Academic Journal of Science and Technology
ISSN: 2771-3032 | Vol. 14, No. 3, 2025

Sci-tech Finance, Industrial Structure Upgrading and Coordinated Regional Economic Development

Xiuqing Wang

Department of Auditing, Fuzhou University of International Studies and Trade, Fuzhou, China

Abstract: As the global economy enters the era of knowledge economy, the crucial role of science and sci-tech finance in promoting regional economic development and industrial structure upgrading has become increasingly prominent. Using science and sci-tech finance as an entry point, this study aims to explore its impact mechanism on industrial structure upgrading and coordinated regional economic development, revealing the intrinsic relationship among these three factors. Based on panel data from 30 Chinese provinces during 2010-2022, this research employs literature review methodology, theoretical model analysis, and empirical regression models. The main findings indicate that science and sci-tech finance significantly accelerates industrial structure upgrading through optimizing resource allocation and promoting innovation; meanwhile, by alleviating financing constraints and enhancing capital efficiency, science and sci-tech finance plays a significant role in narrowing regional economic disparities and promoting coordinated development. Regional difference analysis demonstrates that the effects of science and sci-tech finance vary significantly across eastern, central, western, and northeastern regions. The research concludes that science and sci-tech finance policies should be further optimized to promote coordinated regional economic development according to local conditions, while enhancing the risk resistance capacity of industrial structure upgrading to achieve high-quality development.

Keywords: Sci-tech finance, Industrial Structure Upgrading, Regional Economy, Coordinated Development.

1. Introduction

As the world enters the era of knowledge economy, science and sci-tech finance has emerged as a new engine driving economic development by supporting technological innovation through financial power, thus facilitating industrial structure transformation and high-quality economic development. China has successively introduced policies, such as the "Opinions on Vigorously Promoting Institutional Innovation and Effectively Providing Science and Technology Financial Services" in 2014 and the "Action Plan for Strengthening Support for Financing of Technology-based Enterprises" in 2023, to improve the science and technology financial service system and support the financing needs throughout the lifecycle of technology-based enterprises. While science and sci-tech finance promotes industrial upgrading and coordinated regional economic development, imbalances and lack of coordination in development across regions in China persist. The 20th National Congress Report emphasizes the implementation of regional coordinated development strategies, where science and sci-tech finance can assist less-developed areas in industrial upgrading and narrowing economic disparities. Based on data from 30 provinces nationwide, this paper employs regression models to explore the role of science and sci-tech finance in industrial upgrading and regional coordinated development, as well as their intrinsic connections, aiming to provide references for relevant policies.

2. Literature Review

2.1. Research on Science and sci-tech finance

Science and sci-tech finance drives financial services through technological innovation, supporting technological innovation, achievement transformation, and high-tech industry development through financial instruments and policies. It features multi-subject supply, multi-domain integration, and coverage of the entire innovation lifecycle, effectively reducing innovation risks. Its core lies in optimizing resource allocation through fiscal investment, technology loans, and capital markets, guiding funds toward innovation fields. The main models include government guidance funds, venture capital, technology insurance, technology bonds, and capital market support. Internationally, the focus is on market-oriented financing (such as green finance and venture capital), while domestically, there is greater reliance on policy instruments (such as special loans and industrial funds). Science and sci-tech finance alleviates financing constraints through the pathway of "capital support--technology R&D--industrial transformation," promoting technological breakthroughs and innovation diffusion.

Although foreign countries have not explicitly proposed the concept of "science and sci-tech finance," they highly value financial support for technological innovation. Schumpeter (1912) highlighted the importance of credit for innovation and economic growth, while King et al. (1993) argued that finance can alleviate R&D funding constraints. Faria & Barbosa (2014) emphasized how venture capital enhances enterprises' R&D capabilities and patent output efficiency, while Fuerst (1999) underscored the market-oriented operations of banks, venture capital, and capital markets. Research indicates that science and sci-tech finance has significant effects on economic growth, industrial upgrading, and regional innovation.

2.2. Research on Industrial Structure Upgrading

Science and sci-tech finance promotes industrial structure upgrading by advancing high-tech industries, with effects influenced by regional markets, technological levels, and policy environments (Liu Shufan et al., 2021). Expanding research investment can optimize industrial structure,

conforming to the Petty-Clark Law (Wang Renxiang, 2020). Government technological investment plays a significant role in the startup stage, while venture capital has the greatest impact during the achievement transformation stage (Lu Feng and Han Shangrong, 2015). Eastern regions should increase investment in high-tech industries to form agglomeration effects, while central and western regions should focus on resource allocation and output quality (Feng Xinming et al., 2022).

Science and sci-tech finance exhibits regional differences in its impact on industrial structure upgrading. Zou Jianguo (2023) found that science and sci-tech finance significantly promotes the advancement of industrial structure but is influenced by local institutional environments; Fan Wenxiao and Shen Li (2023) noted that coordination is best in the eastern region, followed by central and western regions, with notable divergence in the northeast. Policies need to be tailored to local conditions to balance regional development disparities.

2.3. Research on Coordinated Regional Economic Development

Lewis (1954) proposed the "dual economic development model" to analyze the interaction between traditional and modern sectors. Kuznets (1949) indicated that industrial structure is an important factor in income levels. Domestic research shows a positive correlation between industrial structure upgrading and coordinated regional economic development (Fan Jianyong and Zhang Tao, 2003). The eastern region has entered a structural slowdown stage, while central and western regions are in an acceleration stage but need to prepare for a slowdown period (Lv Jian, 2012). Reasonable adjustment of industrial structure can effectively promote balanced regional development (Liu Qiang and Li Zejin, 2021).

2.4. Literature Review and Research Gaps

Existing research indicates close connections among science and sci-tech finance, industrial structure upgrading, and coordinated regional economic development. Science and sci-tech finance significantly promotes industrial structure upgrading and regional economic growth, with promotion efficiency in less-developed areas sometimes exceeding that in developed regions, helping narrow economic gaps and promote coordinated regional development. Meanwhile, industrial structure upgrading plays an important role in coordinated regional economic development.

Current research primarily focuses on the relationship between two of these three factors, without clarifying their overall interactive mechanism. Additionally, industrial structure differences across regions may lead to non-linear relationships between science and sci-tech finance and coordinated regional economic development, issues that require further in-depth research.

3. Theoretical Foundations and Research Hypotheses

3.1. Theoretical Foundations

Innovation-driven theory recognizes technological innovation as the core driving force for economic growth and industrial upgrading. Schumpeter emphasized that financial support can promote innovative activities and share risks, accelerating the recombination of production factors. The Solow model points out that technological innovation requires time for transformation, and government regulation is needed to stabilize order when market failures occur. Romer argued that knowledge input and spillover effects determine enterprises' innovation capabilities, with research investment becoming an important indicator for measuring science and sci-tech finance development.

Regional economic coordinated development theory encompasses both balanced and unbalanced development theories. Balanced development emphasizes that free flow of production factors narrows regional disparities but is constrained by resource endowments. Unbalanced development advocates concentrating resources to prioritize the development of certain regions, then achieving balance through driving effects, though initial widening gaps require policy intervention. Both theories aim to achieve coordinated regional development and are often applied in combination in practice.

Financial development theory holds that effective allocation of financial resources is crucial for economic growth. Gerschenkron and Shaw revealed a non-linear relationship between financial development and economic development, while McKinnon and Shaw pointed out that financial repression hinders local development and exacerbates dependence on foreign capital. Science and sci-tech finance promotes technological innovation through financing support, information transparency, and reducing transaction risks. Improving financial markets facilitates enterprise financing, enhances efficiency, attracts investors, and aids coordinated economic and industrial development.

3.2. Analysis of Action Mechanisms

3.2.1. Science and Sci-tech finance and Coordinated Regional Economic Development

China's regional economic disparities are significant, with eastern regions taking the lead. According to Hirschman's theories of "polarization effect" and "trickle-down effect," short-term disparities stem from resource concentration, but long-term "trickle-down effects" help narrow these gaps. Science and sci-tech finance, as an important tool for optimizing resource allocation, accelerates this process, providing catching-up momentum for less-developed regions. First, science and sci-tech finance guides financial resources to support science and technology innovation enterprises in less-developed regions, alleviating resource deficiencies and financing difficulties while enhancing development efficiency. Meanwhile, as the marginal returns on capital decrease in developed regions, more financial resources flow to less-developed areas, promoting accelerated economic growth. Second, by attracting capital support and establishing science and sci-tech finance funds, science and sci-tech finance alleviates the problem of insufficient R&D funding in less-developed regions, promoting innovative development of small and micro enterprises, improving the entrepreneurial environment, and bridging R&D gaps. Finally, the government guides financial resources toward less-developed regions through policies such as "Western Development" and "Rise of Central China," using policy-oriented finance to provide preferential financing conditions, support high-tech industry development, improve investment environments, promote coordinated regional development, and gradually narrow economic disparities.

Based on the above analysis, we propose:

Hypothesis 1: sci-tech finance has a direct effect on

regional economic coordination.

3.2.2. Science and Sci-tech finance and Industrial Structure Upgrading

Science and sci-tech finance serves technological innovation and achievement transformation, providing full-chain financial services for scientific research enterprises. Different stages rely on venture capital, policy banks, commercial banks, microcredit companies, as well as bond issuance and IPO financing, achieving diversified financing channels and optimized business environments, thereby promoting industrial structure upgrading. Through the division of labor among multi-level financial institutions, small and medium-sized technology enterprises rely on debt financing and policy support in the early stages, capital markets play a role in mature stages, and new financial products such as intellectual property pledge financing and technology insurance meet upgrading needs in the industrialization stage. The perfection of financial markets further broadens financing channels, promoting the development of high-tech industries. Meanwhile, science and sci-tech finance reduces the burden on enterprises through fiscal support, disperses risks through intellectual property pledges and technology insurance, while venture capital institutions optimize enterprise management and enhance efficiency.

Based on the above, we propose:

Hypothesis 2: Science and sci-tech finance can drive industrial structure upgrading.

3.2.3. Science and Sci-tech finance , Industrial Structure Upgrading, and Coordinated Regional Economic Development

Science and sci-tech finance helps less-developed regions accelerate development, narrow regional economic disparities, and achieve coordinated regional economic development. It simultaneously provides financing opportunities for science and technology innovation industries, optimizes the business environment, and promotes industrial structure upgrading, while industrial structure upgrading in turn promotes regional economic coordination.

(1) The role of industrial structure upgrading. First, science and sci-tech finance helps less-developed regions accelerate development, narrow regional economic disparities, and achieve coordinated regional economic development. It simultaneously provides financing opportunities for science and technology innovation industries, optimizes the business environment, and promotes industrial structure upgrading, while industrial structure upgrading in turn promotes regional economic coordination. Second, labor transitions toward technology-intensive industries, promoting optimal resource allocation and enhancing the quality and efficiency of economic development.

(2) The impact of science and sci-tech finance on regional economies.

Science and sci-tech finance lowers financing thresholds and costs for science and technology innovation enterprises in less-developed regions through diversified financing channels and tools, optimizing the business environment. This effect not only promotes enterprise growth but also drives industrial structure upgrading. Financing facilitation: provides a fair and efficient market environment for science and technology innovation enterprises, aiding economic growth. Industrial structure optimization: enhances labor productivity, accelerates the accumulation and flow of production factors such as capital, technology, and talent, promoting both quality and speed of economic development.

Based on the above, we propose the following hypotheses:

Hypothesis 3: Science and sci-tech finance indirectly affects coordinated regional economic development through industrial structure upgrading, with industrial structure upgrading serving as a mediating variable between the two.

4. Empirical Analysis

4.1. Empirical Analysis

4.1.1. Data Sources and Variable Selection

Data Sources: Provincial or regional-level indicators of science and sci-tech finance , industrial structure upgrading, and regional economic development in China were selected.

Dependent Variable: Coordinated Regional Economic Development (RECD). This indicator comprehensively reflects the spatial correlation, growth rate, and development disparities of regional economic coordinated development. Higher values indicate higher coordination in regional economic development, while lower values indicate lower coordination.

Independent Variable: Science and Sci-tech finance (STF). This indicator measures the development level of regional science and sci-tech finance from the perspectives of resources, funding, financing, and output. Higher values indicate better development of science and sci-tech finance and stronger support from financial institutions for science and technology innovation enterprises.

Mediating Variable: Industrial Structure Upgrading (UIS). According to the Petty-Clark theorem, social and economic development is accompanied by increasing resident income and a shift in industrial structure from primary to secondary and tertiary industries. Referencing Li Yu (2020), the proportion of secondary and tertiary industry value added in GDP is used to measure industrial structure upgrading, with higher values indicating more advanced industrial structures.

Control Variables: Based on literature review and data availability, three factors were selected as control variables, including fixed capital investment level and financial development level.

The specific variable design and definitions are shown in Table 1.

4.2. Descriptive Statistics

Using data from 30 provinces in China (excluding Tibet, Hong Kong, Macao, and Taiwan) from 2010 to 2022 as research subjects, the data corresponding to each variable was compiled and analyzed. The descriptive statistics results are shown in Table 2.

Using 30 provinces in China (excluding Tibet, Hong Kong, Macao, and Taiwan) from 2010-2022 as research subjects, the descriptive statistics results of the compiled data corresponding to each variable are shown in Table 2.

Table 1. Variables names and definitions.

Variable Type	Variable Name	Variable Symbol	Variable Definitions
Dependent Variables	Regional Economic Coordinated Development	*RECD*	Calculated based on the method proposed by Cheng Lin et al. (2011)
Independent Variables	Sci-tech finance	*STF*	Constructed through the indicator system
Mediating Variable	Industrial Structure Upgrading	*UIS*	Added value of secondary and tertiary industries/GDP
Control Variable	TFixed Asset Investment	*IFA*	New fixed assets in high-tech industries/GDP
	Government Intervention Intensity	*GOV*	Fiscal expenditure/GDP
	Financial Development Level	*FDL*	Loan balance of financial institutions/GDP

Table 2. Descriptive statistics of the main variables

Variable	N	Mean	SD	Min	Max
RECD	358	0.343	0.194	0.005	1.0
STF	358	0.099	0.089	0.005	0.589
UIS	358	0.916	0.171	-0.011	2.147
IFA	358	0.242	0.229	0.003	1.242
GOV	358	0.258	0.111	0.107	0.753
FDL	358	0.015	0.004	0.007	0.269

4.3. Empirical Analysis

4.3.1. Analysis of the Direct Effect of Science and Sci-tech finance on Coordinated Regional Economic Development

(1) Direct Effect Model Construction

Based on previous literature and mechanism analysis, science and sci-tech finance and regional economic development have a strong correlation. To examine the specific relationship between the two, this section constructs a direct effect model using relevant panel data as follows:

$$RECD_{it} = \alpha_0 + \alpha_1 STF_{it} + \alpha_2 CV_{it} + \varepsilon_{it} \quad (1)$$

Model (1) uses science and sci-tech finance (STF) as the explanatory variable, coordinated regional economic development (RECD) as the dependent variable, and control variables (CV) including fixed capital investment (IFA) and ten other variables. Additionally, εit represents the random error term, while α0, α1, and α2 represent the estimated parameters for each variable.

(2) Empirical Testing and Result Analysis of the Direct Effect Model

To eliminate the influence of unit roots on empirical results and ensure data stationarity, unit root testing is necessary first. The LLC panel unit root test method was used to conduct unit root tests on the data. As shown in Table 3, the P-values of all variables passed the significance test, confirming that the data is stationary.

Table 3. The estimation results of the direct effects

	(1) Nationwide	(2) Eastern Region	(3) Central Region	(4) Western Region	(5) Northeastern Region
STF	1.045***	0.319***	2.915***	4.637***	3.007***
	(5.71)	(2.76)	(6.58)	(6.58)	(3.12)
IFA	-0.229***	-0.121	0.856**	-0.536***	-0.222
	(-2.32)	(-1.46)	(2.28)	(-2.76)	(-0.65)
GOV	-0.522*	0.124	-0.828	-3.974	-1.559*
	(-1.76)	(0.33)	(-0.47)	(0.43)	(-2.06)
FDL	-12.848***	-4.248	-98.875***	0.090***	-24.614*
	(-3.18)	(-1.07)	(-4.67)	(-0.68)	(-1.96)
_cons	0.546***	0.741***	0.359	0.190	-0.872
	(4.19)	(3.88)	(1.15)	(1.16)	(-0.70)
R^2	0.2218	0.2651	0.7349	0.4157	0.8317
Hausman	0.0343	0.0042	0.0000	0.0000	0.0013
F	21.55	25.09	6.42	26.89	0.92
N	358	118	71	131	39

P-values in parentheses
*p<0.1,**p<0.05,***p<0.01

To ensure the accuracy of model selection, the Hausman test is first employed in this study. The test results are presented in Table 3. The Hausman test statistics for the national level, as well as the eastern, central, western, and northeastern regions, are 0.0343, 0.0042, 0.0000, 0.0000, and 0.0013, respectively. Therefore, fixed effects models should be selected for both the national level and the four regional levels, and subsequent tests should also continue to utilize

fixed effects models. As shown in column (1) of Table 3, the estimated coefficient of sci-tech finance on regional economic coordination is 1.045, which is highly significant. This indicates that, at the national level, sci-tech finance can significantly promote regional economic coordination. The above test results indicate that sci-tech finance not only promotes regional economic coordination at the national level but also continues to play a significant role at the level of the four major regions. This confirms Hypothesis 1.

4.3.2. Analysis of the Mediating Effect of Industrial Structure Upgrading

(1) Construction of the Mediating Effect Model

The development of science and sci-tech finance not only directly impacts coordinated regional economic development but can also indirectly promote coordinated regional economic development by facilitating industrial structure upgrading. Based on this transmission mechanism, this paper introduces industrial structure upgrading as a mediating variable into the regression model to more comprehensively explore the comprehensive impact of science and sci-tech finance on coordinated regional economic development. Referencing the research methods of Fang Lei and Zhang Xuewei, this section constructs a mediating effect model from the perspective of "science and sci-tech finance - industrial structure upgrading - coordinated regional economic development." The specific models for each stage are as follows:

$$\mathrm{UIS}_{it} = b_0 + b_1 STF_{it} + b_2 CV_{it} + \varepsilon_{it} \quad (2)$$

$$RECD_{it} = c_0 + c_1 STF_{it} + c_2 \mathrm{UIS}_{it} + c_3 CV_{it} + \varepsilon_{it} \quad (3)$$

(2) Empirical Testing and Result Analysis of the Mediating Effect

The test results of the first step are shown in column (1) of Table 3, where the coefficient α1 of STFit is 1.045, which is positively significant at the 1% confidence level. Therefore, subsequent testing only needs to be conducted based on models (2) and (3). The test results are shown in Table 4.

Table 4. The estimated intermediary effect of industrial structure upgrading

	(1) UIS	(2) RECD
STF	1.072***	0.913***
	(3.45)	(5.00)
UIS		0.123***
		(3.82)
IFA	-0.119	-0.216**
	(-0.67)	(-2.23)
GOV	-0.310	-0.485*
	(-0.61)	(-1.66)
FDL	-3.189	-12.454***
	(-0.46)	(-3.15)
_cons	1.256***	0.391***
	(5.67)	(2.92)
R^2	0.0646	0.2559
F	1.59	22.00
N	358	358

P-values in parentheses
*p<0.1,**p<0.05,***p<0.01

From column (1) of Table 4, it can be seen that the estimated coefficient between science and sci-tech finance and industrial structure upgrading is 1.072, showing a positive correlation at the 1% significance level. This indicates that science and sci-tech finance can guide capital flow toward secondary and tertiary industries and optimize industrial structure, verifying Hypothesis 2.

Column (2) of Table 4 shows that the estimated coefficient between science and sci-tech finance and coordinated regional economic development is 0.913, positively correlated at the 1% significance level. This indicates that science and sci-tech finance can still promote coordinated regional economic development through industrial structure upgrading. Meanwhile, the estimated coefficient between industrial structure upgrading and coordinated regional economic development is 0.123, also positively significant at the 1% level, proving that there exists a strong positive correlation between the two, verifying Hypothesis 3.

4.3.3. Robustness Tests

To enhance the timeliness of the regression results, samples from 2010-2015 were eliminated, and 2016-2022 was used as the research period to test the robustness of the previous regression results. As shown in Table 5, the estimated coefficients of science and sci-tech finance, coordinated regional economic development, and industrial structure upgrading in columns (1) and (2) are 1.281 and 1.139, respectively, both being positively significant. When the three are included in the same regression model, as shown in column (3), the estimated coefficient between science and sci-tech finance and coordinated regional economic development decreases to 1.144, while the estimated coefficient between industrial structure upgrading and coordinated regional economic development is 0.120, both significant at the 1% level, still demonstrating a mediating effect. The test results indicate that changing the time range of the sample does not affect the positive or negative nature and significance of the estimated coefficients among science and sci-tech finance, industrial structure upgrading, and coordinated regional economic development, with only slight variations in values, confirming that the previous regression results are robust.

Table 5. Sample time: 2016-2022

	(1) RECD	(2) UIS	(3) RECD
STF	1.281***	1.139***	1.144***
	(7.75)	(2.64)	(4.61)
UIS			0.120***
			(4.28)
IFA	-1.747	-0.260	-0.143
	(-1.43)	(-0.82)	(-1.23)
GOV	-0.339	-2.024**	-0.095
	(-0.96)	(-2.21)	(-0.28)
FDL	-4.189	5.024	-4.793
	(-0.81)	(0.37)	(-0.97)
_cons	1.256***	0.391***	0.677***
	(5.67)	(2.92)	(3.43)
R^2	0.0646	0.2559	0.4580
F	1.59	22.00	27.31
N	358	358	358

P-values in parentheses
*p<0.1,**p<0.05,***p<0.01

5. Research Conclusions and Policy Recommendations

5.1. Research Conclusions

Based on the analysis of provincial data from 2010-2022 in China, this study draws the following core conclusions:

(1) The development of science and sci-tech finance is unbalanced and inadequate. Regional disparities are significant, showing an "East-Central-West-Northeast" decreasing pattern, with only the eastern region above the national average, while the northeastern and central-western regions are more than 30% below the average. The eastern region faces development bottlenecks, the central and western regions accelerate development due to late-mover advantages, and the northeastern region has the slowest growth due to dependence on traditional industries and insufficient investment in high-end technology.

(2) Science and sci-tech finance has both direct and indirect effects on coordinated regional economic development.

Science and sci-tech finance significantly promotes coordinated regional economic development, with direct effects stronger than indirect effects through industrial structure upgrading (accounting for 12.63%). Regional differences are notable: the effects are strongest in the western region, followed by the northeastern and central regions, and weakest in the eastern region. Increasing support for the northeastern and central-western regions can better promote coordinated development.

(3) The threshold effect of industrial structure upgrading is significant.

When the industrial structure upgrading indicator is below 0.8197, the effect of science and sci-tech finance is not significant; when above 0.8197, the promoting effect significantly strengthens. The 2020 pandemic caused 20 provinces in the northeastern and central-western regions to fall below the threshold value, limiting the role of science and sci-tech finance, reflecting insufficient risk resistance capacity in industrial structure.

5.2. Policy Recommendations

(1) Improve the efficiency of science and sci-tech finance development.

Enhancing science and sci-tech finance efficiency requires addressing talent, institutions, funding, and achievement transformation. Through establishing relevant majors in universities, creating talent pools and reward mechanisms, preventing talent loss, and promoting balanced resource allocation; supporting the development of startup institutions and improving project quality. Establishing special fiscal funds to reduce enterprise R&D costs while strengthening supervision to ensure funds are used for R&D. Broadening financing channels, encouraging banks to establish technology branches, providing exclusive credit policies, and supporting enterprises in less-developed regions to obtain financing through listing. Accelerating the transformation of scientific research achievements through diversified financing services and authoritative evaluation standards to reduce risks and improve efficiency.

(2) Key focus points for promoting coordinated regional economic development according to local conditions.

Eastern regions should export high-end talent and quality industries, optimize resource allocation, and breakthrough development bottlenecks. Central regions should strengthen financial services and fixed capital investment, reduce enterprise financing costs, and enhance R&D capabilities. Western regions should deepen science and sci-tech finance support, implement tax incentives and innovative credit products, while strengthening educational investment to cultivate local talent. Northeastern regions should optimize government management and financial services, innovate credit models, undertake industrial transfers from eastern regions, and promote traditional industrial upgrading.

(3) Promote industrial structure optimization and upgrading to enhance the ability to respond to and resolve major risks.

Accelerate industrial upgrading through innovation-driven approaches, promoting the transition from factor-driven to innovation-driven development. Support breakthroughs in traditional industries and the development of emerging industries through tax reductions and subsidies, cultivating quality local enterprises. Each region should optimize its development positioning: eastern regions focusing on high-tech, central regions strengthening manufacturing, western

and northeastern regions undertaking industrial transfers. To prevent risks, financial resources should be integrated, promoting venture capital and insurance support for quality enterprises, with governments guiding fund flows through policies such as tax reductions, and establishing a full-chain science and sci-tech finance service system.

References

[1] King R, Levine R. Finance, Entrepreneurship, and Growth [J]. Journal of Monetary Economics, 1993, (3): 513-542.

[2] Qin Chenglin, Zhang Hua, & Mao Chao. Regional Economic Coordination Development: Concept Analysis, Criteria, and Evaluation Methods [J]. Economic System Reform, 2011(4): 34-38.

[3] Zhang Chao, & Zhong Changbiao. Testing the Impact of R&D Subsidies on Regional Economic Coordination [J]. Statistics and Decision, 2022, 38(7): 122-126.

[4] Hu Huanhuan, & Liu Chuanming. Regional Differences and Dynamic Evolution of Sci-Tech Finance Efficiency in China [J]. Statistics and Decision, 2022, 38(24): 117-122.

[5] Wang X. Capital account liberalization, financial dependence and technological innovation: Cross-country evidence [J]. Journal of Banking & Finance, 2022, 145: 106642.

[6] Fang Lei, & Zhang Xuewei. Spatial Effects and Mechanisms of Sci-Tech Finance Ecosystem on Regional Economic Resilience [J]. China Soft Science, 2023, (6): 117-128.

[7] Fan Wenxiao, & Shen Li. Spatiotemporal Evolution of the Coupling Coordination between Sci-Tech Finance and Industrial Structure Transformation in China [J]. Inquiry into Economic Issues, 2023(8): 103-116.

[8] Wu Yunyong, & Meng Xinru. Empowering New-Quality Productivity through Sci-Tech Finance: Spatial Effects and Heterogeneity Testing [J]. Statistics and Decision, 2024(23): 31-36.

[9] Hu Haiqing, Li Zhuoyi, & Liang Zhikang et al. Sci-Tech Finance, High-Tech Industry Agglomeration, and New-Quality Productivity [J]. Collected Essays on Finance and Economics, 2024: 1-16.

[10] Chen Xiangguang, & Wang Yixuan. Mechanism and Pathways of Sci-Tech Finance Empowering High-Quality Development of the Digital Economy [J]. Contemporary Economic Research, 2025(2): 109-122.