Social Network, Business Risk and Company Failure

Zhao Wen[1*]   Zhao Huihui[1]

[1]*School of Management Science and Engineering, Shanxi University of Finance and Economics School, Taiyuan 030006, China*
Corresponding author. Email: 827388096@qq.com

ABSTRACT

This paper uses the unbalanced panel data of SMEs from 2010 to 2019, combined with the fixed effects model, uses top ten shareholders of the company to measure the centrality of the social network, and empirically analyzes the role of SMEs' business risk on company failure, and the moderating role of social networks.The results show that: (1) Business risk is positively related to business failure; (2) Social network centrality negatively regulates the relationship between business risk and company failure.

Keywords: Social network, centrality, business risk, comapny failure

1. INTRODUCTION

With The development of SMEs has gradually become the main driving force for realizing economic transformation and development, adjusting industrial structure, and providing jobs. How to improve the survival rate and development of enterprises is the main content of government and academic research. Under the impact of the new coronavirus pneumonia epidemic, the government has responded quickly, especially to SMEs in trouble. SMEs have also turned their attention from improving corporate performance to ensure their survival, and think about how to improve their ability to resist external risks to survive in the fierce competition and sudden change environment.

Scholars have discussed the reasons for the failure of enterprises from inside and outside the organization. In the final analysis, these factors make enterprises face higher risks. Furthermore, the inherent nature of SMEs leads to limited resources, and they mainly rely on outside help to ensure their survival and development. As researchers continue to explore this aspect, they find that social network have gradually become an important channel for SMEs to obtain external resources and help. China is a "relational" country that attaches great importance to "reciprocity", and it has a unique cultural heritage [1]. Most scholars studying social networks emphasize their contribution to company information and resource constraints, and provide guarantees for the survival and development of companies.

The contributions of this paper are as follows: (1) Comprehensive related literature found that a large number of literature analyzed the antecedent variables of business risk from the social level, the corporate level and the individual level. The social level includes macroeconomics, institutional factors, capital markets, etc.; the corporate level includes equity structure, board of directors, management incentives, corporate characteristics, etc.; personal level includes demographic characteristics,

psychological characteristics. A small amount of literature analyzes the post-dependent variables of business risk, mainly company performance, but only when the company survives can its performance, innovation and development kick off. This paper studies the role of business risk on company failure; (2) This paper goes further exploring whether social network can reduce business risk is of more practical significance for company development. Starting from the meaning of social network centrality, this paper analyze the adjustment effect on business risk and enterprise failure, and further propose practical countermeasures to reduce business risk.

2. THEORETICAL BASIS AND HYPOTHESIS PROPOSED

2.1. Business Risk and Company Failure

Company risk, also known as business risk, refers to the risk of a company accomplishing its goals under the influence of uncertain factors in the future. Especially under the new crown pneumonia epidemic, the domestic logistics and the flow of people have been strictly controlled, economic activities have been stagnated, and SMEs are facing a huge survival dilemma. Due to the coexistence of opportunities and challenges, companies seize the opportunity to obtain higher profits, but they also face higher risks that trigger crises and even threaten the survival. This paper analyzes the relationship between business risk and company failure from the following two aspects.

First, companies chase excess profits and often formulate and implement high-risk projects. The risk appetite of company owners and operators directly affects business risks. Though hardly any companies are not at risk for success[2], but the high risk, the company in the process of strategic decisions, there are more factors of the uncertainty of the implementation of strategic decision,

may in the case of not collecting overall decision-making information, easy to make decisions. Thus, the quality of decision-making is not guaranteed, which will make the enterprise face higher risks. At the same time, when the risk exceeds the enterprise's tolerable range, once risk-taking behavior is obstructed by certain factors and forced to interrupt or stop, the enterprise will inevitably suffer severe damage or even failure.

Secondly, Bromiley (1991) [3] defines the uncertainty of company earnings as business risk. Companies face various potential and must face risks in the process of production and operation, among which the most deadly risk is the shortage of resources, especially financial risks [4]. Due to the limited resources of SMEs, the high risk of projects and the uncertainty of income, business activities are prone to financial constraints. It is impossible for any company to rely on its own cash flow to promote the project. It may face the impact of cash flow at any time. Moreover, capital is the blood of a company. Once the capital chain of a company is broken, it will greatly threaten the survival of the company. Based on this, a hypothesis is proposed.

Hypothesis 1: The higher business risk, the higher the probability of failure of the company.

2.2. The Moderating Role of Social Network

Based A network in which member and members simultaneously serve in other companies to form direct or indirect connections is called company social network. This paper uses shareholders to serve in multiple companies at the same time to establish mutual connections between individual shareholders, and the connections between chain shareholders are transformed into connections between companies. This paper uses closeness centrality to measure the position of a company in a social network.

Closeness centrality represents the sum of the shortest paths that an enterprise can take with all other companies through direct or indirect contact, and measures the value of the company in the overall network. Companies can obtain more extensive and comprehensive information through direct or indirect contact, better grasp market trends, and enhance the feasibility of innovative projects. At the same time, because company decision-making runs through the entire production management activities, various difficult problems may be encountered in the process of decision-making implementation, which hinder its expected benefits. By virtue of being in a social network position and more efficient communication with other companies [5, 6], the company can obtain a wider range of suggestions and make reasonable adjustment strategic decisions.

The social network centrality of companies is relatively high. On the one hand, invisible market trend information, technical knowledge and policy guidance can be obtained, which are all necessary resources for business risks; on the other hand, limited company resources can be alleviated through social network. For example, through social

network, companies can broaden financing channels and transmit their specific information to investors, so that investors can effectively understand the company's true production and operation conditions, reduce information asymmetry leading to financing difficulties. Thereby increasing the possibility of enterprises obtaining financing, and the cost of obtaining capital investment from investors is lower than the bank loan interest rate.

Hypothesis 2: The centrality of the company social network negatively regulates the relationship between the business risk and the probability of company failure.

3. RESEARCH DESIGN

3.1. Samples and Data Sources

This paper selects SMEs during the period 2010-2019 as the initial research sample (960 companies). On this basis, the initial sample is eliminated: (1) 18 financial SMEs; (2) 29 SMEs with less than three years of social network centrality data; (3) 3 SMEs with discontinuous business risk data, and finally 910 SMEs as the research sample. All the data used in this article are derived from Wind database.

3.2. Variable Measurement

Dependent variable is company failure.It is not only a dynamic process but also a state result. It means that due to various reasons, the company's finances continue to deteriorate, the financial risks are intensified, the crisis of inability to pay off debts appears, and it eventually leads to bankruptcy. Whether a company can survive in the industry is reflected in its financial behavior whether it has the ability to "pay off with revenue" and "pay off due debt". This paper finds out from the Wind database which of SMEs were *ST in which year (indicating that the company has suffered losses for three consecutive years, and the exchange has issued a delisting warning), it is considered that the company failed in that year, set it to 1 in that year, and set it to 0 in other years.

Independent variable is business risk.This paper adopts the Z value as the measurement index of business risk. This paper considers the impact of the lagging period of business risk on company failure. The larger the value of Z, the smaller the business risk. Therefore, the verification hypothesis 1 business risk is positively correlated with company failure, and the business risk regression coefficient is negative at the significance level.

Regulated variable is social network.This paper obtains the top ten shareholders of the company from the Wind database to measure the social network, and then obtains a matrix of the company through programming. For example, if the shareholder holds a position in company A and also in company B. It is considered that companies A and B are connected, and the intersection of company A and

company B in a matrix is set to 1. If there are more than two shareholders at the same time hold a position in company A and B, the intersection of A and B is also set to 1. Finally, import the matrix into UCINET software, and get the centrality index value through the relevant steps.

This paper takes company scale, age, and profitability as control variables, and uses logarithm of operating income, current year minus year of establishment, and earnings per share to calculate.

4. EMPIRICAL RESULTS AND HYPOTHESIS TESTING

4.1. Descriptive Statistical Analysis

From Table 1, this paper can get: (1) The average value of the data of company failure is 0.009, indicating that most companies did not fail during the research periods; (2) The average value of the data of business risk is 8.154, indicating that a large number of companies face less risk during most of the research period. But the standard deviation is high, indicating that the volatility of business risk is relatively large; (3) The correlation coefficient values are all small, and the correlation between variables is low.

4.2. Analysis on the Impact of Business Risk on Company Failure

The regression model 1 in Table 2 shows that: (1) This paper uses the Z value to measure business risk. The value is larger, the business risk is lower. The lag phase of business risk is negative when the significance level is 1%, indicating that the higher the business risk, the greater the probability of company failure. Hypothesis 1 holds; (2) The control variable age is positive at the significant 1% level, it means that the older the company is, the more likely it is to cause the company to fail; the size of the company is significantly negative at the 1% level,

indicating that the higher the scale of the company, the more likely it is to reduce company failure; the coefficient of corporate profitability is not significant.

4.3. Analysis on the Moderating Effect of Network Centrality

The regression model 2 in Table 2 proves the moderating effect of social network centrality: the coefficient of the interaction term between centrality and business risk is significantly negative at the level of 5%, hypothesis 2 holds.

4.4. Robustness Test

In order to ensure the robustness of the research results, this paper does a test. First, change the measurement method of the company's position in the social network to the eigenvector centrality, and the regression results have not substantially changed; second, this paper singles out the manufacturing SMEs (74.73% of the total sample) to verify the hypothesis alone, and the regression results have not changed.

5. CONCLUSION AND SUGGESTION

5.1. Conclusion

Based on the unbalanced data of SMEs from 2010 to 2019, this paper uses the social network centrality index to measure the position of SMEs in the social network, and examines the impact of business risk on enterprise failure and the regulation impact of social network centrality. The results show that: (1) Companies face higher business risks, resulting in higher failure rates; (2) The higher the centrality of the social network of companies, the more it can alleviate the relationship between business risk and companies failure.

Table 1 Descriptive statistics and correlation coefficients of variables

Variable	Mean.	Std.Dev.	ST	Rsik	Clo	Age	Size	Pro
ST	0.009	0.095	1.000					
Risk	8.154	14.634	-0.037***	1.000				
Clo	0.259	0.138	-0.021*	-0.026**	1.000			
Age	15.967	6.051	0.027***	-0.010	0.139***	1.000		
Size	9.136	0.500	-0.056***	-0.254***	0.185***	0.194***	1.000	
Pro	0.414	0.635	-0.154***	0.091***	-0.031***	-0.129***	0.105***	1.000

z statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.2. Suggestions

Based on the above conclusions, this paper puts forward the following suggestions: (1) SMEs, especially those companies that can improve their own breakthrough development, have both opportunities and challenges. They should attract shareholders with rich "relationships" to join, or let its shareholders join other companies, enhance informal interactions and connections with more other companies, and build a rich social network. In this way, the rich social network broadens the financing channels of enterprises, improves the suitability and implementability of innovative activities, and reduces the uncertainty that may lead to enterprise failure in the process. For example, Ma Yun, Ma Huateng, Ma Mingzhe have invested in Huayi Brothers, bringing greater potential for its future development; (2) When inviting high-ranking shareholders, SMEs should pay attention to the value of the information resources of their companies. If a company establishes a connection relationship with a company with relatively rich resources, a relatively complete operating system and a relatively high status, the chain shareholders will transfer the knowledge, strategy and experience of the connected company to the target company, thereby more

Table 2 The comparison of hash methods

Variable	Company failure ratio odds	
	Modle1	Model2
Risk	-0.032	
	(-1.47)	
Risk(-1)	-0.183***	-0.104**
	(-3.93)	(-2.11)
Clo(-1)		3.622***
		(2.63)
Z(-1)* Clo(-1)		-0.493**
		(-2.46)
Age	0.235***	0.192***
	(4.23)	(3.26)
Size	-1.872***	-1.886***
	(-3.67)	(-3.84)
Pro	-0.134	-0.190*
	(-1.10)	(-1.71)

effectively avoiding the possible uncertainty existence of the company's business development.

5.3. Research Limitations and Prospects

This article has the following shortcomings: (1) According to the availability of data, this paper deletes SMEs with missing business risks and social network data based on the data obtained from the Wind database, resulting in a reduction in the sample size; (2) If different shareholders of different companies can be traced back to the same controller, then there is a connection between shareholders and should be included in the social network of the company. Due to the availability of data, this article has not considered it.

REFERENCES

[1] F. W. Chen, Y. Feng, Social network, risk-taking and corporate performance of startups: the moderating effect of environmental uncertainty[J]. Research and Development Management, 2019,31(02):20-33.

[2] P. Nguyen, M. Nakano, Board Size and Corporate Risk Taking:Further Evidence from Japan[J]. Corporate governance, 2012,20(4):369-387.

[3] P. Bromiley, Testing a Causal Model of Corporate Risk Taking and Performance[J]. Academy of Management Journal, 1991,34(1):37-59.

[4] J. H. Wang, N. Mao, Review and Prospects of Research on Enterprise Risk-taking[J]. Foreign Economics and Management, 2015,37(12):44-58.

[5] S. Wasserman, K. Faust, Social Network Analysis Methods and Applications[J]. Contemporary Sociology, 1994,91(435).

[6] J. R. Zhang, L. H. Wang, Wang F J. Will the management appointment network affect executive compensation? ——An empirical study based on social capital[J]. Management Review, 2018,30(06):136-148.