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Original Paper

Research on the Influence of Entrepreneurship on New Quality Productivity

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Abstract

the new development of productivity is our country to construct a new competitive advantage and win the strategic choice for the development of the initiative, entrepreneurship penetration into the production of each link, the new catalytic productivity. Articles intended combing new concept and connotation of productive forces, the entrepreneurial spirit to promote new mediation effect of productivity, and corporate characteristics in entrepreneurship for new show heterogeneity in the influence of the mass productivity. The results show that entrepreneurship has a significant effect on the promotion of new quality productivity; The mechanism test shows that entrepreneurship drives the new quality productivity by improving the quality of knowledge spillover, alleviating financial constraints, and technological innovation and application. The results of heterogeneity analysis show that entrepreneurship plays a more prominent role in promoting the new quality productivity in the enterprises with higher executive salary and private property. This study adds new theory of productivity blueprint, for entrepreneurship, better fitting new mass productivity development direction to provide theoretical explanation and policy recommendations.

Key words

new quality productivity, Entrepreneurship, Knowledge spillover, Financial constraints, Technological innovation and application, institution-driven

1. Introduction

New quality productivity is the productivity that is led by scientific and technological innovation and the realization of key disruptive technological breakthroughs. It needs new production relations to adapt to it, and it will become one (Zhou Wen & Xu, 2023) of the strong backbone of high-quality development. It is the only way to build a new development pattern and a modern economic system to

cultivate new quality productivity, produce high-quality products and services, and find the breakthrough point for the next wave of growth from the perspective of innovation. At present, China's new-quality productivity continues to grow rapidly, with an annual growth rate of 10.18%. The level of development is uneven among different regions, but with the implementation of the regional coordinated development strategy, the situation of inter-regional imbalance has been effectively allevi[2]ated. With the vigorous development of the new quality productivity, it is also necessary to explore the support and sustainability behind it. The "new" of the new quality productivity will be implemented in "innovation", especially the innovation of radical and disruptive technologies. Enterprises, as the main body of innovation, are one of the important sources to promote the disruptive change; Entrepreneurs, as the leaders of enterprises, with their keen market insight (Bai, Cui, & Gen, 2014), can accurately identify the fields with more advanced productivity, effectively introduce scientific and technological innovation results into the market, and then improve production efficiency, and actually promote the profound transformation of productivity.

The concept of new quality productivity has been deeply interpreted by scholars. The core meaning of the new quality productivity is "innovation". The economy and society make efforts to reshape the production mode (Zhou & Xu, 2023) through the three elements and three important subjects of the productivity system at the key levels such as technological breakthrough, industrial system and the allocation and combination of production factors. Combined with various changes and requirements of technological breakthroughs, workers, labor objects and labor materials will be transformed into high-quality workers with innovation ability and skills, labor objects such as new energy and new materials with low energy consumption and high efficiency, and high-end labor materials (DU, Shu, & Li, 2023) such as "advanced, sophisticated" equipment and tools. Other scholars attempt by the theory and practice to build the new productivity index, song jia, etc. (SONG, ZHANG, & Pan, 2024). Based on the classical theory of two key elements of productive force, from two factors of labor and production tools in the new mass productivity change established a new quality, and the productivity index of enterprise level. Han Wenlong et al. (2024) constructed a complete and detailed composition of the new quality productivity.

Because of human desire, generally difficult to radically change, so disruptive changes typically occur on the supply side rather than the demand side (Joseph, 2019; Chen, Liu, & Nie, 2023), entrepreneurship can change in the past to capital and labor input structure, the elements of the new elements into the production system, acceptance, application and promotion of new technologies, new forms, create new business models (He, 2022).

Schumpeter regarded entrepreneurs as the main body of innovation. Entrepreneurs turn elements or assembled into the activities of the products, produce new products, new production methods, the new market and new allocations, back to the "creative response" for a given condition, the market equilibrium with a "creative destruction", eliminate and update the production elements, destroying the old mode of production, industrial structure and market structure, profit and promote economic growth

(Powell, 2016). Kurtz, type of entrepreneurs is to capture the economy disequilibrium, introducing elements of efficient departments and trades, close to "carry" behavior, after flattening of the creative destruction of economic disequilibrium (Chen, Liu, & Nie, 2013; Wang, 2024), its essence is imitation innovation. Creative destruction is spontaneous disruptive changes in the economic cycle power source, innovative talents to adapt to the demand of the new mass productivity disruptive technology breakthrough.

Coincidentally, the early discussions of Chinese scholars on entrepreneurship also focused on its connotation and essence, summarized the connotation of entrepreneurship, and distinguished the difference (Li, Wang, Qiu, & Zhang, 2002) between entrepreneurs, managers, inventors and other roles based on individual characteristics. Later scholars have discussed the entrepreneur ability, including entrepreneurs' understanding (Zhang, 2022) of the resources integration, productive rent- (Shen, 2001) seeking, social capital (Guo & Zhu, 2001), extrinsic motivation mechanism, constraint mechanism (Guo & Zhu, 2001), the market characteristics (Wang & Yu, 2003) of entrepreneur ability and its growth and the influence of the play. In this paper, on the basis of schumpeter's classic definition of entrepreneurship, the definition of entrepreneurship refers to any keen organizational entity recognition and effective response to market opportunities, state-owned enterprises, private enterprises and government agencies, as long as the show corresponding innovation, adventure and enterprising spirit, and are regarded as entity with the entrepreneurial spirit.

Combing the literature, the existing literature depicts a entrepreneurship continuously with the combination of the revolution of science and technology innovation development. At present, disruptive technological innovation comes from basic research, and entrepreneurship is the key driving force for the transformation of disruptive innovation achievements into new quality goods and services. It will profoundly reshape the market structure from the supply side and realize the disruptive transformation of the market. Then, what kind of entrepreneurship is called by the new quality productivity, and what kind of institutional environment support can reduce transaction costs, lubricate friction, mobilize entrepreneurship, and make entrepreneurship and the development goal of the new quality productivity work in the same direction? These problems still need to be solved.

The marginal contribution of this paper is: first, in this article, we will arrange the new quality concept, development level of productivity, quality, and the productivity of new era include the development goals, using detailed measurement index system, discuss the entrepreneur spirit from the enterprise and provincial two levels to promote the new productivity, ensure the reliability of the empirical study, broaden the new qualitative research the influence factors of productivity; Two, combed the early and the present theory of entrepreneurship, with the help of interaction term model study from the empirical level entrepreneurship in new mass productivity path; In addition, under different compensation system creatively explore the entrepreneurial spirit for the strength of the new mass productivity effect, another exploration under the proprietary nature of the heterogeneity, the final inspection of endogenous.

2. Theoretical Basis

New quality productivity "new" is breaking the ice "stuck" problem with key disruptive technologies. Key core technology research, subject to the shortage of senior human resources, investment (Chen, Liu, & Nie, 2023) amount is large, high return risk.

2.1 Quality of Knowledge Spillover

In the era of knowledge intensive economy, knowledge is the raw material of innovation, enterprise is the combination of "stock of knowledge", entrepreneurship is a guide way of knowledge spillover effect. Knowledge spillover in imitative innovation is the same repetition of the same technology, while new quality productivity emphasizes original innovation, changes the economic structure with disruptive technology, and accelerates the acceleration of economic growth, which requires high-quality knowledge spillover. Entrepreneurs may improve the quality of knowledge spillover from the aspects of organizational learning and innovation, knowledge and power matching, and their own literacy and ability, so as to find a new direction for technological resources, and change the mode and efficiency of innovation.

Enterprises accumulate knowledge stock (Gao & Huang, 2023) through learning by doing, and the knowledge acquired by organizational learning endow enterprises with new ideas and ideas (Mao, Wang, & Fang, 2016) through spontaneous innovation, forming new innovation resources and improving the overall innovation level. Organizational learning is divided into explorative learning and exploitative learning. Explorative learning expands new knowledge fields from the existing knowledge of enterprises, while exploitative learning develops on the basis of the existing knowledge of enterprises. Radical entrepreneurship (Journal of Beijing Union University (Humanities and Social Sciences Edition), n.d.), as a strategic orientation, uses explorative learning to acquire knowledge, develop new products and new markets, and promote enterprises to explore related technologies, market demands and competitive products.

In social organizations, decision-making power should be matched with knowledge distribution, and the matching degree of knowledge power determines the matching effect and innovation efficiency. Scientific research talents in enterprises are knowledge carriers, and entrepreneurs are located in the decision-making center of the organizational structure of enterprises. Their leadership ability determines the reasonable degree of the allocation of leadership power to scientific research personnel in innovation activities, which maintains the dominant position of scientific research personnel and ensures that the knowledge power in innovation activities is concentrated in scientific research personnel (Liu, 2023). The matching of high power and high knowledge may allow researchers to individualize and ensure their innovation vitality.

Knowledge information comes from individual behavior, and individual behavior comes from the acquisition of information. The brain processes data information through the "order of feeling", acts and produces new information. Driven by their own ideal picture, entrepreneurs develop independent and targeted action methods according to the "order of feeling", adjust and negotiate constraints to meet market demand. At this time, entrepreneurs' actions generate spontaneous innovation and improve the

efficiency (Zhu & Wang, 2023) of social overall resource allocation. The "feeling order" of entrepreneurs is composed of rational and irrational factors such as past experience, values and philosophical pursuit. It originates from personal literacy and ability (Bai, 2022), and is of great significance for the reorganization and upgrading of enterprise knowledge stock.

Hypothesis 1: Entrepreneurship plays a significant role in improving the level of new-quality productivity.

Hypothesis 2: Entrepreneurship improves the quality of knowledge spillover, and then promotes the development of new quality productivity.

2.2 Alleviation of Financial Constraints

Due to the long cycle of innovation activities, high risk and large demand for funds, financing constraints are an obstacle to the promotion of innovation projects. Entrepreneurship can significantly reduce the level of corporate credit risk. The alleviation of financing constraints is generally divided into external financing and internal financing.

External financing comes from bank loans, issuing stocks, corporate bonds, etc. The competitiveness of entrepreneurship is one of the guarantees of external financing. Highly competitive firms have large assets and high profit margins, which are dominant in the information disclosure mechanism of the banking system. Flexible and convenient bank credit can effectively alleviate financing constraints, and the R&D intensity of enterprises is significantly positively correlated (Jiang & Zhao, 2006) with the amount of financing obtained.

Social capital is the enterprise top management a series of strong/weak the sum (Zhou, 2020) total of social relations. The social capital of entrepreneurs may improve the credit level of enterprises, alleviate the problem of information asymmetry, reduce the transaction cost, thus reduce the financing pressure, and further empower the new quality of productivity. Endogenous financing comes from retained earnings of enterprises. Innovative spirit and adventurous spirit prompted entrepreneurs to invest in new technologies, develop new products, new services and new business models, develop new markets, high risk associated with high returns, the success of the new technology and new products to enhance the enterprise the competitive ability and profitability, the internal accumulation of enterprise funds, from the perspective of endogenous financing alleviate the pressure of the enterprise funds, invested reproduction, innovation, Constantly update and iterate, improve the level of technology, develop innovative products, and form a positive cycle of improving the level of new quality productivity.

Hypothesis 3: Entrepreneurship can promote the development of new quality productivity by alleviating financing constraints.

2.3 Innovation and Application of Technology

Invention is the result of basic research, innovation is the first commercial application (Zhuang, 2007) of the invention, entrepreneurs are new knowledge into the catalyst of goods and services.

First of all, R&D investment is a prerequisite for innovation, and the allocation of entrepreneurial

activities to productive innovation activities can increase the level (Ye & Wu, 2018) of R&D investment in the economy. Some of the R&D input comes from government subsidies, but the independent input of enterprises is also an unobtainable source, and the R&D input of enterprises depends on the decisions (Huang, 2014) of entrepreneurs. The R&D investment should be divided into two categories: basic research and commercial application. Disruptive technologies cannot be separated from basic research, which has long development cycle, high risk and large capital demand. Some enterprises tend to focus on the application and transformation of basic research results, and basic research and commercial application together constitute the innovation and application of technology. Secondly, the innovation, competitiveness and risk-taking contained in entrepreneurship may strengthen the competition and cooperation between each other, pay attention to the relationship between suppliers, internal technical staff and other stakeholders, guide industry-university-research[29] cooperation and research, promote the integration and intersection of technologies in various fields, multi-point breakthroughs, and improve the conversion rate of scientific and technological achievements.

Hypothesis 4: Entrepreneurship can allocate enterprise activities to productive innovation and accelerate the development of new quality productivity.

3. Research Design

3.1 Empirical Strategy

This paper explores the effect of entrepreneurship on the development level of new quality productive forces, and sets the following model:

$$NPro_{i,t}=\beta_0+\beta_1 Ent_{i,t}+\beta_j \sum controls+\rho_i+\sigma_t+\varepsilon_{i,t} \quad (1)$$

In Equation (1), i and t represent enterprise, year and industry respectively. The explained variable represents the *new-quality productivity level of enterprise i* in year t. is used to represent the comprehensive level of *entrepreneurship of enterprise i* in year *t*. *Controls* represents the control variables at the enterprise level, including enterprise size, enterprise age, operating income growth rate, asset-liability ratio, enterprise ownership, return on assets and ownership concentration. and represent firm fixed effects and year fixed effects, respectively. represents the random disturbance term. The key point in Model (1) is the coefficient β_1. If is significantly positive, it indicates that there is a positive correlation between entrepreneurship and new quality productivity.

3.2 Data Sources

Based on this paper the research content and data availability, this paper selected the a-share listed companies from 2012 to 2022 data, preliminary collected 24723 groups of data, the following treatment: (1) to delete the sample period was ST and * ST listed companies; (2) the samples of financial industry and real estate industry are excluded; (3) The missing values are eliminated. In order to eliminate the influence of outliers on the estimation schedule, the relevant variables are winsorized and decentralized by 1%. The data were obtained from CSMAR database.

3.3 Variable Definition

3.3.1 Explained Variable

Referring to Song et al. (2024) new quality productivity is the Marxist productivity theory with Chinese characteristics in the new era, and its index system can be constructed based on the classical two-factor theory of productivity. Among them, living with r&d staff salary proportion, research and development personnel accounted for, highly educated personnel of measure; Materialized labor was measured by the proportion of fixed assets and manufacturing costs; Hard technology was measured by the proportion of direct R&D investment, depreciation and amortization, leasing expenses and intangible assets; Soft technology is measured by total asset turnover and the inverse of equity multiplier.

3.3.2 Explanatory Variables

Existing studies have explored the connotation of entrepreneurship from macro and micro perspectives, and derived diversified measurement methods from macro and micro perspectives (Gao & Huang, 2023; Zhang & Zhao, 2022;Wang & Yao, 2021; Zhou & Zhao, 2021; Hou, Wang, & Gong, 2022; Xu, Zhu, & Yang, 2022; Jin & Jiang, 2024).

First, entrepreneurship includes the spirit of innovation, identifying needs and opportunities, integrating resources, optimizing the combination of factors and improving the efficiency of resource allocation; The second covers the spirit of competition, running a business, being familiar with the market, adjusting strategies and leading development, and the third covers the spirit of adventure, taking risks and uncertainties (Powell, 2016). Referring to the measurement method constructed by Xu Xiumei et al. (2022) this paper uses the ratio of R&D investment to measure entrepreneurs' innovative spirit; The competitive spirit is measured by asset scale, enterprise gross profit margin and asset contribution. The satisfaction rate of self-generated funds refers to the degree to which enterprises rely on internal financing to meet their capital needs. The satisfaction rate of self-generated funds is high, while the dependence on external financing is low and the leverage ratio is low.

Table 1. Types of Variables and Main Descriptions

Types of variables	Variable name	Variable abbreviation	Variable description
Explained variable	New quality productivity	*NPro*	Refer to Xu Xiumei et al. (2022)
Explanatory variables	Entrepreneurship	*Ent*	Refer to Song Jia et al. (2024)
Variables of control	Enterprise size	*Size*	Natural logarithm of total annual assets
	Age of business	*Firm Age*	ln(year of the current year - year of incorporation +1)

	Growth rate of operating revenue	*Growth*	Current year's operating income/previous year's operating income -1
	Asset-liability ratio	*Lev*	Total year-end liabilities/total year-end assets
	Business ownership	*SOE*	It is 1 for state-controlled enterprises and 0 for others
	Return on assets	*ROA*	Ebit/average balance of total assets
	Ownership concentration	*Top10*	Number of shares held by top ten shareholders/total number of shares

4. Analysis of Empirical Results

4.1 Benchmark Regression

Table 4 reports the effect of provincial entrepreneurship on new quality productivity, with a total of 24723 enterprise data for regression. Due to a small amount of data loss of various fixed effects, the total data is very small. F-statistics show that the four regression models contribute significantly to the explanation of dependent variables. The empirical results are shown in Columns (1) - (4) of Table 2. It is found that the coefficient estimates of entrepreneurship in different states are all positive and statistically significant, indicating that entrepreneurship has a significant role in promoting new quality productivity. Hypothesis H1 is verified.

Among them, Column (2) controls the enterprise fixed effect and year fixed effect on the basis of Column (1), and the observed value of coefficient decreases to 0.798. Different enterprises have differences in scale, establishment period, growth and other aspects, and each year also faces different macroeconomic trends and policy environment. After controlling enterprise fixed effects and year fixed effects, the R value increases significantly. The differences of the four groups of data show that there are some factors in different enterprises and regions that make the impact of entrepreneurship on the new quality productivity uneven. In addition, according to the correlation coefficient and variance inflation factor test, the correlation coefficient between variables is low and there is no multicollinearity.

Table 2. Benchmark Regression Results

VARIABLES	*Npro*			
	(1)	(2)	(3)	(4)

Score	13.341***	0.798***	0.675***	10.692***
	(0.253)	(0.210)	(0.209)	(0.259)
Size	0.146 ***	-0.012	-0.030	0.220***
	(0.019)	(0.025)	(0.026)	(0.019)
FirmAge	0.186***	0.915***	1.010***	0.285***
	(0.056)	(0.179)	(0.177)	(0.059)
Growth	0.521***	-0.062	0.063*	0.103
	(0.076)	(0.038)	(0.037)	(0.072)
Lev	0.621***	0.295***	0.263***	0.100
	(0.115)	(0.095)	(0.094)	(0.110)
SOE	1.030***	-0.001	-0.038	0.932***
	(0.042)	(0.060)	(0.060)	(0.042)
ROA	11.264***	2.292***	2.212***	7.765***
	(0.325)	(0.202)	(0.201)	(0.313)
Top10	0.008***	0.010***	0.010***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	3.488***	3.213***	3.385***	6.981***
	(0.376)	(0.714)	(0.725)	(0.398)
Control variables	yes	yes	yes	yes
Firm fixed effects	no	yes	yes	no
Year fixed effects	no	yes	yes	yes
Industry fixed effects	no	no	yes	yes
Province fixed effects	no	no	no	yes
Observations	24,723	24,228	24,228	24,722
R-squared	0.125	0.846	0.850	0.275

Note. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

4.2 Robustness Test

In order to test the robustness of the benchmark regression, the explanatory variables and explained variables are replaced by the indicators of entrepreneurship and new-quality productivity at the provincial level.

The comprehensive index of new quality productivity refers to Han Wenlong et al. (2024) and divides the new quality productivity into three physical new factors and three permeability factors of technology, organization and data. In addition, referring to Jin Huan and Jiang Pengcheng[42], entrepreneurship is expanded into four aspects: innovation spirit, entrepreneurship spirit, adventure spirit and contract spirit. The control variables consider the factors of new technologies, new forms of business and new factors that can generate new quality productivity, and select six control variables:

marketization degree (*Mbi*), human capital level (*Hum*), government support (*Gov*), infrastructure (*Infra*) and financial development level (*Fin*).

Table 3 reports the effect of provincial entrepreneurship on the new quality productivity. Hypothesis H1 has been verified again.

Table 3. Results of the Robustness Regression

VARIABLES	*Npro*				
	(1)	(2)	(3)	(4)	(5)
Ent	0.751***	0.754***	0.272***	0.417***	0.273***
	(0.035)	(0.048)	(0.050)	(0.044)	(0.044)
Constant	0.001	0.031	-0.048	0.000	0.163
	(0.008)	(0.029)	(0.074)	(0.032)	(0.115)
Control variables	no	yes	yes	yes	yes
Province fixed	no	no	yes	no	yes
Year fixed	no	no	no	yes	yes
Observations	270	270	270	270	270
R-squared	0.639	0.785	0.927	0.786	0.946

Note. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

4.3 Mediating Variables

Through the above theoretical and empirical analysis, this paper tests the relationship between entrepreneurship and new quality productivity, and Hypothesis 1 has been confirmed. Next, the interaction term model is used to verify the mediating mechanism.

$$NPro_{i,t}=\beta_0+\beta_1 Ent_{i,t}+\beta_2 MV_{i,t}+\beta_3 Ent_{i,t}\cdot MV_{i,t}+\beta_j \sum controls+\rho_i+\sigma_t+\varepsilon_{i,t} \quad (2)$$

Among them, *MV* represents the influencing mechanism variables, which respectively represent the measurement indicators of knowledge spillover effect, financial constraints, technology innovation and application, and the other variables are the same as above.

4.3.1 Knowledge Spillover Effect

Imitative innovation relies on patent citation, which leads to the dilemma of technology lock-in, improvement and innovation around existing patented technologies, lack of exploration and breakthrough in new technical fields, lack of in-depth understanding and integration of patents, and cannot be effectively applied to the production process. Dai et al. (2010) found that entrepreneurship plays a key coordinating role in industry-university-research cooperation. Entrepreneurs' innovative spirit and risk-taking spirit permeate enterprise activities, organize industry-university-research alliance, rationalize the matching degree of knowledge and power, carry out explorative learning, drive technology diffusion and transfer, improve the quality of knowledge spillover effect, encourage

enterprises to break through the limitation of imitation innovation, encourage teams to pool their ideas, so as to put forward more constructive innovation plans. In this paper, the number of patent citations *NPA* is selected as the measurement index, and the estimated results are reported in Column (1) of Table 4.

4.3.2 Financial Constraints

The high financing requirements of disruptive technological innovation highlight the role of entrepreneurship. Companies with strong entrepreneurial spirit are highly competitive, and may obtain more sufficient external financial support from bank credit, stock market and bond market. They may also obtain high returns from new technologies and accumulate internal financing through retained earnings, thus easing the financing dilemma of technological innovation. Entrepreneurs' social capital also plays a supporting role in innovation activities. Referring to Zhang et al. (2017) this paper uses *KZ* index to measure financial constraints. Column (2) of Table 4 reports the estimated results of entrepreneurship alleviating financial constraints. Judging from the estimated coefficient of interaction terms on new quality productivity, entrepreneurship can effectively relieve the financial pressure of innovation projects, provide conditions for project start-up, production equipment and talent introduction, meet the basic requirements of disruptive innovation, and promote the level of new quality productivity.

4.3.3 Innovation and Application of Technology

Zhang and Zhao (2021) discussed the dual effect of *R&D* investment, pointing out that although innovation investment may increase the overall risk, it may also increase the innovation output and improve the performance. This paper will test whether entrepreneurship can effectively promote the production of innovation results and promote the formation of new quality productivity by enhancing innovation investment. As an important indicator to measure technological innovation and its practical application, patents cover from basic research to the exploration of new materials and new reaction mechanisms, as well as the further commercial transformation and development of these basic research results. Specifically, in Column (3) of Table 4, the coefficient of the interaction term between the number of patent applications and entrepreneurship is significantly positive, indicating that entrepreneurship attaches great importance to *R&D* activities, which can promote basic research and accelerate its commercial application.

Table 4. Mediating Mechanism

VARIABLES	*Npro*		
	(1)	(2)	(3)
Score	0.527**	0.564**	0.389*
	(0.212)	(0.221)	(0.215)

PCV×Score	0.008***		
	(0.002)		
KZ×Score		0.292***	
		(0.052)	
NPA×Score			0.010***
			(0.002)
Constant	3.441***	3.845***	3.716***
	(0.726)	(0.727)	(0.725)
Control variables	yes	yes	yes
Individual/year/industry fixed variables	yes	yes	yes
Observations	24,228	24,228	24,228
R-squared	0.850	0.852	0.851

Note. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

4.4 Heterogeneity Analysis

4.4.1 Executive Compensation

One view holds that managers' knowledge construction forms memory, management mode is heavily path dependent, and the distribution of factors and income runs in the same mode of copy and paste, which may even hinder entrepreneurs from seeking innovation and change (Liu, 2023). Therefore, executive compensation and new quality productivity have a negative impact; The other view is that the high level of executive compensation often means that the enterprise recognizes and motivates the executive ability, which can encourage the executive to play the entrepreneurial spirit more actively. In order to reveal the difference in the impact caused by senior executive salary, this paper takes senior executive salary as the standard group, and the results are shown in Columns (1) to (2) of Table 5. It is found that higher executive salary is more conducive to the direct effect of entrepreneurship on new quality productivity. In enterprises with higher executive salary, entrepreneurship has a stronger impact on new quality productivity. It may be that the salary incentive drives innovation, and the selection mechanism makes technical personnel and innovative members participate more in the management process to integrate the technical link and management ability. The knowledge-power matching is more reasonable.

4.4.2 Nature of Property Rights

Different characteristics between state-owned enterprises and private enterprises will affect the effect of entrepreneurship. Soes' overall layout and planning of new quality productivity, deep cultivation of research and development cycle is long, difficult to tackle the field, improve the whole chain of innovation from basic research to industrialization; Private enterprises may not only make subversive breakthroughs in basic research, but also achieve results in technology application. In addition, from

the perspective of financing constraints, state-owned enterprises are easy to obtain strong backing from the government, enjoy high credit rating, raise large-scale financing, and promote the potential of entrepreneurship; Private property subjects are more active in the pursuit of profit returns, and have a strong driving force for technological innovation. Their business strategy is deeply influenced by market orientation, and they have a sharper insight into and fit with consumer demand, and their positive effect on new quality productivity may be more prominent. Through the empirical analysis of the impact of entrepreneurship on the new quality productivity under different ownership structures, it can be found that the estimated coefficient of private enterprises is significantly higher than that of state-owned enterprises.

Table 5. Heterogeneity Analysis

VARIABLES	Executive compensation		Nature of ownership	
	High executive pay	Low executive pay	State-owned	Private
	(1)	(2)	(3)	(4)
Score	12.596***	9.399***	9.005***	12.411***
	(0.345)	(0.300)	(0.504)	(0.252)
Constant	8.109***	6.691***	8.918***	6.769***
	(0.542)	(0.503)	(0.684)	(0.442)
Control variables	yes	yes	yes	yes
Individual/year fixed	yes	yes	yes	yes
Observations	12,137	12,091	7,485	16,743
R-squared	0.225	0.209	0.168	0.246
Significance of differences between groups	*Prob* > *chi2* = 0.0000		*Prob* > *chi2* =0.0306	

Note. *, ** and *** indicate significance at the level of 10%, 5% and 1%, respectively.

4.5 Endogeneity Discussion

The utility of entrepreneurship in promoting technological innovation has been fully demonstrated above, but a question worth discussing is whether potential entrepreneurs will actively respond to the emergence of new technologies, emerging markets and new industries. In other words, the emergence of new quality productivity may have a reverse causal impact on entrepreneurship. In addition, factors such as business environment and marketization degree may affect entrepreneurship and new quality productivity at the same time, which may lead to endogenous bias caused by missing variables.

In order to overcome this problem, this paper adopts the system generalized method of moments

estimation (GMM), and selects the one-period-lagged explained variable (*l.pro*) as the instrumental variable for regression estimation. As shown in Table 6, the research results show that the positive promoting effect of entrepreneurship on new quality productivity has been verified at the significance level of 5%. At the same time, the *p* value of *AR* (1) is less than 0.1, while that of AR (2) is greater than 0.1, which strongly supports the hypothesis that the disturbance term in the system *GMM* estimation only has first-order autocorrelation, but no second-order or above autocorrelation. In addition, the *p-value* of *Hansen*'s test is greater than 0.1, which further proves the validity of the selected instrumental variables.

Table 6. Endogeneity Analysis

VARIABLES	*Npro*
L.Npro	0.914***
	(37.16)
Score	2.932**
	(1.97)
Observations	17,991
Number of Stkcd	3,288
Year/individual fixed	YES
AR(1)	0.000
AR(2)	0.105
Hansen test	0.174

Note. *, ** and *** indicate significance at the levels of 10%, 5% and 1%, respectively.

5. Conclusions

As a key factor driving economic and social development, entrepreneurship plays an irreplaceable role in breeding and catalyzing new quality productivity. Based on the data of A-share listed companies in Shanghai and Shenzhen, this study constructs an analytical framework including entrepreneurship and new quality productivity. The results show that entrepreneurship has a significant positive effect on the accelerated development of new quality productivity; The mechanism of entrepreneurship is mainly reflected in three aspects: promoting knowledge spillover, alleviating financial constraints, and promoting technological innovation and application; Further analysis shows that the relationship between entrepreneurship and new quality productivity is moderated by a variety of factors, which is manifested as significant differences in executive compensation level and ownership nature.

Based on the findings of existing research, this paper has the following suggestions:

William Baumol believed that environment creates entrepreneurs and pointed out the profound influence of institutional factors on entrepreneurship. In the past few decades, China's rapid economic

growth has mainly relied on imitation innovation. In the future, the driving force of growth needs to turn to original innovation, which puts forward new urgent requirements for deepening institutional reform.

The new institutional economics believes that institutions can guide entrepreneurs to engage in productive and innovative activities through incentive system and relative reward. Political, social and institutional changes are extremely important factors to promote and ensure the success of entrepreneurs. A good business environment induces entrepreneurs to carry out technological innovation and reduce rent-seeking production. To encourage entrepreneurs to devote themselves to innovation, the market should be compatible with productive innovation. The decisive role of the market in resource allocation can stimulate entrepreneurship, improve the market access mechanism, dismantle the barriers for enterprises to enter the industry, ensure fair competition, and improve the market price mechanism. We will continue to improve the credit, fiscal and taxation, decentralization, regulation and services, and business environment. Set a reasonable economic growth targets, balance the construction of infrastructure and technological innovation, should avoid excessive takes the indicator light and heavy production innovation, and prevent them from innovation capacity shortage problem caused by the traditional industry; The realization of intellectual property is risky, the valuation is difficult to determine, and start-ups lack real assets for collateral, so it is difficult to borrow money. Therefore, a reliable financial support system should be established to support the financing of intellectual assets.

The government should consider the forward-looking planning of the industrial system, the construction of relevant supporting major infrastructure, the construction of basic disciplines as the foundation of technological breakthroughs, the market demand and application as the guidance, and the institutional reform to provide the guarantee of high risk and return ratio for innovators;[5] Collaborative national and local keep policy, the government to guide enterprise development path consistent with the direction of social and economic development, collaboration is focused on the underlying kinetic energy innovation; The state sector to the private sector to provide the necessary supplement, all departments should be based on their size and characteristics of the respectively responsible for incremental innovation and radical innovation; Government funds should focus on general technology and basic scientific research with large investment amount, long cycle and high risk, and also cultivate high-quality and skilled labor factors.

However, in the process of pursuing innovation, entrepreneurs may deviate from business ethics due to the profit motive, and engage in pseudo-innovation or rent-seeking behaviors. In promoting the entrepreneurial spirit, therefore, at the same time, must pay attention to standardize capital, distinguish between entrepreneurs and capitalists, correct understanding of the function of entrepreneur in the economy and society, and the entrepreneur's integrity put forward strict requirements, to ensure that entrepreneurs in the pursuit of personal interests at the same time, the performance of social responsibilities.

The overall knowledge stock of Chinese society needs to be improved, and entrepreneurs need to build an internal environment conducive to improving the knowledge stock of enterprises. Entrepreneurs can take advantage of the resources integration ability, pay attention to knowledge management activities, the strengthened enterprise knowledge acquisition, communication and application ability, grasp the industry development trends, build internal knowledge communication platform, to promote effective exchange and integration of knowledge within the organization, at the same time actively introducing external knowledge resources, and to emphasize the rationality of the compensation system, fairness and efficiency, Motivate employees involved in the manufacture of knowledge innovation and vitality; Spontaneous agglomeration, ecological building industry collaboration, agglomeration effect can form positive externalities in specific geographical areas, career inspires more members of society innovation, spread entrepreneurship development, promote the exchange of knowledge spillover, and competition, gathering area will gradually form to assist entrepreneurs activities of social support system and service network, To provide a solid guarantee for the sustainable growth and value creation of enterprises.

Humanistic thought is the spiritual source and vitality of business ethics, and the enterprise is the ethical organization form of the new era, so it is necessary to have the corresponding ethical theory guidance. Entrepreneurs can dig deeply into the application of humanistic thought in business ethics, draw spiritual inspiration from multiple ideological ethics or personal beliefs, and integrate traditional culture and modern ideological trend into entrepreneurship. Cultivate the deep spiritual culture soil of the enterprise, and build the localized entrepreneurship; The current R&D process often focuses too much on the R&D itself, while ignoring the importance of actual demand, resulting in the mismatch between R&D results and consumer demand. Entrepreneurs can actively seek cooperation with scientific research institutions, universities and other basic research bases, and improve the scientific research management mechanism to make R&D closer to market demand and improve the commercialization rate of R&D results. Entrepreneurship should be combined with the positioning of The Times, local policy and culture to adapt to and innovate the management mode; Entrepreneurs should focus on improving personal literacy and value guidance, accumulate their own experience and theoretical knowledge, integrate rational and irrational factors, and enhance judgment, foresight and insight.

In addition, entrepreneurs should actively seek to change constraints, stimulate internal motivation through high-level incentives, give up rent-seeking production activities, and seek to promote the change and innovation[38] of cultural trend of thought, economic system and political system by becoming institutional entrepreneurs or knowledge entrepreneurs, so as to improve the interaction and game between entrepreneurs, society and external environment, and achieve overall ecological win-win.

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