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VC Syndication and the Earnings Management Behaviors of Invested Companies

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Abstract

Using the sample data of China's Growth Enterprise Market (GEM) since 2009, in this paper, we empirically test the impacts of venture capital syndication on the earnings management behaviors of the invested companies. To be specific, we focused on the internal characteristics of venture capital syndications and then examined those attributes on earnings management behaviors of invested companies. Our research bridges the gap in literature by providing a systematic analysis in this field. It will also provide significant insights for policy makers in terms of the establishment of joint investment portfolios, the formulation of investment strategies for venture capital companies, and the cooperation between venture capital institutions and venture capital firms etc.

Keywords: Venture Capital, Earnings Management, Syndication.

1. Introduction

Since 1985, China has successively established many venture capital companies to help promote technology innovation in China. After 20 years of rapid development, China's venture capital industry now achieved a much-diversified developing trend, including state-owned, private or non-bank financed venture capital institutions such as institutional holdings and private funds etc. The launch of the Growth Enterprise Market (GEM) in 2009 broadened the financing channels for small and medium sized enterprises (SMEs). As of February 2015, there are 427 startups listed on the GEM, among which, half have a VC background, and the number is increasing year by year. China's venture capital institutions are more likely to start the investment in later stage than foreign institutions, and most of them choose to exit when the startup companies first issue IPO. Thus, China’s Small and Medium Enterprise Board (SMB), also known as the GEM become the main exit channel for venture capital companies. In this paper, we

investigate the earning management issues of the invested companies with a venture capital syndication background in China.

Researchers have long observed that some companies manipulate their financial statements in order to increase the IPO pricing and attract public investors. For example, using the data of 1990, Teoh (1998) found that more than 10% of the IPO companies managed their earnings upward before IPO. Cai Xiang et al. (2003) argue that the main motivation for China's companies earning management is to cater to the Securities Regulation Committee (SRC)'s three-year performance indicators for corporate listings and other regulation rules. Generally speaking, earnings management of the current period will have a negative impact on the companies' future performance, and thus can significantly affect investors' return. Companies commonly use accruals to manage earnings and such behaviors are often very difficult to identify by general investors. Venture capital institutions, on the other hand, are usually involved with enterprise management and thus are expected to have better ideas of the companies' earning management behaviors. Accordingly, understanding the role of venture capital companies regarding earnings management of invested companies can help investors recognize the companies' real financial conditions and thus help them make better informed-investment decisions.

Many studies have demonstrated that venture capital firms will supervise and suppress companies' earnings management behaviors to reduce the principal-agent problem between investors and listed companies in order to maintain their high reputation. At the same time, other studies have shown that some venture capital firms are acquiescing or even encouraging enterprises to manage earnings for their own interests. In this paper, we focus on the earning management issues of the invested companies with a background of venture capital syndications. The rise of joint venture capital investment has dispersed the risks of members but at the same time, mutually restrained their interests and behaviors. We argue that the various characteristics of joint venture capital investments will have different impacts on the overall role of the VC firms in terms of supervising invested companies' earnings management behaviors. For example, when young venture capital firms dominate the joint venture syndication, the VC syndication might have a weakening effect to monitor or supervise companies' earning management behaviors, as the young firms are eager to show better return to have their name recognized. On the other hand, venture capital companies usually form their own cooperative network to select investment partners. This cooperation network is expected to reduce friction and coordination costs, and thus help them play a better role to supervise the invested companies' earning management behaviors.

In this paper, using the data of China's Growth Enterprise Market (GEM) since 2009, we are aiming to empirically test the impacts of venture capital syndication on the invested companies' earning management behaviors in China. To be specific, we focus on the internal characteristics of venture capital syndications, especially the factors of cooperation within joint investment, and investigate their influences on the companies' earning management behaviors.

Our paper will contribute to the literature in multiple perspectives. First, we bridge the gap in literature by providing an systematic analysis of the impacts of venture capital syndication on the invested companies' earnings management behaviors. Second, from the practical level, the results of our paper will provide signfiicant insights for policy makers in terms of the establishment of joint investment portfolios, the formulation of investment strategies for venture capital companies, and the cooperation between venture capital institutions and venture capital firms etc.

The rest of the paper is organized as follows: we first reviewed the relevant literature in section 2, we then discussed the model and data in section 3, in section 4, we summarized the empirical results and then provide conclusions in section 5.

2. Literature Review

In this section, we review the literature from the following three main perspectives: Earnings management and corporate governance; (2) Venture capital and earnings management and (3) Venture capital syndication and earning management.

2.1 Earnings management and corporate governance

Earnings management literature has a long history of over 30 years. William. K. Scott (1997) defined earnings management as choosing accounting policy within the scope allowed by GAAP to maximize the operator's own interests or the market value of the enterprise. Generally speaking, managers conduct earnings management for the following two motivations: (1) Job security: managers adjust earnings to obtain better job security (Defond ML, J, Jiambavo (1997); (2) Capital market financing opportunities: managers adjust earnings for capital financing opportunities, such as stock issuance and private placements (Teoh, 1998). Healy (1993) shows that companies tend to conduct earnings management one year before the implementation of the debt contract. Zhang (1998) list the major means of corporate earnings management, including changing accounting methods, undergoing huge writing-offs, adjusting annual net income, selling long-term assets, etc. Wang (2014) empirically studied the long-term impacts of earnings management on the company's performance. He focused on the two earnings management methods: the accrued earnings management based on changing accounting books and the real surplus management based on changing the short-term business behavior of enterprises and he found that both two earnings management behaviors have negative impacts on the long-term performance of the companies. Similarly, Cohen (2010) points out, earnings management will lead to a temporary rise of the performance and then the long-term decline of the business after equity financing.

2.2 Venture Capital and Earnings Management

There are no consistent conclusions in literature regarding the impact of venture capital firms' involvement on companies' earnings management behaviors. Barry et al

(1990) first proposed the supervision hypothesis. They examined an exhaustive set of initial public offerings (IPOs) by venture-capital-backed companies between 1978 and 1987 and found that those companies on average experienced lower under pricing of IPO. They argued that this is due to the intensive monitoring of the venture capital firms, which improved the earnings quality of those companies. Gompers et al. (1998) argued that venture capital firms not only inject capital into the invested companies, but also provide other services such as business planning, development planning, human resource management and post-investment supervision etc, which increase the value of the invested company. A study by Morsfield and Tan (2006) found that companies with venture capital background had lower earnings management behaviors and better stock performance, even after the lockup periods, compared to the companies without venture capital backgrounds. Cohen (2005) also argued that the existence of venture capital background negatively correlated with the invested companies' earnings management behaviors. Chen (2010) obtained a similar conclusion with a dataset including 199 Small and Medium-sized companies in Shenzhen, China.

On the contrary, there are other literatures arguing that venture capital might put pressure on the invested companies to manipulate earnings to influence IPO price, so that they can pocket higher profits afterwards. For example, Mills (2001) claimed that venture capitalists, investment banks and the entire capital market should be responsible for the Internet industry bubble, because they blindly promote the listing of Internet companies without doing serious due diligence. Suo and Yang (2011) showed that there is an increase of earnings management behaviors before IPO for Chinese companies with venture capital background in Shenzhen, and the level is significantly higher than the companies without venture capital background. Liu and Xiang (2012) also obtained similar findings.

2.3 Venture Capital Syndication and Earnings Management

In order to expand investment scale, integrate resources and diversify risks, more and more venture capital firms choose to invest in syndication. Lerner (1994) argued that there is no consistent impact on the earnings management behaviors of the IPO companies from each individual member of the VS syndication. Diversity is an important feature of joint venture capital syndication. Different members have diverse characteristics and backgrounds, which are reflected in different factors such as sources of funds, geographical locations etc. Sorenson and Stuart (2008) showed that VC companies tend to invest in the companies, which are in the same or similar industry to their own investment background, but at the same time, the diversity within co-investments is also present because of the different regions and backgrounds of other venture capital companies in the syndication. Sorenson and Stuart (2008) argued that the participation of a large number of different VC companies might reduce their name-chasing behaviors as it is difficult to define the contribution of each member to the network. Zhang and Tan (2014) also empirically showed that after controlling the

number of syndicated investment cases, there is a negative relationship between earnings management behaviors and the degree of diversification in the syndication.

However, there is counter argument that while co-investment can help a single VC firm to reduce specific risks, and thus benefiting it from the synergy of other VCs in selecting and filtering investment projects, there will also be proxy conflicts between them, especially during the IPO phase. This might leads to weakening monitoring and supervision results. In addition, with the increase of the diversity level in the VC syndication, equity share of each VC Company is reduced and thus might also decrease its enthusiasm to supervise the invested companies. In addition, the "free rider" behaviors of the VC members as pointed out by Cumming (2016) might also add on the weakening efficiency of supervision. Moreover, the diversity within the joint VCs syndication also leads to high coordination costs, making it difficult to monitor management deficiencies and respond to them in a timely manner. Cumming (2007) argued that the diversity within the joint VC syndication might lead to conflicts of interests among VC syndication members, thus providing opportunities for managers to manipulate earnings during the company's IPO stage. Chahine, Arthur, and Fila (2012) studied the impact of the degree of diversification within VC syndication on earnings management behaviors of invested companies in U.S. and U.K. market and found that the degree diversification positively correlated with the invested companies' earnings management behaviors.

In addition to the agency issues, researchers also argue that there are other conflicts of interests among the syndication members. For example, Cumming (2006) argued that information asymmetry might lead to conflicts of interest between dominant VCs and other VCs, and thus reduce their monitoring efficiency of the invested companies. In addition, literature argues that young and mature VCs may have different attitudes toward earnings management, which might also lead to inconsistent supervising efforts. For example, Gompers (1996) found that matured VC companies need to protect their reputation and often discourage IPOs' earnings management, but younger VCs tend to be motivated for rapid growth and thus might encourage the invested companies to manage earning actively. This growth motivation of young venture capital is called the name-chasing effect. As a result, it is expected that the higher the diversity of joint VCs syndications, the more difficult it will be for the dominant VC to curb speculation and restrain earnings management behaviors.

Venture capital institutions continuously learn and accumulate experiences in the investment process. To maximize the benefits of the joint investment, they comprehensively select their investment partners from different perspectives such as establishment time, region, investment team and reputation, etc. For example, according to Fulghieri and Sevillir (2005), experienced venture capital institutions tend to pick VC partners with similar joint venture capital investment experiences. Brander (2002) pointed out that in the process of joint investment, VC companies frequently communicate and exchange ideas with other venture capital institutions in terms of jointly manage and supervise the invested companies, and thus will form a closely

connected horizontal venture capital network in the cooperation. At the same time, Sorenson and Stuart (2008) found that in order to be able to access better investment opportunities in the future, VC companies have a need to continue to expand their cooperation networks. Hochberg (2007) showed that venture capital institutions with broader networks tend to have higher yields. Sorenson and Stuart (2001) emphasized the importance of geographic location and industry space for information flow and the important role of VC's spatial network in their investment decisions. Renneboog (2007) demonstrated that the majority of British venture capitalists gathered near London, and they often chose partners in their networks to invest at the matured stage. This network enables VC companies to align their interests and thus forms what we call the "institutional effect". Salim Chahine (2012) made an in-depth study of the relationship between institutional effects and the earnings management behaviors of the listed companies and argued that the investment system under the British institutional effect supports an informal reputation chasing behaviors of VC companies in the closely connected social networks. Networks can prevent speculation behaviors of VC companies as the negative reputations will ruin future relationships. Consistent interests reduce the possibility of conflict of interests and improve the efficiency of the supervision of VC companies. This, instead, will reduce the earnings management behaviors of the invested companies.

In addition to the institutional effects and informal reputation chasing results, venture capital cooperation networks can also bring trust among partner companies. Gambetta (1988) believes in modern society, trust is the key to the cooperation among enterprises, but there are two issues with it: (1)how much cooperation can be independent of trust, and (2) whether trust is the result of cooperation rather than a prerequisite. Chen et al (2009) point out that they are four factors that will improve cooperation and trust among enterprises. (1) transaction time: the longer the transaction time, the better the two parties understand each other and thus the higher the trust level they will develop; (2) company's reputation, the higher the company's own reputation, the easier it is to gain trust; (3) the scale and amount of cooperation, and (4) the guarantee of cooperation by the contract and the law. Luhman (1979) argued that trust and cooperation among organizations could help them develop the sense of security and thus reduce transaction costs and improve cooperation efficiency in the social networks. Based on those, we have reasons to form the hypothesis that the history of cooperation will strengthen the trust between the partners.

Existing literature only focuses on the value-added services that venture capital networks can bring to the invested companies before their IPOs. Fried et al (1998) argue that VC firms use their network to provide advice and resources on management, strategic development, financial structure etc to the listed companies. Brander et al. (2002) also argued that the social network of VC companies could help the invested companies to market their products and find strategic partners such as reputable accounting firms, law firms, and securities underwriters etc. However, there is lack of research that studies the benefits of social network on the earning management

behaviors of the invested companies, especially within China's environment. China's venture capital industry is about 30 years behind those of the United Kingdom and the United States, so there is no obvious institutional effect yet. In this paper, we are trying to investigate whether the cooperation and trust among VC firms in the syndication will help them do a better job supervising the invested companies' earnings management behaviors.

Literatures have not found consistent evidence regarding the impact of VC syndication on the invested companies' earnings management behaviors. Many researchers demonstrate that the invested companies with VC background have less earnings management behaviors than those without VC background (Gonmpers (1996), Lerner (1994) and Morfields (2006), Chen (2010) etc). However, Mills (2001) and Suo (2011) argued that VC companies might fail to supervise the invested companies for their own benefits; and on the contrary, they might push the invested companies to exaggerate the financial performance by managing earnings in order to achieve higher return.

Along with the rise of the VC syndication, VC firms from different backgrounds cooperate in the same project and thus make it even more complicated in terms of their supervision of the invested companies' earnings management behaviors. Sorenson and Sturart (2001) argue that the diversity of VC syndication brings resource integration and thus improve management efficiency. Zhang and Tan (2014) empirically demonstrate that the diversity of VC syndication negatively correlated with the degree of corporates' earnings management behaviors. On the contrary, some scholars argue that diversity of VC syndication might lead to a decrease in supervision enthusiasm and efficiency. Studies by Cumming (2007) and Chahine (2012) found that with the increase of the coordination costs, the degree of the invested companies' earnings management behaviors positively correlated with the diversity of the VC syndication.

In summary, there are no consistent findings regarding the impact of VC syndication on the invested companies' earnings management behavior based on the experience of foreign market. This might be due to differences in the research models, data, or methods. Meanwhile, the research regarding Chinese market is even more limited. China's VC market has a relatively short history but has undergone significant development and changes. The study of Chinese market will provide significant insights to help to understand the VC syndication in developing markets.

In this paper, we aim to provide a comprehensive empirical test of the impact of VC syndication on the invested companies' earnings management behavior in Chinese market. We also include in our study a variable to measure historical cooperation experiences among VC syndication partners. We assume that VC companies that have had good cooperation experience before are more trustful to each other, thus will incur smaller friction costs and leads to better monitoring process.

3. Methodology

3.1 Hypothesis

Teoh et al (1998) argue that the inconsistency between internal and external information provides motivations and opportunities for the managers to manage earnings before IPO to attract potential investors. On the contrary, other researchers argue that venture capital companies care about their reputations, so they supervise the listed companies to provide real information to the market, which will then reduce the degree of earnings management behaviors (Morsfield and Tan (2006). There are no consistent findings regarding the impact of venture capital on the invested companies' earnings management behaviors. Based on this, we construct our first hypothesis:

H1a: Companies with a venture capital background have a lower degree of earnings management in the year before IPO than the companies without a venture capital background do.

The alternative hypothesis is:

H1b: Companies with a venture capital background have a higher degree of earnings management in the year before IPO than companies without a venture capital background do.

For VC syndication, regardless of whether the leading venture capital contribution is high or low when supervising listed companies, the equities of the following venture capital companies are always smaller than the leading venture capital company, which might reduce their supervision enthusiasm and lead to "free riding" behavior. At the same time, the larger the number of members within VC syndication, the more friction they will generate. This will lead tothe poorer decision-making process and make it more difficult for the VC firms to supervise management deficiencies and respond to management speculation in a timely manner (cumming (2006), (2007)). Based on this, we propose the following hypothesis:

H2: Companies with VC syndication background will have a higher level of earnings management behaviors in the year before IPO than the companies with single VC company background.

H3: The more members of VC companies are in the VC syndication, the higher the level of earnings management behaviors the invested company will have in the year before IPO.

At the same time, some research argued that when the VC syndications become more diversified, the members are more likely to provide complementary services, and this might improve the supervision efficiency regards the earnings management behaviors of the invested companies. For example, after controlling the number of members in the VC syndication, Zhang and Tan (2013) empirically concluded that the diversification of joint ventures has a negative correlation with the degree of earnings management within the invested companies. According to this, we propose the fourth hypothesis:

H4: After controlling the number of VC companies in the VC syndication, the more diversified the VC syndication is, the lower the level of the earnings management behaviors the invested companies will have before IPO.

Venture capital companies are constantly looking for the best exit opportunities to maximize benefits. Due to their different motivations, VC members might have different attitudes towards earnings management, and thus can restrict each other's behaviors. Generally speaking, experienced venture capital firms need to protect their reputation and thus often discourage earnings management of IPO companies. On the contrary, young venture capitalists are more likely to chase the reputation of high investment return and thus are more likely to motivate the invested companies to manage earnings. (Gompers (1996)). As a result, we propose the Hypothesis 5 as below:

H5: The larger the equity that young VC companies held in the VC syndication, the higher the earnings management behaviors of the invested companies in the year before their IPOs.

The network of venture capital investment can prevent speculation behaviors of the VC companies from a structural and relationship perspective, as bad reputations will affect future relationships negatively. Consistent interests can reduce the possibility of conflicts of interest, which will improve the supervision efficiency. Using data from UK and US, Chahine (2012) found that UK's venture capital industry has stronger institutional effects and more concentrated regions than VC industry in the United States, so the overall degree of earnings management in the UK is less than that in the United States. Chinese venture capital companies are usually clustered in larger cities, such as Shenzhen, Beijing, Shanghai etc, and there are many emerging venture capital companies with equity investment from mature VC firms. It is excepted when the matured VC firms and young VC firms have consistent interests; they tend to do a better job supervising the invested companies and thus suppress their earnings management behaviors. Accordingly, we propose the following assumptions:

H6: Aligned interests among VC syndication members will reduce the earnings management behaviors of the invested companies.

3.2 Data

Our data sample spans from Oct 30, 2009 to Feb 15, 2015, including 427 companies listed on China's Growth Enterprise Market. Excluding companies which are delisted during the period or have missing financial data or prospectus data, our final sample has405 valid observations. We obtain the financial data and market data from the Guo Tai An database and the IPO information from the company's prospectus. We use STAT for our empirical analysis.

3.3 Research Variables

3.3.1. Variables for earnings management

Following literature, we uses the modified Jones model to measure the degree of earnings management in the year before the invested companies' IPO, which is shown as follows:

$$TP_t/TA_{t-1}=\beta_0\ (1/TA_{t-1})\ +\ \beta_1\ (\triangle REV_t-\triangle REC_t)\ /TA_{t-1}+\beta_2 PPE_t/TA_{t-1}+\varepsilon_t \quad (1)$$

Where: TP_t is the total accrued profit of the listed company in year t, which is calculated as net profit minus cash flow generated from operating activities. TA_{t-1} is the company's total assets at the end of the t-1 year. $\triangle REV_t$ measures the change in main business income at the end of t years compared with the end of t-1 years. $\triangle REC_t$ is the change in accounts receivable at the end of t years compared to the end of t-1 years. PPE_t is the net value of fixed assets at the end of year t. ε_t is the model residual, which is the operable accrued profit of the company in the year t, and we use this to measure the degree of earnings management in our paper. From the statistical regression, we estimated coefficients β_0, β_1 and β_2 and then calculate the earning management level as

$$EMt = TPt/TAt\text{-}1\text{-}13670517(1/TAt\text{-}1) + 0.00346\ (\triangle REVt-\triangle RECt)/TAt\text{-}1+0.15927PPEt/TAt\text{-}1 \quad (2)$$

3.3.2. Variables to Measure VC Background

Due to the generally low shareholding of venture capital companies, the background information of venture capital firms included in the top ten shareholders of listed companies usually is incomplete in Chinese databases such as Guo Tai An. To respond to this challenge, we manually reviewed 427 IPO prospectuses, focusing on sections such as "status of shareholders holding more than 5% of the shares of the issuer" and "equity of the issuer" etc. In this paper, we adopt a narrow definition, and only consider companies that include "venture capital" in their names, and investment institutions that include "venture capital" in their main business and operating activities as disclosed in the Prospectus. Companies whose main business is equity investment, project investment, and investment consulting are not included as the sample to have a venture capital background. Venture capital institutions shall have no affiliation with the actual controllers or managers of listed companies. Table 1 shows the general statistics of our sample based on the classification of VC background.

Table 1. Sample Statistics Based on VC Background

This table provides the number of investments cases based on whether it has a VC background on a yearly basis.

Year	With VC Background	%	Without VC Background	%	Sum
2009	22	5.43%	14	3.45%	36
2010	45	11.10%	68	16.77%	113
2011	53	13.07%	74	18.25%	127
2012	31	7.65%	43	10.61%	74
2014	20	4.93%	26	6.41%	46
2015	4	0.99%	5	1.23%	9
Total	175	43.21%	230	56.79%	405

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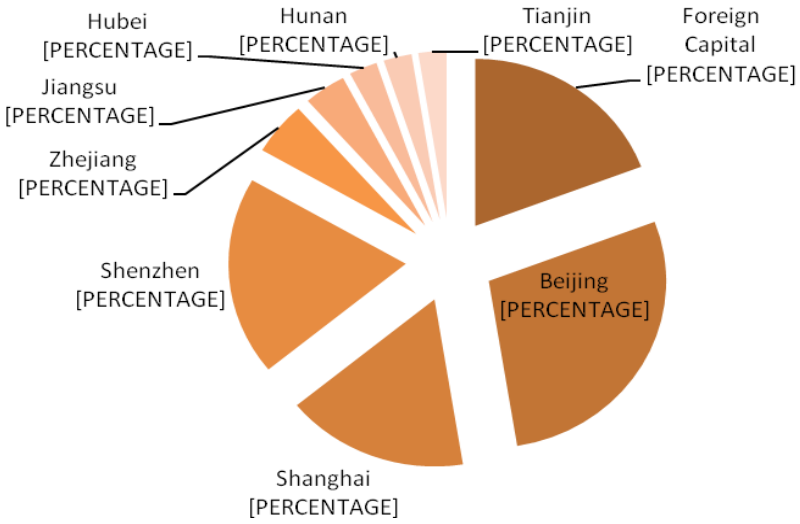
3.3.3 Classification of Leading Venture Capital Based on Reputation

We also classify our sample based on the reputation of the leading venture capital firm in the VC syndication. Our high reputation group contains venture capital companies, which are included in the Top 50 Chinese Venture Capital Institutions and China's Top 50 Chinese Venture Capital Institutions during the 2009-2014 period announced by Zero2IPO Group and Forbes.

The following table shows the distribution of the high reputation VC groups with different geographic background in China. As we can see from Figure1 that, the high reputation group are more concentrated in Beijing and Shenzhen area, with 28% and 19% respectively. This is then followed by Shanghai and foreign capital, and the remaining is distributed in Hangzhou, Suzhou, Wuhan, Changsha and Tianjin and etc. In China, the distribution of venture capital has a lot to do with the distribution of startup companies and most of the state-owned venture capital companies have their headquarters in Beijing and Shenzhen.

Figure 1. Pie Chart of VC Syndication's Geographic Locations in China



3.3.4 Classification of Listed Underwriters and Accounting Firms Based on Reputation

We used the C-M reputation method proposed by scholars Carter and Manaster in 1990 to create composite index of ranking for underwriters. The detailed calculated is explained below:

$$\text{Composite Index} = \sum_{T=1}^{5} \frac{(0.5 \times \text{Rank of the Underwriter in year T} + 0.5 \times \text{Rank of Underwriting Magnitute in Year T})}{5} \quad (3)$$

The rank of underwriter and underwriting magnitude was obtained from China Securities Industries Association from 2009 to 2014 (excluding 2013 when the IPO was suspended in China).

Similarly, we created the composite index for the accounting firms as follows:

$$\text{Composite Index of Accounting Firm} = \sum_{T=1}^{6} \frac{\text{Rank of Accounting Firm in Year T}}{6} \quad (4)$$

T is from the year 2009 to 2014. The rank of accounting firm was based on the top 100 Chinese Accounting Firms published by the Chinese Institute of Certified Public Accountants from year 2009-2014.

3.3.5 Measure VS Syndication Diversity

We first measured VC syndication diversity from the following three different perspectives:

(1) The number of the types of the controlling institutions in the VC syndication. VC syndication could have many different types of controlling institutions, which include bank holdings, non-bank financial institution holdings, corporate venture capital, social fund control, or private venture capital etc. We account the number of types of the controlling institution in the syndication and use it as one-way measure VC syndication diversity.

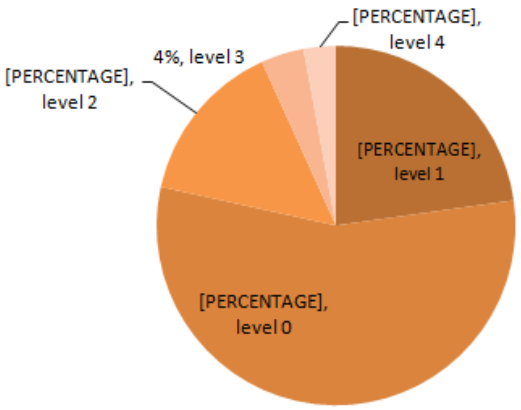
(2) Sources of capital, which include internal sources or external source.

(3) Geographic difference, in which we calculated the geographical difference between the leading venture capital and the remaining members of the venture capital.

For example, the geographic difference equals 2 if there are two VC firms that have different geographic locations than the leading VC firms in the syndication. We then created a composite index to measure the diversity of the VC syndication and classified the diversity into five levels: Level 0 to Level 4, with the diversity level going from low to high. Among them, level 0 is the largest group, with a leading percentage of 55%. This includes the VC syndications with more than half of the VC syndication members are from the same geographic and same type of the actual controlling institutions. From our statistics, most of the VC syndications in Shenzhen have a diversity level 0, and most of their leading companies are non-bank financial institutions. This indicates that the venture capital organizations in Shenzhen area are similar and then tend to cooperate with each other in investment.

For the rest of the groups, level one group takes the majority, with a leading 23% of the total sample. We also found that most of the diversity of VC syndication comes from the differences in the geographical locations and types of the actual controllers, and the low diversity level takes the majority.

Figure 2. Pie Chart of VC Syndication Diversity Levels



3.3.6 Variables to Measure Cooperation and Constraints among Members in the VC Syndication

Inconsistent interests lead to containment among group members. Generally speaking, VC companies with high reputation tend to be matured ones. Based on that, we classify the venture capital with high reputation venture (based on our classification of section 3.3.3) as the matured ones, and the remaining institutions as young ones. We then quantify the members' interest inconsistency as the proportion of the young members' shareholdings within the VC syndications with an aim to measure the extent how young venture capital interests affect the overall effect of joint venture capital on earnings management. At the same time, there are two other conditions that affect the cooperation among group members: (1) past successful cooperation experiences among group members (2) cross holding of shares among group members. Accordingly, we created a dummy variable VCCoop to measure cooperation among group members, which equals 1 if any of the above two conditions are met, and 0 otherwise.

We also created control variables from previous literature and the detailed descriptions of the variables are listed in Table 3.

Table 3. Descriptions of the Research Variables

Variables	Description	Type	Expected Sign
EM	Operable accrued profit, our measure of earnings management	Dependent Variable	
VCNO	Number of VC firms in the syndication, obtained from the prospects	Independent Variable	+
VCdiv	Diversity measure of the VC syndication	Independent Variable	-
VCCoop	Variable to measure consistent interests among VC members in the syndication, a dummy variable, which equals 1 if conditions are met, 0 otherwise.	Independent Variable	-
VCratio	The ratio of the shareholding of leading VC firm in the syndication.	Control Variable	-
VCyoung	The equity shares held by young VC firms in the VC syndication.	Independent Variable	+

VCfame	A dummy variable to measure Fame of the leading VC firm in the Syndication, which equals 1 if the leading VC is one of the top 50 VC firms in China.	Control Variable	-
VCplace	A dummy variable to measure the geographic difference between leading VC and the invested company.	Control Variable	-
Age	The age of the invested company, which is measured as the duration since establishment and IPO.	Control Variable	
Underwriter	A dummy variable to represent the reputation of the underwriter, which equals 1 for underwriter with high reputation, and 0 otherwise.	Control Variable	-
Audit	A dummy variable to represent the reputation of the auditing company, which equals 1 for auditors with high reputation, and 0 otherwise.	Control Variable	-
Asset	The variable to measure the scale of the invested company, which is calculated as the nature log (Ln) of the total assets of the invested company before IPO.	Control Variable	-
Growth	The variable to measure revenue growth of the invested company before IPO, which is calculated as the ($Revenue_t$ – $Revenue_{t-1}$)/$Revenue_{t-1}$.	Control Variable	-

3.4 Research Models

To test hypotheses 1, 2, and 3, we construct model 1 to examine whether companies with a venture capital background tend to have lower earnings management behavior before IPO compared with the listed companies without a venture capital background. At the same time, we also examine whether companies with multiple VC background have lower level of earning management than the companies with only single venture capital company background.

Model 1:

$$EM=\alpha0+\alpha1*VCNO+\alpha2*Age+\alpha3*Asset+\alpha4*Growth+\alpha5*Underwrite+\alpha6*Audit+\varepsilon \quad (5)$$

Where:

EM is the operable accrued profit, which we used to measure earnings management behaviors of the invested companies.

VCNO indicates the number of the VC firms in the syndication, which is the main explanatory variable in model 1. We also have Year, Asset, Growth, Underwriter and Audit as control variables.

We then extend model 1 to model 2 by including measures of the internal attributes of the VC syndication in order to test hypothesis 4, 5 and 6.

Model 2:

$$EM=\alpha0+\alpha1\times VCNO+\alpha2\times VCdiv+\alpha3\times VCCoop+\alpha4\times VCratio+\alpha5\times VCyoung+\alpha6\times VCfame+\alpha7\times VCtime+\alpha8\times VCplace+\alpha9\times Age+\alpha10\times Asset+\alpha11\times Growth+\alpha12\times Underwrite+\alpha13\times Audit++\varepsilon \quad (6)$$

4. Empirical Results

4.1 Descriptive Statistics

Table 4 shows the general statistics of the earnings management measures for the Chinese GEM companies. As we can see that there were 213 companies performing positive earnings management before IPO while only 192 companies performing negative earnings management with an average value of 0.0034 for the whole sample. This indicates that GEM companies tend to manipulate earnings positively, but the average value is not high.

Table 4. Descriptive Statistics of Research Variables

	No. of Obs	% of Sample	Mean	Medium	Max	Min	S.D.
Positive Earnings Management	213	51.3%	0.1192	-0.082	2.4782	0.0003	0.2253
Negative Earnings Management	192	48.7%	-0.1251	0.0657	-0.00196	-2.0649	0.2068
Full Sample	415	100%	0.0034	0.0040	2.4782	-2.0649	0.2487

Table 5 shows the earnings management statistics based on the VC background.

Table 5. Sample Statistics Based on VC Background

	No VC Background	Single VC Background	VC Syndication Background
Obs	230	84	91
EM(Earnings Management)			
Mean	-0.0212	0.0312	0.0398
Standard Deviation	0.2156	0.3456	0.1967
Age			
Mean	9.1870	8.4444	9.6824
Standard Deviation	4.5036	4.3643	4.4011
Asset (Ln of Total Assets)			
Mean	19.5966	19.6468	19.8309
Standard Deviation	0.7088	0.5618	0.6923
Growth (Revenue Growth)			
Mean	0.3114	0.4232	0.7707
Standard Deviation	0.3213	0.7362	0.5191
Underwriter (Underwriter Reputation)			
Mean	0.3597	0.5	0.4588
Standard Deviation	0.489	0.5	0.4983
Audit (Auditor Reputation)			
Mean	0.3957	0.4	0.4182
Standard Deviation	0.489	0.4899	0.4873

From table 5, we see that companies with no VC background tend to have negative earnings management before IPO, while companies with single VC background or VC syndication background all have positive earnings management, which is against

the argument of 1a that VC syndication, helps to curtail the earnings management behaviors of the invested companies before IPO. We also see that the mean value of companies' assets, revenue growth, company's age, underwriter, or auditor reputation tends to be higher for companies with VC syndication than those companies with single VC background or non-VC background. It suggests that venture capital companies have a screening effect on invested companies and at the same time, underwriters and accounting firms with higher reputation are more likely to sponsor and audit companies with a joint venture capital background.

Table 6. Descriptive Statistics of Earnings Management Based on VC Syndication Attributes

	Obs	Earnings Management	
		Mean	Standard Deviation
Total Sample	91	0.0398	0.1967
VCdiv (VC Syndication Diversification Level)			
0	14	-0.0192	0.2262
>0	77	0.0297	0.1718
Underwriter (Underwriter Reputation)			
High	25	-0.0266	0.1815
Low	66	0.0406	0.1777
VCplace (Geographic Consideration Between Leading VC Company and Invested Company)			
Same Province	43	0.0514	0.198
Different Province	48	-0.0014	0.0612
VCCoop (Cooperation Among VC Syndication)			
Yes	19	-0.0859	0.1842
No	72	0.0507	0.1693
VCyoung (Equity Shares of Young VC Companies)			
<50%	29	-0.0582	0.1855
>50%	62	0.0598	0.1664

Table 6 shows the distributions of earning management levels based on various internal characteristics of VC syndication. As we can see that for companies that have VC syndication background, there are much less companies with a diversity level of 0 than the company with a diversity level above 0, and their mean earnings management level is far lower. This is against our Hypothesis 4, which argues that the diversity of VC syndication leads to higher level of earnings management behaviors of the invested companies. We also found that the proportion of investments by venture capital firms with high reputation is not high. The reason for this might be that most of the mature venture capital companies in China choose to invest in large companies that are usually not listed on the GEM, but on NASDAQ, the Hong Kong Stock Exchange or the Shanghai-Shenzhen SME Board etc. For example, Sequoia Capital, Public Comment, invests JD.com and Alibaba by SoftBank China Capital, etc., choose not to list in China, but instead on NASDAQ, so the number of GEM samples with high reputable VC syndication is relatively small. However, even with the smaller sample, we can still see that the average earnings management level tends to be negative when they have a VC

background with high reputation; while on the contrary, the average earnings management level for the companies with a background of young VCs is positive. This indicates that mature VCs did a better job supervising the earnings management behaviors of the invested companies. We also see that when leading venture capital and the invested companies have same or close geographic locations (i.e. same provinces), the invested companies tend to have lower average level of earnings management behaviors.

This supports the argument that similar geographic background can help venture capital play a better supervisory role on the invested companies' earnings management behaviors. We also see that the sample size of the companies with cooperation factors is much smaller than the sample without cooperation history. However, we think this may not reflect the reality in China due to sample selection biases. In this paper, we only select the invested companies from the scope of the GEM which includes about 400 companies, however, in China there are far more investment cases of VC syndication than those from GEM and there are also many cooperation histories that have occurred in small and medium-sized board companies or unlisted companies. Therefore, the statistical process of cooperation variables may not be completely accurate to reflect China's reality. However, even with this sample selection, we still see that when VC companies have a cooperation history, the invested company tends to have a much lower earnings management level than those without the cooperation history. This supports our hypothesis 5: when VC companies have lower frictions among them, they tend to do a better job supervising the earnings management behaviors of the invested companies. Among the 91 observations, 62 companies have a background where young venture capital holds50% or more of the equity share, indicating that young venture capital firms are the primary investors of China's GEM companies. We also noticed that those companies have a higher average degree of earnings management level than the companies do with a background of young venture capital taking less than 50% of the equity. This implies that when the combined equity of young venture capital exceeds that of matured venture capital, the syndications' supervising capability declines. This is consistent with our hypothesis 4.

4.2 Correlation Analysis

Table 7. Shows the Spearman Correlation results among our main explanatory variables

	VCNO	age	growth	size	Underwrite	audit
VCNO	1					
age	0.058	1				
growth	0.069	-.168**	1			
size	.238**	0.093	-0.027	1		
Underwrite	.263**	-0.048	-0.052	0.067	1	
audit	0.051	-0.092	-0.049	0.029	-0.047	1

Note: ** and * represent significance level of 1% and 5%（2-tailed）respectively.

As shown in Table 7, there is a negative correlation between the growth rate of operating income and the duration of the company's establishment, and it is significant at the level of 1%. According to the theory of the company's growth cycle, this may be because the company with a long establishment period is more mature and thus the growth rate of operating income has declined. We also noticed a positive correlation between the size of the company and the number of venture capital investment, which is significant at the level of 1%. This indicates that venture capital institutions are more inclined to invest in larger companies. The correlation between the underwriter's reputation and the number of venture capital firms is also positive and significant at 1% level. This implies that companies with a more venture capital background attract underwriters with high reputations.

We also performed VIF test to evaluate the multicollinearity issue in our model, and the result is shown in table 8.

Table 8. VIF Test Result

Variable	Tolerance	VIF
Audit	0.948	1.05
Underwriter	0.963165	1.04
VCDiv	0.469961	2.13
VCNO	0.551577	1.81
VCCoop	0.956996	1.04
VCratio	0.956996	1.08
VCfame	0.454764	2.20
VCyoung	0.501477	1.99
VCplace	0.875488	1.14
Year	0.918054	1.09
Asset	0.886074	1.13
Growth	0.961678	1.04

As we see from table 8 that all our explanatory variables have a VIF smaller than 10, which indicated that we do not have the multicollinearity problem.

We also run regression analysis to investigate the relationship between the invested companies earning management behavior and the VC syndications' various attributes. Table 9 shows the results.

Table 9. Empirical Results of Regression Analysis

	Model 1	Model 2
VCno	0.0210 *	0.0457 **
	0.086	0.027
Year	-0.0021	-0.0078*
	0.446	0.082
Asset	0.0699 **	0.0136
	0	0.628
Growth	-0.0004	-0.0635*
	0.989	0.076
Auditer	-0.0182	-0.0543
	0.463	0.144
Underwriter	0.0422 *	0.0126
	0.086	0.73
VCdive		-0.0253
		0.468
VCCoop		-0.1232***
		0.008
VCratio		-0.0006
		0.858
VCfame		-0.0668
		0.303
VCyoung		0.1247 *
		0.072
VCplace		0.0323
		0.4
R-squared	0.0573	0.2515
Adj R-squared	0.0431	0.1364

***, **, * represents significant levels at 1%, 5% and 10% respectively.

As we see from the result of Model 1, there is a positive correlation between the number of VC firms in the syndication and the invested companies' earning management behaviors. This supports our hypothesis 1b, 2, and 3. The coefficients of VCDiv, VCfame and VCratio are all negative, indicating that when the VC syndications are more diversified, the leading VC firms have higher reputations, or the leading VC firms have larger equity shares, the invested companies will have less earning management behaviors, but the impacts are not significant. The coefficient of VCCoop is also negative with a significance level of 0.1. This supports our hypothesis 6 that when the VC syndication partners have more cooperation history, they will do a better job monitoring the invested companies' earnings management behaviors. We also noticed that when the leading VC firm and the invested companies are in different locations, the invested companies tend to have a higher level of earning management behaviors. This might be due to the higher monitoring costs resulting from long distance. At the same time, the coefficient of variable VCyoung has a positive and significant coefficient, indicating that when the young VC firms have higher equity shares in the syndication, the invested companies tend to have more earnings management behaviors. The larger the shareholding ratio of the leading VC, the more concentrated the internal equity of VC, and the more effectively it can play a

supervisory role. The high reputation of leading venture capital to reduce earnings management level validates the supervision motivation brought by the reputation effect of venture capital.

Moreover, we also noticed that variable "year" and "Growth" tend to negatively be correlated with the invested companies' earnings management behaviors. This implies that the more established the companies are and the higher growth they experienced before their IPOs, the less earnings management behaviors the invested companies will have before IPO. We argue that this might be because more established companies tend to have more standardized regulations and thus will suppress the invested companies' earnings management behaviors. At the same time, companies with fast growth are easy to attract investors and thus have lower motivation for earnings management. However, the coefficients of "growth" and "year" are much smaller than those of other variables are, indicating that they have smaller impacts on the invested companies' earnings management behaviors than others. We also see that the total assets of an enterprise are positively related with the companies' degree of earnings management. The reason might be that the larger the enterprise, the more complex the financial statements will be, and thus provides more convenience for the company to manipulate earnings. In addition, we see that the variable "Underwriters" has a positive coefficient, which is inconsistent with the expected sign. We argue that this might be because underwriters intentionally encourage IPO companies to manipulate their earnings to pass the approval of listing as soon as possible in order to maintain a high ranking of underwriting deals and income. On the contrary, "Auditor" has a negative coefficient, indicating that auditing firms with good reputations did a better job suppressing the invested companies' earnings management behaviors. This might be because firms with a high reputation have more incentive to monitor the listed companies to provide correct disclosure of financial information in order to avoid future litigation and compensation arguments.

4.3 Robustness Tests

In the robustness tests, we used the two different other measurements of accruals to estimate the earnings management behaviors of the invested companies, as shown below:

$$EM_t = TP_t/TA_{t-1} - (\beta 0 + \beta 1 \times \Delta REV_t/AS_{t-1} + \beta 2 \times PPE_t/AS_{t-1})$$

Or

$$EM_t = TAC_t/AS_{t-1} - (\beta 0 + \beta 1 \times (\Delta REV_t - \Delta REC_t)/AS_{t-1} + \beta 2 \times PPE\ t/ASt\text{-}1)$$

The results of the robustness check are similar to our original analysis. The minor differences mainly focus on the coefficients of number of VC firms in the syndication. The coefficients of the VCNoare negative in our robustness check, but the results are not significant. Results for the robustness check are available upon request.

5. Conclusions

In this paper, we use a sample data of 415 companies listed on the China GEM from 2009 to 2014 to investigate the impact of VC syndicaiton on earnings management behaviors of invested companies.

Unlike results documented in previous literature, our empirical research shows that the VC background positively related with the invested firms' earnings management behaviors one year before IPO. To be specific, we found that in China, compared with companies with venture capital background, companies with no venture capital background actually have lower degree of earnings management. There might be three reasons for that:

First of all, China's venture capital industry started in the 1990s and has only a history of about 20 years. Also, China's venture capital industry usually have different organizaiton format than those of foreign countries do, i.e, foreign venture capital institutions usually adopt a limited liability partnership system, while China's venture capital institutions mostly likely adopt a limited liability company system. The different orgnaizaiton format leas to different system regarding responsibility, profit distribution, and decision-making etc. In addiiton, Chinese venture capital companies prefer to invest in companies that are close to IPO stage, and at the same time, a large number of young venture capitalists are egaer to promote their listing as soon as possible to build their own reputations and thus are more likely to motivate the invested companies to manupuate earnings to achive the goal.

Secondly, among our more than 400 samples companies selected, the total equity share equity owned by venture capital firms rarely exceeds one-third of the total share, which is far lower than those of major shareholders. On the contrary, the major shareholders of the sample companies usually hold more than 50% of the equity, this signficiantly reduce the control power of venture capital firms and thus greatly weaken their supervision of the invested companies.

Third, China's capital market is still not mature and thus have information asymmetry and opacity issue. This gives managers opportunities and motivaitons to manupuate earnings and make is challenging for the VC firms to succesfully play the monitoring role.

To help overcome this situation, we argue that China's venture capital companies should be guided to form mature investment concepts and also explore more exit channels in addition to IPO, so that venture capital can pley a better supervising role to support the success of high-tech companies or SMEs. At the same time, we propose that China should introduce more foreign venture capital to invest in SMEs and develop effective investment methods suitable for China's national conditions. The mutual integration of foreign investment and China's capital market conditions will gradually change the companies' behaviors, and Chinese venture capital institutions can also benefit from foreign operating models.

We also found that compared with companies with a single venture capital background, companies with multiple VC background tend to have a higher degree of earnings management, and the greater the number of joint ventures in the syndication, the higher the degree of earnings management will be. This indicates that ownership dispersion has a significant impact on the supervising results of VC firms on the invested companies. Through the study of other characteristic variables, we argue that this negative effect can be minimized by choosing an appropriate method for joint investment. Thus we suggest the following:

(1) Increase the diversity of joint venture capital, integrate different sources of funds; increase the shareholding of leading venture capital and joint holdings of venture capital companies;

(2) Increase the equity holding of leading VC firms and the joint holdings of VC firms. The concentration of holdings makes the interest of leading venture capital more inlined with the interst of thecompany, and thus has more enthusiasm to monitor the company;

(3) Choose a leading venture capital with higher reputation. As high-profile VCs firms value more of their reputation and thus have more motivatons to actively monitor the company's operations;

(4) Choose a leading venture capital firm which has the same geographic locaiton as the invested companies. This will reduce the monitoring costs and improve the supervising results;

(5) When selecting VC syndiciaton partners, venture capital companies should be encouraged to choose companies with a history of successful cooperative investment experiences or companies with mutual shares as partners for joint investment in their own spatial relationships. Such a combination has mutual trusts and benefits and thus will benefit the invested companies.

(6) When selecting members, VC syndicaition should also pay attention to balance the shareholding ratio of young VCs and mature VCs. Empirical evidence shows that the larger shareholding ratio of young VCs will weaken the supervising activities of VC companies. We also recommend that investment should be lead by the mature VCs, which can better suppress the impacts of young VCs' motivaiton toaccerlerate the IPO process. Our paper has multiple contributions. From a theoretical perspective, we bridge the gap in literature by providing an systematic analysis of the impacts of venture capital syndication on the invested companies' earnings management behaviors. From the practical perspective, the results of our paper provides signfiicant insights for the establishment of joint investment portfolios, the formulation of investment strategies for venture capital companies, and the cooperation between venture capital institutions and venture capital firms. These will provide signficiant insights for policy setting in China regarding Venture Capital.

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