Does state-owned capital matter for private enterprise: a research based on trade credit

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Abstract. The introduction of state-owned capital into private enterprises is an important form of mixed-ownership reform, but it is often labeled as 'state advancement and private retreat' or 'retrogression in reform' in China. Based on the sample of listed private manufacturers, we find the introduction of state-owned capital can significantly improve trade credit of private enterprises. Due to the complementary advantages, private enterprises benefit from state-owned capital by getting more trade credit. Moreover, we find there will be a profound impact only in the regions with high degrees of marketization. An important policy implication is that we should continue to promote market-oriented reforms and focus on encouraging state-owned capital to enter private enterprises in high marketization regions.

Keywords: State-owned capital, Private enterprises, Trade credit.

1 Introduction

Although China began to vigorously carry out the mixed-ownership reform in 2013 to improve company competitiveness, there are still great controversies about the effect of the reform. Especially, it is often labeled as 'state advancement and private retreat' or 'retrogression in reform' when state-owned capital enters private enterprises. There are many differences between state-owned capital and private capital. For example, state-owned capital bears serious policy burdens (Lin et al.,1998) while private capital rarely has the problem. So, there will be conflicts when state-owned capital and private capital encounter. Therefore, it is vital to reveal how state-owned capital affects private enterprises to guide the mix-ownership reform. The current research in this field is very rare.

In China, private enterprises face more serious financing constraints than state-owned enterprises (Bai et al.,2021) and they rely more on trade credit (Bai et al.,2021; Wang et al.,2019). Trade credit can ease the friction in sales growth (Hill et al., 2012), improve operation performance, mitigate information asymmetry, and thus promote industry growth (D'Mello and Toscano, 2020). So, if private enterprises can benefit from state-owned capital through getting more trade credit, we believe that state-owned capital and private capital are complementary with advantages, but not 'state advancement and private retreat' when state-

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owned capital enters private enterprises. This paper explores whether state-owned capital benefits private enterprises based on trade credit.

In this paper, we establish OLS models to test the influence of state-owned capital on private enterprises in view of trade credit based on a sample of manufacturing enterprises. The results show that the private enterprises benefit from state-owned capital by helping themselves get more trade credit. The results imply that the two heterogeneous capitals achieve complementary advantages. State-owned capital and private capital develop together when state-owned capital enters private enterprises but not 'state advancement and private retreat'. Due to the great unbalanced regional development, we further partition the sample based on marketization levels and find that private enterprises in regions with high marketization levels could obtain more benefits in the introduction of state-owned capital.

2. Data and methodology

We define private enterprises as enterprises controlled by natural persons or family enterprises. We preclude these enterprises which are privatized through equity transfer after IPO because these enterprises have the gene of state-owned capital. Considering China being a big manufacturing country, and manufacturing companies, with different characteristics from non-manufacturing companies, accounting for the majority of listed companies, we choose only the manufacturing sector companies listed on the Shanghai and Shenzhen Stock Exchanges from 2008 to 2018. The industry classification is based on the Securities Regulatory Commission 2012 Edition. After omitting observations with missing data, the final sample consists of 1600 observations.

In this paper, we utilize financing data from CSMAR. We collect data about the nature of shareholders manually from financial statements because of there being no direct data on the nature of capital in the existing databases. Specifically, we judge the nature of capital of the top ten shareholders of listed companies one by one and summarize state-owned shares to get the proportion of state-owned capital. We define the proportion of state-owned capital as *State*.

We utilize the OLS model to reveal how state-owned capital affects the trade credit of private enterprises. We establish basic model in equation (1):

$$Tc = \beta_0 + \beta_1 State + \beta_2 Size + \beta_3 Lev + \beta_4 Liq + \beta_5 Roe + \beta_6 Cash + \beta_7 Age + \beta_8 Growth + \varepsilon \quad (1)$$

Furthermore, the results may be biased due to reverse causality or sample selectivity bias. To solve these possible endogenous problems, we carry out two robustness tests. First, independent variables are lagged by one year to reduce the influence of reverse causality. Second, because the state-owned capital enters only a part of private enterprises, there might be sample selectivity bias. We use Heckman's two-stage method to solve the problem. In the first stage, we utilize the probit model to estimate the likelihood of state-owned capital entering the top ten shareholders of private companies and get the Inverse Mills ratio (Imr). The model is designed in equation (2):

$$State = \beta_0 + \beta_1 Size + \beta_2 Lev + \beta_3 Roe + \beta_4 Age + \beta_5 Growth + \beta_6 Indr + \beta_7 Dual + \beta_8 First + \beta_9 Board + \beta_{10} At + \varepsilon \quad (2)$$

Then, we add the Inverse Mills ratio (*Imr*) into the second-stage regression model (3):

$$Tc = \beta_0 + \beta_1 State + \beta_2 Liq + \beta_3 Cash + \beta_4 Size + \beta_5 Lev + \beta_6 Roe + \beta_7 Age + \beta_8 Growth + \beta_9 Imr + \varepsilon \quad (3)$$

We consider two commonly used measures of trade credit (*Tc*): *Tc1* and *Tc2*. *Tc1* is accounts payable divided by operating cost at fiscal year ends. *Tc2 is* equal to accounts

payable minus prepaid accounts and then divided by operating cost. *Size* is the logarithm of the total asset. *Liq* is the ratio of current assets to current debt. *Roe* is the ratio of net income to average total equity. *Age* is the logarithm of years of the listing. *Cash* is the ratio of net cash flow from operating activities to total assets. *Lev* equals total debt divided by total assets. *Growth* is the growth rate of operating income. To exclude outliers, the variables are winsorized.

Consistent with existing literature, this paper utilizes the marketization index to represent the marketization level. We define the top 12 regions in the marketization index as high marketization regions (the dummy variable *Above* equals 1), otherwise, low marketization regions (the dummy variable *Above* equals 0) to further test the impact of marketization levels.

3 Results

The results of the full sample in Table 1 show that the coefficients of *State* are significantly positive at the 1% level. The results indicate that state-owned capital improves trade credit of private enterprises. Based on the theory of signaling, state-owned capital may transmit a reliable signal about the invested private enterprise to the market, making other companies willing to provide more trade credit. Furthermore, state-owned capital can provide information superiority, system support, and government privilege for private enterprises (Xiao et al., 2013). All these factors are beneficial to help private enterprises gain more trade credit to achieve resource complementarity.

Table 1. The regression results of full sample and sub-samples [a].

Variables	Full sample		*Subsample High Marketization*		*Subsample Low Marketization*	
	Tc1	*Tc2*	*Tc1*	*Tc2*	*Tc1*	*Tc2*
State	0.0030***	0.0025***	0.0027***	0.0025***	0.0023	0.0020
	(4.90)	(3.73)	(4.03)	(3.43)	(1.58)	(1.32)
Size	-0.0162***	-0.0156***	-0.0019	-0.0090*	-0.0404***	-0.0386***
	(-4.18)	(-3.78)	(-0.44)	(-1.94)	(-4.37)	(-4.04)
Lev	0.1940***	0.1715***	0.1436***	0.1237***	0.3791***	0.3610***
	(8.30)	(6.88)	(6.11)	(4.81)	(5.50)	(5.07)
Liq	-0.0044*	-0.0067***	-0.0047*	-0.0089***	-0.0031	-0.0011
	(-1.90)	(-2.68)	(-1.95)	(-3.40)	(-0.51)	(-0.16)
Roe	-0.0191	-0.0557	-0.0427	-0.0446	0.0800	-0.0206
	(-0.49)	(-1.36)	(-1.02)	(-0.97)	(0.88)	(-0.22)
Cash	-0.3304***	-0.1061*	-0.2127***	-0.1441**	-0.4621***	0.0385
	(-6.38)	(-1.92)	(-3.90)	(-2.42)	(-3.37)	(0.27)
Age	-0.0163**	-0.0344***	-0.0300***	-0.0282***	-0.0348*	-0.0418**
	(-2.23)	(-4.41)	(-3.74)	(-3.21)	(-1.77)	(-2.05)
Growth	-0.0021	-0.0109	0.0055	-0.0031	-0.0419*	-0.0241
	(-0.20)	(-0.98)	(0.48)	(-0.25)	(-1.73)	(-0.97)
_cons	0.4609***	0.3914***	0.1806**	0.2732***	0.9687***	0.7778***
	(5.63)	(4.49)	(2.02)	(2.79)	(4.90)	(3.80)
Year	Control	Control	Control	Control	Control	Control
N	1600	1600	1272	1272	328	328
F-value	14.21	15.81	9.63	12.09	5.18	4.88
R^2	0.1393	0.1525	0.1215	0.1479	0.2317	0.2212
Adj. R^2	0.1295	0.1429	0.1089	0.1357	0.1870	0.1758

[a] T-statistics are reported in parentheses. ***,** and * denote significance at the 1%, 5% and 10% levels,

respectively.

Table 1 also presents the impact of the marketization level. The coefficients of State are significant in the subsample of high marketization level (Above=1) and they are no longer significant in the subsample of low marketization level (Above=0). We also partition the sample according to the median of the marketization index, the results have no difference. The results of the subsamples suggest high marketization levels can help state-own capital play a more effective role in helping private enterprises get more trade credit and realize complementary advantages with private capital.

Table 2. The results of robustness tests [a].

Variables	The test of lagged one period of all independent variables		Heckman's two-stage test		
	Col1:Tc1	*Col2:Tc2*	*Col3:State*	*Col4:Tc1*	*Col5:Tc2*
State	0.0036***	0.0031***	-	0.0033***	0.0029***
	(5.53)	(4.37)	-	(5.06)	(4.08)
Liq	-0.0025	-0.0041	-	-0.0040*	-0.0062**
	(-0.99)	(-1.56)	-	(-1.70)	(-2.47)
Cash	-0.3756***	-0.2075***	-	-0.3136***	-0.0864
	(-6.79)	(-3.54)	-	(-5.98)	(-1.54)
Size	-0.0196***	-0.0164***	0.3798***	-0.0146***	-0.0140***
	(-4.70)	(-3.70)	(7.82)	(-3.71)	(-3.31)
Lev	0.1917***	0.1792***	-0.5378**	0.1981***	0.1772***
	(7.61)	(6.72)	(-2.45)	(8.25)	(6.89)
Roe	-0.0158	-0.0449	0.8000**	-0.0380	-0.0723*
	(-0.38)	(-1.02)	(2.13)	(-0.97)	(-1.73)
Age	-0.0191**	-0.0405***	0.2039***	-0.0196***	-0.0383***
	(-2.50)	(-5.03)	(2.97)	(-2.64)	(-4.81)
Growth	-0.0045	-0.0059	0.0992	0.0002	-0.0091
	(-0.41)	(-0.50)	(0.76)	(0.02)	(-0.82)
Indr	-	-	-0.0837	-	-
	-	-	(-0.09)	-	-
Dual	-	-	-0.0377	-	-
	-	-	(-0.39)	-	-
First	-	-	-0.0132***	-	-
	-	-	(-3.58)	-	-
Board	-		-0.0438	-	-
	-	-	(-0.16)	-	-
At	-	--	0.1133	-	-
	-		(1.42)	-	-
Imr	-	-	-	-0.0040	-0.0076
	-	-	-	(-0.58)	(-1.03)
_cons	0.5642***	0.4213***	-6.7707***	0.4267***	0.3555***
	(6.39)	(4.51)	(-5.71)	(5.15)	(4.01)
Year	Control	Control	Control	Control	Control
N	1446	1446	1683	1581	1581
F-value	13.28	15.11	-	13.50	15.04
R^2	0.1366	0.1525	-	0.1411	0.1547
Adj. R^2	0.1263	0.1424	-	0.1306	0.1444

[a] T-statistics are reported in parentheses. ***,** and *denote significance at the 1%，5% and 10% levels, respectively.

4 Conclusion

Table 2 presents the results of lagged one-period data of all independent variables and Heckman's two-stage test. It shows that the coefficients of State with a lag of one year are still significant at the 1% level in columns 1 and 2 (If we only lag one-period of the explanatory variable State, the coefficient of L.State is at least 1% significant and the conclusion remains the same). After controlling the selective bias, the coefficients of State are all significant at the 1% level in columns 4 and 5. The results of Table 2 indicate that the research results are robust.

This paper reveals that the entry of state-owned capital can benefit private enterprises by helping them obtain more trade credit and it is conducive to mitigate the financial constraint of private enterprise. The results indicate that state-owned capital and private capital can realize complementary advantages to some degree. The results don't support the view of 'state advancement and private retreat' and 'retrogression in reform'. In addition, our results show that private enterprises in high marketization regions are more likely to benefit from state-owned capital. The results imply that we should focus on promoting the mixed-ownership reform in areas with high marketization levels by introducing state-owned capital, and continue to promote the marketization process in China.

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