

Research on the Impact of Venture Capital on IPO Earnings Management of Internet Enterprises

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Abstract: This paper takes the Internet companies that IPO in Shanghai and Shenzhen stock exchanges from 2010 to 2017 as a sample, uses the modified Jones model with intangible assets to measure the level of earnings management during the IPO process. Through empirical analysis, it is found that the participation of joint venture capital can effectively reduce the IPO earnings management level of Internet companies compared to single venture capital; compared with low-reputation venture capital institutions, the IPO earnings management level of Internet companies with high reputation venture capital institutions Lower; Compared with venture capital institutions with a low shareholding ratio, venture capital institutions with a high shareholding ratio are more able to restrain the IPO earnings management level of Internet companies.

Keywords: Venture capital, Internet companies, IPO, Earnings management

INTRODUCTION

The development of my country's Internet industry is inseparable from the participation of venture capital. The development history of the Internet industry in my country also reflects the development of the venture capital market in my country [Li Gang, et. al., 2018]. Venture capital institutions help Internet companies complete IPOs and exit after the lock-up period to obtain high returns. Companies that intend to go public often conduct earnings management through internal transactions and change accounting standards during the IPO process to meet regulatory requirements. Institutions have relevant requirements for listed companies, beautify the company's financial statements, and achieve rapid financing needs [Huang Dongyi, et. al., 2018]. As a key role of a company in the IPO process, venture capital institutions can play the role of supervision and certification on the one hand to curb the earnings management behavior of the company during the IPO process, On the other hand, it is also possible to turn a blind eye to the earnings management behavior of the invested company for its own short-term interests, and even more proactively require the invested company to carry out earnings management in order to achieve high returns after the IPO [Xie Liying, 2014].

Taking into account the particularity of Internet companies, this paper uses the modified Jones model with the introduction of intangible assets to reliably measure the earnings management level of Internet companies' IPO links, and then studies the role of venture capital institutions in it, and according to the research The results put forward corresponding

suggestions and solutions for the problems faced by China's securities market, venture capital industry and Internet companies [Li Fang, et. al., 2018].

THEORETICAL ANALYSIS AND HYPOTHESIS

Domestic and foreign scholars mainly have three hypotheses about the impact of venture capital on corporate IPO earnings management: certification hypothesis, supervision hypothesis and name-by-name hypothesis [Cai Ning, 2015]. The first two hypotheses affirm that venture capital has a positive and positive effect on the companies it invests in; the third hypothesis is that venture capital institutions may also have a negative impact on the companies they support [Huang Fuguang, et. al., 2012]. Then, as the most important external investment institution of Internet companies, venture capital institutions will affect their earnings management in what aspects [Cheng Xiwu, et. al., 2018]? Will different ways of participation, reputation of venture capital institutions, and different shareholding ratios of venture capital institutions have different effects on Internet companies [Huang Dongyi, et. al., 2018]? This paper proposes the following three hypotheses in response to the above problems:

H₁: Compared with single venture capital, the participation of joint venture capital can effectively reduce the IPO earnings management level of Internet companies.

H₂: Compared with low-reputation venture capital institutions, the IPO earnings management level of Internet companies with high reputation venture

capital institutions is lower.

H₃: Compared with venture capital institutions with a low shareholding ratio, venture capital institutions with a high shareholding ratio are more able to restrain the IPO earnings management level of Internet companies.

RESEARCH DESIGN

Sample selection and data sources

This paper selects Internet companies listed on my country's Shanghai and Shenzhen markets from 2010 to 2019 as the research object. After excluding the incomplete financial data and market transaction data before and after the issuance, the final research sample is 41 Internet companies. Among them, due to the suspension of my country's IPO from October 2012 to January 2014 and no Internet companies listed on my country's Shanghai and Shenzhen markets in 2018, the data for 2013 and 2018 are missing.

Variable selection

The explained variable

DA: Represents manipulability accrued profit. This paper takes into account the influence of intangible assets on calculated profits, and adopts the modified Jones model with intangible assets to measure the level of earnings management [Liu Yuan, et. al., 2016]. The revised Jones model is as follows:

$$\frac{NDA_i}{A_{i-1}} = \partial_0 + \partial_1 \left(\frac{1}{A_{i-1}} \right) + \partial_2 \frac{(\Delta S_i - \Delta R_i)}{A_{i-1}} + \partial_3 \left(\frac{FA_i}{A_{i-1}} \right) + \partial_4 \left(\frac{IA_i}{A_{i-1}} \right)$$

$$\frac{TA_i}{A_{i-1}} = \partial_0 + \partial_1 \left(\frac{1}{A_{i-1}} \right) + \partial_2 \frac{(\Delta S_i - \Delta R_i)}{A_{i-1}} + \partial_3 \left(\frac{FA_i}{A_{i-1}} \right) + \partial_4 \left(\frac{IA_i}{A_{i-1}} \right) + \varepsilon_i$$

$$\frac{DA_i}{A_{i-1}} = \frac{TA_i}{A_{i-1}} - \frac{NDA_i}{A_{i-1}}, \quad \frac{TA_i}{A_{i-1}} = \frac{Earning_i}{A_{i-1}} - \frac{CFO_i}{A_{i-1}}$$

Among them, TA_i represents the total profit of the i period; DA_i represents the manipulable accrued profit; NDA_i represents the non-manipulation accrued profit; A_{i-1} represents the end of the $i-1$ period Total assets; ΔS_i represents the difference between the operating income of period i and the operating income of period $i-1$; ΔR_i represents the difference between the accounts receivable in period i and the accounts receivable in period $i-1$; FA_i represents the entry value of fixed assets at the end of the i period; IA_i represents the entry value of intangible assets at the end of the i period; $Earning_i$ represents the net profit of the i period; CFO_i represents the operating activities of the i period Net cash flow; i represents the year before the IPO; ∂_0 is a constant term; ∂_1 , ∂_2 , ∂_3 and ∂_4 are regression coefficients; ε_i is an error term.

Explanatory variables

SVC stands for joint investment of venture capital institutions. Two or more venture capital institutions participate in the IPO of an Internet company. They are identified as joint investments and assigned a value of 1, otherwise they are assigned a value of 0; RVC represents the reputation of venture capital institutions. The venture capital institution is located in the Wind database China PEVC of the top 50 investment institutions is determined as high reputation and assigned a value of 1, otherwise it is assigned a value of 0; SHVC represents the shareholding ratio of venture capital institutions, and the value is determined according to the shareholding ratio of venture capital institutions among the top 10 shareholders in the prospectus [Jeng fang Chen, et. al., 2012].

Control variable

In order to control the impact of other factors on the level of earnings management of Internet companies' IPOs, this article introduces AGE, SIZE, PERF, LEV, GROWTH, RU and RA as control variables. The specific values are shown in Table 1:

Table 1 Variable definition

Variable type	Variable	Variable name	Variable description
Explained variable	DA	Manipulability accruals	Measure the degree of earnings management
Explanatory variables	SVC	Joint investment	There are two or more VCs participating in the assignment 1, otherwise 0
	RVC	Venture capital institution reputation	The top 50 investment institutions are assigned a value of 1, otherwise 0
	SHVC	Venture capital institution shareholding ratio	Percentage of Venture Capital Institution Among the Top 10 Shareholders
	AGE	Years of establishment of the company	Logarithm of the number of years from establishment to IPO

Control variable	SIZE	Enterprise size	Natural logarithm of total assets
	PERF	Operating results	Cash flow from operating activities/total assets
	LEV	Company debt level	Total liabilities/total assets
	GROWTH	Company growth ability	Operating income growth rate
	RU	Underwriter's Reputation	Assign 1 to the top 10, otherwise 0
	RA	Audit agency reputation	Assign 1 to the top 10, otherwise 0

Model building

This article builds the following three models based on the above three assumptions:

$$DA = \beta_0 + \beta_1SVC + \beta_2Age + \beta_3Size + \beta_4Pref + \beta_5Lev + \beta_6Growth + \beta_7RU + \beta_8RA + \varepsilon \quad (1)$$

$$DA = \beta_0 + \beta_1RVC + \beta_2Age + \beta_3Size + \beta_4Pref + \beta_5Lev + \beta_6Growth + \beta_7RU + \beta_8RA + \varepsilon \quad (2)$$

$$DA = \beta_0 + \beta_1SHVC + \beta_2Age + \beta_3Size + \beta_4Pref + \beta_5Lev + \beta_6Growth + \beta_7RU + \beta_8RA + \varepsilon \quad (3)$$

Among them, β_0 is a constant term, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ and β_8 are regression coefficients, and ε is the residual term of the regression equation.

EMPIRICAL RESULTS AND ANALYSIS

Descriptive statistics

Descriptive statistics on participation in venture capital

It can be seen from Table 2 that there were 41 Internet companies listed in Shanghai and Shenzhen from 2010 to 2019, of which 26 Internet companies participated in venture capital investment, accounting for 64% of the total sample, and 15 Internet companies participated in venture capital investment. Home, accounting for 37% of the total sample, indicating that venture capital has a high degree of participation in Internet companies.

Table 2 2010-2019 Shanghai and Shenzhen listed Internet companies venture capital background

Year of listing	Listed Internet companies	Venture capital participation	Proportion	Non-risk investment participation	Proportion
2010	14	9	64%	5	36%
2011	6	2	33%	4	67%
2012	5	2	40%	3	60%
2014	1	1	100%	0	0%
2015	4	4	100%	0	0%
2016	3	0	0%	3	100%
2017	4	4	100%	0	0%
2019	4	4	100%	0	0%
Total	41	26	63%	15	37%

Descriptive statistics of earnings management

It can be seen from Table 3 that the average

earnings management levels of the Internet companies selected in this article from the first two years of the IPO to the year of the IPO are all positive, which are 0.011, 0.059, and 0.043, respectively. Positive earnings management has been carried out, and the level of earnings management reached the maximum one year before the IPO. This can be understood as the Internet companies to be listed in order to meet the listing conditions of China's stock market, generally using various means to manipulate earnings, after listing, may gradually reduce the level of earnings management. Table 3 Changes in the degree of earnings management of Internet companies in the first two years of IPO and that year

Year	Samples	Mini	Maxi	Mean	Standard variance
IPO-2	41	-0.775	0.855	0.011	0.234 0.055
IPO-1	41	-0.071	0.433	0.059	0.097 0.009
IPO	41	-0.251	0.876	0.043	0.191 0.036

Correlation analysis

In this study, the Pearson correlation test was performed on the relationship between the variables, and the test results are shown in Table 4. We can see from Table 4 that the reputation of venture capital institutions (RVC), joint venture capital (SVC), venture capital institutions' shareholding ratio (SHVC) and earnings management (DA) are at the levels of 10%, 10%, and 1% respectively. There is a significant negative correlation between the above

and the correlation coefficients are -0.153, -0.285, and -0.427. In addition, the level of corporate debt (LEV) is significantly positively correlated with the

level of earnings management, which shows that the higher the debt level of Internet companies, the greater the possibility of earnings manipulation. Business performance (PERF) and earnings management (DA) are significantly negatively correlated at the level of 5%, indicating that Internet companies with better business performance do not need to carry out positive earnings management. On the contrary, they often have poor business performance. Internet companies conduct earnings manipulation in order to meet the listing requirements as soon as possible. In order to further

verify the validity of the hypothesis, we performed regression analysis on the three explanatory variables.

Regression analysis

Table 5 shows the results of regression model analysis. The independent variable variance inflation factors (VIF) of the three regression models are 1.350, 1.140, and 1.532, which are all significantly less than 5, so the model is not affected by multicollinearity; three models The F values of are all significantly correlated at the 10% confidence

Table 4 Pearson correlation test

Variable	DA	SVC	RVC	SHVC	AGE	LEV	PERF	SIZE	GROW	RA	R
DA	1										
SVC	-0.153*	1									
RVC	-0.285*	0.585	1								
SHVC	-0.427*	0.501	0.502	1							
AGE	0.110	-0.141	-0.098	-0.447	1						
LEV	0.413**	-0.046	-0.229	-0.170	0.434	1					
PERF	-0.357*	-0.19	0.026	0.157	-0.378	-0.489	1				
SIZE	0.082	0.379	0.007	0.090	0.123	0.319*	-0.422	1			
GROW	0.039	0.220	-0.039	0.071	-0.144	-0.161	0.304	0.251	1		
RA	-0.064	0.275	0.275	0.393*	-0.117	-0.070	-0.148	0.314	-0.133	1	
RU	-0.106	0.259	0.035	0.210	0.102	0.240	-0.283	0.448	0.173	0.342	1

***、**、* indicate a significant correlation at the confidence level (two-sided) of 0.01, 0.05, and 0.1, respectively.

level, and the adjusted R2 are 0.264, 0.258, and 0.404, respectively, indicating that the model is effective and has a certain explanatory power.

From the regression results of model (1) in Table 5, it can be seen that the joint venture capital (SVC) and the degree of earnings management are significantly negatively correlated at the 10% confidence level, indicating that joint venture capital can curb the degree of IPO earnings management of Internet companies. This verifies Hypothesis 1.

From the regression results of model (2), it can be seen that the correlation coefficient between the reputation of venture capital institutions (RVC) and the degree of earnings management (DA) is -0.045, and is significantly correlated at a confidence level of 10%, indicating high reputation venture capital In order to maintain their reputation, institutions will participate in the business management of the company to effectively curb the manipulation of earnings management, which verifies Hypothesis 2. The regression result of model (3) shows that the proportion of shares held by venture capital institutions (SHVC) and the degree of earnings

management (DA) are significantly negatively correlated at the level of 1%, and the correlation coefficient is -0.005, indicating that the greater the proportion of shares held by venture capital institutions, The lower the degree of earnings management of the participating companies, the Hypothesis 3 is verified.

At the same time, it can be seen from the above table that the level of corporate debt (LEV), corporate growth capability (GROWTH) and earnings management (DA) are positively correlated, indicating that the higher the debt level, the better the growth capability of Internet companies in order to deliver a good Signals ensure that the development of the enterprise is guaranteed by funds, and the higher the motivation of the management for earnings management. Further analysis reveals that the age of establishment (AGE), business performance (PERF) and the degree of earnings management (DA) are significantly negatively correlated. This may be because the longer the establishment, the better the business performance, and the more mature development in all aspects. The

management system has been improved, which has restrained the occurrence of earnings management to a certain extent. The reputation of audit institutions (RA) and the degree of earnings management (DA) show a positive correlation. It is speculated that due to the low punishment of audit institutions' dereliction of duty or even fraud in our country, compared with the huge benefits obtained from audit fraud, CPA and audit Institutions are more willing to bear the risk of audit dereliction, which leads to the behavior of audit institutions that tacitly approve and condone the manipulation of earnings by audited companies.

RESULTS AND CONCLUSIONS

This paper selects 41 Internet companies listed on China's Shanghai and Shenzhen stock markets from

2010 to 2019 as a sample. Through empirical analysis, this paper studies the impact of venture capital on Internet companies' IPO earnings management, and finally draws the following conclusions: (1) Compared with The participation of a single venture capital institution and joint venture capital can effectively curb the earnings management of invested companies; (2) Compared with low reputation risk investment institutions, the participation of high reputation risk investment institutions can lower the level of Internet companies' IPO earnings management; (3) The higher the proportion of venture capital institutions in the board of directors of the invested company, the greater the effect of monitoring and deterring the invested company's earnings management.

Table 5 Regression analysis results

Variable	Model (1)		Model (2)		Model (3)	
	Coefficient	t	Coefficient	t	Coefficient	t
Constant	0.473	1.202	0.568	1.446	0.598	1.534
SVC	-0.048*	-1.546				
RVC			-0.045*	-1.448		
SHVC					-0.005***	-3.231
AGE	-0.003	-1.133	-0.003	-0.870	-0.007***	-2.196
LEV	0.003**	2.500	0.002**	2.359	0.003***	3.145
PERF	-0.454**	-2.772	-0.409*	-2.540	-0.348	-2.399
SIZE	-0.018	-0.908	-0.024	-1.204	-0.023	-1.301
GROWTH	0.001**	2.402	0.001*	2.104	0.001*	2.357
RA	0.031	0.952	0.034	1.032	0.053*	1.752
RU	-0.065	-1.991	-0.068	-2.064	-0.052	-1.720
Ad-R ²	0.264		0.258		0.404	
F	2.795		2.737		4.386	
VIF	1.350		1.140		1.532	

Dependent variable: DA

Note: ***, **, * indicate significant correlation at the confidence level of 0.01, 0.05 and 0.1, respectively.

Based on the above conclusions, it can be seen that, as an important participant in my country's capital market, venture capital institutions play a positive role most of the time and also play a certain role in restraining the level of earnings management of Internet companies. However, due to the imperfect development of my country's venture capital institutions, they have failed to give full play to their positive role in corporate IPOs. Therefore, government departments should improve China's listing review system and establish a sound information disclosure system; increase penalties for negligence of audit institutions; guide China's venture capital industry to participate more in

Internet companies; and China's venture capital industry and the Internet Companies should also continue to improve their own industry standards. At the same time, the Internet industry itself must promote the establishment of corporate integrity systems, strengthen core product competitiveness, improve corporate economic efficiency, reduce earnings management, and promote the entire Internet industry to develop in a healthy and healthy direction.

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