

Empirical Study on Financing Constraints and Financing Behaviors

—Evidence from China's Internet Listed Companies

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Abstract—The aim of this study was to evaluate internet listed companies' financing constraints and financing behaviors in China. This paper selected 2012-2018 China's A-share Internet listed companies as the research example, and uses KZ index model, ordered logistic regression and multiple linear regression research methods with SPSS24. The results show that internet listed companies have difficulty in internal financing, and most use commercial credit financing behavior, and high financing constraints are restricted by bank loans and commercial credit financing. Companies with lower financing constraints use more internal financing. As there is a lack of research on internet companies' financing constraints, this research provides a reference for easing financing constraints and adopting more reasonable financing behaviors.

Keywords—Internet listed company; financing constraints; financing behavior

I. INTRODUCTION

The Internet industry is currently an important part of the world's economic development. According to statistics, China's Internet-related economy accounts for more than 6.9% of GDP. However, due to the lack of research on the financing constraints of the predecessors in the Internet field, the foreign index model may not be applicable to China's national conditions. Therefore, only after establishing a reasonable and effective financing constraint index can we further explore the impact of financing constraints on corporate financing behavior. The important purpose of this thesis is to construct the financing constraint index of Internet listed companies and examine the correlation between different financing behaviors and asset-liability ratios. Finally, this thesis is to put forward relevant proposals to improve financing capabilities and optimize the financing strategies of Internet-listed companies with financing constraints and capital markets.

II. LITERATURE REVIEW

Fazzari, Hubbard, and Petersen (1988) [1] used FHP model to measure financing constraints through investment-cash flow sensitivity indicators. Almeida, Campello, and Weisbach (2004) constructed a new indicator model (ACW model). Kaplan and Zingales (2000) [2] used KZ indices; Whited and Wu (2006) established WW indices.

Zhong He et al. (2016) [3] studied the dividend-paying behavior of financing-constrained companies, and found that companies with a high degree of financing constraints tended to equity financing. Rüdiger Fahlenbrach et al. (2017) [4] studied the relationship between financing constraints and financing behaviors based on European companies.

Domestically, Zhang Jie and Liu Dong (2006) examined the status and operational mechanism of commercial credit in financing behavior by studying the financing constraints of SMEs in the manufacturing industry in Jiangsu Province. Zhang Fan (2015) [5] still inspected manufacturing industry, but mainly focused on listed companies, combined with financial development to examine the financing constraints and financing behavior of listed manufacturing companies, which organically combined macro and micro. CHENG Liwei, YAN dan (2012) [6], Dongmei Wang, Ruijie Kang (2014) [7] and Ling chen, Bao Wenbin (2018) [8] studied financing constraints and debt financing, equity financing and other financing behavior of Chinese listed companies.

FHP model, KZ index, ACW model and WW index are all classic financing constraint measurement methods, which are cited by many domestic and foreign scholars. However, the results obtained by these different metrics are often different, and each has its own advantages and disadvantages. The above researches are usually based on foreign capital market. Considering the differences in domestic and foreign policies and financial market development, these metrics are not necessarily applicable to domestic enterprises. The Internet industry as a new economic development model, considering innovation and other factors, China's Internet listed companies should learn from foreign classic financing constraints measurement methods to establish an index system suitable for their own.

Domestic scholars have recently adopted a more scientific and stochastic frontier method to measure financing constraints. They mainly focus on samples of listed manufacturing companies in China, which lack research in the internet industry. Therefore, this thesis will establish effective financing constraint measures for Internet listed companies in China. It is very necessary to further provide relevant suggestions for the financing behavior of Internet listed companies.

III. EMPIRICAL STUDY DESIGN AND SELECTION OF INDICATORS

In order to investigate the degree of financing constraints of Internet listed companies in China, this paper mainly draws on the index model of Kaplan and Zingales (2000). The comprehensive index model is constructed by combining qualitative and quantitative information as follows:

$$KZ_{sp} = \partial_1 CF_{sp} + \partial_2 Div_{sp} + \partial_3 Cash_{sp} + \partial_4 Lia_{sp} + \partial_5 Q_{sp} + \varepsilon \quad (1)$$

KZ is the dependent variable. CF, Div, Cash, Lia, Q are explanatory variables. At the same time, the dummy variable of KZ is set. SP means company s in year p.

This paper measures the financing behavior of Internet listed companies in four ways: equity financing, bank loans, commercial credit, and internal financing, taking into account of the company's size, profitability, and the impact of tangible asset rates on corporate finance. The building model is as follows:

$$Lia_{sp} = \partial_1 Equity_{sp} + \partial_2 Bank_{sp} + \partial_3 Business_{sp} + \partial_4 (RE/A)_{sp} + \partial_5 S_{sp} + \partial_6 ROA_{sp} + \partial_7 TA_{sp} + \varepsilon \quad (2)$$

Lia is the dependent variable. Equity, Bank, Business, RE/A are explanatory variables. S, ROA, TA are control variables.

TABLE I shows the description of the adopted variables of the above empirical models.

TABLE I. DESCRIPTION OF VARIABLES ADOPTED

Variable symbol	Description
KZ	Indicates the degree of financing constraints
CF	Operating cash flow to assets
Div	Dividend to assets
Cash	Cash to assets
Lia	Liability to assets
Q	Tobin Q
Equity	Equity financing to assets
Bank	Bank loan to assets
Business	Trade payable and advance receipt to assets
RE	Internal financing to assets
S	Size, ln (assets)
ROA	Net profit to assets
TA	Tangible assets to total assets

IV. EMPIRICAL STUDY RESULTS

The data in this paper is mainly from CSMAR database. Considering that the number of domestic A-share Internet listed companies is small, and the Internet company giants are not listed on the A-share market, the performance of the A-share companies is far from the US-listed, Hong Kong-listed Internet companies. Therefore, China's A-share Internet listed companies have been selected. The top 28 companies with better performance in recent years have been conducted financing constraints and financing behavior analysis, selecting financial data is from January 1, 2012, to January 1, 2018.

A. Descriptive statistics analysis

TABLE II. DESCRIPTION VALUE OF VARIABLE

Variable	Average	Variance	Max	Min
CF	0.035	0.009	0.454	0.272
Div	0.017	0.000	0.115	0
Cash	0.297	0.053	0.855	0.001
Lia	0.363	0.059	1.017	0.011
Q	5.290	37.027	33.475	0.377
Equity	0.207	0.023	1.006	0.016
Bank	0.082	0.012	0.540	0
Business	0.094	0.009	0.405	0
RE	0.129	0.038	0.543	0.755
S	7.642	1.052	10.642	5.745
ROA	0.029	0.005	0.297	0.239
TA	0.969	0.001	1	0.847

CF: The net operating cash flow accounts for 3.5% of the total assets, but the maximum value is 45.4%, and the minimum value is -27.2%, indicating that some companies have negative cash flow in 2012-2018. Excessive cash flow may also mean that there is no efficient investment; Div: the average share of dividends in total assets is 1.7% and the maximum value is 11.5%. Overall, the difference in dividend payout ratios in different financial years is small; Cash: the average value of cash holdings is 29.7%, the maximum value is 85.5%, and the minimum value is 0.13%, even if the selected sample companies have better overall performance, there is a big difference in cash holdings; most individual samples have a Tobin Q value greater than 1, indicating that most companies have higher market value than their replacement cost and have better investment opportunities.

The sample company mainly chooses the equity financing method, and the equity financing ratio average is 20.7%, of which the maximum value is 100%, and the minimum value is 1.6%. The individual difference is large; the bank loan and commercial credit account for approximately 8.2% and 9.5% respectively. The commercial credit ratio can still be improved; the internal financing accounts for 12.9%. Considering the unique advantages of internal financing, the ratio should be further increased. It also shows that some enterprises have insufficient internal funds. The size of the company is expressed in the logarithm of the total assets. The average value is 7.642, the maximum value is 10.642, and the minimum value is 5.745, indicating that the sample companies are similar in size. Even the largest companies are only twice as large as the smallest companies.

The average ROA is 2.9%, the maximum value is 29.7%, and the minimum value is -23.9%. Some companies still have losses, and individual samples vary widely.

B. Financing constraints analysis

TABLE III. ORDERED LOGISTIC REGRESSION

	Estimate	Standard error	Wald	Sig.
CF	-7.397	2.238	10.927	0.001
Div	-119.932	20.269	365.011	0

Cont. to TABLE III.				
Cash	-2.098	1.130	3.451	0.063
Lia	4.552	1.064	18.318	0
Q	0.090	0.035	6.806	0.009

From TABLE III, we can get: $KZ = -7.397 CF - 119.932 Div - 2.098 Cash + 4.552 Lia + 0.090 Q$. Among them, CF, Div and Cash showed a negative correlation with financing constraints means companies with lower dividend payout rates and lower cash are facing a higher degree of financing constraints. The Lia and Q are positively correlated with KZ. The dividend payout ratio has a greater impact on the degree of financing constraints. For each increase of 1, it will reduce the KZ of 119.932, which is to reduce the degree of financing constraints. Tobin q has little influence on the degree of financing constraints. For each increase of 1, it will increase KZ by 0.090. The results of this study are similar to those of the Kaplan and Zingales (2000) index model. Overall, A-share Internet listed companies with lower financing constraints showed high cash flow, high dividend payment, high cash holdings, and lower asset-liability ratio and Tobin q.

C. Correlation between financing constraints and financing behavior

TABLE IV. FINANCING BEHAVIOR OF HIGH FINANCING CONSTRAINTS COMPANIES

Model	Unstandardized Coefficients (β)	t	Sig.
Constant	-0.441	-0.666	0.508
Equity	-0.374	-2.659	0.010
Bank	0.534	2.675	0.009
Business	0.590	3.409	0.001
RE	-0.440	-3.971	0
S	0.030	1.561	0.123
ROA	-0.741	-2.775	0.007
TA	0.660	1.001	0.320

Dependent variable: Lia

TABLE V. FINANCING BEHAVIOR OF LOW FINANCING CONSTRAINTS COMPANIES

Model	Unstandardized Coefficients (β)	t	Sig.
Constant	-0.357	-0.7	0.486
Equity	-0.075	-0.67	0.505
Bank	0.763	3.856	0
Business	1.105	4.758	0
RE	-0.234	-1.944	0.056
S	0.074	4.967	0
ROA	0.146	0.585	0.561
TA	0.017	0.034	0.973

Dependent variable: Lia

Through the obtained KZ model, the specific KZ of the sample company can be further calculated each year, and then sorted by Excel. 157 data are sorted from high to low, they can be divided into 2 parts. The top 50% are high financing constraint companies. We will further examine the performance and differences of financing behaviors of these companies under different financing constraints.

For the investigation of financing behavior, the adjusted R^2 are 0.696 and 0.672 respectively, indicating good fitting.

Companies with different levels of financing constraints have large differences in equity financing behaviors. High financing constraints companies use equity financing less frequently. These two types of companies both show less internal financing, but bank loans and commercial credit financing behaviors are more.

The internal financing coefficient of high financing constraint company is -0.44, and the low financing constraint company is -0.234, indicating that China's A-share Internet listed company lacks internal funds and needs to increase the proportion of internal financing.

In terms of bank loans and commercial credit, the high financing-constrained companies were 0.534 and 0.590, both of which were lower than the 0.763 and 1.105 of the low-finance-constrained companies, indicating that the low-finance-constrained companies are more likely to have bank loans and commercial credits. The financing channels for bank loans and commercial credits are not smooth. And Internet companies are more inclined to commercial credit than bank loans.

By analyzing control variables, the biggest difference between companies with different financing constraints is ROA. For companies with low financing constraints, improving profitability can make companies more easily to expand financing channels. The impact of company size on financing behavior is affected by the degree of financing constraints.

V. CONCLUSION

The research in this paper shows that:

(1) The correlation between financing constraints of China's A-share Internet listed companies and the cash flow, dividend payout ratio, cash holdings, asset-liability ratio, and Tobin Q is consistent with the KZ index model. The difference is expressed as $kz = -7.397 CF - 119.932 Div - 2.098 Cash + 4.552 Lia + 0.090 Q$. The larger the KZ index, the higher the degree of financing constraints.

(2) Overall, A-share Internet listed companies with lower financing constraints show high cash flow, high dividend payment, high cash holdings, and low asset-liability ratio and Tobin q.

(3) The bank loans and commercial credit financing channels are not smooth for high financing constraints companies.

(4) In general, Internet companies tend to use external financing rather than internal financing. Internal financing is difficult. High financing constraints companies use equity financing less frequently than low financing constraints companies.

In this regard, the paper puts forward the following suggestions:

(1) China's Internet listed companies should increase internal financing. The cost of endogenous financing is low and the risk is small. The proportion of endogenous financing

should be increased to optimize the internal financial management of enterprises.

(2) Reduce the financing constraints of Internet companies, optimize the financing behavior of enterprises, and pay attention to the development characteristics of the industry and the market environment.

(3) Banks should support the development of Internet enterprises, and pay more attention to the future development capabilities of Internet companies and optimize loan policies in response to the relatively small characteristics of fixed assets of Internet companies.

(4) Further expand financing channels, promote diversified financing methods, reduce financing risks, improve the financing capacity and financing level of Internet companies, and promote the development of the financial environment.

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