

The governance Effect of Heterogeneous Debts on Over-investment: Evidence from China

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Abstract: This paper sets out to observe the governance effect of the heterogeneous debts on the over-investment behavior by Chinese companies. On this basis, the authors examined the different relationships between heterogeneous debts and over-investment. The study results indicate that various types of debt have different governance effect on over-investment. Trade credit can curb over-investment effectively and bank loans may exacerbate over-investment.

Keywords: Over-investment; Trade credit; Bank loans

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1 Introduction

Over the past decade, the over-investment by Chinese firms have seriously damaged the development of China's economy. Default risk, therefore, arises at the same time. There are some famous cases of business failure caused by over-investment, (e.g., the bankruptcy of Xingrun Real Estate Corp in 2014, the credit downgrading of the Wuhan City Construction Investment & Development Corp. in 2014, Chaori Solar Corp.'s default on its corporate bonds in 2015). According to cash flow theory, the manager intends to overinvest the surplus cash in less profitable projects rather than distributes them to shareholder, which causes the over-investment problem and reduces the company's value^[1]. Debt contract can force the manager to pay out excess cash and cut down the amount of cash under manager's discretion, therefore, the debt have a governance effect on over-investment^[2]. Some Chinese scholars argued that debt contracts have failed to exert governance effect on the over-investment^[3-4]. These

research results are inconsistent because they all treat debt as a single funding source. It is noteworthy that the debt instruments vary in specific features, such as accessibility, maturity, sources of funds, collateral, transaction cost, property of receipt, incentives to manager, influence on cash flow and others^[5]. Therefore, treating debt from different creditors as single source of fund ignores its various features. It is necessary to observe the debt's governance effect on over-investment from the viewpoint of debt heterogeneity rather than debt homogeneity.

2 The literature review and hypothesis

2.1 The governance effect of debt funds on over-investment

There are abundant arguments about how debt financing governs the reduction of over-investment, but scholars do not find much agreement. Jensen and Meckling noted that once the cash required to finance the positive projects are met, the manager intend to put excessive cash into capital expenditure (such as: real estates) rather than distribute them to shareholder. To pursue his personal achievements, the manager may overinvest the free cash into the negative NPV projects regardless of shareholder's interest^[6]. However, a debt contract can force the manager to make repayment at certain time, which can reduce the amount of available cash flow under manager's control, thereby hindering the manager's tendency to make over-investment. However, Some domestic scholars noted that debt indentures cannot reduce over-investment in China's public firms, especially in China's stated-owned firms^[7-8]. The main reason of conflicting results is that the scholars treat the debt funding as single source of fund rather than multiple sources of fund. To study the debt heterogeneity, some researchers usually divide the debt

funding into several heterogeneous debts. For example, Colla subdivided the debt funding for American listed firms into five types of different debt funds: commercial paper, term loans, capital leases, drawn credit lines, senior bonds and notes, and subordinated bonds and notes^[5]. With the development of China's financial market, the channels available for debt financing is increasing. The debt structure of China's public firms increasingly consists of ample fundraising instruments. However, China's financial system is marked by a high degree of government intervention in debt lending, especially in the bank lending market. Under the protection of the government, stated-owned firms are more likely to obtain bank loans cheaply. It is easy for stated-owned firms to extend the credit period for overdue bank loans if the default risk is high, and therefore the budget constraint of bank loans become very soft to the debtor. Additionally, the trade credit is also an important long-term source of debt funds for the Chinese listed firms, some firms can mature solely on the capital raised from the trade credit^[9]. In summary, the following heterogeneous debts are proposed: (1) trade credit (including accounts payable, notes payable, and unearned revenue), (2) bank loans. The paper is going to observe whether the heterogeneous debts have different governance effect of reducing the over-investment.

2.2 The governance effect of trade credit on over-investment

Trade credit is a credit extended by the supplier to the buyer in the process of trading products or services; it is granted to facilitate the purchase without need for immediate payment. Trade credit is always treated by the buyer as an important source of short-term debt funding. Trade credit listed on the balance sheet includes accounts payable, unearned revenue, and notes payable from suppliers. Due to the poor credit system, the delinquency of trade credit is very common in Chinese publicly listed firms, who maintain a large amount of overdue trade credits, and most of them are overdue for a year. Statistically speaking, the total amount of overdue trade credit in Chinese publicly listed firms was at 12,430,000,000,000 RMB until the end of 2012, which accounted for 19.5% of the total liabilities^[9]. Hence, the trade credit has become a significant long-term debt fund for Chinese public firms. As creditors, suppliers know how to assess the financial position of debtors through frequent daily selling and purchasing transactions and are thus able to respond

timely if debtors' default risk increases. Suppliers can threaten to stop delivering goods if debtors operate in violation of the interests of suppliers or they can dismiss trading contracts if debtors suffer big losses. Thus, debtors must be very prudent in choosing investment projects^[4]. Suppliers can help to reduce debtors' agency cost by setting the relevant constraint terms in the trade contract, which will decrease the default risk caused by over-investment^[4,10]. Hence, hypothesis 1 is proposed

H1. Trade credit can curb over-investment in Chinese public firms, which means that the higher the level of trade credit, the less over-investment.

2.3 The governance effect of bank loans on over-investment

Bank loans are also significant sources of debt funding. Without participating in operating activities, banks know less than suppliers about the financial position of debtors. It is costly and time-consuming for banks to get efficient information about debtors' business operations. Therefore, it is difficult for banks to control debtors' investment decisions ex ante, and they must accept the loss from investment failure ex post. To protect banks' own interests, they usually ask debtors to pledge collateral on bank loans for which they sue on default. Moreover, most of the Chinese publicly listed firms are owned by the government. Hence, the Chinese government plays both roles of creditor and debtor and Chinese publicly listed firms get little punishment in default. In this situation, the budget constraints of bank loans in China become very soft^[11]. Under the soft budget constraints, bank loans increase the agency cost and facilitate the exploitation by the manager^[12]. Therefore, bank loans to Chinese publicly listed firms exacerbate over-investment. Hence, hypothesis 2 is proposed

H2. Bank loans exacerbate over-investment in Chinese public firms, which means that the higher the level of long-term bank loans, the more over-investment.

3 Research design

3.1 Data

The authors in this paper selected the A-shares listed firms for the period from 2012 through 2016, excluding the data of the financial institutions. All of data were mainly selected from Market & Accounting Research Database (CSMAR) and Wind Financial Database (WIND). To get more accurate results, the author removed the observations with missing values from the data set. Moreover, the

author used Richardson's model^[13] to identify the firm-observations with over-investment problem. Finally, the data in this paper were winsorized at the level of 1% in both tails of the distribution and 2970 firm-year observations were constructed.

3.2 Model design

To study the relationship between heterogeneous debts and over-investment, on the basis of Song and Yao's model^[4], the author derived formula (1) by making some adjustments. H1 predicts that trade credit is negatively related to over-investment which suggests that $\partial_1 < 0$. H2 predicts that bank loans is positively related to the over-investment which suggests that $\partial_2 > 0$

$$\begin{aligned}
 OI_{i,t} = & \partial_0 + \partial_1 OPDA_{i,t-1} + \partial_2 BDA_{i,t-1} \\
 & + \partial_3 Mp_{i,t} + \partial_4 Ind_{i,t} + \partial_5 Fcf_{i,t} + \partial_6 Mfee_{i,t} \\
 & + \partial_7 Top1_{i,t} + \partial_8 Growth_{i,t} + \partial_9 Occupy_{i,t} \\
 & + \partial_{10} Size_{i,t} + \sum Industry + \sum Year + \omega_{i,t} \quad (1)
 \end{aligned}$$

Where the dependent variable OI represents over-investment, which is calculated as the deviation rate between the actual investment amount and the optimal investment amount based on formula of Richardson, choosing the year-firms with positive value of deviation rate^[13]. The independent variable OPDA represents trade credit, which is measured by the year-end balances of trade credit over the year-end balance of total assets. The independent variable BDA represents bank loans, which is measured by

the year-end balance of bank loan over the year-end balance of total assets. For the control variables, Mp represents executive compensation which is calculated as the natural logarithm of the total compensation for the top three executives. Ind represents the proportions of independent directors in the total directors. Fcf represents the scale of free cash flow. Mfee represents administration expense scale which is measured by the total administration expense over total revenue. Top1 represents the proportions of shareholding by the large shareholder. Growth represents the sales growth scale. Occupy represents the fund occupied by the large shareholder which is measured by the year-end balance of receivable from large shareholder over the year-end balance of total assets. Size represents size of the firm which is calculated as the natural logarithm of year-end balance of the total assets.

4 Empirical results

4.1 Descriptive statistics

Table 1 provides the descriptive statistics results of the main variables in formula (1). The average value of the dependent variable OI is very close to its median value, and the statistical values of the dependent variable OI are spread in a reasonable range. The statistical values of the independent variables and control variables are spread in a reasonable range, Therefore, the further statistical analysis can be made.

Table 1. Descriptive statistics of the main variables

Var.	Obs	Average value	Standard deviation	Median value	Min.	Max.
OI	2970	0.0597	0.0452	0.0523	0.0001	0.42
OPDA	2970	0.189	0.106	0.166	0.0596	0.381
BDA	2970	0.055	0.0648	0.0279	0	0.189
Mp	2970	14.38	0.717	14.36	11.49	17.14
Ind	2970	0.37	0.054	0.333	0.182	0.714
Fcf	2970	0.092	5.9	0.05	-180	77
Mfee	2970	0.0866	0.0826	0.0719	0.0021	1.436
Top1	2970	0.3518	0.1518	0.3307	0.0339	0.8999
Growth	2970	0.078	0.187	0.0538	-0.175	0.455
Occupy	2970	0.0266	0.0594	0.0098	0	0.796
Size	2970	22.63	1.331	22.47	16.76	28.51

4.2 Regression results

The regression results for the aggregate sample is presented in Table 2. It reveals that trade credit (OPDA) is negatively related to over-investment (OI) and the coefficient is -0.0233, which is statistically significant

at level of 1% and indicates that trade credit can reduce the over-investment. Consequently, H1 is verified. However, the coefficient of BDA is 0.0361, which is statistically significant at level of 1%, and indicates that bank loans can exacerbate the over-investment. Consequently, H2 is verified.

Table 2. The regression results

Variable	Coef.	T
OPDA	-0.0233***	-2.74
BDA	0.0361***	2.89
Mp	0.00438***	3.01
Ind	-0.00728	-0.44
Fcf	-0.0285***	-2.89
Mfee	-0.0104	-0.87
Top1	-0.000116**	-1.83
Growth	0.00529	1.07
Occupy	0.0697***	4.65
Size	0.00536***	5.74
Cons	-0.116***	-4.64
Year	Controlled	Controlled
Industry	Controlled	Controlled
F	11.23	
AdjR2	0.11	

Note: ***, **, *, present the statistical significance at the 0.01, 0.05 and 0.1 levels, respectively

5 Conclusions

It is found that trade credit can restrain over-investment effectively because trade credit is provided by suppliers and is less affected by non-market factors. Suppliers can assess the financial situation of customers against the standards of market competition. After credit is given, suppliers know a great deal the financial positions of debtors by virtue of their daily trading with debtors. Suppliers are also able to respond timely if debtors' default risk increases due to their inefficient investments. In addition, suppliers can threaten to stop delivering the goods if debtors operate in violation of the interests of suppliers, therefore, trade credit can discipline over-investment effectively. Because of the Chinese government's ability to intervene in bank lending and an underdeveloped bankruptcy system in China, budget constraint of bank loans become very soft, bank loans fail to play a governance role in the exacerbation of over-investment.

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