Study on the Influence of Regional Social Capital on the Cost Stickiness of GEM Enterprises

Yanan Wang[1], Zhaoya Zhu[2*]

{wynaaaa@126.com[1], 879110846@qq.com[2*]}

School of Economics and Management, Hebei University of Science and Technology, Shijiazhuang, China

Abstract. This paper selects the financial data of China's GEM enterprises from 2017 to 2021 for research. Using Stata15.0 to carry out linear regression of the model, the empirical analysis of the impact of regional social capital on cost stickiness, the study finds that regional social capital has a significant inhibitory effect on cost stickiness. Further analysis shows that regional social capital and corporate governance have a substitution effect on inhibiting cost stickiness. This paper expands the research on the influencing factors of cost stickiness and enriches the literature on the impact of regional social capital on firm cost management.

Keywords: regional social capital; cost stickiness; linear regression model

1 Introduction

Regional social capital, as one of the informal institutions, is embodied as follows: in areas with high regional social capital, there are dense social networks, strict social norms and a strong sense of trust among social members. Regional social capital plays an important role in the development of regional economy. On the one hand, regional social capital plays an important role in reducing the audit cost and transaction cost of enterprises, which is different from the ordinary mode of action such as physical capital and human capital. On the other hand, regional social capital, as an important informal system, can promote regional economic and social development by strengthening member contacts and establishing cooperation among members.

In the Government Work Report of The State Council in 2021, it is proposed to continue to complete the important task of "three to go, one to reduce and one to make up", among which "cost reduction" reflects the importance of improving the efficiency of cost management. Cost management is of great significance to the survival and development of enterprises. Although many literatures have paid attention to the influencing factors of cost stickiness, most researches have ignored the influence of informal institutions on cost stickiness. Different from previous studies, this paper empirically analyzes the impact of regional social capital on cost stickiness by taking enterprises listed on GEM from 2017 to 2021 as samples. The empirical results show that regional social capital can significantly reduce the cost stickiness of enterprises. At the same time, it is found that regional social capital and corporate governance have substitution effect on cost stickiness.

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Compared with the existing literatures, the possible contribution and value of this paper are as follows: (1) it enriches the research on the factors affecting cost stickiness. It has been pointed out that the main influencing factors of cost stickiness are adjustment cost, manager's optimistic expectation and agency cost. This paper examines the impact of social capital on cost stickiness in informal institutional areas, and expands the research on the influencing factors of cost stickiness. (2) This paper examines the inhibitory effect of regional social capital on cost stickiness, provides a new direction for how to reduce the cost stickiness of enterprises, enriches the literature on regional social capital and cost stickiness, and supplements the relevant researches on regional social capital at the firm level.

2 Theoretical analysis and research hypothesis

Many studies have pointed out that regional social capital will have an impact on the development of companies [1-2], mainly the management decisions of managers. Literature has shown that the governance capacity of listed companies in regions with high social capital will be stronger [3], and the agency costs of the first and second types will be lower. Miyamo pointed out that the audit fees of companies in regions with high social capital would be lower, because the social norms in these regions would encourage auditors to work harder and reduce the possible litigation risk. Hoi et al. believed that social capital would curb the abnormal rise of CEO compensation [4].

To sum up, it can be concluded from the literature that regional social capital will have an impact on managers' decision-making behavior. Managers in regions with high social capital are more inclined to follow social norms, reduce their opportunist motives, and avoid higher punishments due to opportunistic behaviors. This leads us to our first hypothesis:

H1: High regional social capital will reduce managers' opportunistic motivation and thus reduce cost stickiness.

Some literatures also hold that a more intensive social network is conducive to a good relationship among employees [5], which enhances employee satisfaction and work enthusiasm, and makes employees more willing to contribute to the organization. Managers in such a good relationship have more recognition of the organization, have more confidence in their employees, are reluctant to fire employees even when the company is in a downturn, and show more altruism, which can lead to higher adjustment costs.

Chen Hongbo et al. pointed out that high social capital will encourage enterprises to make innovation decisions [6], mainly through the improvement of regional trust, which shortens the negotiation time and reduces the complexity of contracts, so that managers will reduce their risk-avoiding behaviors. Yang Dexiang et al. pointed out that high social capital would stimulate employees' innovative behavior [7], and from multiple different dimensions, employees would have more interaction, closer relationship, and be more willing to share their own knowledge resources. Employees will find a sense of identity, belonging and so on from dense social networks. To sum up, managers in high social capital areas will be more optimistic and confident, believing that the decline in business volume is only temporary, and the increase in business volume is the long-term development trend. This leads us to the second hypothesis:

H2: High social capital makes managers and employees closely connected, enhances managers' optimism, and thus increases cost stickiness.

3 Research design

3.1 Sample selection and data source

In this paper, companies listed on chinext from 2017 to 2021 are selected as the initial samples, and the samples are processed as follows: 1. Remove the financial industry sample; 2. Remove samples of companies with ST and *ST; 3. Remove samples with missing values. Finally, 3133 sample observations were obtained. In order to prevent the extreme values in the sample from affecting the research results, the continuous variables were contracted at 1% and 99% levels. The financial data in this paper are from the WIND database, and the social capital data are from the official website of China Statistical Yearbook, provincial Statistical Yearbook and China City Business Credit Environment Index.

3.2 Definition and measurement of variables

(1) Explained variable

This paper selects the natural logarithm of the ratio of operating cost of GEM listed companies in the current year to that of the previous year as the explained variable.

(2) Explanatory variable

Rate of change of operating income (Ln R), virtual variable of income decline (D) and regional social capital (SC) were selected as explanatory variables. Social capital is measured from the three measurement directions of social trust, social norms and social network, and six indicators of regional trust, divorce rate, number of traffic accidents, social organization density, Internet penetration rate and telephone use frequency are selected to construct comprehensive regional social capital of each province. The measurement of each indicator is shown in **Table 1**. The principal component analysis of the above six indicators is carried out, and the first principal component is extracted to calculate the regional social capital index of each province.

Table 1. Social capital measurement table.

Measure	Measurement index	Measure method
Social trust	Regional trust	China city business credit environment index
Social regulation	Divorce rate	The number of divorces per province as a percentage of the region's average annual population
	Number of traffic	Number of traffic accidents by province
Social network	Social organization density	Number of social organizations per 10,000 people in each province
	Internet penetration rate	The ratio of the number of people using the Internet by province to the total population

	Telephone frequency	The ratio of total telephone subscribers to total population in each province

(3) Control variable

In order to control other factors that may affect cost stickiness, this paper draws on the studies of Wang Jitian (2023) [8]. Four economic variables (Econ-Vars) (Asset intensity (AI), Employee intensity (EI), Income decline for two consecutive years (Dty) and GDP growth rate (GDP)) were selected as control variables. Control Free cash flow (FCF), Dual, enterprise Size (Size), and Tobinq (Tobinq).

3.3 Model building

Most studies on cost stickiness refer to the model of Anderson (2003). [9] This paper will also take this model as the basic model and add some control variables affecting cost stickiness to the model to study the impact of regional social capital on cost stickiness.After adding control variables, the model is equation (1):

$$\mathrm{Ln}(\frac{\mathrm{Cost_{i,t}}}{\mathrm{Cost_{i,t-1}}}) = \beta_0 + \beta_1 \ln(\frac{\mathrm{R_{i,n,t}}}{\mathrm{R_{i,n,t-1}}}) + \beta_2 \mathrm{D_{i,n,t}} \times \ln(\frac{\mathrm{R_{i,n,t}}}{\mathrm{R_{i,n,t-1}}}) + \beta_3 \mathrm{SC_{n,t}} \times \mathrm{D_{i,n,t}} \times \ln \mathrm{R_{i,n,t}}$$
$$+\beta_4 \mathrm{SC_{n,t}} + \beta_5 \ln \mathrm{R_{i,n,t}} \times \mathrm{D_{i,n,t}} \times \text{Econ-Vars} + \beta_6 \text{Econ-Vars} + \beta_7 \text{Control-Vars} + \varepsilon_{i,n,t}. \quad (1)$$

In the above model, the tripartite cross term of regional social capital, business income change rate and income decline dummy variable is the focus of this paper, which represents the degree of influence of regional social capital on cost stickiness. If the regression coefficient is significantly positive, it indicates that regional social capital can reduce the cost stickiness of enterprises. If it is significantly negative, it indicates that regional social capital can increase the stickiness of enterprise cost.

4 Empirical results and analysis

Multiple regression analysis and robustness test are carried out on the main variables of the empirical study in this paper, and the specific results are as follows:

4.1 Multivariate regression analysis

Table 2 shows the regression results of regional social capital and cost stickiness of sample firms during 2017-2021. Column (1) tests whether the sample enterprises have cost stickiness. The results show that the coefficient of Ln R×D is -0.082, which is significant at 1% level, indicating that the sample enterprises generally have cost stickiness. Column (2) adds regional social capital (SC) and its cross term with cost stickiness (Ln R×D×SC). The coefficient of the cross-multiplication term between regional social capital and cost stickiness (Ln R×D×SC) is 0.042, which is significant at 1% level, indicating that regional social capital can reduce the stickiness of enterprise costs. Hypothesis H1 is preliminarily verified and hypothesis H2 is overturned. In column (3), control variables were added on the basis of column (2), and the coefficient of the cross-multiplication term (Ln R×D×SC) was still significantly positive, further testing the hypothesis H1 and overturning the hypothesis H2.

Table 2. Regression results.

	LnC				LnC		
	(1)	(2)	(3)		(1)	(2)	(3)
LnR	0.965**	0.966***	0.966***	FCF			-0.000**
	(93.76)	(93.84)	(88.80)				(-3.48)
Ln R×D	-0.082*	-0.111***	-0.126**	Dual			0.004
	(-3.55)	(-4.46)	(-2.67)				(1.07)
Ln		0.042***	0.039***	Dty			-0.031**
		(3.07)	(2.84)				(-2.87)
SC		0.002	0.002	Size			-0.001
		(0.83)	(1.05)				(-0.43)
Ln			0.016*	GDP			-0.002
			(1.75)				(-0.08)
Ln			-0.018	Tobinq			-0.002*
			(-1.01)				(-1.69)
Ln			-0.094**	_cons	0.027**	0.025**	0.044
			(-2.29)		(3.49)	(3.23)	(0.72)
Ln			0.199**	Year	YES	YES	YES
			(2.01)	Industry	YES	YES	YES
AI			0.002	N	3133	3133	3133
			(1.16)	R2	0.847	0.848	0.850
EI			0.004	Adj. R2	0.847	0.847	0.848
			(1.61)				

Note: ***, **, and * are significant at 1%, 5%, and 10% levels respectively (double-tailed).

4.2 Robustness test

(1) Fixed effect model

In the main test, ols was used to study the relationship between regional social capital and cost stickiness, and the fixed effect model was used to conduct robustness test to further control the individual fixed effect. Column (1) of **Table 3** shows that the coefficient of the fixed effect cross-multiplication term (Ln R×D×SC) of the control company is still significant at the 1% level, and the hypothesis H1 is still valid.

(2) Propensity Score Matching

This paper chooses the propensity score matching (PSM) method to alleviate the sample selection bias. Specifically, the regional social capital index is grouped according to the annual median of the industry, and asset intensity (AI), employee intensity (EI), revenue decline for two consecutive years (Dty), GDP growth rate (GDP), free cash flow (FCF), Dual and enterprise Size (Size) are used as covariates. The one-match four-nearest neighbor matching method is used [8]. The regression results after matching are shown in Column (2) of **Table 3**, and the coefficient of interaction term is still significant, indicating that the results are robust.

Table 3. Robustness test.

	(1) Ln C	(2) Ln C
LnR	0.958***	0.967***
	(71.41)	(88.84)
Ln R×D	-0.150***	-0.128***
	(-2.62)	(-2.60)
Ln R×D×SC	0.047***	0.040***
	(2.81)	(2.70)
SC	-0.003	0.002
	(-0.30)	(1.14)
_cons	-0.346	0.045
	(-1.63)	(0.73)
Control-Vars	YES	YES
Individual	YES	NO
Year	YES	YES
Industry	NO	YES
N	3133	3131
R2	0.847	0.850
Adj. R2	0.847	0.848

Table 4. Further analyzes the results.

	(1) Low level Ln C	(2) High level Ln C
LnR	0.963***	0.994***
	(64.06)	(60.78)
Ln R×D	-0.106	-0.174***
	(-1.49)	(-2.65)
Ln R×D×SC	0.061***	0.034*
	(3.09)	(1.69)
SC	0.005*	0.000
	(1.72)	(0.14)
_cons	0.142	0.043
	(1.21)	(0.52)
Control-Vars	YES	YES
Year	YES	YES
Industry	YES	YES
N	1566	1566
R2	0.855	0.847
Adj. R2	0.852	0.845

5 Further analysis

Corporate governance, as an internal environmental factor of enterprises, can reduce cost stickiness. To study the relationship between regional social capital and corporate governance, the samples were divided into two groups with high and low levels of corporate governance, and regression was conducted separately. Among them, the level of corporate governance is measured by the salary of the top three executives [10]. Conversely, it indicates a low level of corporate governance. From columns (1) and (2) of **Table 4**, it can be seen that the coefficient of the interaction term (Ln R×D×SC) of the group with low corporate governance level is 0.061, which is significant at the level of 1%. In the group with high level of corporate governance, the coefficient of Ln R×D×SC is 0.034, which is significant at the level of 10%. The results show that the inhibitory effect of social capital on cost stickiness is more significant in the group with low corporate governance level. The inhibitory effect of social capital on cost stickiness is weak in the group with high level of corporate governance. The inhibitory effect of corporate governance level and regional social capital on cost stickiness has a substitution effect.

6 Conclusion

Using the GEM listed companies from 2017 to 2021 as the research sample, this paper empirically analyzes the impact of regional social capital on cost stickiness. The results show that cost stickiness is common in GEM listed companies, and regional social capital can reduce cost stickiness. The robustness test is carried out through the fixed effect model and the propensity score matching method to verify that the conclusions are still correct. Further analysis shows that regional social capital and corporate governance have a substitution effect on the inhibitory effect of corporate cost stickiness.

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