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Syndication through social embeddedness: A comparison of foreign, private and state-owned venture capital (VC) firms

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Abstract This paper explores the different syndication behavior in various types of Chinese venture capitals (VC), in particular it focuses on foreign, private-owned and state-owned VC firms and these firms' behavior when faced with institutional uncertainties. Mixed methods data analysis was conducted using the Simuton database of 1,173 VC firms and snowball interviews were also conducted in the Chinese state-owned and private-owned VCs as well as foreign VCs. Findings indicate foreign VC investors are more willing to build much denser relationships than those of Chinese state-owned and private VC firms in order to overcome the uncertainty. This result provides additional evidence that adopting close relationships or a *guanxi*-based (informal social network) strategy does not only depend on cultural issues such as

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East Asian culture, but also on high institutional uncertainty. Furthermore, this paper develops four propositions on how VC firms establish syndication influenced by high institutional uncertainty. Finally, the conclusion and discussion sections put forward implications to VC companies about how informal social networks facilitate the internationalization process and growth in foreign markets.

Keywords *Guanxi* (informal social network) · Venture capital (VC) · Syndication · Liability of foreignness · State-owned · Social embeddedness

This paper investigates the variety of co-investment behavior of foreign VC (venture capital), state-owned enterprise (SOE) and private-owned VC firms in China. A syndication tie indicates that two VCs synchronously invest in one investee (Bygrave, 1987). In the quantitative study, if two VCs announce their investment in the same firms at the same time, one syndication tie will be counted between these two VCs. In the relevant literature, resource related logic is often seen as the dominant reason for a partners' selection, this is mainly true of Western companies who make their choice based on resources like core competence and complementarity (between the two companies). In the Chinese context, companies are more willing to choose partners based on mutual trust and personal relationships (Luo, 1997; Ou, Pavlou, & Davison, 2014; Taormina & Gao, 2010). In China, companies put more faith in close relationships or *guanxi* (informal social network) instead of formal relationships such as contracts, which are regarded as relational-dominant logic (Lu, Trienekens, Omta, & Feng, 2009; Luo, 1997).

Interestingly, the story is hugely different in the China VC industries for foreign and Chinese VCfirms. It was found that VC firms from foreign countries build more co-investment relations than domestic investors in China, especially in comparison with state-owned VC firms. Explaining this phenomenon poses a challenge to *guanxi* theories: to use a *guanxi*-based strategy is not only determined by the culture (East Asian culture) but also determined by other factors. This paper tries to use both quantitative and qualitative methods to propose an answer based on social embeddedness theory.

There are two main groups of theories explaining the syndication of investors. One is related to rational choice theory or resource-dominant logic, and the other one is related to network theory. Rational choice theory emphasizes the attempt by one actor to maximize their pay-off through syndication. In an uncertain environment such as the VC industry, it is highly possible to suffer a loss, and firms use partners to lessen risk (Wilson, 1968). In order to avoid the liability of foreignness (Johanson & Vahlne, 2009; Zaheer, 1995) especially in the Chinese market, companies are more willing to seek syndication partners. Thus, other theories focus on resource-based reasons, and argue the importance of diversified resources pooled together so as to compensate for each firms' insufficiency (Lockett & Wright, 2001; Tykvová, 2007). In a complex investment project requiring various types of knowledge and experience, cooperation among heterogeneous partners is helpful to get successful results (Brander, Amit, & Antweiler, 2002).

Instead of emphasizing the motivations behind syndication, network theory shifts the focus from investment events to the relations themselves, and puts attention on the logic behind cutting and building syndication ties (Padgett & Powell, 2012; Stacey, Griffin, & Shaw, 2000). In network dynamics, new syndication ties are built, old ties are cut, and many existing ties are maintained (Polidoro, Ahuja, & Mitchell, 2011; Rowley, Greve, Rao, Baum, & Shipilov, 2005). Attachment patterns, for instance, preferential attachment—where an actor prefers to build relations with a central node in a network—are explored to explain the evolution of a complex system like the VC industry (Barabasi, 2005; Powell, White, Koput, & Owen-Smith, 2005).

Although these two lines of theories have several similarities, this paper will further address the network theory to propose explanations for the different networking behaviors, hence the research question is:

What kind of syndication ties do various VC firms (state-owned, private-owned and foreign investors) create? And why do they create these kinds of syndication ties?

To answer this question, we propose the following research strategy:

First, quantitative data on syndication networks in the Chinese VC industry is analyzed and descriptive statistics are used to delineate the different network types among various VC firms.

Second, we interpret the findings of descriptive statistics based on the qualitative data collected from some experts in this industry.

Finally, following the interpretation of the data, this paper proposes an explanatory model for the above-stated questions. In other words, quantitative data analysis is utilized to uncover the findings, and qualitative data follows to interpret the findings. This combination of methods (Small, 2011) helps us to suggest four propositions to address the possible theory for different networking behaviors among various types of VCs.

This article is for theory exploration, rather than an empirical study for testing a theory (i.e., developing theoretical arguments, getting hypotheses, using quantitative data to test the hypotheses, and making conclusions). Rather, this exploratory strategy is a process of finding, interpreting and developing theoretical propositions.

The quantitative analyses show foreign investors are more willing to utilize a *guanxi*-based/relationship-based strategy than Chinese state-owned and private-owned VC firms. Foreign VC firms have denser syndication ties than other VC firms. In the quantitative network analysis, we found that a *guanxi*-based strategy is not a Chinese culture-specific strategy, instead it may take place within a cross-cultural context, and with varying degrees of density. In the qualitative study, we further find that the adoption of a *guanxi*-based strategy does not only depend on culture, but also on high institutional uncertainty. In the discussion, we also propose four propositions to try to explain how VC firms establish syndication ties in the context of high institutional uncertainty.

This paper is divided into several parts: the next focuses on a literature review, and covers social embeddedness theories and international business theories. The third part uses a mixed method research methodology (i.e., a research methodology that mixes qualitative and quantitative research techniques) (King, Keohane, & Verba, 1994; Small, 2011), to investigate the differences in the networks of foreign, private and state-owned VC firms in China. In the fourth section, results are presented and relevant modifications of the propositions are also considered. The final section discusses the paper's theoretical and practical contribution and also outlines future research.

Literature review

From resource-dominant logic to relation-dominant logic

The resource-based view (Barney, 1991; Das & Teng, 2000) posits that domestic firms internationalize themselves when they need to obtain competitive advantages in order to overcome the liability of foreignness or “being an outsider” (Golafshani, 2003; Vahlne, Schweizer, & Johanson, 2012; Zaheer, 1995). Companies are reluctant to expand without advantages (Chen & Chen, 1998; Johanson & Vahlne, 2009). Hence, the Uppsala school put forward a process of incremental internationalization, whereby a company gradually builds up their competitive advantages overseas (Johanson & Mattsson, 2015; Johanson & Vahlne, 2009). After that, Dunning and his colleagues also summarized three key advantages in the OLI framework to demonstrate the reasons that companies internationalize: ownership, location and internal advantages (Dunning, 2001; Dunning & Lundan, 2008; Stoian, 2013).

Furthermore, scholars also highlighted how network-based resource advantages increase internationalization. The network-based approach (Chen, 2003; Chen & Chen, 1998) addresses existing strategic and relationship linkage and hen expands this to business overseas. However, these studies view internationalization through the lens of competitive advantage, indicating a resource-dominant logic. However, in some cases, companies expand into some market were they lack significant advantages. For example, new markets with large potential or the new market all the competitors are willing to enter. In such situations, companies have to deal with an even more complicated environment including market and institutional uncertainties. The “ecosystem strategy” is introduced to overcome such uncertainty (Rong, Wu, Shi, & Guo, 2015). The theory highlights the importance of stakeholders and suggests companies in an unfamiliar market should build up a community of complementary partners, made up of leading partners and other supporting partners to create potential opportunities. This strategy mainly revolves around relational-dominant logic which differs from resource-dominant logic.

Why do two VCs want to build a partnership relation? Relational-dominant logic answers this question by looking at how syndication may occur between two (or more) investors with similar features, such as geographical and industrial proximity (Kogut, Urso, & Walker, 2007), or their mutual adoption of an industry trend (Powell et al., 2005). In preferential attachment theory, syndication may also occur due to an investor on the periphery of a network wanting to link with an investor with a high-degree of centrality. Actors in the VC industrial network may cut and build ties in order to attain a better position in the network, such as a central or bridging role (Bygrave, 1987, 1988; Chiplin, Robbie, & Wright, 1997), influence on other investment partners (Sorenson & Stuart, 2008), or get a good reputation in the industry (Tykvová, 2007). Gaining a better position in the VC network increase an actor’s chances of survival (Hochberg, Ljungqvist, & Lu, 2007, 2010).

Following this line of research, social embeddedness theory (Granovetter, 1985) leads us to emphasize the connection between networking behavior and high environmental uncertainty, which is the main factor separating the actions of a foreign VC from an SOE in China[1] (Luo, Zou & Guo, 2016). Thus, social embeddedness theory is used to complement resource-dominant logic to re-examine international business theories.

Relation-dominant logicin VC syndication networks

Social embeddedness theory was proposed by Granovetter (1985) to join social network and governance theories. This theory argues that economic actions are embedded in social networks, and mutual trust bred in social ties is an important mediator between people's social life and the good governance of their economic transactions. Due to bounded rationality and opportunistic behaviors of actors, as well as information asymmetry between the transacting parties (Simon, 1976), some types of economic transactions will have high transaction costs if conducted in markets. Thus, hierarchy may be an alternative governance mechanism to replace the market when doing such deals (Coase, 1937; Williamson & Winter, 1993).

In a dialogue with this famous argument of "markets and hierarchies" (Williamson, 1979; Williamson & Winter, 1993), social embeddedness theory illustrates how personal trust brought by social relations is important in both market-related and hierarchy-related transactions. On the one hand, mutual trust renders detailed contracts and costly lawsuits irrelevant and thus reduces transaction cost, which influences actors' choice of governance mechanisms. On the other hand, any type of governance mechanism needs some degree of mutual trust to lubricate the process of cutting a deal; otherwise, no transactions can be completed (Granovetter, 1985).

The contribution of social embeddedness theoryis to let social network theorists enter into the studies of governance, by investigating network-related mechanisms and various types of mixed forms of governance (Powell, Koput, & Smith-Doerr, 1996). In addition, this theory provides an analytical tool for studying social orders by examining the disordered behavior in transactions and social exchanges, and finds the solutions hedged against the uncertainties caused by disorder.

A co-investment in VC industry is a transaction between two investors. It often occurs in an environment with high uncertainty, in addition to other uncertainties that result from the transaction itself, which are asset specific and carry the possibility of high behavioral uncertainty (Williamson, 1979). Both parties to a co-investment will find formal contracts difficult to fulfill when solely relying on market-related governance mechanisms (Williamson, 1996), and various forms of relation-related governance mechanisms are generally implemented to reduce transaction cost (Hemmert, 1999). Since cooperation between two VC firms lasts for a very long time in such a highly uncertain environment, there is always a risk of moral hazard (Holmstrom, 1982). Firms may engage in free-riding or opportunistic behavior, and some research thus focuses on the rational design of governance mechanisms for enforcing benign behavior (Admati & Pfleiderer, 1994; Tykvová, 2007). Without benign behavior, even the combination of diversified resources cannot guarantee success. Thus, social embeddedness theory (relational-dominant logic) was introduced to explain collaboration over the long-term.

[1] Most SOEs are operated by various levels of local governments, rather than the central government.

When considering why foreign investors have more active networking behavior than Chinese private and state-owned VC firms, social embeddedness theory provides a theoretical tool to investigate the link between social ties, transactional uncertainties and governance mechanisms. In addition, state-owned VC firms receive protection from their political ties and thus possess a greater ability to hedge against environmental uncertainties than their foreign counterparts (Luo et al., 2016). This is especially effective for dealing with uncertainties caused by the institutional environment, such as frequently changing policies, incomplete legal systems, local government intervention, rent-seeking behavior, and so on. The VC industry in China is a paradigmatic case of high market and institutional uncertainty. Social embeddedness theory (Granovetter, 1985, 2017) leads us to focus on governance mechanisms, and thus answer the question why it is that foreign VCs in particular, are more inclined to build up close syndication ties to deal with liability of foreignness in China.

Research questions

Following the social embeddeness view, we will investigate the different syndication strategies in the VC industry.

As stated above, it is important to re-consider the logic of market entry and growth strategy in a foreign market, especial in the VC industry. One of the main issues in a foreign market is the greater number of uncertainties: (1) A foreign firm has to deal with the liability of foreignernness, especially when the market is highly influenced by policies, such as in China; (2) The VC industry normally has a long investment cycle which generates even more uncertainty. As a result, a VC firm will set up syndication ties and use the mechanism of social embeddedness to overcome these challenges. Due to the differing circumstances of foreign, private-owned and state-owned VC firms, they have different patterns of syndication ties as well as ways varying ways of establishing these ties.

Hence we have the following research question:

What kind of syndication ties do VC firms create to deal with institutional uncertainty?

Data and method

This paper will adopt a theory building approach to address the research question. We use mixed methods to address the question. Mixed methods are found to be very productive in many fields of research (Small, 2011). First, we need to know the current pattern of syndication network created by three types of firms (state-owned, private-owned and foreign VCs). Quantitative methods (Saunders, Lewis, & Thornhill, 2009) offer the whole picture of an industry and an average for the behaviors of different types of VC firms. Second, qualitative methods, such as the grounded theory (Eisenhardt, 1989; Yin, 2008), provide detailed information concerning a VC firm's behavior and motivations for their syndication ties. After the grounded theories analysis, we then deliver four propositions based on interaction between institutional uncertainty and the three types of VC firms. Those propositions could be tested in future research. Both of the methods are important for investigating a VC firm's syndication network and the motivation behind networking behavior.

Quantitative data analysis

There are several databases that collect the activities of VC firms in China, such as Simuton Database and ChinaVenture. In addition, a VC Research Institute's annual reports release relevant indexes in the VC field for the years 1995 to 2015 (Simuton Database, 2016. http://www.pedata.cn/ /). For the quantitative study in this research, data were mainly collected from the Simuton Database, which collects a variety of data from the Internet and modifies it into a structured form. This dataset provides more detailed and rich information on the Chinese VC industry than the other two databases. Information from the Internet and government documents were used to modify the dataset, which aided in distinguishing state-owned VC firms from Chinese private VC firms.

Using this data, information for 1,173 VC firms with their investment data from 1995 to 2013 was obtained. Investment data include: Investment time, investees' name, industry, location and stages in their growth, and so forth. These data form a two-mode network (i.e., a network composed of the arcs from investors to investees). Among these VC firms, 319 are from foreign countries, 561 are domestic private firms, 265 are state-owned, and 28 are joint investments between foreign and domestic VC firms. Since the number of joint investments is small, they are excluded from the following analysis. If two VC firms invest in the same investee at the same time, then we compute this event as one co-investment. We thus transform the two-mode network into a one-mode network (i.e., a network only composed of VC firms and their joint investment relations).

There are generally several runs of investments in the growth path of an investee. Joint investments in the mature stage of an investee may not imply cooperation between the two investors, because the investee may have the option of selecting various investors at this stage. In other words, two investors may not know each other before they are selected to join. So data for investment events in the mature stage are removed, and only 731 VC firms with valid joint investments in the investees' initial stage remain. We thus have a 731×731 matrix for computing the network features of all VC firms.

In order to facilitate the understanding of the analysis, we also visualize the result. We have selected one VC firm from foreign investors, private firms and SOE groups. This network diagram will aide in understanding the difference in syndication ties established by these three groups.

Qualitative studies based on interviews

Our qualitative research is composed of interviews conducted using the Delphi method. We used snowball sampling to collect qualitative data, beginning from two important and in-depth interviews, the research team eventually interviewed 10 interviewees. Table 1 shows the background and information of the 10 informants. Among them, one is the leader of a central government research institute, three are CEOs of major state-owned

Table 1 The 10 interviewees in the qualitative studies

Interviewee	Occupation	Time	Location	Recorded Interview
Mr. L.	An junior manager in a state-owned VC firm	2012/8	Beijing	Y
Mr. Z.	An junior partner of private VC investor	2012/7	Tianjin	
Mr. Y.	A senior partner of a private VC investor	2012/7 and 2013/4	Beijing	Y
Mr. C.	A CEO of a state-owned VC firm	2013/10	Tianjin	Y
Mr. X.	A manager of a branch of a large VC investor	2012/12	Tianjin	
Mr. S.	A CEO of a private VC in the tech industry	2015/1	HuiZhou	Y
Mr. G.	The head of a central government affiliated research institute	2013/10 2014/6 2015/4, and 2017/1	Beijing	Some are recorded
Mr. Li.	The CEO of a leading foreign VC	2015/5	Shanghai	Y
Mr. D.	The CEO of a leading state-owned VC invested by a province	2015/5	Nanjing	Y
Mr. H.	The CEO of a leading state-owned VC invested by a city	2015/5	Shanghai	

VC firms, one is the CEO of a foreign investor, and one is a senior manager of a large private domestic VC firm. The questions include the history of networking behaviors of the firm, the motivation behind these behaviors, a detailed description of some syndications, the influence of industrial environment on syndication behavior, and their expert opinions concerning the difference between foreign and domestic VC firms.

An in-depth investigation of one typical case will provide a useful description of the key milestone or event network, the process of networking behaviors, and contribute to a more comprehensive research result (Eisenhardt, 1989). The senior manager of the large private domestic firm recommended several partners, including some small investors and junior managers, so that we can collect information from employees in different position, so as to provide multiple perspectives of a syndication event. In addition to the questions stated above, we further ask the following: How does a leader select a partner, the motivation behind the choice, the reason why subordinates will want to follow, detailed networking behavior and decision processes in this event, and so on.

Findings

Syndication network patterns

Statistics analysis

In this section, the propensity to syndicate (i.e., the proportion of co-investments of a VC firm's total investments) was computed. This was calculated for all VCs, and an average for these statistics was created for the four firm categories: Foreign, state-owned, private, and joint venture firms. Table 2 shows the analytical results. Of the 1,173 firms, foreign

Table 2 The propensity to syndicate of the various types of VCs

Descriptive statistics results							
		Investment amount(M)		The propensity to syndicate		Duration of entering Chinese market	
Capital type(I)	*N*	Mean	SD	Mean	SD	Mean	SD
State-owned	265	197.47	658.56	.26	.34	6.58	4.80
Private	561	154.00	581.65	.39	.42	4.33	3.25
Foreign	319	147.28	512.46	.50	.24	7.77	4.51
Joint-owned	28	148.82	297.83	.26	.40	7.14	5.35
Sum	1173	161.87	577.08	.39	.40	5.84	4.32

Investment amount is in millions of Yuan (about 6.9 Yuan = one US dollar)

investors have an average scale, in terms of the investment quantity, similar to domestic private firms, while SOEs are significantly larger than both of these two types of firms. Larger investors in general have more investment events and thus more chances to build social relations, but the results of our analysis are different; showing that foreign investors have a significantly higher tendency to engage in syndication than domestic private and joint-venture firms, which are in turn significantly more likely to syndicate than state-owned VC firms. Comparing syndication propensity, Chinese SOEs' average is lower than that of private firms, while foreign investors' propensity is highest (i.e., .26 vs. .39 vs. .50). Clearly, foreign investors engage in more syndicated investments, while SOEs are least likely to have co-investments.

Only 731 VC firms have records of their co-investments, and we will analyze only foreign, private and SOE investors in the following. Of these 731 firms, 238 foreign investors (74.6% of all foreign investors), 348 private firms (63% of private VCs) and 145 SOEs (54.7% of all state-owned VC firms) are included. All others are excluded since they do not have co-investments. These foreign and state-owned VC firms with records of syndication were included in our analysis, since the comparison between them is the focus of this paper.

Table 3 illustrates three network features indicating three types of networking behavior. Comparing investment amounts, SOE VC firms' average is higher than that of foreign investors (303 vs. 184), but the difference is not significant ($p = .11$). Degree centrality measures the number of syndication ties owned by a VC, shown as the following:

Degree centrality measures the number of syndication ties owned by a VC, shown as the following:

$$\mathrm{D}_i = \sum N_{ij}$$

Where N_{ij} is a node j which has an edge with node i.

This is an indicator for the amount of ties of VC firms in the industrial network. Foreign investors have an average degree centrality of 13.6, much higher than that of private VCs (5.24) and state-owned investors (6.58).

We then compute the K-shell value, another indicator of a firm's importance in the industrial network. When computing the K-shell value, firms with only one syndication tie with other firms were erased from the whole industrial network in each run. After those

Table 3 The network features of the various types of VCs

Capital type	Variables	Investment amount	Degree (centrality)	CC	K-shell	FN2	Duration
Foreign	Mean	184.56	13.56*	.53*	6.17*	5.29*	8.13
($N = 239$)	SD	584.16	19.88	.38	4.45	10.13	4.35
Private-owned	Mean	154.00	5.14	.47	3.01	3.64	4.86
($N = 328$)	SD	581.65	9.86	.44	2.43	5.94	3.32
State-owned	Mean	303.71	6.58	.36	3.25	1.87	7.7
($N = 146$)	SD	856.68	15.19	.39	2.96	6.565	4.73

1. * indicates the variables of foreign VC companies are significantly different from the state-owned VC companies with a significance level of .0

2. Investment amount is in millions of Yuan (about 6.5 Yuan = one US dollar)

3. FN2 means the number of friends who have more than 2 (contained) times co-investment with a VC

with one tie are all erased, the VCs with two ties are erased from the whole network, and so on. The K-shell value is the number of runs that a VC firm can survive in the network. For example, if a VC firm is erased in the ninth run, then its K-shell value is nine. The highest value is 14, while the lowest is one. A high value indicates that a firm has many important partners. Foreign investors' average K-shell value is 6.18, while private VCs (3.01) and state-owned VC firms (3.29) have a significantly lower average.

Degree centrality and K-shell value are highly associated with the investment amount of a VC. In other words, larger investors have higher values for these two indicators. Foreign and private firms have a similar size of investment, while SOEs are larger on average. However, SOEs have a similar degree centrality and K-shell, which are lower than that of foreign investors.

Cluster coefficient (CC) is an indicator of network density around a centered ego.

$$C_i = \frac{2T(i)}{\deg(i)(\deg(i)-1)}$$

For a undirected graph where $T(i)$ is the number of triangles of node i and $\deg(i)$ is the degree value of node i.

Higher CC values mean that a player's partners have more syndication ties with other partners of the player. Again, foreign investors have an average CC value higher than private VCs, which are also higher than state-owned firms (i.e., .53 vs. .46 vs. .36).

FN2 indicates the number of partners who have two or more co-investments with a specific VC firm.

The initial syndication between companies is often a "trial and error" syndication, while two or more co-investments indicates that companies are stable partners of the focal VC. Again, the results show that foreign investors have significantly higher values than private VCs, which in turn are higher than SOEs.

It takes time to build up an ego-centered network; that is, the longer the life of a VC firm, the more chances of cooperation it creates. Therefore, a long-lived VC firm accumulates more syndication ties. The statistics covering duration show that foreign and state-owned VC firms have similar age on average. This evidence excludes the influence of age on the different networking behaviors between foreign VC firms and SOEs.

It is clear that VC firms from foreign countries have more syndication ties, higher numbers of important cooperators, denser ego-centered networks, and more frequent cooperation with their partners than private and state-owned VC firms.

Syndication network: Three patterns

The following examples illustrate the syndication ties of three major investors of similar scale. All of them are leading companies in this industry, with one from the US while the others are Chinese private and state-owned. The behaviors of senior and junior decision makers during the syndication process are quite different. Major players in the Chinese VC industry deserve our special attention, since they have enough bargaining power to launch a series of investment and to choose their partners in syndication agreements. Unlike small investors who are mainly chosen as partners by other VC firms, the networking behavior of major players' bears the mark of their active nature.

These data are computed using the Simuton Database and cover the period 1995 to 2013. Figure 1 shows the syndication ties of the US company DFSH. There are 50 companies that have one co-investment with DFSH, five having two, two having three,

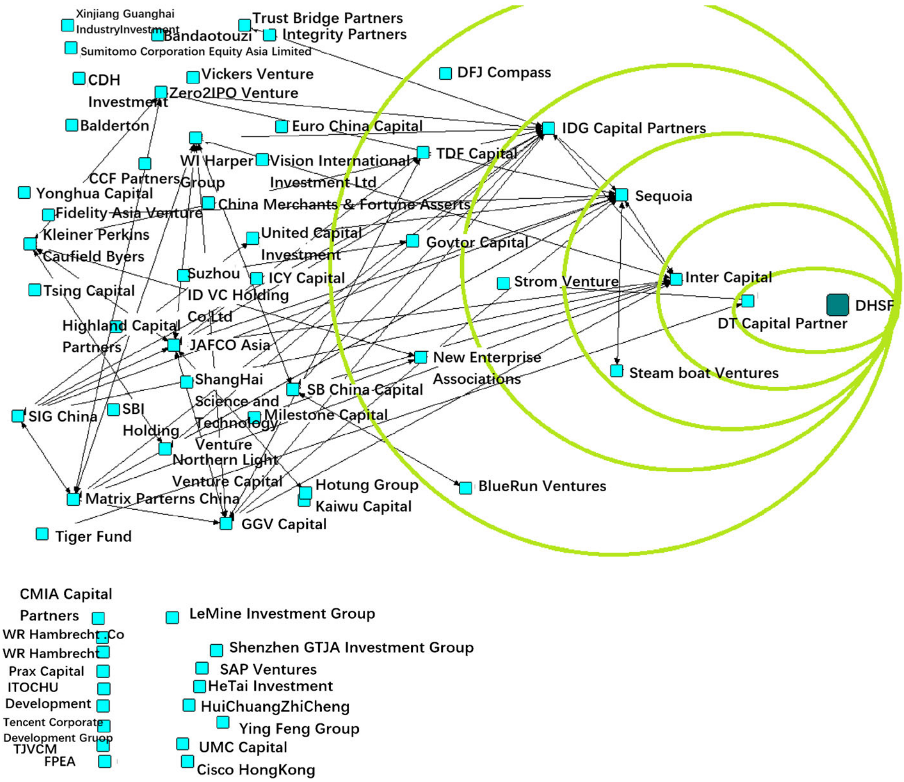

Fig. 1 The ego-centered network of a big foreign VC. Outside these rings, investors have only one-time cooperation with DFSH. The first ring contains firms that have worked with DFSH twice, the second 3× cooperation, the third is 4× cooperation, and the fourth ring is 5× cooperation. In the most inner ring, one VC firm has 8 co-investments with DFSH. All lines indicate syndication ties among DFSH's partners (but do not show frequency of cooperation)

two having four, one having five, and the inner-most circle member has eight co-investments with DFSH.

Figure 2 illustrates the ego-centered syndication network of GTJS, an important state-owned VC firm operated by the local government of a rich Chinese province. This ego-centered network has three layers, the outer-most circle is composed of 48 partners with one co-investment, the next closest is made of three partners with two co-investments each, and the closest layer has two companies with three co-investments with GTJS. In comparison with DFSH, GTJS has less layers and partners, and has a comparatively sparse syndication network.

Figure 3 shows the ego-centered syndication network of CDF-capital, a large private-owned VC firm which has a similar size and investment frequency to GTJS. This ego-centered network has four layers. The outer-most circle has 28 partners with one co-investment, and the next layer is composed of six partners with two co-investments with CDF. The next layer has three companies with three co-investments, and there are two firms in the inner-most circle, each with four co-investments with CDF. CDF's ego-centered syndication network has more layers and frequent-syndication partners than GTJS, and its partners form a denser network than GTJS's (Fig. 2).

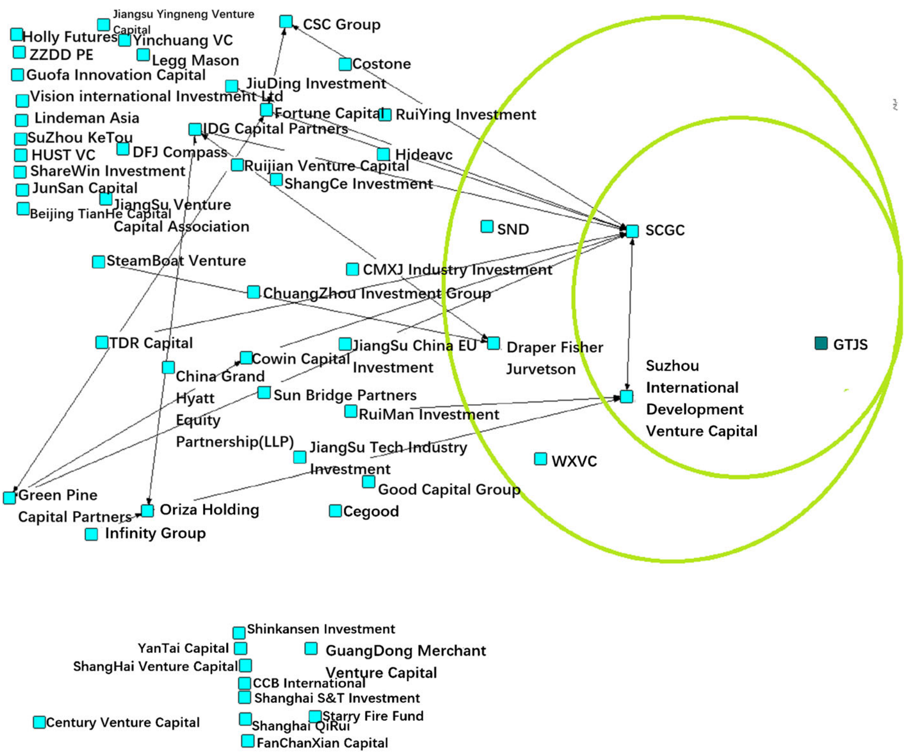

Fig. 2 The ego-centered network of a big state-owned VC. Investors outside the rings have only one-time cooperation with GTJS. The first ring contains those with 2× cooperation. In the most inner ring there are two VC firms with 3× co-investments with GTJS. All lines indicate syndication ties among DFSH's partners (but do not show frequency of cooperation)

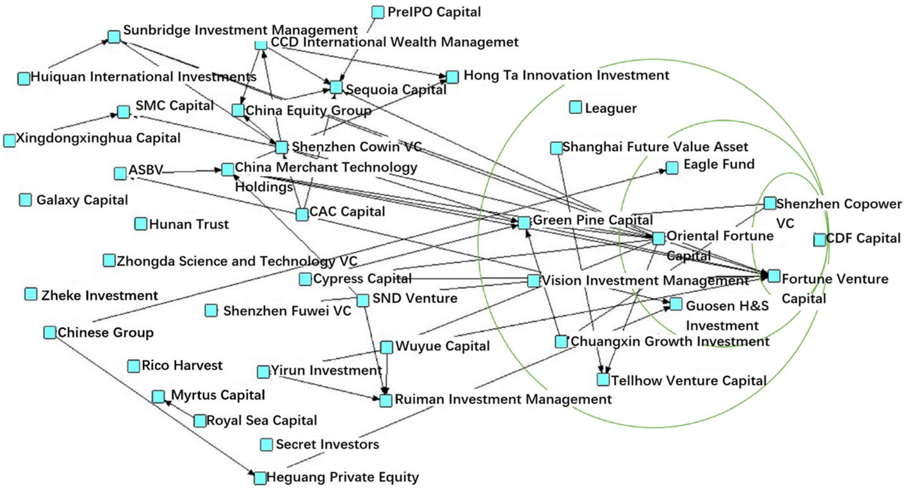

Fig. 3 The ego-centered network of a big private-owned VC. Outside these rings, investors have only one-time cooperation with CDF-capital. The first ring contains firms that have worked with CDF twice, the second 3× cooperation, and the third is 4× cooperation with CDF. All lines indicate syndication ties among CDF's partners (but do not show frequency of cooperation)

In addition, the partners of DFSH have dense mutual cooperation among one another. In contrast to that, the network of GTJS's partners is comparatively sparse. Although these three cases are only examples, the comparison between the three ego-centered networks illustrates the following difference:

1. DFSH has more syndication behaviors than GTJS and CDF: DFSH has 87 syndications while GTJS has 53 and CDF has 39.
2. DFSH has more frequent cooperation with its partners than GTJS: DFSH has 11 partners with two or more co-investments, while CDF has also 11 and GTJS has only 4. In addition to this, DFSH has very intimate partners who have more than 4 syndication relationships with the center, while both CDF and GTJS have none.
3. DFSH's partners have more mutual cooperation among one another than CDF's, which in turn have a denser network than GTJS's. it is clear that DFSH has a dense ego-centered network, while GTJS's partners are rarely connected with each other and for the most part are only connected with GTJS (the network center).

These differences are common when comparing state-owned, private and foreign VC firms in the Chinese arena. Why is a foreign VC firm motivated to have more frequent co-investments, more intimate relationships with its partners, and a dense ego-centered network compared to a domestic VC, especially a state-owned firm?

Proposition development of VC firms syndication behavior

In this section, we will develop four propositions based on our interview data. The proposition and related quotes are listed in Table 4.

Uncertainty caused by the institutional environment

VC firms in China experience uncertainties caused by the institutional environment they operate in. The most important difference between foreign and domestic VC firms is their ability to access governmental ties which strongly hedge against institutional uncertainty.

In a transitional economy, Chinese governments at both local and central levels often modify their policies in order to adapt to new scenarios generated by rapid economic development. In this kind of environment, existing laws are generally not mature enough to fully regulate VC firms' behavior, so new policy is constantly being issued to meet new situations. An environment where policies are frequently being updated or changed makes it more difficult for VC firms to create investment plans.

In addition, local governments are responsible for developing local economies, so they make industrial development plans which encourage investment in industries targeted by these plans. They may subsidize start-ups or certain firms in target industries, and VC firms owned by local governments generally have a role to play in fostering the development of these firms. Privately-owned VC firms, either foreign or domestic ones, may have conflicts of interest with state-owned VC firms over market competition, which increases the environmental uncertainties for private investors.

Finally, there are many institutional barriers faced by start-up companies. For example, they may need to obtain a license before they can begin operating, they may also be unable to gain access to bank loans, have difficulty renting land, acquiring certain up-/down-stream resources which are monopolized by state-owned firms, and so forth. All of these factors increase the risk of local government engaging in rent-seeking behavior. Investors involved with start-ups in this position need to have good relations with government officers, so as to hedge against possible rent-seeking. A senior investor in the hi-tech industry, Mr. S., stated governmental relations have the following characteristics:

> *In this field [green energy]… we like to invite government officers to provide us with consultation, and help study the investees. If it helps [promotes a relevant policy]… then we will go on investing in the firm, as the risk is small. If they don't view the situation as favorable, then we must be careful, as governmental policies are not supportive.*

This clearly shows that a local government's policies and economic development plans are highly relevant to the profitability of a VC firm. The huge difference between state-owned and private VC firms is their different level of access to local governments. Private VC firms, especially foreign investors, are unable to obtain the same policy benefits and other governmental resources when compared to state-owned VC firms. Mr. D. stated that:

> *Generally speaking, our funds are performing well…in the year 2000…their performance (the two funds belonging to the interviewee) distributed bonuses to stockholders so that all stakeholders made money. We were an exception, as in the year 2000 (which saw the bursting of the dot-com bubble), many funds could not make returns on their investments. There are several reasons we succeeded while others failed: On the one hand, the mechanisms we use to select*

Table 4 Proposition and interview quotes

Proposition type	Proposition	Quotes
Network tie(political tie)	Proposition 1 (Political tie): The more political ties a VC firm has, the smaller institutional uncertainty it faces, and the less likely this VC firm will seek syndication ties.	A senior investor in the hi-tech industry, Mr. S., stated governmental relations have the following characteristics: *In this field [green energy]… we like to invite government officers to provide us with consultation, and help study the investees. If it helps [promotes a relevant policy]… then we will go on investing in the firm, as the risk is small. If they don't view the situation as favorable, then we must be careful, as governmental policies are not supportive.* Mr. D. stated that: *Generally speaking, our funds are performing well… in the year 2000…their performance (the two funds belonging to the interviewee) distributed bonuses to stockholders so that all stakeholders made money. We were an exception, as in the year 2000 (which saw the bursting of the dot-com bubble), many funds could not make returns on their investments. There are several reasons we succeeded while others failed: On the one hand, the mechanisms we use to select investments were robust, and on the other hand, all stockholders (mainly various levels of government) helped us carefully review the investment plans, and my team had rich experience in the industry of the investees. It was comparatively easy to raise a fund, since the three levels of government (central, provincial and municipal governments) all had very good relations with us.* A senior researcher in a government institute, Mr. G., said: *…for example, it [a foreign investor] invests in an electronic commerce firm, from which lots of new opportunities arise. New projects will attract new partners to invest, so new syndication ties form….State-owned VCs face restrictions [from local governments], among which the most important one is the location. Since you get money from the regions of Shenghai or Wushi, you must invest in [the start-ups of] Shenghai or Wushi [that restricts the freedom of SOEs to invest new opportunities].* Mr. D. described the situation: *This (co-investment) is definitely interest-driven in this industry. I certainly need to share profits with our partner(s) when we cooperate,…for this reason, we tend to not cooperate. No matter whether the potential partner is an investor, broker or even a banker… They will not yield profit to you. They bargain with you based on their own interests. It is difficult to negotiate a settlement that satisfies both parties.*

Table 4 (continued)

Proposition type	Proposition	Quotes
		The CEO of a leading foreign VC firm, Mr. Li., put it: *A domestic (state-owned) VC firm is a little too cautious. It (this state-owned VC's CEO) doesn't like to share with others. It is different from others (VC firms). It has more control over uncertainty. Foreign investors need co-investors, since they need more resources to hedge against risks. The (state-owned) domestic VC firm don't need others to share risk. It has a clear understanding of the range of investment opportunities.* The senior researcher Mr. G. stated it in this way: *Private firms are heterogeneous. Some of them spin off from state-owned VCs, and some are started up by SOEs' managers. Their social networks for sure are from their original systems [the syndication networks of their parent companies]. There are also some coming from foreign investors' staff. In summary, their behaviors are mixed [mixture of SOE and foreign investors].*
Network size of circle members	Proposition 2 (Network size of circle members): The greater the uncertainty caused by the institutional environment, the more likely a focal VC firm is to find circle members to do the co-investment. Such circle members will enable the focal VC firm approach complementary resources and opportunities.	When asked why foreign investors tend to have more partners, Mr. D. answered: *Foreign investors like to cooperate (with others), for several possible reasons. First, they are foreign companies, so they tend to hug other (domestic) VC firms, as they are unfamiliar with local conditions. Second, in the early stage (of the development of this industry), foreign investors preferred large projects,…now, they tend to invest in smaller projects…. (Finally), foreign investors bond together to gain greater efficiency (higher protection against uncertainty). … Through mutual trust and governance mechanisms, we co-invest one a project.* A CEO of a leading foreign VC firm, Mr. Li., described a standard syndication scenario: *In general, each run has only one major player, and all others are followers. In each run, it (the investee) gives you only one board member; at most, two—where two co-investors become board members, (and they) jointly lead (this run of investment). All others can only follow.* A junior partner of a domestic private investor, Mr. Z., stated: *[Good projects] all come from the mediation of good friends.* A CEO of private VC firm, Mr. S., illuminated this environment: *A big brother has a strong reputation and good investment portfolio to support this reputation….A smaller VC firm will use money in exchange for sharing in the larger VC's reputation. It directly gets reputation from cooperating with a big name….In addition, a little brother may manipulate*

Table 4 (continued)

Proposition type	Proposition	Quotes
		guanxi [in the big brother's guanxi circle], and gradually move into the inner rings. It is possible for the little brother someday, somehow to become a big brother [build his own guanxi circle].
		The junior general partner of a private VC firm, Mr. Z., stated:
		We (Mr. Z. and another VC investor) met together several times in different projects but we are not familiar with each other at that time.... One day, a mutual friend of ours invited us to have dinner... then we decided to invest together.
Network size of core members	Proposition 3 (Network size of core members): The greater the uncertainty caused by the institutional environment, the more likely a focal VC firm is to have core members, who together conduct frequent cooperation.	Mr. S., the CEO of a successful VC firm, said:
		It is simple. For example, if we have good relations, I will certainly invite you join in my project. I will not allow others in, but entreat you to join us. This is done amidst a feeling of brotherhood. (Long-term) Cooperation is formed gradually (in frequent co-investments). Frequent co-investments occur in a small group; this is a guanxi circle.
		Mr. Y. stated:
		Sometimes, projects (from the different partners) are the same (in terms of potential profit and risk), but a friend in-need is a friend indeed (If a member of the guanxi network needs aide then this firm will receive priority over a firm not in the guanxi network with a similar project). When I really need help, good brothers (in term of pseudo-family members) will come to my aide. Next time (when the friend needs help), I will definitely return the favor.
Network density	Proposition 4 (Network density): The greater the uncertainty caused by the institutional environment, the more likely a VC firm has a dense syndication network.	A senior partner of a private VC investor, Mr. Y., put it:
		[for a successful VC investor] it is not good to make any one side unhappy... as someone may lose money, the centered person [those who have high degree centrality in the VC community] can balance [this person's gain or loss; in other words, a peripheral person by him- or her-self may not be able to find opportunities to balance the loss].... In China, we earn a better reputation via *cooperation, rather than acquisition and merging.*
		A junior partner of a Chinese VC, Mr. Z., stated:
		Guanxi is indeed important... some projects fail, but it is OK, since guanxi is there. It [a successful project] is the result of process of collective actions... which are necessary for guanxi building.

investments were robust, and on the other hand, all stockholders (mainly various levels of government) helped us carefully review the investment plans, and my team had rich experience in the industry of the investees. It was comparatively easy to raise a fund, since the three levels of government (central, provincial and municipal governments) all had very good relations with us.

The political ties of SOEs are a double-edged sword: On the one hand political ties help a state-owned VC solving the problems caused by institutional uncertainty, but on the other hand, it also provides some constraints on the investor. Investments in some industries are encouraged by government, especially those supported by local industrial development plans. Some types of investment are restricted, especially those with high institutional uncertainty. These restrictions further help reducing the institutional uncertainty faced by a SOE. As a senior researcher in a government institute, Mr. G., put it as follows:

…for example, it [a foreign investor] invests in an electronic commerce firm, from which lots of new opportunities arise. New projects will attract new partners to invest, so new syndication ties form….State-owned VCs face restrictions [from local governments], among which the most important one is the location. Since you get money from the regions of Shenghai or Wushi, you must invest in [the start-ups of] Shenghai or Wushi [that restricts the freedom of SOEs to invest new opportunities].

Social relations are important substitutes for formal governance institutions (Granovetter, 1985). In China, political ties provide protection for firms, and hedge against the uncertainty caused by the institutional environment, so that the firm may get better returns from its investments and improve its reputation. This results in a VC firm being better placed to raise more funds in the future. That is one of the reasons why foreign investors wish to cooperate with more partners, especially those having good accesses to various levels of government. In contrast to this, state-owned VC firms already have good relations with different levels of government, so they are more likely to invest without partners. Mr. D. described the situation:

This (co-investment) is definitely interest-driven in this industry. I certainly need to share profits with our partner(s) when we cooperate,…for this reason, we tend to not cooperate. No matter whether the potential partner is an investor, broker or even a banker… They will not yield profit to you. They bargain with you based on their own interests. It is difficult to negotiate a settlement that satisfies both parties.

This statement shows that a state-owned VC firm is unwilling to share profit with others, even if the profit is assured. State-owned VC firms often collect funds to help various levels of local governments to develop their target industries, especially industries related to hi-tech and innovative products. Thus, their investment plans are generally supported by policies, and those investees may obtain subsidies and key resources from local governments. In addition, state-own VC firms may receive governmental aide during the process of going public or merging with another company. That is an important reason why state-owned VC firms have a shorter investment cycle, higher return rate and lower cost than other types of investors, according to a study of VC firms' performance.

Since state-owned VCs hedge against uncertainty caused by the institutional environment and are more likely to earn profit in their expectation, they tend to invest alone. As the CEO of a leading foreign VC firm, Mr. Li. put it:

> *A domestic (state-owned) VC firm is a little too cautious. It (this state-owned VC's CEO) doesn't like to share with others. It is different from others (VC firms). It has more control over uncertainty. Foreign investors need co-investors, since they need more resources to hedge against risks. The (state-owned) domestic VC firm don't need others to share risk. It has a clear understanding of the range of investment opportunities.*

On average, private VCs' political ties are weaker than those of SOEs', but stronger than foreign firms'. Actually, the access to political resources varies hugely among private firms, since they are heterogeneous. Private firms have varying origins, including being spin-offs of SOEs, managers in SOEs, general partners of foreign VCs, very successful entrepreneurs, and so on. Private VC firm leaders usually leverage old relationships for new investments. Unlike most state-owned firms who have formal relations with local governments, private investors, especially those from SOEs and wealthy families, have informal relations with high-ranking officers. So, it is reasonable to assume that their political tie strength is somewhere between SOEs's and foreign investors'. The senior researcher Mr. G. stated it in this way:

> *Private firms are heterogeneous. Some of them spin off from state-owned VCs, and some are started up by SOEs' managers. Their social networks for sure are from their original systems [the syndication networks of their parent companies]. There are also some coming from foreign investors' staff. In summary, their behaviors are mixed [mixture of SOE and foreign investors].*

State-owned VC firms have political ties which hedge against uncertainty, therefore SOEs' investment plans have a low risk of failure, and so they are less likely to require partners for sharing risk. Based on this finding, the following propositions can be put forward:

Proposition 1 (Political tie proposition): The more political ties a VC firm has, the smaller institutional uncertainty it faces, and the less likely this VC firm will seek syndication ties.

Hence, the state-owned VC has fewest syndication ties, while the foreign VCs own the most syndication ties and the private-owned VC stays in the middle. The state-owned VC naturally has the advantages to have more political tie than those of private and foreign VC firms.

The leader-follower model: Working with circle members

Without local government aide, both foreign and domestic private VC firms face a high risk of investment failure, and are thus more likely to seek co-investment partners with complementary resources (circle members) so as to share risk, pool resources together and complement each other's insufficiencies. They not only need local knowledge, local relations and especially political ties to access key resources, but they also tend to form a large and dense investment network in order to hedge against environmental uncertainty. When asked why foreign investors tend to have more partners, Mr. D. answered:

> *Foreign investors like to cooperate (with others), for several possible reasons. First, they are foreign companies, so they tend to hug other (domestic) VC firms, as they are unfamiliar with local conditions. Second, in the early stage (of the development of this industry), foreign investors preferred large projects,…now, they tend to invest in smaller projects…. (Finally), foreign investors bond together to gain greater efficiency (higher protection against uncertainty). …Through mutual trust and governance mechanisms, we co-invest one a project.*

Although there are some cases of syndication ties between two equal partners, most investments have a main leader while other VC firms are only followers, often named after limited partners (LPs). This is the most common form of syndication in this industry. In the analysis of our qualitative data, one frequently mentioned reason for this is that very few VC firms can participate in the decision process of investees in each run of investment. The VC firm that manages to establish itself on the board of an investment firm will have more information and bargaining power in the alliance of investors. In general, only one VC firm can obtain a board position with the respective VC investee. These rich resources include financial capital, reputation, social capital and more channels to have good investment opportunities in future runs of investments. The leading VC firm will take the responsibility to write an investment proposal, reach an agreement, arrange a contract, and call for "followers" to join in. A CEO of a leading foreign VC firm, Mr. Li. described a standard syndication scenario:

> *In general, each run has only one major player, and all others are followers. In each run, it (the investee) gives you only one board member; at most, two—where two co-investors become board members, (and they) jointly lead (this run of investment). All others can only follow.*

But, why do followers want to follow? An important factor mentioned by interviewees is the limited optimal investment opportunity and asymmetric information, which is linked to the reason why small VC firms follow larger ones: They are unable to gain access to and effectively evaluate good investment opportunities. As a junior partner of a domestic private investor, Mr. Z. stated:

> *[Good projects] all come from the mediation of good friends.*

By partnering with larger VC firms, small VC firms (or circle members) not only gain access to good investment information, but also enjoy more valuable ties with other firms in the larger VC firm's network, who is often working with other large players in this industry. In the interviews, the leading VCs are sometime called "big brothers," and their followers are called "little brothers." Labeling investment partners "brothers" indicates that Chinese tend to use family-ethics to build a clan-like ego-centered network in the working arena (Boisot & Child, 1996). A CEO of private VC firm, Mr. S., illuminated this environment:

A big brother has a strong reputation and good investment portfolio to support this reputation.…A smaller VC firm will use money in exchange for sharing in the larger VC's reputation. It directly gets reputation from cooperating with a big name….In addition, a little brother may manipulate guanxi [in the big brother's guanxi circle], and gradually move into the inner rings. It is possible for the little brother someday, somehow to become a big brother [build his own guanxi circle].

This type of leader-follower network is called a "guanxi circle" by the interviewee (Luo & Cheng, 2015). Because syndication ties are generally the mixture of two VC firms' instrumental exchanges and the friendship between the VC firms' general partners (GPs; often the founders of the small and medium sized VC firms), that is why informants in this industry call the cooperation relation "*guanxi*." As the junior general partner of a private VC firm, Mr. Z. stated:

We (Mr. Z. and another VC investor) met together several times in different projectsbut we are not familiar with each other at that time…. One day, a mutual friend of ours invited us to have dinner… then we decided to invest together.

In an environment with such high uncertainty, two VC firms find it difficult to build syndication ties directly. However, the creation of a personal relationship built between the two GPs triggered firm-level cooperation.

A *guanxi* circle is an ego-centered network with a resource-rich person as the center, who distinguishes his/her partners into several layers according to the tie strength (Marsden & Campbell, 1984) between the ego and the partner. Following the Chinese behavioral rule "differential modes of association" (Fei, Hamilton, & Wang, 1992), the center of a *guanxi* circle uses different principles of social exchange to deal with his or her partners located in different layers of the *guanxi* circle. A *guanxi* circle is like an action set (Mayer, 1966), rather than a club or association (Hsu, 1963), since its boundary is open, members may be moved in or out according the center's decisions, and its purpose is to launch a series of actions that serve the network members' common interests.

A small VC firm may sacrifice its short-term profit for gaining a better position in the industrial network (Bygrave, 1988), exercise more influence on other VC firms (Sorenson & Stuart, 2008), and obtain a good reputation in order to get better returns in the long-run (Hochberg et al., 2007, 2010). In other words, in the process of connecting more VC firms, especially influential big investors, a small VC firm may build up its own *guanxi* circle, harvest the benefits of its high-centrality position and thus lead investment projects in the future. This is also one of the main reasons why small VC firms are willing to follow leaders.

As stated above, the most commonly mentioned difference between state-owned and private VC firms is their ability to access government relations and hedge against uncertainties caused by the institutional environment, including: changing policies, government intervention, and institutional barriers faced by start-up firms. Thus, private VCs, especially foreign investors, tend to build various types of ties and find more co-investment partners (circle members) so as to complement their insufficiencies in these areas. For those who do not have enough political ties, especially foreign investors, we thus propose the following statement for future verification.

Proposition 2 (Network size of circle members proposition): The greater the uncertainty caused by the institutional environment, the more likely a focal VC firm is to find circle members to do the co-investment. Such circle members will enable the focal VC firm approach complementary resources and opportunities.

Hence, the foreign VCs own the most syndication ties than those of other two types of VCs. The foreign VCs firms face even more institutional uncertainty, hence they need more circle members to access to complementary resources in order to reduce the institutional uncertainty. The circle members normally based around the outer-ring of the focal VC firms will complement to focal VC firms' resources.

Frequent cooperation with core members to hedge against environmental uncertainty

In addition to a larger number of co-investment partners, frequent cooperation with core members is also common in the ego-centered network of an investor.

Formal contracts and other coercive measures, such as hostages, punishment terms in formal contracts, third-party monitoring, and so on (Williamson, 1995; Williamson & Winter, 1993), are rarely effective in syndication among both foreign and domestic VC firms. These measures cannot work well against opportunistic behaviors in an extremely uncertain environment (e.g., the Chinese VC industry). On the one hand, there is a paucity of legal methods to deal with problems, and the lack of government arbitrage in an environment of this sort make all these types of credible commitments lose their function. On the other hand, it is not good to have deterrence methods in the syndication, since deterrence is seen as a signal of mistrust of the partner (in the context of Chinese culture) and damages cooperative relations (Hwang, 1987). In other words, VC firms in China often do not sign detailed written contracts, or bring the contract to arbitrage in the case of a dispute.

As a result, mutual trust built on frequent cooperation is a vital prerequisite of successful syndication (Gulati, 1999). Those exposed to high environmental uncertainly tend to develop deep relationships with their investment partners (core members, rather than circle members), so as to create a strong bond of trust; which will allow frequent cooperation. Mr. S. is the CEO of a successful VC firm which often partners with one of the leaders in the VC industry, and he put it in this way:

> "*It is simple. For example, if we have good relations, I will certainly invite you join in my project. I will not allow others in, but entreat you to join us. This is done amidst a feeling of brotherhood. (Long-term) Cooperation is formed gradually (in frequent co-investments). Frequent co-investments occur in a small group; this is a guanxi circle.*"

The small group core members of tight co-investment relations are called a "*guanxi* circle" in the above statement. As argued above, a Chinese person divides his or her ego-centered network into several rings, and treats different rings with different principles of social exchange (Fei et al., 1992). First-time, or one time only partners are generally in the "trial and error" stage, while multiple co-investments indicate trustworthy and potentially long-term partners. High-frequency syndication is the index of friendship and strong obligation of reciprocity, as Mr. Y. stated:

> *Sometimes, projects (from the different partners) are the same (in terms of potential profit and risk), but a friend in-need is a friend indeed (If a member of the guanxi network needs aide then this firm will receive priority over a firm not in the guanxi network with a similar project). When I really need help, good brothers (in term of pseudo-family members) will come to my aide. Next time (when the friend needs help), I will definitely return the favor.*

A small group of frequent co-investment partners forms the core of an ego-centered syndication network, which is trustworthy, easily mobilized and exhibits strong cooperation to launch a series of collective actions. We thus propose a third proposition:

Proposition 3 (Network size of core members proposition): The greater the uncertainty caused by the institutional environment, the more likely a focal VC firm is to have core members, who together conduct frequent cooperation.

Hence, the foreign VCs own the most frequent syndication ties with core members than that of the other two types of VCs. The core members are different from circle members as suggested in Proposition 2. They are based in inner-circle position and more closely working with the focal VC firms. They conduct frequent cooperation since they are in the same boat.

A *guanxi* circle is a small group of intimate ties located in a dense structure within a larger network. In other words, it is a small core of VC firms gathered around a leader, whose members in the ego-centered network connect with one another. A dense and comparatively closed network creates a community full of committed relations (Coleman, 1990; Yamagishi, Cook, & Watabe, 1998). Strong community norms help to reinforce benign behaviors among network members, since mutual monitoring among firms is enforced, which helps to curtail opportunistic behavior by network members (Yamagishi et al., 1998; Yamagishi & Yamagishi, 1994). VC firms with a poor reputation will be removed from the group.

The reputation of the leader is especially important for the sustainability of the network. Leaders who abuse their power and satisfy their own interests at the expense of their followers' will have no one to follow them. In short-term, or one off cooperation, followers may sacrifice their short-term profit for long-term benefits. However, in multiple runs of co-investment, followers require a leader to balance everyone's interests and compensate for their loss. As a senior partner of a private VC investor, Mr. Y. put it:

> *[for a successful VC investor] it is not good to make any one side unhappy… as someone may lose money, the centered person [those who have high degree centrality in the VC community] can balance [this person's gain or loss; in other words, a peripheral person by him- or her-self may not be able to find opportunities to balance the loss].... In China, we earn a better reputation via cooperation, rather than acquisition and merging.*

We have found that that VC firms in China are generally *guanxi*-oriented, that is, they may sacrifice short-term profit in one or two runs of co-investment, but learn investment techniques, gain more syndication ties, and share the group's reputation, all of which help them gain a central position. Once they have a better position in the industrial network, then their future investments can compensate for their previous losses. In other words, networking behavior and strategies are crucial for realizing the long-term interests of an investor in the Chinese VC industry. An investor too focused on short-term profit is often not welcome. As a junior partner of a Chinese VC, Mr. Z. stated:

> *Guanxi is indeed important… some projects fail, but it is OK, since guanxi is there. It [a successful project] is the result of process of collective actions… which are necessary for guanxi building.*

A dense network not only makes its syndication ties strong and trustable, but also forms barriers that help to resist the negative impacts of an uncertain environment. For example, if a large number of VC firms choose to ignore a certain policy, they will not be punished, especially when policies change quickly and local governments are not able to enforce these regulations. This is a way to hedge against the uncertainty of the institutional environment. We thus propose the fourth proposition:

Proposition 4 (Network density proposition): The greater the uncertainty caused by the institutional environment, the more likely a VC firm has a dense syndication network.

Hence, the state-owned VC has the least dense syndication network, while the foreign VCs own the most dense syndication network and the private-owned VC stays in the middle. Such dense syndication network will make the focal VC firms and its partners compose of a big power of investment network to tackle the barrier of institutional uncertainty. The denser the network, the less they face the institutional uncertainty.

Discussion

In the network analysis of the Chinese VC industry, it was found that foreign investors are more likely to syndicate, have close partners, and build dense ego-centered networks than domestic VCs, especially state-owned firms. Based on a network theory perspective, this paper collects qualitative data to explain these phenomena. Results show that environmental uncertainty, type of network governance (Powell et al., 1996, 2005) and trust in embedded ties (Granovetter, 1985; Gulati, 1998) all have an important role to play. Uncertainty caused by institutional environment is a commonly mentioned factor in interviews, since it is the most significant difference between foreign and state-owned VC firms. So, we generalize these findings and develop the proposition: “when a VC lacks political ties, institutional uncertainty is higher, so it is more likely to actively engage in networking behavior.”

Contributions

One of the contributions of this paper is to link social embeddedness theory to foreign investors’ networking behavior. The institutional uncertainty commonly mentioned in interviews explains why foreign investors have more syndication activities than SOEs. We also try to answer how an investor hedges against these uncertainties. Three relation-related governance mechanisms are thus investigated. First, a VC firm tends to find more co-investment partners who can share the risk caused by the institutional environment and pool resources to hedge against uncertainty. Second, it is more likely to develop a deep relationship with a partner, based on trustworthiness and ease of mobilization. Third, this VC is likely to have a dense ego-centered network, in which partners monitor each other and act collectively.

A VC firm operating in the context of high uncertainty tends to form an ego-centered network, or in Chinese terms a *guanxi* circle, so that it has a hard core composed of frequent partners to guarantee the success of collective actions. It has a large number of peripheral partners, who can construct an effective networks neighborhood (Burt, 2010) so as to access more investment opportunities and valuable ties. Finally, this VC firm has a comparatively dense structure in its *guanxi* circle, so that mutual monitoring will make cooperation among circle members successful. The combination of strong and weak ties as well as dense and sparse networks (Granovetter, 2002) provides this VC firm with a healthy ecosystem, which in turn increases the probability of its profitability. This helps explain why foreign investors in average are most likely to syndicate, have the highest cluster coefficient and largest number of stable partners, while SOEs are least likely to co-invest, have the lowest cc value and small number of stable partners. And, domestic private firms are in the middle between foreign investors and SOEs.

This paper also elaborates on how social networks facilitate the internationalization process and growth in foreign markets. First, due to the high institutional uncertainty and nature of long-term business, the resource-dominant logic will gradually shift to relational-dominant logic, even for Western companies. This is different from the traditional network theories of internationalization, these network theories still use resources advantages as an explanatory factor. This paper proposes new network theories based on relational logic, which may not directly generate value but has large potential for future value creation. In a complicated and uncertain environment, companies should have a long-term view of international expansion by building up a friendly community of stakeholders, namely a business ecosystem (Rong et al., 2015). In such a dynamic structure, syndication ties might help avoid the liability of foreignness (Zaheer, 1995) and deal with OLI disadvantages (Dunning & Lundan, 2008), and mitigate systematic risk. As a result, the foreign VC firms in our database are inclined to co-invest, co-invest with familiar partners and finally formulate a comparatively denser syndication network.

Limitations and future research directions

In terms of future research, these propositions we developed need to be verified in future studies, and new data need to be collected to test these propositions and develop new hypotheses. First, it is necessary to develop adequate indicators for measuring institutional uncertainty. Unfortunately, there are no good existing proximate measurements in second-hand datasets. So researchers must collect data using surveys. When explaining networking behavior, control variables should be included in the causal model. Examples include a VC's scale, regional similarity, property type, and some other factors derived from resource-based theory. After controlling for these possible explanatory variables, we may check the real influence of institutional uncertainty on syndication behaviors.

The theoretical implication of this paper does not exclude other explanations. For example, the ecology of VC firms in an investee's industry does matter. A complete value chain with abundant and diversified resources, such as the one in the hi-tech industry of Silicon Valley (Granovetter & Ferrary, 2009), will encourage VCs to jointly invest. The centralization of power and propensity of preferential attachment in a cluster (i.e., part of an industry's network) will make the syndication ties denser within the cluster (Barabasi & Albert, 1999). In addition to institutional uncertainty, market uncertainty also influences the formation of business network (Granovetter, 1995). As the senior researcher Mr. G. noted, state-owned VC firms are generally restricted to invest in high-risk industries by local governments. High-risk investments face both the possibility of high profits and high risks of losing money, so SOEs avoid this kind of investment so as to reduce the ratio of failed projects. Their market uncertainty is thus comparatively lower than the other two types of VCs.

In addition, it is often mentioned that state-owned VC firms have a higher probability of successfully investing, since they have more political ties and lower institutional uncertainty. Thus, in general, it is argued that a VC firm's profitability is influenced by institutional uncertainty, and syndication helps to hedge against uncertainty. One possible future avenue of research is to combine networking behavior, institutional uncertainty, and profitability in one explanatory model to investigate the causal relations among these three variables. The Fig. 4 diagram integrates the four propositions raised in this paper into one model:

Cultural explanations generally assume irresistible cultural forces working on atomized actors that determine the actors' behaviors, including networking behavior. However, cultural influence is not so static and determinant, as Granovetter (2017: 11) stated, yet more sophisticated analyses of cultural influence make it clear that culture is not a once-for-all influence but an ongoing process, continuously constructed and reconstructed during interaction.Yet more sophisticated analyses of cultural influence make it clear that culture is not a once-for-all influence but an ongoing process, continuously constructed and reconstructed during interaction. (Granovetter, 2017: 11)

In other words, there is a long term process of interactions between individual behaviors, institutional and network structural factors behind the cultural force. Chinese firms/people do tend to build strong *guanxi* and dense networks in their business world, but what are the factors behind this cultural phenomenon? This paper tries to demonstrate the opposite case—foreign VC firms build even stronger

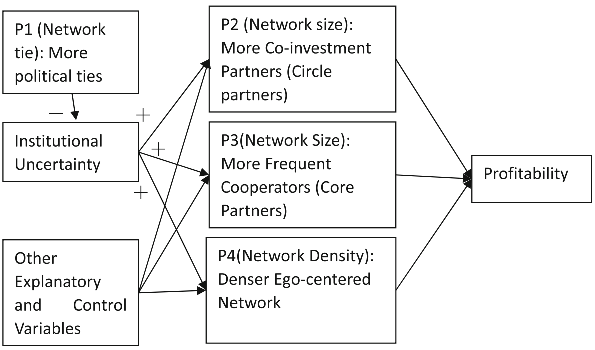

Fig. 4 Proposition framework of foreign VC

syndication ties and denser networks than their Chinese counterparts, which suggests the importance of institutional uncertainty in the formation of syndication networks.

In summary, in order to cope with a highly uncertain institutional environment, a foreign VCs in China inclines to build up an investment ecosystem of key syndication ties and complement partners for their long-term investment strategies. Thus the foreign VC actually invested in larger *guanxi* circles than that of a Chinese VC. Due to the close relationship with Chinese government, the Chinese state-owned VC has the lower uncertainties and smaller circles.

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