Entrepreneurship, Exploratory Innovation and Financial Performance

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Abstract. Taking Chinese A-share listed enterprises as the research sample, this paper empirically analyzes the impact of entrepreneurship on financial performance and the intermediary role of exploratory innovation in it, and further groups the relationship between government and business, and studies the change of the role of entrepreneurship on performance under different levels of the health index of the relationship between government and business. The study found: First, entrepreneurship has a significant positive impact on financial performance; Second, exploratory innovation plays a partial mediating role between entrepreneurship and financial performance; Third, further analysis found that the positive impact of entrepreneurship on performance was significantly higher in the government-business relationship health index. The high group is significant, and the group with low political and business health index is not obvious.

Keywords: Entrepreneurship · Exploratory innovation · Financial performance · Political-Business relations

1 Introduction

Entrepreneurs are important organizers of economic activities and the backbone of innovation and entrepreneurship. Entrepreneurial spirit is one or more of the spirit, characteristics that ordinary people do not have when managers carry out pioneering activities. Market vitality comes not only from entrepreneurs, but also from entrepreneurial spirit. To promote entrepreneurship, entrepreneurs should strive to become the main force in building a modern economic system, building a new development pattern and promoting high-quality development in the new era, among which innovation-driven development has become a social consensus [1]. However, the current market environment is unpredictable. If an enterprise wants to obtain a lasting competitive advantage, it means that it should pay more attention to exploratory innovation and create unprecedented new products and technologies suitable for the market. We should adhere to the core position of innovation in the overall modernization drive, strengthen the leading role of enterprises in innovation, and give full play to the leading role of entrepreneurs in technological innovation. Managers with entrepreneurial spirit are the bearers of uncertain risks in the business process, and are also the main advocates and implementers of exploratory innovation activities. On the one hand, the unique adventure and creativity of entrepreneurship is the source power for enterprises to carry out exploratory innovation; On the other

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hand, the high income brought by exploratory innovation can significantly improve the financial performance of enterprises, which is also more in line with the risk preference of entrepreneurship. It can be seen that entrepreneurship, exploratory innovation and financial performance are inextricably linked, which is worthy of in-depth consideration and exploration.

At present, we are in a critical period of economic and social transformation. The government holds the core resources necessary for enterprises to carry out market activities. Entrepreneurs must be affected by the relationship between government and business when making decisions and implementing plans. In addition, the government's control of the market and the formulation and implementation of policies also have a profound impact on the cultivation and development of entrepreneurship. The relationship between pro-Qing government and business is the guiding ideology of the exchanges between government and business in the context of China in the new era. The business environment is one of the important indicators that affect the growth and development of enterprises. However, at present, there is still a lack of relevant research on how the new pro-Qing political and business relationship affects the economic activities of micro-enterprises, especially how it affects entrepreneurial behavior and decision-making, which is worth exploring.

Adventure and innovation of entrepreneurship are mostly realized through exploratory innovation. Exploratory innovation is closely related to financial performance in many aspects such as function path and innovation results. Therefore, it is of practical significance to explore the relationship between the three. At the same time, the cultivation and development of entrepreneurship must be affected by external political and commercial relations. There is still a lack of empirical research on the relationship between political and commercial relations and entrepreneurship, Therefore, the contribution of this paper is: ① put entrepreneurship, exploratory innovation and financial performance into the same frame, and explore the relationship between the three; ② The relationship between government and business will be further grouped to study how the role of entrepreneurship will change under different health levels of the relationship between government and business. This study can provide reference for cultivating and exerting entrepreneurship, improving financial performance, and maintaining healthy and good relationship between government and business.

2 Literature Review and Research Hypothesis

2.1 Entrepreneurship and Financial Performance

Entrepreneurship is not only a pure personal trait, but also a social commonality [3]. Under the framework of high-level theory [4], managers' personal characteristics, subjective consciousness, values, etc. are closely related to the strategic decision-making and development of enterprises, and entrepreneurship can directly affect the financial performance of enterprises [5]. Wang Sulian et al. (2015) [6] concluded that entrepreneurship can directly affect the innovation ability of enterprises, and has a significant impact on enhancing the sustainable competitiveness of enterprises and improving financial performance. Yu Renzhi et al. (2015) [7] believe that top managers with entrepreneurial

spirit can create and use uncertain environment in a creative destruction way to gain competitive advantage and improve performance.

This study believes that enterprises with entrepreneurial spirit have stronger risk bearing capacity, which can not only quickly respond to changes in the market environment, but also proactively predict the market, which has a positive role in improving the financial performance of enterprises. The following assumptions are made:

H1: Entrepreneurship positively affects financial performance.

2.2 Entrepreneurship and Exploratory Innovation

Exploratory innovation refers to the process of creating new products, new technologies, new processes, etc. by breaking through the traditional models of existing knowledge, products or business models to meet the emerging customer and market needs [8, 9]. Exploratory innovation can help enterprises quickly perceive and seize the fleeting opportunities in the market, and establish knowledge and technological advantages that are difficult to imitate [10]. The characteristics of high risk and high income of exploratory innovation are just in line with the risk preference of managers with entrepreneurial spirit. Yi Yaqun (2010) et al. [11] concluded that under the guidance of entrepreneurship, exploration, learning and innovation will become a corporate culture, affecting all employees of the company. In the face of dynamic environment, enterprises will be more willing to conduct fundamental innovation through exploration and learning, so as to gain competitive advantage. Zhao Jianyu et al. (2019) [12] believed that entrepreneurial orientation with the spirit of adventure and exploration would promote enterprises to try to carry out innovative activities with disruptive characteristics earlier, namely exploratory innovation.

This study believes that entrepreneurs are the main body of micro-innovation. Entrepreneurship exists in every process of enterprise's exploratory innovation. Managers with entrepreneurial spirit are more willing to carry out breakthrough exploratory innovation activities to widen the gap with competitors. Accordingly, the following assumptions are proposed in this paper:

H2: Entrepreneurship is positively related to exploratory innovation.

2.3 The Intermediary Role of Exploratory Innovation

1. Exploratory innovation and financial performance. Exploratory innovation has high risk and long cycle, but the new technologies and products it brings are of great significance for obtaining key resources, transforming the market competition pattern and building the core competitiveness of enterprises [13]. Previous studies have shown that carrying out exploratory innovation activities can significantly improve financial performance. Li Yi et al. (2008) [14] concluded that exploratory innovation can positively affect financial performance by developing new products and services. Li Ningjuan et al. (2017) [15] believe that breakthroughs in exploratory innovation can not only create new innovation results, but also bring key innovation resources and improve enterprise financial performance [16].

2. The intermediary role of exploratory innovation. Carrying out exploratory innovation activities is an important way to give full play to entrepreneurship. As the decision-maker and implementer of enterprise innovation, entrepreneurs' thought and behavior have an important impact on the development of exploratory innovation. The characteristics of exploratory innovation are high risk and high income, which are highly consistent with the risk preference of managers with entrepreneurial spirit. Therefore, this paper believes that exploratory innovation has a positive impact on corporate financial performance. Therefore, the following assumptions are proposed:

H3: Exploratory innovation plays an intermediary role between entrepreneurship and financial performance.

2.4 Further Analysis

As the allocator of public resources in the external market and the messenger of public power, the government will obviously have an impact on the cultivation and development of entrepreneurship.1. When an enterprise maintains a good and healthy relationship with the government, the risk of rent-seeking of entrepreneurs increases. Enterprises need not spend too much energy on maintaining the relationship with the government, and more energy and resources are used to engage in productive activities such as innovation, which is conducive to the full play of entrepreneurship; 2. The development of entrepreneurship needs to consume a lot of resources. By maintaining a good and healthy relationship with the government, entrepreneurs can obtain targeted strategic support from the government in terms of human resources, funds and information [17]. At the same time, maintaining a good and healthy relationship between government and business will also release positive signals to the outside world, greatly easing the pressure of enterprise financing constraints, and providing financial guarantee for the development of entrepreneurship; 3. In the context of mass entrepreneurship and innovation, we can create a good policy environment for cultivating and developing entrepreneurship by building a healthy pro-Qing political and business relationship, which is conducive to improving financial performance and ensuring high-quality development of economic and social sustainable innovation [18]. Based on this, the following assumptions are proposed:

H4: The positive effect of entrepreneurship on financial performance is more significant in enterprises with high health index of political and business relations.

Based on the previous analysis and assumptions, the framework of the relationship mechanism between entrepreneurship and financial performance is constructed, as shown in Fig. 1:

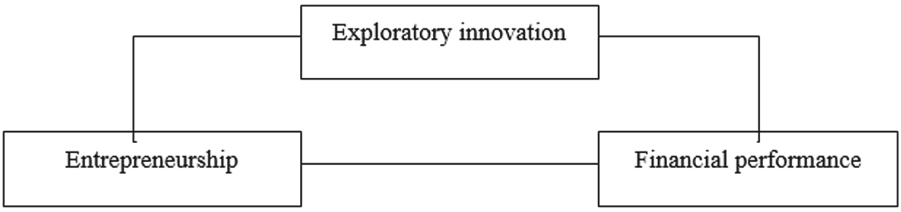

Fig. 1. Relationship model between entrepreneurship, exploratory innovation and financial performance

3 Research Design

3.1 Sample Selection and Data Source

Select the panel data of China's A-share listed companies from 2017 to 2020 as the research sample, and screen the sample as follows: ① exclude ST *, ST companies, financial companies, and companies with asset-liability ratio greater than 1; ② Eliminate the absence of key variables. A total of 2747 sample data were obtained. The relevant data of political and commercial relations are from the Ranking List of China's Urban Political and Commercial Relations, the total number of regional employment data is from the statistical yearbook of provinces and cities, and the rest data is from the WIND database.

3.2 Variable Selection

1. Dependent variable: financial performance. Select the total asset net interest rate (ROA) with a lag of one period to measure the financial performance, and the return on equity (ROE) as the replacement variable for the robustness test.

2. Independent variable: entrepreneurship (ES). Referring to the practice of most scholars at present, the employment rate of private enterprises is adopted as the measure of entrepreneurship in this paper [19].

3. Intermediary variable: exploratory innovation (Rat). Select the enterprise's expensed R&D expenditure to measure the enterprise's exploratory innovation [20].

4. Grouping variable: This paper selects the health index of the relationship between government and business of each city in the Ranking List of China's Cities to measure the relationship between government and business.

5. Control variables: Select the control variables as enterprise size, solvency (Cr), etc. The specific description of each variable is shown in Table 1:

Table 1. Variable definition

Variable category	name	Symbol	Metrics
Dependent variable	Financial performance	ROA	Net interest rate of total assets
Independent variable	Entrepreneurship	ES	Employment rate of private enterprises
Intermediary variable	Exploratory innovation	Rat	The logarithm of expensed R&D expenditure
Group variables	Political and commercial relations	Rbgb	Health index of ranking list of political and business relations
Control variables	Enterprise size	Size	Pairs of total assets
	Solvency	Cr	Current ratio
	capital structure	Lev	Total liabilities/total assets × 100%
	Number of employees	Staff	The logarithm of the total number of employees
	R&D technicians	Tp	Number of technical staff
	Growth	Grow	Year-on-year growth rate of operating revenue

3.3 Model Construction

According to the previous analysis, this paper constructs the following empirical analysis model:

$$ROA = \alpha_0 + \beta_1 ES + \beta_2 \text{controls} + \varepsilon \tag{1}$$

$$R\text{at} = \alpha_0 + \beta_1 ES + \beta_2 \text{controls} + \varepsilon \tag{2}$$

$$ROA = \alpha_0 + \beta_1 ES + \beta_2 R\text{at} + \beta_3 \text{controls} + \varepsilon \tag{3}$$

wherein, controls is the control variable (see Table 1 for details). The model (1) is used to test the relationship between entrepreneurship and financial performance. The model (1)–(3) tests the intermediary effect of exploratory innovation.

4 Empirical Analysis

4.1 Descriptive Statistics

Table 2 provides a descriptive statistical analysis of the main variables. It can be seen from the table that the minimum value of entrepreneurship (ES) is 0.185 and the maximum value is 0.972, which indicates that there are significant differences in entrepreneurship in different regions. There is a gap but not a big gap in exploratory innovation (Rat), and

Table 2. Descriptive statistics of main variables

Variable	N	mean	sd	min	max
ROA	2,747	3.633	7.083	−29.86	20.81
ES	2,747	0.580	0.240	0.185	0.972
Rat	2,747	18.06	1.523	13.25	22.02
Rbgb	2,747	63.50	23.05	15.94	100

Table 3. Correlation analysis of main variables

Variable	ROA	ES	Rat	Cr	Tp	Grow	VIF
ROA	1.000						2.10
ES	0.028	1.000					1.03
Rat	0.058***	0.091***	1.000				1.84
Cr	0.158***	0.057***	−0.219***	1.000			2.06
Tp	−0.002	0.071***	0.590***	−0.159***	1.000		1.77
Grow	0.088***	−0.023	0.033*	−0.090***	−0.034*	1.000	1.03

it is generally at a low level. The standard deviation of the health index of the relationship between government and business (Rbgb) is as high as 23.05, indicating that there are great differences in the external political and business environment faced by enterprises in different regions.

4.2 Correlation Analysis

Pearson correlation coefficient of main variables is shown in Table 3. It can be seen that entrepreneurship (ES) and financial performance (ROA) are positively correlated but not significantly, which means that the effect of entrepreneurship on corporate financial performance is also affected by various internal and external factors, and needs further verification. Exploratory innovation (Rat) is significantly positively correlated with entrepreneurship (ES) and financial performance (ROA) at the level of 1%, indicating that enterprises with entrepreneurship tend to engage in exploratory innovation activities. The VIF values of the main variables are far less than 10, which means that there is no multicollinearity between them.

4.3 Regression Result Analysis

Entrepreneurship, exploratory innovation and financial performance. Column (1) of Table 4 reports that the entrepreneurship (ES) coefficient is 1.516, and it is significantly positively correlated with the financial performance (ROA) at the level of 1% and H1 has been verified. In column (2), entrepreneurship (ES) and exploratory innovation (Rat) are

Table 4. Regression analysis results

variable	(1)	(2)	(3)	(4)	(5)
	ROA	Rat	ROA	ROA	ROA
ES	1.516***	0.367***	1.243**	1.528*	1.583
	(2.761)	(4.811)	(2.266)	(1.727)	(1.403)
Rat			0.745***		
			(4.826)		
Constant	4.168	−0.315	4.403	13.763**	2.016
	(1.169)	(−0.575)	(1.245)	(2.501)	(0.364)
control variable	control				
N	2,747	2,747	2,747	1,372	1,375
Adj-R^2	0.109	0.666	0.118	0.0876	0.141

Note: * * *, * * and * indicate significant correlation at the level of 1%, 5% and 10% respectively, below as above.

significantly positively correlated at the level of 1%, assuming that H2 is verified; Combining columns (1) - (3), entrepreneurial spirit (ES) has a significant impact on (1) and (2). After adding the variable exploratory innovation (Rat), in column (3), exploratory innovation (Rat) has a significant positive correlation with financial performance (ROA) at the level of 1%, and entrepreneurial spirit (ES) has a significant positive correlation with financial performance (ROA) at the level of 5%, which means that exploratory innovation is part of the intermediary between entrepreneurship and corporate financial performance, H3 is verified.

4.4 Further Analysis

Define the health relationship between high political quotient and low political quotient based on the median of political quotient relationship. The regression results are shown in Table 4 (4) - (5). Under the grouping of column (4) High political quotient relationship health index, entrepreneurship has a significant positive impact on financial performance at the level of 10%. On the contrary, Under the grouping of column (5) low political quotient relationship health index, entrepreneurship has a positive impact on financial performance, but it is not significant. H4 has been verified.

4.5 Robustness Test

To ensure the robustness of the regression results, two tests were carried out:

1. Replace the dependent variable. The return on equity (ROE) is used to measure financial performance for secondary regression, and the regression results are shown in Table 5 (1) - (3). The empirical regression results show that the coefficient direction has not changed except for the slight change in the significance level, which proves that the above results are robust.

Table 5. Robust regression results of substitution dependent variables

variable	(1)	(2)	(3)	(4)	(5)	(6)
	ROE	Rat	ROE	ROA	Rat	ROA
ES	1.935**	0.367***	1.504*	36.925*	11.946***	26.225*
	(2.131)	(4.811)	(1.659)	(1.834)	(3.155)	(1.650)
Rat			1.173***			0.896**
			(4.657)			(2.159)
Constant	−0.126	−0.315	0.243			
	(−0.020)	(−0.575)	(0.040)			
control variable	control					
N	2,747	2,747	2,747	1,177	1,177	1,177
Adj-R^2	0.0874	0.666	0.0948	0.7397	0.6137	0.5325

2. This paper selects the minimum wage of each province and city as the instrumental variable of entrepreneurship to conduct regression again, and the regression results are shown in Table 5. After considering the endogenous problem, the regression results still support the original hypothesis.

5 Conclusions and Suggestions

5.1 Research Conclusion

Taking the data of China's A-share listed companies from 2017 to 2020 as the research sample, this paper empirically studies the relationship between entrepreneurship, exploratory innovation and financial performance, and groups the health degree of the relationship between government and business, and finally draws the following conclusions: entrepreneurship can effectively improve financial performance, and exploratory innovation plays a part of intermediary role between the two; Further grouping of the relationship between government and business shows that entrepreneurship can significantly and effectively promote financial performance in enterprises with high health index of the relationship between government and business. Therefore, maintaining a good relationship between government and business is of great significance for enterprises to cultivate entrepreneurship.

5.2 Countermeasures and Suggestions

Entrepreneurship is the source power to promote enterprise innovation and promote social and economic development, and is an important driving factor for enterprises to carry out exploratory innovation. Enterprises with entrepreneurial spirit can grasp the changes in market demand, seize market opportunities and improve their financial performance. Enterprises are not independent individuals, and the cultivation and development of entrepreneurship are not only affected by the internal mechanism of enterprises.

In the current process of economic transformation, local governments have the ability and motivation to intervene in market microeconomic activities. The development of entrepreneurship will inevitably be affected by the relationship between government and business. To sum up, this paper puts forward the following suggestions for the cultivation and development of entrepreneurship:

For enterprises: First, enterprises should improve the incentive mechanism to create a good internal environment for stimulating and cultivating entrepreneurship. Today's enterprises are mostly in the situation of separation of ownership and management rights, and the attitude of senior executives towards work is more prone to slackness and laziness. It is necessary for enterprises to establish a reasonable incentive mechanism to fully mobilize the enthusiasm of senior executives and stimulate and cultivate their entrepreneurial spirit; Second, Increase investment in research and development, improve the risk bearing capacity of managers, and encourage managers to carry out exploratory innovation. New products and new technologies brought by exploratory innovation help to increase profits and improve financial performance of enterprises; Third, enterprises should actively cooperate with the government, support the government's work, carry out exploratory innovation activities under the guidance of the government, and obtain market resources through fair competition rather than through some rent-seeking activities.

For the government: First, recognize the role orientation and realize the important impact of government behavior on entrepreneurship and enterprise innovation behavior. Seriously combat corruption and no matter what behavior, actively guide enterprises to carry out innovation activities, and communicate with enterprises on the basis of equality and trust; Second, Optimize the business environment. Encourage entrepreneurship in both material and spiritual aspects, and give preferential policies such as tax relief and honor awards to enterprises or individuals with excellent entrepreneurship, so as to create a good and stable external institutional environment for cultivating and developing entrepreneurship.

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