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How Government Investment Funds Foster Patient Capital Development?- A Perspective Based on the Synergistic Interaction Between “Government Leadership” and “Market Followership” in Investment

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ABSTRACT

While patient capital offers distinct risk-bearing advantages for long-cycle R&D in high-performance fiber materials, its development in China remains constrained by structural imbalances on the financial supply side. Addressing these financing gaps is essential to support the capital-intensive technical upgrades and weaving technology innovations required for modern textile engineering. Drawing on the synergistic interaction between the government’s “anchor investment” and market-based “co-investment,” this paper empirically investigates the impact of government investment funds on the development of patient capital and its underlying mechanisms. The findings indicate that government investment funds significantly promote the development of patient capital. Mechanism analysis shows that, guided by the government’s anchor investment, such funds effectively generate financing incentives, signaling effects, and innovation protection, which collectively foster the growth of patient capital. Meanwhile, through the leverage effect of market co-investment, optimizing the internal corporate environment (enhancing risk-bearing capacity and reducing financial dependence) and improving the external corporate environment (deepening market development and perfecting the legal and institutional environment) positively moderate the facilitative effect of government investment funds on patient capital development. The facilitative effect is more pronounced in capital-intensive industries, high-tech sectors, less competitive markets, state-owned enterprises, large-scale enterprises, and growth-stage enterprises. This paper not only provides new theoretical interpretations and empirical evidence on the causal relationship between government investment funds and patient capital, but also offers academic support and decision-making references for better leveraging government roles, mobilizing more social capital into venture investment, and accelerating the construction of a strong financial nation.

KEYWORDS

government investment funds, patient capital, government leadership in investment, market followership in investment, textile engineering

INTRODUCTION

The Resolution of the Third Plenary Session of the 20th CPC Central Committee proposed to “encourage and regulate the development of angel investment, venture capital, and private equity investment, better leverage the role of government investment funds, and develop patient capital.” Patient capital refers to a new form of capital that focuses on long-term value investment and possesses strong risk tolerance [1-2]. Its investment decisions are less susceptible to short-term market fluctuations [3]. It can not only provide long-term funding guarantees for technology innovation enterprises, helping them cross the “valley of death” in technology transformation [4], but also further play the role of market stabilizer and economic development booster to effectively respond to economic cycle fluctuations [5].

China’s economy is currently at a critical transformation stage from high-speed growth to high-quality development, necessitating a shift from traditional factor-driven models toward innovation-driven intensive growth within high-performance fiber and textile engineering sectors to boost Chinese modernization. This evolution prioritizes the integration of advanced weaving technologies and functional material research to replace legacy manufacturing dependencies with high-value technical capabilities [6]. In this context, cultivating and strengthening patient capital not only helps promote sustainable corporate development but also holds significant importance for improving the quality and efficiency of financial services in advancing new quality productive forces.

Overall, China’s financial system is dominated by indirect financing, with a relatively low proportion of direct financing. There are structural contradictions in supporting technology innovation enterprises. According to the People’s Bank of China’s 2024 social financing scale stock statistics report, as of the end of 2024, China’s social financing scale stock was 408.34 trillion yuan, of which indirect financing balance was 271.48 trillion yuan, accounting for 66.48%; direct financing balance was approximately 125.11 trillion yuan, accounting for 30.64%. From the ratio of the two, the indirect financing stock is about 2.17 times that of direct financing stock. This persistently solidified financing structure highlights two key issues: First, China’s financial resource allocation still heavily relies on banking credit intermediation, and structured innovations such as credit asset securitization are insufficient to effectively change the current development pattern ; Second, the debt financing-dominated financial supply model has maturity and risk preference mismatches with long-term holding capital formation, making it difficult for the existing financial system to meet the institutional needs of

strategic emerging industries (average R&D cycle of 5-8 years) and technology-based SMEs (start-up mortality rate as high as 30%) for long-term holding capital.

Recently, In 2025, the General Office of the State Council issued the “Guiding Opinions on Promoting High-Quality Development of Government Investment Funds,” emphasizing “highlighting government guidance and policy positioning, operating government investment funds in accordance with market-oriented, rule-of-law, and professional principles, developing patient capital, and focusing on practical effectiveness.” Expanding the sources of patient capital and effectively guiding other social capital to support the cultivation of high-performance fiber R&D and weaving technology innovations has become an urgent issue for accelerating the construction of a strong financial nation. This strategic capital allocation provides the necessary stability for the long-term technical transformation of textile engineering and the advancement of functional materials.

THEORETICAL ANALYSIS AND HYPOTHESIS DEVELOPMENT

The theoretical foundation of how government investment funds function as patient capital originates from the institutional designs implemented during their rapid expansion phase. Specifically, the ‘Interim Measures for the Management of Government Investment Funds’ (issued by the Ministry of Finance in 2015) explicitly mandated these funds to target market failures, support long-term industrial innovations, and act as a catalyst for social capital. Driven by these institutional guidelines during our sample period, government investment funds essentially use government credit and capital as leverage to promote economic transformation toward innovation-driven development by redefining the time value of capital, inherently possessing natural “patient capital” attributes.

First, government investment funds effectively resolve the structural contradictions of market-oriented capital in long-cycle investment by providing continuous capital supply and reshaping capital time preferences [7]. Although in practical operations, many Chinese government guidance funds are structured with a standard 5-to-8-year lifecycle (e.g., the “5+2” model) and face eventual exit pressures, they still inherently function as patient capital relative to purely market-driven funds. On one hand, they achieve ‘structural patience’ through a comprehensive capital relay system. Even if a single fund exits, the multi-tiered nature of government funds (spanning angel, venture, and industrial stages) builds a continuous support network across the entire corporate lifecycle—from basic research to technological transformation and industrialization . This effectively guides the long-term orientation of capital behavior.

On the other hand, government investment funds reshape capital time preferences by reducing social discount rates and exhibiting higher risk tolerance. When market capital discounts long-term value due to high discount rates, government investment funds rationally price long-term technological breakthroughs and industrial changes at discount rates below market levels, enabling cross-cycle innovation projects that were originally undervalued by the market to gain survival and development space [8], thereby promoting patient capital development.

Second, government investment funds can withstand phased losses in the process of technology R&D and industrial transformation through structured risk layering design and correcting intertemporal externality mismatches, dissolving the erosion of short-term return anxiety on long-term value investment [9], providing effective guarantees for promoting patient capital development.

Based on the above analysis, this paper proposes the following hypotheses:

Hypothesis 1: Government investment funds can promote the development of patient capital.

- (1) Financing Incentive Effect. Government investment funds can effectively play the financing incentive effect by alleviating financing constraints and expanding financing cash flows, thereby promoting patient capital development.
- (2) Signaling Effect. Government investment funds can effectively play the signaling effect by reducing information friction and reducing information friction, thereby promoting patient capital development.
- (3) Innovation Protection Effect. It is crucial to distinguish this mechanism from the mere provision of capital (Financing Incentives). While expanded cash flows grant the firm the financial ability to invest, they do not guarantee the strategic willingness to engage in high-risk, long-cycle R&D (such as advanced weaving technologies). In the liquid secondary market, management with abundant cash often faces immense pressure from myopic investors to pursue immediate profitability or short-term financial investments.

Government investment funds effectively play an innovation protection role by acting as a 'strategic shield' against these myopic market pressures. Through sharing the trial-and-error costs and mitigating opportunistic litigation risks triggered by short-term earnings volatility, government funds provide robust risk tolerance for the management. This governance protection ensures that the management remains insulated from short-term performance anxiety, thereby guaranteeing that available financial resources are genuinely committed to improving R&D intensity rather than being diverted to short-term arbitrage. Consequently, this unique protection mechanism fosters the continuous accumulation of patient capital.

Hypothesis 2: Under the guidance of “government leadership,” government investment funds can effectively play financing incentive effects, signaling effects, and innovation protection effects by alleviating financing constraints, expanding financing cash flows, reducing information friction, reducing information friction, preventing litigation risks, and improving R&D intensity, thereby promoting patient capital development.

Hypothesis 3: Under the leverage effect of “market followership,” optimizing the internal corporate environment (enhancing risk-bearing capacity and reducing financial dependence) and improving the external corporate environment (deepening market development and perfecting the legal and institutional environment) can positively moderate the facilitative effect of government investment funds on patient capital development.

RESEARCH DESIGN

Econometric Model Specification

Based on the theoretical analysis above, this paper treats government investment funds as a quasi-natural experiment and uses the DID model to estimate their impact on patient capital development. It is important to note that government investment funds are often established in tandem with a broader package of local government industrial policies and regional macro-economic stimuli. Standard firm-level control variables (e.g., Firm Age, Board Size) are structurally insufficient to capture these time-varying regional policy shocks. Therefore, to rigorously address this omitted variable bias, our baseline model and subsequent robustness tests progressively incorporate high-dimensional fixed effects, specifically Province \times Year fixed effects and Industry \times Year fixed effects.

By saturating the model with Province \times Year fixed effects, we effectively control for all unobservable, time-varying regional characteristics—such as concurrent local tax incentives, regional fiscal subsidies, and macro-economic fluctuations—ensuring that the estimated coefficient captures the pure treatment effect of the government investment fund rather than the halo effect of regional policy packages.

The model is specified as follows:

$$PC_{i,t} = a_0 + a_1 GIF_{i,t} + a_2 Control_{i,t} + \mu_i^1 + \lambda_t^1 + \varepsilon_{i,t}^1$$

In the above equation, i and t represent enterprise and year respectively; the dependent variable $PC_{i,t}$ represents the patient capital of enterprise i in year t ; the core explanatory variable $GIF_{i,t}$ represents a dummy

variable indicating whether enterprise i received government investment funds in year t ; $Control_{i,t}$ represents a series of control variables affecting patient capital development; and represent parameters to be estimated, and represent enterprise fixed effects and year fixed effects respectively; represents the random disturbance term.

Dependent Variable

Patient capital is a new form of capital that focuses on long-term value investment and possesses high risk tolerance. Its development is constrained by a country (or region)'s "long-term orientation" characteristics and the development status of banks and institutional investors [10]. Therefore, this paper follows the approach of Lin Yifu and Wang Yan and defines "patient capital" from a broad perspective, referring to ultra-long-term capital invested in a "relationship" in which investors voluntarily inject capital (including equity and debt over ten years) into recipient countries or development partners. On this basis, this paper divides patient capital into two dimensions: stable equity and relational-based debt, and further draws on the research approach of Liu Shiyuan et al. to weight and average stable equity and relationship-based debt according to weights, thereby effectively measuring patient capital. Specifically, following the relationship banking theory, 'relationship-based debt' is defined as long-term credit capital (debt with a maturity of over one year, particularly extending toward ten years in its rolling nature) provided by external financial institutions. Unlike 'connected-party transactions' or 'related-party debt' which often occur between a firm and its affiliates for internal capital reallocation, relationship-based debt is based on the long-term, stable, and trust-based interaction between the firm and professional lenders. This type of debt is 'patient' because the lender's possession of 'soft information' allows for greater flexibility and continuous support during the firm's long-cycle R&D processes, such as those in high-performance fiber and textile engineering sectors.

It is worth noting that while the A-share secondary market is highly liquid, it does not preclude the existence of patient capital within listed companies. The 'patience' of capital depends on the investors' strategic objectives rather than market trading mechanisms. Specifically, 'stable equity' captures shares held by controlling shareholders, government funds, and strategic investors who are constrained by lock-up periods or motivated by long-term corporate growth rather than short-term arbitrage. Meanwhile, 'relationship-based debt' captures long-term bank loans that rely on long-term credit contracts independent of stock market liquidity. Together, these two dimensions effectively extract the 'ultra-long-term' patient capital embedded within liquid listed companies.

Core Explanatory Variable

Following the approach of Hao Xiangchao and Li Yuchen , this paper classifies the venture capital background of enterprises. Specifically, if the enterprise's first-round venture capital financing includes venture capital institutions established with government investment fund contributions (GIF), it is assigned a value of 1 in the year of receiving the investment and subsequent years; otherwise, it is assigned a value of 0.

Control Variables

To alleviate estimation bias caused by omitted variables, this paper refers to the approaches of Chu Peipei and Zhang Rao[11], introducing a series of control variables into the model to exclude the influence of other potential factors on patient capital development.

Data Description

This paper takes A-share listed companies on the Shanghai and Shenzhen Stock Exchanges in China from 2009-2022 as the research sample. To ensure data quality and exclude the interference of abnormal samples, this paper processes the original data as follows: (1) excluding all financial industry listed companies; (2) excluding listed companies in ST, *ST, and PT status in the current year; (3) excluding listed companies with asset-liability ratio greater than or equal to 1; (4) excluding listed company data from the IPO year and before; (5) excluding listed company data with missing key variables; (6) using linear interpolation to fill in individual missing data for some listed companies. After the above processing, a total of 37,578 observations from 4,592 listed companies were obtained.

Table 1. Variable Descriptive Statistics

Variable Type	Variable Name	Variable Description	Unit	Obs.	Mean	Std. Dev.	Min	Max
Dependent	PC	Patient Capital	/	37578	0.0748	0.0983	0.0000	0.8461
Explanatory	GIF	Government Investment Fund	/	37578	0.0721	0.2586	0	1
Control	Age	Firm Age	Year	37578	9.7149	7.6451	0.0000	28.0000
	Big1	Shareholding of Largest Shareholder	/	37578	34.5074	14.9289	8.5750	74.5657
	BM	Book-to-Market Ratio	/	37578	0.9907	1.1044	0.0926	6.8480
	Mfee	Management Expense Ratio	%	37578	0.0860	0.0664	0.0083	0.4043
	Cashflow	Cash Flow Ratio	/	37578	0.0483	0.0690	-0.1576	0.2460
	Lev	Asset-Liability Ratio	%	37578	0.4155	0.2054	0.0502	0.8884
	ROA	Return on Assets	%	37578	0.0443	0.0630	-0.2082	0.2264
	Board	Board Size	Person	37578	9.2717	2.2446	5.0000	17.0000

Variable Type	Variable Name	Variable Description	Unit	Obs.	Mean	Std. Dev.	Min	Max
Mechanism	Abs	Financing Constraint	/	37578	3.8014	0.2606	2.8582	4.5576
	CFF	Financing Cash Flow	Bil-lion	37578	0.5984	2.1488	0.0009	71.2649
	Asy	Information Asymmetry	/	37578	-0.2125	0.6542	-19.3904	29.1360
	Sriq	Info Disclosure Quality	/	37578	0.4327	0.2659	0.0000	1.0000
	Litinum	Litigation Risk	Times	37578	0.0775	0.3146	0.0000	5.5759
	Innova	R&D Intensity	%	37578	0.0034	0.0438	0.0000	0.2418
Moderating	Risk	Risk-bearing Capacity	/	37578	0.0399	0.0339	0.0048	0.1835
	Fin	Financial Dependence	%	37578	-0.2405	10.1958	-156.6146	1129.0210
	Market	Market Development	/	37578	9.6842	1.8073	-0.1610	12.8640
	Legal	Legal Environment	/	37578	10.9957	3.7949	-0.7360	18.9740

EMPIRICAL ANALYSIS

Benchmark Regression Results

Table 2 reports the benchmark regression results of the impact of government investment funds on patient capital development. The results show that regardless of whether the clustering level of standard errors is changed, government investment funds can promote patient capital development. Taking column (2) as the benchmark result for analysis, the results show that government investment funds can significantly promote patient capital development at the 1% statistical significance level, thereby preliminarily verifying that Hypothesis 1 is established. Specifically, given other conditions unchanged, compared with enterprises without government investment funds, government investment funds can promote an average increase of 0.0133 units of patient capital.

Table 2. Benchmark Regression Results

Variable	PC (1)	PC (2)	PC (3)	PC (4)	PC (5)	PC (6)	PC (7)
GIF	0.0094*** (0.0030)	0.0133*** (0.0027)	0.0133*** (0.0044)	0.0133*** (0.0022)	0.0133*** (0.0027)	0.0133*** (0.0041)	0.0133*** (0.0028)
Control Variables	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Heteroskedasticity Robust SE	Yes	Yes	No	No	No	No	No
Clustered at Firm	No	No	Yes	No	No	No	No

Variable	PC (1)	PC (2)	PC (3)	PC (4)	PC (5)	PC (6)	PC (7)
Clustered at Year	No	No	No	Yes	No	No	No
Clustered at Firm-Year	No	No	No	No	Yes	No	No
Clustered at Firm-Industry	No	No	No	No	No	Yes	No
Clustered at Year-Industry	No	No	No	No	No	No	Yes
R2	0.6564	0.7134	0.7134	0.7134	0.7134	0.7134	0.7134
Observations	37142	37142	37142	37142	37142	37142	37142

Note: ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively. Values in parentheses below coefficients are robust standard errors. Same for all following tables.

Pre-assumption Evaluation

According to Angrist and Pischke [12], when using the DID method to evaluate the impact of government investment funds on patient capital development, satisfying the parallel trend assumption between the treatment group and control group is a key prerequisite for ensuring the scientific validity of the research results. Specifically, without policy shocks, enterprises receiving and not receiving government investment funds should have consistent time series characteristics in the changing trends of patient capital development.

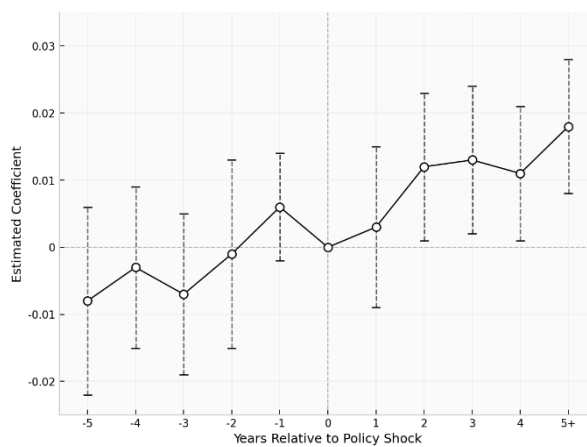


Figure 1. Test for Parallel Trends

The results show that when $k < 0$, the estimated coefficient of government investment funds on patient capital development is generally not significant, indicating that before the entry of government investment funds, there is no systematic difference in the changing trends of patient capital development between enterprises that received and did not receive investment, thus not rejecting the assumption of parallel pre-trends; when $k > 0$, the estimated coefficient of government investment funds on patient capital development becomes

significant from the second period and shows a clear growth trend, indicating that government investment funds can promote patient capital development.

Robustness Tests

This paper conducts a series of robustness tests, including: replacing key variables, excluding the influence of multiple investments by government investment funds, excluding the influence of simultaneous equation bias, excluding the influence of treatment group time trends, excluding the influence of control group selection bias, and using wild cluster bootstrap method to calculate standard errors. The results show that the benchmark conclusions remain robust.

Table 3. Robustness Tests: Replacing Key Variables

Variable	PC (1)	PC (2)	PC (3)	PC (4)	PC (5)
	Replace PC Measure	Replace PC Measure	Replace PC Measure	Replace PC Method	Replace PC Method
	Stable Equity	Relationship-based debt	Long-term Inv. Ratio	Alt. Weight	PCA
GIF	0.4924* (0.2591)	0.0215*** (0.0050)	0.0057*** (0.0009)	0.0134*** (0.0027)	0.2044*** (0.0331)
Control Variables	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
R2	0.1784	0.6453	0.4114	0.7131	0.4743
Observations	37142	37142	37142	37142	37142

To rule out interference from other factors, this paper conducts a series of robustness tests, including the following five aspects.

First, excluding the impact of multiple investments by government investment funds. During the sample period, there were cases where government investment funds made multiple investments in the same enterprise, which affected the development of patient capital. To further exclude the bias in the baseline results caused by the frequency of government investment fund investments, this paper removes samples of enterprises that received government investment funds twice and re-estimates the parameters. The corresponding results are reported in Column (1) of Table 4. These results indicate that the baseline conclusions obtained previously remain unchanged after excluding samples with multiple investments by government investment funds in the same enterprise.

Second, addressing simultaneous equation bias. Considering that in the early stages of enterprises receiving government investment funds, institutional reform effects may be limited due to information asymmetry and other reasons, thereby affecting the implementation effectiveness of national government investment fund policies. To avoid potential endogeneity issues arising from this, this paper follows the approach of Cai Qingfeng et al. [13] by lagging the explanatory variable by one period and re-estimating the parameters. The corresponding estimation results are reported in Column (2) of Table 4. These results indicate that the baseline conclusions obtained previously remain unchanged after addressing simultaneous equation bias.

Third, excluding time trends in the treatment group. Due to different objectives and strategies of government investment funds, enterprises with and without government investment funds may exhibit different trends over time. To exclude the potential impact of time trends in the treatment group on the research conclusions, this paper follows the approach of Wang Dehua by introducing the interaction term between the treatment group dummy variable and year into Equation (1) and re-estimating the parameters. The corresponding estimation results are shown in Column (3) of Table 4.

To alleviate the concern of selection bias—specifically, the possibility that government funds merely select firms with pre-existing high-quality disclosure rather than causing the improvement—this paper employs the Propensity Score Matching Difference-in-Differences (PSM-DID) approach. By including pre-treatment firm characteristics and historical information disclosure metrics as matching covariates, we pair the treated firms with control firms that exhibited nearly identical disclosure qualities prior to the investment. The PSM-DID estimation yields highly consistent and significant results, confirming that the enhancement of information disclosure and the subsequent development of patient capital are indeed causal treatment effects driven by government investment funds, rather than mere selection artifacts.

Fourth, addressing selection bias in the control group. To further overcome the non-randomness of sample selection and reduce the impact of systematic differences between enterprises with and without government investment funds on the research conclusions, this paper follows the approach of Zhang Xuan et al. . First, control variables in the baseline regression model are used as matching covariates, and the 1:2 caliper nearest neighbor matching method is employed to estimate propensity score matching values for sample regions using the logit model. Second, based on the propensity score matching values, a new control group is matched for enterprises receiving government investment funds to minimize systematic differences between the treatment and control groups. Finally, the Propensity Score Matching-Difference-in-Differences (PSM-DID)

method is used to re-estimate Equation (1). The corresponding estimation results are reported in Column (4) of Table 4. These results indicate that the baseline conclusions obtained previously remain unchanged after addressing selection bias in the control group[14].

Fifth, addressing the impact of standard error clustering methods. This involves using the Wild cluster bootstrap method to calculate standard errors. When using clustered robust standard errors, the number of clusters is typically required to be large to ensure that the estimated standard errors are close to the true standard errors. However, in real-world data, the number of clusters may be small, and observations within each cluster may be unbalanced. To further exclude potential bias caused by using asymptotic theory to calculate clustered standard errors on the research conclusions, this paper follows the approach of Roodman et al. by re-estimating parameters for the research sample based on the method where weights follow a two-point distribution. The corresponding estimation results are reported in Column (5) of Table 4. These results indicate that the baseline conclusions obtained previously remain unchanged after using the Wild cluster bootstrap method to calculate standard errors.

Table 4. Robustness Tests: Excluding Other Factors

Variable	PC (1)	PC (2)	PC (3)	PC (4)	PC (5)
	Exclude GIF	Multiple Exclude Bias	Simult. Exclude Trend	Time Exclude Bias	Selection Wild Bootstrap
GIF	0.0101*** (0.0028)	0.0135*** (0.0031)	0.0116*** (0.0034)	0.0132 (0.0027)	0.0094** (0.0050)
Control Variables	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
R2	0.7142	0.7362	0.7134	0.7135	0.7135
Observations	36439	32732	37142	37103	37578

MECHANISM ANALYSIS

According to the theoretical analysis above, under the synergistic effect of “government leadership” and “market followership,” government investment funds can effectively play financing incentive effects, signaling effects, and innovation protection effects, thereby promoting patient capital development[15]. Meanwhile, through the leverage effect of “market followership,” enhancing risk-bearing capacity and reducing financial dependence to optimize the internal corporate environment, while deepening market development and per-

fecting the legal and institutional environment to improve the external corporate environment, can positively moderate the facilitative effect of government investment funds on patient capital development.

Government Leadership Transmission Mechanism Analysis

According to Hypothesis 2, government investment funds may play financing incentive effects, signaling effects, and innovation protection effects, thereby promoting patient capital development.

Table 5. Government Leadership Transmission Mechanism Analysis

Dependent Variable	PC (1)	PC (2)	PC (3)	PC (4)	PC (5)	PC (6)	
	Financing Incentive	Incentive	Financing Incentive	Signaling	Signaling	Innovation Protection	Innovation Protection
Explanatory	Abs	CFF	Asy	Sriq	Litinum	Innova	
GIF	-0.0172*** (0.0031)	0.4308*** (0.0433)	-0.2084*** (0.0196)	0.0286*** (0.0075)	-0.0413*** (0.0105)	0.0040*** (0.0011)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	
R2	0.9627	0.9023	0.4563	0.6474	0.3178	0.7810	
Observations	37142	37142	37142	37142	37142	37142	

The estimation results in columns (1) and (2) of Table 5 show that the impact of government investment funds on financing constraints is significantly negative, and the impact on financing cash flows is significantly positive, indicating that government investment funds can promote patient capital development by alleviating financing constraints and expanding financing cash flows.

The estimation results in columns (3) and (4) of Table 5 show that the impact of government investment funds on information asymmetry is significantly negative, and the impact on information disclosure quality is significantly positive, indicating that government investment funds can promote patient capital development by reducing information friction and reducing information friction.

It is important to acknowledge the potential selection bias wherein government investment funds (GIFs) might inherently prefer to invest in firms that already exhibit high-quality disclosure. However, beyond this selection effect, GIFs exert a substantial active treatment effect post-investment. After the capital injection, GIFs typically engage in active corporate governance by appointing directors or supervisors, demanding more rigorous internal audit and compliance systems. Furthermore, to meet the strict regulatory requirements for state-owned or public asset management, invested firms are mandated to report operating and financial

conditions more frequently and transparently. Therefore, the introduction of GIFs dynamically “forces” and “leads” the enterprise to significantly improve its information disclosure quality, thereby reducing information friction for external patient capital.

The estimation results in columns (5) and (6) of Table 5 show that the impact of government investment funds on litigation risk is significantly negative, and the impact on R&D intensity is significantly positive, indicating that government investment funds can promote patient capital development by preventing litigation risks and improving R&D intensity.

The above analysis results show that government investment funds can indeed play financing incentive effects, signaling effects, and innovation protection effects, thereby promoting patient capital development, thus verifying the establishment of Hypothesis 2.

Market Followership Moderating Mechanism Analysis

According to Hypothesis 3, under the leverage effect of “market followership,” government investment funds may regulate the impact on patient capital development by enhancing risk-bearing capacity and reducing financial dependence to optimize the internal corporate environment, while deepening market development and perfecting the legal and institutional environment to improve the external corporate environment.

Table 6. Market Followership Moderating Mechanism Analysis

Variable	PC (1)	PC (2)	PC (3)	PC (4)
	Internal Environment	Internal Environment	External Environment	External Environment
GIF × Risk	0.1186** (0.0583)			
GIF × Fin		-0.0006*** (0.0002)		
GIF × Market			0.0025* (0.0014)	
GIF × Legal				0.0017*** (0.0006)
Risk	-0.0591*** (0.0146)			
Fin		-0.0000 (0.0000)		
Market			-0.0018** (0.0009)	
Legal				-0.0006** (0.0003)

Variable	PC (1)	PC (2)	PC (3)	PC (4)
GIF	0.0089*** (0.0032)	0.0131*** (0.0027)	-0.0124 (0.0148)	-0.0102 (0.0082)
Control Variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
R2	0.7136	0.7134	0.7135	0.7135
Observations	37142	37142	37142	37142

The estimation results in column (1) of Table 6 provide empirical evidence that as the internal risk-bearing level of enterprises continues to improve, it positively moderates the facilitative effect of government investment funds on patient capital development.

The estimation results in column (2) of Table 6 provide empirical evidence that as the internal financial dependence level of enterprises continues to decrease, it positively moderates the facilitative effect of government investment funds on patient capital development.

The estimation results in column (3) of Table 6 provide empirical evidence that as the external market development degree of enterprises continues to deepen, it positively moderates the facilitative effect of government investment funds on patient capital development.

The estimation results in column (4) of Table 6 provide empirical evidence that as the external legal and institutional environment of enterprises continues to improve, it positively moderates the facilitative effect of government investment funds on patient capital development.

The above test results show that continuously enhancing risk-bearing capacity and reducing financial dependence to optimize the internal corporate environment, while continuously deepening market development and perfecting the legal and institutional environment to improve the external corporate environment, can indeed positively moderate the facilitative effect of government investment funds on patient capital development. Therefore, Hypothesis 3 is verified.

HETEROGENEITY ANALYSIS

Heterogeneity Analysis by Industry Characteristics

First, labor-intensive, capital-intensive, and technology-intensive industries show systematic differences in factor structure, R&D intensity, and investment return cycles, which may lead to differentiated effects of government investment funds on patient capital development.

Table 7. Heterogeneity Analysis by Industry Characteristics

Variable	PC (1)	PC (2)	PC (3)
GIF × Capital	0.0151*** (0.0048)		
GIF × Tech	0.0130*** (0.0031)		
GIF × Labor	0.0124 (0.0077)		
GIF × Htech		0.0169*** (0.0029)	
GIF × Ltech		0.0075 (0.0049)	
GIF × Lcompet			0.0183*** (0.0033)
GIF × Hcompet			0.0059 (0.0040)
Control Variables	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
R2	0.7134	0.7134	0.7150
Observations	37142	37142	37142

The estimation results in column (1) of Table 7 show that the estimated coefficients of government investment funds on patient capital development for capital-intensive and technology-intensive industry enterprises are both significantly positive, with the former’s coefficient value being larger than the latter, while the estimated coefficient for labor-intensive industry enterprises is not significant. It can be seen that the impact of government investment funds on patient capital development shows obvious heterogeneity across different industries, with the enhancement effect being more prominent in capital-intensive industry enterprises.

Second, there are significant differences between high-tech and non-high-tech industries in improving resource allocation, which may lead to differentiated effects of government investment funds on patient capital development.

The estimation results in column (2) of Table 7 show that the estimated coefficient of government investment funds on patient capital development for high-tech industry enterprises is significantly positive, while the estimated coefficient for non-high-tech industry enterprises is not significant. It can be seen that the impact of government investment funds on patient capital development shows obvious heterogeneity across different industries, with the enhancement effect being more prominent in high-tech industries.

Heterogeneity Analysis by Enterprise Characteristics

First, state-owned and non-state-owned enterprises show significant differences in the intensity of social responsibility they bear when implementing major national development strategies, which may lead to differentiated effects of government investment funds on patient capital development.

Table 8. Heterogeneity Analysis by Enterprise Characteristics

Variable	PC (1)	PC (2)	PC (3)
GIF × Soe	0.0165*** (0.0030)		
GIF × NoSoe	0.0082* (0.0046)		
GIF × Lme		0.0134*** (0.0027)	
GIF × Sme		0.0085 (0.0079)	
GIF × Growth			0.0173*** (0.0029)
GIF × Maturity			0.0099*** (0.0035)
GIF × Decline			0.0054 (0.0034)
Control Variables	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
R2	0.7134	0.7134	0.7135
Observations	37142	37142	37142

The estimation results in column (1) of Table 8 show that the estimated coefficients of government investment funds on patient capital development for both state-owned and non-state-owned enterprises are significantly positive, but the former's coefficient value is larger than the latter. It can be seen that the impact of government investment funds on patient capital development shows obvious heterogeneity across different enterprises, with the enhancement effect being more prominent in state-owned enterprises.

Second, enterprises of different sizes show significant differences in economic capacity, governance structure, and employment absorption, which may lead to differentiated effects of government investment funds on patient capital development.

The estimation results in column (2) of Table 8 show that the estimated coefficient of government investment funds on patient capital development for large-scale enterprises is significantly positive, while the estimated coefficient for small-scale enterprises is not significant. It can be seen that the impact of government investment funds on patient capital development shows obvious heterogeneity across different enterprises, with the enhancement effect being more prominent in large enterprises.

Third, enterprises at different life cycle stages show significant differences in management strategies, resource allocation, and external support, which may lead to differentiated effects of government investment funds on patient capital development.

The estimation results in column (3) of Table 8 show that the estimated coefficients of government investment funds on patient capital development for both growth-stage and mature-stage enterprises are significantly positive, with the former's coefficient value being larger than the latter, while the estimated coefficient for decline-stage enterprises is not significant. It can be seen that the impact of government investment funds on patient capital development shows obvious heterogeneity across different enterprises, with the enhancement effect being more prominent in growth-stage enterprises.

CONCLUSION AND POLICY IMPLICATIONS

As an important lever for optimizing financial supply structures, patient capital provides both the strategic support for building a strong financial nation and a key path for the high-quality transformation of the high-performance fiber and textile engineering sectors. This stable investment framework facilitates the long-term technical upgrading of weaving processes and functional material research essential for sustainable industrial development. This paper, from the perspective of the synergistic interaction between "government leadership" and "market followership," empirically examines the impact of government investment funds on patient capital development and its mechanisms, obtaining the following main conclusions.

First, government investment funds can promote the development of patient capital, and this conclusion remains valid after a series of robustness tests.

Second, under the guidance of "government leadership," government investment funds can effectively play financing incentive effects, signaling effects, and innovation protection effects by alleviating financing constraints, expanding financing cash flows, reducing information friction, reducing information friction, preventing litigation risks, and improving R&D intensity, thereby promoting patient capital development. Meanwhile, through the leverage effect of "market followership," enhancing risk-bearing capacity and

reducing financial dependence to optimize the internal corporate environment, while deepening market development and perfecting the legal and institutional environment to improve the external corporate environment, can positively moderate the facilitative effect of government investment funds on patient capital development.

Third, the facilitative effect of government investment funds on patient capital development is more pronounced in capital-intensive industries, high-tech industries, less competitive industries, state-owned enterprises, large-scale enterprises, and growth-stage enterprises.

The research conclusions of this paper have the following important policy implications:

First, give full play to the cultivation role of government investment funds in patient capital development. This includes: building tiered risk-sharing mechanisms and long-term tax incentive policies; extending the assessment cycle to longer periods and establishing comprehensive evaluation models covering multiple indicators such as technological innovation, industrial chain cultivation, and ESG contributions; and creating industry empowerment-type joint investment platforms.

Second, strengthen the targeted cultivation role of government investment funds in patient capital development. This includes: creating industry-specific funds; smoothing exit channels; and implementing investment adaptation mechanisms.

Third, build a policy system adapted to enterprise characteristics. This includes: establishing dynamic risk matching mechanisms; and establishing dynamic balance mechanisms between financial leverage and industrial investment.

Author Contributions

Wei Cui designed, collected and analyzed the data, and drafted the manuscript. Wei Cui conducted the study, critically revised the manuscript for important intellectual content, and gave final approval of the version to be published. Wei Cui participated fully in the work, take public responsibility for appropriate portions of the content, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflicts of Interest

The author declares no conflict of interest.

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