517
r2_a	0.434	0.346	0.253	0.446

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6. Conclusions and Recommendations

6.1. Main Research Conclusions

This study systematically examines the impact mechanism of patient capital on enterprise resilience using data from Chinese A-share manufacturing listed companies from 2013 to 2023, constructing a theoretical framework of "capital attributes → capability-building → resilience generation." The findings reveal:

First, as a scarce resource, patient capital significantly enhances enterprise resilience ($\beta = 0.000102$, $p < 0.01$), validating the core proposition of resource-based theory.

Second, mediation analysis identifies two key pathways: improved innovation efficiency ($\beta = 0.682$) and alleviated financing constraints ($\beta = -0.0462$), each contributing over 30%, demonstrating the synergistic effects of capital support, technological breakthroughs, and financial stability.

Third, moderation analysis shows that high agency costs significantly weaken the utility of patient capital (interaction term β = -0.0669), providing new evidence for agency theory.

Finally, heterogeneity tests indicate that patient capital has a more pronounced effect on non-digital core industries (β = 0.0129) and non-high-tech enterprises (β = 0.0110), highlighting the importance of aligning capital allocation with industry characteristics.

These findings not only expand the financial economics perspective in enterprise resilience research but also provide empirical support for policymakers to design differentiated capital guidance strategies, for enterprises to optimize governance structures, and for investors to make long-term value-oriented decisions. Future research could further explore the dynamic evolution of patient capital's mechanisms in the context of digital transformation.

6.2. Policy Recommendations

Based on the empirical findings, this study proposes systematic policy recommendations at the governmental, corporate, and investor levels to maximize the role of patient capital in enhancing enterprise resilience.

At the governmental level, it is recommended to implement differentiated capital guidance policies:

For traditional manufacturing sectors reliant on long-term capital, provide targeted support through tax incentives and specialized funds.

For high-tech industries, focus on building technology transfer platforms and strengthening intellectual property protection.

Incorporate agency costs into policy evaluation systems, offering financing cost benefits to firms with strong governance to create a virtuous cycle of "policy guidance → governance optimization → capital efficiency."

At the corporate level, a dual-track strategy should be adopted:

Non-digital economy enterprises should actively introduce strategic investors and establish long-term R&D funds to achieve deep synergy between capital and innovation.

All enterprises should reduce agency costs by optimizing board structures, implementing equity incentives, and other measures to create an institutional environment conducive to value realization for patient capital.

For investors, it is advised to develop a multi-dimensional evaluation framework:

Beyond financial metrics, prioritize assessing firms' dynamic capabilities (e.g., innovation efficiency) and governance quality.

Adopt industry-specific asset allocation strategies—emphasizing financial stability for traditional manufacturing and technological innovation potential for high-tech sectors.

These recommendations collectively form a comprehensive system spanning macro-policy to micro-practice, providing actionable solutions to enhance the resilience of China's manufacturing sector.

Theoretical Contributions and Practical Implications

This study integrates the resource-based view and dynamic capability theory to construct a theoretical framework of "capital attributes → capability-building → resilience generation", addressing the literature gap on the dynamic effects of capital structure.

From a practical perspective, it provides empirical evidence for the manufacturing policy of "strengthening advantages and addressing weaknesses", highlighting the importance of aligning capital allocation with industry characteristics and governance efficiency.

Future research could further explore:

The interaction between patient capital and digital transformation;

Heterogeneous effects across firms with different ownership structures.

References

[1] Lin Y., Wang Y. New structural economics: Patient capital as a comparative advantage [J]. Development Finance Research, 2017.

[2] Fan H., Pan N. Digital transformation, agile response and enterprise resilience [J]. Economic Management, 2024, 46(07): 36-54.

[3] Xiao X., Lin Y. ESG performance and enterprise resilience: Effects and mechanisms [J]. Industrial Economic Review, 2024, (03): 116-134.

[4] Hu H., Tian Y., Wang A., Ma B. Can internal capital markets improve enterprise resilience? [J]. Contemporary Finance & Economics, 2025, (01): 56-69.

[5] Hu H., Song X., Guo X. Investor protection system and enterprise resilience: Influence and mechanism [J]. Economic Management, 2020, 42(11): 23-39.

[6] Qiu, R., Zhang, M., & Li, H. Ownership concentration and patient capital allocation: An instrumental variable approach [J]. Journal of Economic Research, 2024, (3), 45-60..

[7] Wu M., Zhang P., Zhao Z. The impact of patient capital and innovation investment on enterprise performance: Evidence from SME board listed companies [J]. Scientific Decision Making, 2022, (09): 55-72.

[8] Jiang Z., Wu F. Patient capital, digital economy and innovation efficiency: Empirical evidence from A-share manufacturing listed companies [J]. Journal of Hohai University (Philosophy and Social Sciences), 2024, 26(02): 121-133.

[9] Deeg R., Hardie I. What is patient capital and who supplies it? [J]. Socio-economic Review, 2016, 14(4).

[10] Kaplan S B. Globalizing Patient Capital: The Political Economy of Chinese Finance in the Americas [M]. Cambridge: Cambridge University Press, 2021.

[11] Teece D J., Pisano G., Shuen A. Dynamic capabilities and strategic management [J]. Strategic Management Journal, 1997, 18(7): 509-533.

[12] Van der Vegt G S., Essens P., Wahlström M., George G. Managing risk and resilience [J]. Academy of Management Journal, 2015, 58(4): 971-980.

[13] Lins K V., Servaes H., Tamayo A. Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis [J]. Journal of Finance, 2017, 72(4): 1785-1824.

[14] Luo L., Zhang L., Wang C. Digital transformation and enterprise resilience: Evidence from China's A-share listed companies [J]. Reform, 2024, (05): 64-79.

[15] Chen X., Liu Y., Zhou K. Research on the path of digital economy to enhance the resilience of China's industrial chain [J]. Economic System Reform, 2022, (01): 95-102.

[16] Wang H., Li Y., Gong Y. Technological diversification, continuous innovation and enterprise resilience: The moderating role of dual networks [J]. Science & Technology Progress and Policy, 2025, 42(03): 50-61.

[17] Zhang J., Fan Y. Innovation investment and enterprise resilience: Internal mechanisms and industrial chain synergy [J]. Economic Management, 2024, 46(05): 51-71.

[18] Fan H., Pan N. Digital transformation, agile response and enterprise resilience [J]. Economic Management, 2024, 46(07): 36-54.

[19] Jiao H., Wang L., Liu S. CEO temporal focus, attention allocation and enterprise resilience [J]. Economic Management, 2024, 46(07): 91-108.

[20] Xiao X., Lin Y. ESG performance and enterprise resilience: Effects and mechanisms [J]. Industrial Economic Review, 2024, (03): 116-134.

[21] Jia Y., Fu Q., Li D. Technological innovation and enterprise resilience: Based on the context of COVID-19 [J]. Management Science, 2023, 36(02): 17-34.

[22] Zhang H., Huang Q. Research on the influence mechanism of executive team characteristics on enterprise strategic change: From the perspective of environmental dynamism [J]. Enterprise Economy, 2022, 41(07): 76-86.

[23] Zhang L., Wang S. Research on the impact of technology supply disruption on enterprise resilience [J]. Journal of Zhongnan University of Economics and Law, 2023, (06): 102-114.

[24] Yang L., Wang Z., Li Y. Social credit and enterprise resilience: A quasi-natural experiment based on social credit system reform pilot [J]. Scientific Decision Making, 2024, (03): 45-56.

[25] Fan H., Pan N. Digital transformation, agile response and enterprise resilience [J]. Economic Management, 2024, 46(07): 36-54.

[26] Cai X., Xia Y., Xue L. Construction, measurement and test of enterprise resilience index: Based on data from A-share listed companies [J]. Scientific Decision Making, 2024, (03): 57-74.

[27] Yang G., Tang L. The impact of patient capital on enterprise resilience [J]. Finance & Economics, 2025, (03): 15-29.

[28] Chen Y., Chen W. The internal mechanism and realization path of patient capital empowering enterprise original innovation [J]. Friends of Accounting, 2025, (06): 32-35.

[29] O'Brien D., Hill P., Wright M. The Journal of Finance [J], 2014, 69(3): 1285-1324.

[30] Wang B., Xie W., Zeng C. Institutional ownership, corporate governance and R&D investment of listed companies: Empirical evidence from Chinese listed companies [J]. Science & Technology Progress and Policy, 2011, 28(06): 78-82.

[31] Wang X., Wen D. Heterogeneity of institutional investors, innovation investment and enterprise performance: Empirical evidence from GEM [J]. Auditing and Economy Research, 2020, 35(02): 98-106.

[32] Fan H., Zhou X. Research on the influence mechanism of management shareholding on innovation performance: Based on the mediating role of financing constraints [J]. Science Research Management, 2020, 41(03): 52-60.

[33] Dahya J., McConnell J J. Outside directors and corporate board decisions [J]. Journal of Corporate Finance, 2005, 11(1-2): 37-60.

[34] Qi J., An T. Institutional investors' shareholding and enterprise R&D investment: Based on nonlinearity and heterogeneity [J]. China Economic Studies, 2014, (03): 27-39.

[35] Jensen M C., Meckling W H. Theory of the firm: Managerial behavior, agency costs and ownership structure [J]. Journal of Financial Economics, 1976, 3(4): 305-360.

[36] Wang H., Peng Z., Jiang X. Threshold effect of agency conflict on ambidextrous innovation synergy [J]. Studies in Science of Science, 2022, 40(3): 534-544.

[37] Zhang H., Huang Q. Does dominant CEO promote or hinder enterprise innovation investment? [J]. Research on Economics and Management, 2022, 43(07): 59-78.

[38] Williamson O E. The economic institutions of capitalism: Firms, markets, relational contracting [M]. New York: Free Press, 1985.

[39] Yang F., Zhang H., Sun Q., et al. How does patient capital help develop new quality productive forces? [J]. Western Forum, 2024, 34(06): 31-47.

[40] Lai Y., Wen M., Peng J. Research on the impact of ESG performance on enterprise resilience [J]. Finance and Economy, 2024, (07): 50-61.

[41] Jensen M C., Meckling W H. Theory of the firm: Managerial behavior, agency costs and ownership structure [J]. Journal of Financial Economics, 1976, 3(4): 305-360.