Research on the Relationship between Corporate Social Responsibility and Commercial Credit Financing-Empirical Analysis Based on Big Data of Shanghai and Shenzhen A-share Enterprises

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Abstract. Based on the big data of Shanghai and Shenzhen stock exchanges A-share listed companies from 2009 to 2019, this paper uses fixed effect model to analyze the impact mechanism of corporate social responsibility on commercial credit financing. The results show that: there is a significant negative relationship between corporate social responsibility and commercial credit financing, and the degree of market competition positively adjusts the relationship between the two. Further research finds that corporate social responsibility will increase cash holdings and then affect commercial credit financing.

1 Introduction

With the concern of social responsibility from all walks of life, academia has done a lot of research on corporate social responsibility. Most of the existing researches on corporate social responsibility focus on financial performance, brand value, corporate reputation, financing constraints and so on [1] [2]. From the perspective of financial financing, most of the existing articles discuss it from the perspective of equity financing and debt financing, and less discuss the role of corporate social responsibility in commercial credit financing. Combined with China's economic environment, we find that compared with equity financing and bank lending, commercial credit financing is a kind of short-term financing provided by suppliers and partners out of trust relationship. In order to adapt to the new trend of research, this paper chooses a more detailed perspective of commercial credit financing to explore the impact of corporate social responsibility.

This paper studies the commercial credit financing under the Chinese market environment, discusses whether corporate social responsibility can promote commercial credit financing, and the influence mechanism of corporate social responsibility on commercial credit financing.

2 Literature review and research hypothesis

2.1 Corporate social responsibility and commercial credit financing

According to the stakeholder theory, while pursuing economic interests in the market competition, enterprises should not ignore the interest expectations and demands of stakeholders. They need to establish and maintain a good image to maintain and enhance the relationship with stakeholders, and then obtain the positive response of stakeholders and resource support. A large number of studies have shown that the fulfillment of social responsibility has become the main channel for enterprises to communicate with stakeholders indirectly, maintain relations and obtain resources [3] [4]. First of all, corporate reporting social responsibility information helps investors to understand the relevant information of the enterprise, make a clearer and more accurate prediction of the development of the enterprise, and alleviate the information asymmetry. At the same time, based on the signal transmission theory, corporate can send a positive signal to investors, build a good corporate image, and obtain the confidence of investors by actively fulfilling social responsibility. Secondly, when enterprises fulfill their social responsibilities, such as social donation and environmental protection, they will be strongly supported by government departments, such as giving policies and resources to corporate, so as to ease financing constraints. Therefore, corporate social responsibility can be financed from the government, investors and other major external financing channels. Because of the high hidden cost of

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commercial credit financing (such as cash discount at the expense of on-time payment), enterprises will give priority to bank loans, equity and debt financing, and use less commercial credit financing .Based on this, this paper proposes assumption 1:

H1: Corporate social responsibility cannot bring more commercial credit financing for enterprises.

2.2 Corporate social responsibility, market competition and commercial credit financing

The production and operation activities of enterprises are inseparable from the market. As the external environment of enterprise operation, the market competition environment is bound to have an impact on the relationship between social responsibility performance and commercial credit financing. China is in the period of economic transformation, and the market environment is highly competitive. Therefore, market factors may affect the motivation of corporate social responsibility and the effect of corporate social responsibility. Based on this, this paper explores the impact of competition intensity on the relationship between the two. The market competition environment will affect the relationship between enterprises and upstream and downstream. Generally speaking, when the concentration of the industry is high, the enterprise has higher monopoly ability, the more suppliers and customers carry out the purchasing and sales business with, the more transactions are, the less prominent the benefits of corporate social responsibility in the long-term repeated business game. In the industry with fierce market competition, there are many competitors with the same strength. If enterprises want to obtain more financing, they must stand out from many enterprises. At this time, the benefits of corporate social responsibility can bring more credit financing, equity and debt financing for enterprises, and further reduce the number of commercial credit financing. Based on this, this paper proposes assumption 2:

H2: The degree of market competition will positively adjust the relationship between corporate social responsibility and commercial credit financing.

3 Research and design

3.1 Sample selection and data source

This paper selects the annual data of Shanghai and Shenzhen stock exchange's A-share listed companies from 2009 to 2019, excluding the samples of financial industry, ST and * ST companies, finally obtains 858 enterprises and 5415 data. Social responsibility data comes from RKS csr ratings reports, and other data comes from CASMR database and Wind database. In order to avoid the influence of outliers and extreme values, the main continuous variables are reduced by 1%.

3.2 Definition of variables

3.2.1 Corporate social responsibility

In this paper, RKS's evaluation results of social responsibility reports are selected as our variables such as corporate social responsibility (Csr). The higher the social responsibility score, the better the corporate social responsibility performance.

3.2.2 Commercial credit financing

Referring to the practice of existing literature [5][6], this paper uses the proportion of the sum of accounts receivable, notes payable and advance receivables in the total assets at the end of last year to measure the commercial credit financing. That is, commercial credit financing Tc= (accounts payable + notes payable + advance receivables) / total assets at the end of last year.

3.2.3 Other variables:

Referring to the existing literature [6] , this paper controls the relevant variables of enterprise scale (Size), financial leverage (Lev), growth ability (Growth), mortgage ability (Fa), bank loan (Bank), profitability (Roa), net cash flow of operating activities (Cfo), equity concentration (Top10), Tobin Q (Tbq), enterprise age (Age) and enterprise nature (Soe). Hhi index is chosen as the agent variable for market competition,and sets up the year and industry dummy variables.

3.3 Model construction

In order to test the above hypothesis, this paper constructs models (1)-(3).

$$
\begin{aligned}
Tc = {} & \beta_0 + \beta_1 Csr + \beta_2 Lev + \beta_3 Size + \beta_4 Roa \\
& + \beta_5 Growth + \beta_6 Cfo + \beta_7 Fa + \beta_8 Bank + \beta_9 Top10 \quad (1)\\
& + \beta_{10} Soe + \beta_{11} Age + \beta_{12} Tbq + \delta Industry + \theta Year + \varepsilon
\end{aligned}
$$

$$
\begin{aligned}
Tc = {} & \beta_0 + \beta_1 Csr + \beta_2 Hhi + \beta_3 Lev + \beta_4 Size + \beta_5 Roa \\
& + \beta_6 Growth + \beta_7 Cfo + \beta_8 Fa + \beta_9 Bank + \beta_{10} Top10 \quad (2)\\
& + \beta_{11} Soe + \beta_{12} Age + \beta_{13} Tbq + \delta Industry + \theta Year + \varepsilon
\end{aligned}
$$

$$
\begin{aligned}
Tc = {} & \beta_0 + \beta_1 Csr + \beta_2 Hhi + \beta_3 Csr * Hhi + \beta_4 Lev \\
& + \beta_5 Size + \beta_6 Roa + \beta_7 Growth + \beta_8 Cfo + \beta_9 Fa \\
& + \beta_{10} Bank + \beta_{11} Top10 + \beta_{12} Soe + \beta_{13} Age \\
& + \beta_{14} Tbq + \delta Industry + \theta Year + \varepsilon \quad (3)
\end{aligned}
$$

4 Regression analysis

4.1 Test results of main assumptions

This paper uses panel data fixed effect model to test the impact of social responsibility on commercial credit financing. The results of Table 1 (1) (2) show that the regression coefficient of corporate social responsibility to

corporate competitiveness is negative, and it is significant at the level of 5%, indicating that the fulfillment of corporate social responsibility by listed companies will restrict commercial credit financing. It supports the theoretical expectation of hypothesis 1. The result of model (4) shows that the degree of market competition positively adjusts the relationship between corporate social responsibility and commercial credit financing, which supports the theoretical expectation of hypothesis 2.

Table1. Regression results.

Variables	Tc			
	(1)	(2)	(3)	(4)
Csr	-0.001**	-0.000**	-0.000**	-0.000**
Hhi			0.007	0.008
Csr*Hhi				0.005**
All controls	Yes	Yes	Yes	Yes
Constant	0.223***	-0.283	-0.285	-0.321*
N	5，415	5，415	5，415	5，415
R-squared	0.037	0.305	0.310	0.311
Industry fe	Yes	Yes	Yes	Yes
Year fe	Yes	Yes	Yes	Yes

Note: *** p<0.01, ** p<0.05, * p<0.1

4.2 Further analysis: impact mechanism

In order to better improve the logical framework of this paper, this paper further tests the impact mechanism of corporate social responsibility on commercial credit financing. The liquidity of cash and cash equivalents in assets is the strongest, which has the greatest effect on the company's operating turnover and debt repayment. [7] Scholars put forward the agency motivation of cash holding. They think that the agency problem between shareholders and management will increase the agency cost. As the most liquid asset, cash is easy to become a tool for managers to seek personal interests. In order to solve the agency problem, it is necessary to reduce the information asymmetry between owners and operators. The fulfillment of social responsibility can promote the information exchange among stakeholders, effectively reduce the occurrence of information asymmetry, and then reduce on-the-job consumption, avoid the fraud of on-the-job consumption through cash flow, and then realize the adequacy of the company's cash holdings. The amount of cash holdings determines the speed of enterprise liquidity. The more cash holdings an enterprise has, the stronger its ability to pay. It is not necessary to lose the cash discount provided by the supplier, but to choose the commercial credit financing brought by deferred payment. Therefore, this paper tests whether corporate social responsibility will increase cash holdings and further weaken commercial credit financing. According to the mediating effect test method [8], the following models are set up:

$$Csr = \beta_0 + \beta_1 Cash + \beta_2 Lev + \beta_3 Size + \beta_4 Roa$$
$$+ \beta_5 Growth + \beta_6 Cfo + \beta_7 Fa + \beta_8 Bank + \beta_9 Top10 \quad (4)$$
$$+ \beta_{10} Soe + \beta_{11} Age + \beta_{12} Tbq + \delta Industry + \theta Year + \varepsilon$$

$$Tc = \beta_0 + \beta_1 Csr + \beta_2 Cash + \beta_3 Lev + \beta_4 Size$$
$$+ \beta_5 Roa + \beta_6 Growth + \beta_7 Cfo + \beta_8 Fa$$
$$+ \beta_9 Bank + \beta_{10} Top10 + \beta_{11} Soe + \beta_{12} Age \quad (5)$$
$$+ \beta_{13} Tbq + \delta Industry + \theta Year + \varepsilon$$

Table 2 regression result column (2) shows that the coefficient of corporate social responsibility and cash holding is significantly positive, indicating that corporate social responsibility will increase corporate cash holding. Column (3) shows that the coefficient of cash and commercial credit financing is significantly negative, indicating that there is a partial mediating effect. In order to ensure the reliability of this conclusion, sobel test is carried out, and the results show that the mediating effect is still robust.

Table2. Analysis of influence mechanism.

Variables	Tc	Cash	Tc
	(1)	(2)	(3)
Csr	-0.000**	39086978.545***	-0.000*
Cash			-0.000**
Constant	-0.283	-6.694e+10***	-0.364*
All controls	Yes	Yes	Yes
N	5415	5415	5415
R-squared	0.310	0.170	0.312
Industry fe	Yes	Yes	Yes
Year fe	Yes	Yes	Yes

5 Robustness test

5.1 Instrumental variable method

Although many control variables are set in this paper, there may be some missing variables and endogeneity problems. Therefore, in order to test the endogeneity problems that may exist in the model, this paper selects the lag period of corporate social responsibility as the tool variable of independent variable, and uses the tool variable to test the endogeneity. The results of two-stage regression are shown in Table 3 (1) (2).The first stage regression result (1) is significantly positive, indicating that instrumental variables have good prediction effect on explanatory variables. The second stage regression result (2) shows that the coefficient of corporate social responsibility and commercial credit financing is significantly negative, indicating that the conclusion of this paper is still robust after excluding endogeneity.

Table3. Robustness test.

Variables	Csr	Tc		
	(1)	(2)	(3)	(4)
l.Csr	0.893***			

Variables	Csr	Tc		
	(1)	(2)	(3)	(4)
Csr		-0.001***	-0.000*	-0.002***
imr2			-0.033	
Constant	-11.036***	0.135***	0.442**	-2.130**
All controls	Yes	Yes	Yes	Yes
Observations	4404	4404	5413	5415
R-squared	0.832	0.680	0.687	0.089
Industry fe	Yes	Yes	Yes	Yes
Year fe	Yes	Yes	Yes	Yes

5.2 Heckman two stage model

In order to solve the problem of sample self selection in principal regression, this paper uses Heckman two-stage model to test. Firstly, according to the median of corporate social responsibility, corporate social responsibility is divided into dummy variables, and mimills ratio (IMR) is calculated by probit model regression, and then the calculated IMR is substituted into the second stage model for regression analysis. The results are shown in Table 8 (3). In the second stage, the coefficient of CSR is still significantly negative, which indicates that the results are robust.

5.3 Substitution variable method

With reference to the existing research [9],this paper also replaces the dependent variable measurement method for robustness test, and uses the method of "accounts payable + bills payable + advance receivables - accounts receivable - bills receivable - prepayment) / operating income" to measure commercial credit financing. That is, the commercial credit obtained from the supplier minus the commercial credit provided to the customer. The regression results are still significant as shown in Table 3 (4).

6 Conclusions

The results show that: corporate social responsibility cannot bring more commercial credit financing, the degree of market competition can positively adjust the relationship between corporate social responsibility and commercial credit financing, corporate social responsibility can further weaken the need for commercial credit financing by increasing cash holdings.

According to the conclusion of this paper, the following suggestions are put forward: (1) enterprises should actively undertake social responsibility, which can make it easier for enterprises to obtain the favor of banks and investors, and ease the financing constraints of enterprises, without sacrificing cash discount for commercial credit financing. (2) We should limit the internal cash holding limit, strengthen the cash management and limit the opportunism of the management.

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