The effects of social networks and contractual characteristics on the relationship between venture capitalists and entrepreneurs

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Abstract We show how social ties and contractual factors shape the relationship between entrepreneurs and venture capitalists (VCs). While direct ties result in the VC offering more advice to the entrepreneur, indirect ties result in greater levels of disagreement between VC and entrepreneur. We also find that contractual favorableness is associated with more advice and less disagreement, but that contractual flexibility is surprisingly not significant. The results vary by area of advice and disagreement. Our results suggest that scholars and practitioners must integrate contractual and social network perspectives to better understand the VC-entrepreneur relationship.

Keywords Entrepreneurship · Venture capital · Disagreement and advice · Social networks

There is growing recognition that social networks play an important strategic role for firms (Burt, 1983; Gulati, Nohria, & Zaheer, 2000; Westphal, Boivie, & Chng, 2006). This is especially true for startup firms because they are resource-constrained and therefore reliant upon external partners (Shan, Walker, & Kogut, 1994; Starr & MacMillan, 1990; Zhang, Souitaris, Soh, & Wong, 2008). Of particular importance is the relationship between startup firms and venture capitalists (VCs) both for funding as well as for managerial guidance (Fried, Burton, & Hisrich, 1998; Hsu,

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2004). VCs were instrumental to the growth of some of the world's largest companies in terms of market capitalization, such as Google, Microsoft, and Cisco (Jeng & Wells, 2000). Yet, the VC-entrepreneur relationship is characterized by significant information asymmetry (Amit, Glosten, & Muller, 1990; Gompers, 1995; Sahlman, 1990; Shane & Cable, 2002) and opportunistic behavior (Lerner, 1995; Martin & Scott, 2000).

A considerable amount of research has been conducted on the formal mechanisms used by VCs to minimize information asymmetry and opportunistic behavior. These mechanisms include changing the composition of boards (Barry, 1994; Lerner, 1995), changing the contractual structure (Kaplan & Stromberg, 2001), and altering control rights (Farag, Hommel, Witt, & Wright, 2004). Inasmuch as control mechanisms help to reduce asymmetric information and opportunistic behavior problems, they are costly to both the VC (Gifford, 1997) as well as to the entrepreneur.

While formal mechanisms are important, existing research on post-investment behavior has not adequately explored the social nature of the relationship between VCs and entrepreneurs. Recent research in strategic management has shown the importance of exploring firms' informal relationships, for example, see Westphal and colleagues (2006). Our paper examines how the post-investment behavior of VCs is affected by their pre-investment social relationship with entrepreneurs. Social ties play an important role alongside formal contractual structures in helping the VC reduce information asymmetry, thus shaping the relationship between the VC and the entrepreneur.

We examine two facets of the relationship between the VC and the entrepreneur: (a) the propensity of the VC to give advice and (b) the level of disagreement between the two parties. In giving advice, the VC places trust in the entrepreneur to use his judgment in making decisions. In contrast, disagreement suggests a level of conflict between the VC and the entrepreneur. Prior research suggests that the stronger the relationship between the VC and the entrepreneur, the greater the level of advice-giving by the VC and the lower the level of disagreement between the two parties.

We empirically explore this idea using a questionnaire survey of startup firms in the US and Singapore. Our results suggest that *direct ties* increase the likelihood that the VC gives advice to the entrepreneur, but not the level of disagreement between them. In contrast, *indirect* ties increase the likelihood of disagreement but do not affect advice-giving. We also find that contractual favorableness (as viewed by the entrepreneur) is associated with higher levels of advice from the VC and fewer disagreements between both parties. Hence, the post-investment relationship between entrepreneur and VC is shaped by both contractual factors as well as the nature of their social ties.

This paper contributes to both strategic management and sociological research on the VC-entrepreneur relationship. We show that the benefits of being part of a social network extend beyond the early stage of sourcing for investments for an entrepreneurial venture, and that they also include post-investment disagreement and advice. Our results suggest that *both* formal contracts and social ties must be considered by scholars and managers. Furthermore, by measuring advice and disagreement along several different dimensions, we show that the results are heterogeneous: direct ties are associated with certain types of advice more than

others, while indirect ties are associated with certain types of disagreements more than others. Hence, the overall perspective we present is one in which the VC-entrepreneur relationship is contingent upon social factors, contract characteristics, and the type of information that is asymmetric among partners.

In the next section, we review relevant prior research. "Data and method" describes the methodology used and our dataset, while "Results" presents our results. "Discussion and conclusions" discusses these results and presents our conclusions.

Social ties between VCs and entrepreneurs

VCs play a crucial role in facilitating the success of entrepreneurial firms that they invest in (Hellman & Puri, 2000; MacMillan & Subbanarasimha, 1987; Sapienza, 1992; Steiner & Greenwood, 1995). Many VCs take active board positions in startups, offering guidance and valuable strategic advice (Fried et al., 1998; Hsu, 2004). They also assist in fundraising and recruitment (Gorman & Sahlman, 1989) and they facilitate opportunities for entrepreneurs to expand their network of valuable contacts (Fried & Hisrich, 1995).

Entrepreneurs are willing to pay a premium to be associated with prominent VCs that have a track record of helping their portfolio firms succeed (Hsu, 2004). Rosenstein, Bruno, Bygrave, and Taylor (1993) find that entrepreneurs value VCs for their practical experience and not just for financial expertise. In addition, VCs play a large role in the professionalization of startups (Hellman & Puri, 2000; Thiess & Lane, 2004) and the IPO process (Lerner, 1995). Above and beyond business transactions, VCs provide managerial support to the venture (Timmons & Bygrave, 1986).

While VCs can play a constructive advisory role in the development of new ventures, the relationship between them is fraught with tension due to information asymmetry. The problem arises because entrepreneurs are reluctant to disclose the full details of their ideas to the VC, fearing this would allow the VC to extract the value of the idea and eliminate entrepreneurial profits (Shane & Venkataraman, 2000). In order for entrepreneurs to appropriate the profits of the opportunity to themselves, the information they possess must be kept unknown to others in the market, including VC investors (Amit, Brander, & Zott, 1998; Amit et al., 1990; Barry, 1994; Chan, Siegel, & Thakor, 1990; Gompers, 1995). Entrepreneurs also have an incentive to selectively disclose facts about their ideas to VCs, as this increases their chances of obtaining venture funding (Sapienza & Korsgaard, 1996; Shane & Cable, 2002). Such behavior threatens the formation of a cooperative relationship between the two parties, thus risking business success (Shepherd & Zacharakis, 2001).

In order to reduce information asymmetry, VCs must monitor the companies they invest in and ensure that entrepreneurs will not behave opportunistically. Barney, Fiet, Busenitz, and Moesel (1996) observed that VCs engage in active monitoring to better align the decisions of managers with the goals of the VCs. It is common for VCs to exert control through the use of veto rights (Kirilenko, 2001) and board positions (Fried et al., 1998; Kaplan & Stromberg, 2003). Wright and Robbie (1998)

find that VCs typically take an active and interventionist role in firm decision making.

Despite the best effort of a VC to reduce information asymmetry and to help entrepreneurs with advice, disagreements often arise in the post-investment period. Each party may have different goals, and monitoring is both costly and imperfect. Gorman and Sahlman (1989) interviewed VCs and found that over the course of a year, a typical VC spends around 80 hours onsite and another 30 hours on the telephone with each entrepreneur. Furthermore, monitoring cannot be conducted continuously, making it an imperfect mechanism. Since VCs only make periodic comprehensive reviews around the time of refinancing, entrepreneurs can behave opportunistically between these periods (Gorman & Sahlman, 1989).

Higashide and Birley (2002) find that although disagreements can sometimes have beneficial effects (such as for identifying areas for improvement), disagreements lead to a dramatic fall in venture performance. This is especially acute in the area of product development and innovation. Related to this are the findings of De Clercq and Sapienza (2006) that social cohesion, goal congruence, and trust have a significant impact on the venture firm's performance, as perceived by the VC. But apart from a small number of studies such as these, there is relatively little prior research on what factors shape the level of conflict and disagreement between VCs and entrepreneurs.[1] The existing literature also focuses heavily on the impact of social ties on the VC-entrepreneur relationship during the *pre-investment* stage. However it is important to also understand how social ties affect *post-investment* behavior.

The role of direct and indirect ties

Social networks allow individuals to build social capital (Burt, 2000), which is economically valuable (Ferrary, 2003). Individuals that possess greater social capital occupy prominent positions within the groups they belong to and are better connected to others. Scholars have analyzed the influence of social networks in VC investment syndication (Sorenson & Stuart, 2001; Zheng, 2004), on investment decisions (Ferrary, 2003; Shane & Cable, 2002; Stuart, Hoang, & Hybels, 1999), on VC contracting (Landstrom, Manigart, & Sapienza, 1998; Manigart et al., 2000), on the post investment relationship of the VC and the entrepreneur (Sapienza & Korsgaard, 1996; Steiner & Greenwood, 1995), and on the governance of alliances (Das & Teng, 1998; Gulati, 1995; Stuart & Sorenson, 2005). The core argument is that network ties and structure facilitate the flow of information and that it creates mutual trust and cooperation.

The proximity between a VC and an entrepreneur within a network affects the success of their relationship. *Direct ties* exist when two members exist in close proximity to one another, while a less proximal *indirect tie* exists where two parties are connected through another network member. With information asymmetry and uncertainty present, both direct and indirect ties can provide an advantage to those who wish to acquire resources from others (Podolny, 1994). Although the mechanism for obtaining these resources is dissimilar for the two types of ties, they are built on

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[1] A number of papers explore conflict in family businesses (including entrepreneurial ones), but the nature of relationships within family businesses is much more personal, and therefore quite different than the relationship between regular entrepreneurs and venture capitalists.

two factors: social obligation and access to private information (Shane & Cable, 2002). Social obligation reduces the risk of opportunistic behavior, while access to private information reduces the level of asymmetric information. Social obligation can be understood from a gift-exchange perspective (Ferrary, 2003). From this perspective, economic actors behave according to the rules and norms of the social network they exist in, and deviant behavior leads to sanctions by other network members (Ferrary, 2003). Actors are reluctant to optimize short-term gains as this risks destroying value from future transactions with members of the network (Das & Teng, 1998).

Direct ties are those where both parties have a personal relationship (Larson, 1992) while indirect ties are when two individuals are not directly connected, but connected through the social network of either party's direct tie (Shane & Cable, 2002). Direct and indirect ties therefore differ in the strength of the tie, and can be classified as strong and weak ties, respectively.

Direct ties facilitate trust because the VC and entrepreneur have a shared history and a better sense of each other's personalities. Social obligation is strong when a direct tie is involved. Intimate knowledge about the entrepreneur helps the VC to reduce uncertainty and ameliorate the need for costly monitoring, as it reduces the need for formal mechanisms in the management of the relationship. This is consistent with studies showing that the most important criteria used by VCs in screening investment proposals are entrepreneurial personality and experience, with a lesser dependence being placed on market and product strategy (Wright & Robbie, 1998). Also, because direct ties mean that each party knows the other personally, the VC is in a better position to understand the entrepreneur and to give appropriate advice.

We therefore expect to find that direct ties between a VC and an entrepreneur to increase the probability that post-investment advice will be given to the latter. Direct ties should also reduce the level of disagreement between the VC and entrepreneur, leaving the entrepreneur greater control over the startup.

Hypothesis 1 Direct ties between a VC and an entrepreneur will (a) increase the advice given by the VC to the entrepreneur and (b) decrease the level of disagreement between the VC and entrepreneur.

In contrast, indirect ties are likely to result in a different type of relationship between VCs and entrepreneurs. Shane and Cable (2002) found that indirect ties mitigate the effects of direct ties in venture financing. Indirect ties are useful because entrepreneurs have limited ability to access and to evaluate VCs, and therefore network brokers (such as indirect ties) play an important role in helping entrepreneurs to evaluate VCs (Hallen & Eisenhardt, 2009). From a VC's point of view, indirect ties offer a useful source of contact to promising entrepreneurs. However, with only an indirect tie, the VC does not have a shared history or direct personal relationship with the entrepreneur. This means a higher chance of disagreements arising than with direct ties. Even if the VC funds a promising entrepreneur who is an indirect tie, the VC may not be as enthusiastic about investing in intangibles, such as her valuable time advising the entrepreneur. As such, we expect to find that indirect ties between a VC and an entrepreneur reduces the amount of advice the VC will give to the entrepreneur, but increases the degree of disagreement.

Hypothesis 2 Indirect ties between a VC and an entrepreneur will (a) reduce the advice given by the VC to the entrepreneur and (b) increase the level of disagreement between the VC and entrepreneur.

Contract characteristics

The literature is rich with discussions on contractual tools that a VC can use to decrease the uncertainty surrounding an investment. These can be seen as a passive form of control: they are determined at the time of deal structuring for the purpose of deterring unfavorable subsequent actions by the entrepreneur (Tyebjee & Bruno, 1984). Although the use of contracts is prevalent in every investment deal, they remain an instrument of last resort, when all else in the relationship fails. Because contracts tend to be incomplete, the gaps must be filled through renegotiations or legal interventions, which is costly for both parties.

Aside from being a means for controlling the entrepreneur's behavior, contracts also influence the behavior of VCs in the post-investment setting. Cumming and Johan (2007) find that monitoring and advice-giving by VCs are affected by contractual provisions. Macaulay (1963) and Macneil (1980) found that parties do not always use contracts for problem solving, relying instead on relational aspects of the partnership.

In examining the effects of contractual terms on VC behavior, we propose adding a perceptual aspect of measuring contracts to complement its substantive characteristics. In particular, we are interested in the degree to which the entrepreneur finds the contract with a VC favorable. Many VC contracts have a primarily pro-investor orientation, so accepting them puts the entrepreneur at a disadvantage. An entrepreneur will only accept the contractual terms offered if she is confident about the venture (Sahlman, 1990). Furthermore, Manigart, Korsgaard, Folger, Sapienza, and Baeyens (2002) suggest that entrepreneurs who have more trust in the VC are more willing to include pro-investor provisions into the contract.

As such, the extent to which an entrepreneur views the terms in the contract as being favorable can be used as a measure of how much trust there is in the relationship between the two parties. This trust is intangible but helps to ensure cooperative partner behavior (Shepherd & Zacharakis, 2001). A favorable contract is an indication of goal congruence between the entrepreneur and VC (Manigart et al., 2002). We expect to find that the more favorably the entrepreneur views the contract, the more likely the VC will provide advice to the entrepreneur, while making it less likely that they end up with disagreements later.

Hypothesis 3 Contractual favorableness will (a) increase the advice given by the VC to the entrepreneur and (b) reduce the level of disagreement between the VC and entrepreneur.

Apart from favorableness, another important dimension is contractual flexibility. From a transaction cost perspective, the cost of contracting on unlikely contingencies may outweigh the benefits (Spier, 1992). As more clauses are included into a contract, the costs to enforce the contract also increase.

Flexibility in the governance of ventures is important for the success of the venture (Fried & Hisrich, 1995; Hatherly, Innes, Macandrew, & Mitchell, 1994; Sweeting, 1991). The greater the ability of the venture to "roll with the punches," the better it is for the firm (Bhide, 1994). Also, by accepting greater flexibility and control over the venture, the entrepreneur signals to the investor that there is a lower potential for moral hazard problems (Manigart et al., 2002). Moreover, higher flexibility around the contractual arrangements serves as a signal of mutual trust and goal congruence (Dyer & Ouchi, 1993).

Hypothesis 4 Contractual flexibility will (a) increase the advice given by the VC to the entrepreneur and (b) reduce the level of disagreement between the VC and entrepreneur.

Entrepreneurial environment

Many studies on VCs and entrepreneurial activity are based in the US and Europe, where venture-backed entrepreneurial activity was traditionally based. However, VC-backed entrepreneurial activity is growing in Asia (Ahlstrom, Bruton, & Yeh, 2007; Wright, 2007), where the business environment is different. Studies show that Asian businesses are heavily reliant upon personal relationships: *guanxi* in China, *kankei* in Japan, and *inmak* in Korea (Hitt, Lee, & Yucel, 2002). The type of network formed by Asian managers is tied to the firm's strategic orientation, with government links being important for entrepreneurial firms (Li, 2005). Asian business networks evolve over time, with strong ties playing a dominant role in early stages and weak ties becoming more important as the institutional environment matures (Peng & Zhou, 2005).

For the VC, personal relationships and social ties serve as a means to identify opportunities in Asia (Lu & Hwang, 2010) and to supplement investment decisions (Batjargal & Liu, 2004). Foreign and domestic VCs operate differently in Asia as their behavior is shaped by the social political and operational factors (Fuller, 2010; Wright, 2007). Lu and Hwang (2010) found that international VC firms have the propensity to solicit more deals from networks than domestic VC firms, mainly because international VC firms place greater emphasis on the information that a network can provide than is publicly available.

Asian entrepreneurs too are able to extract benefits from their social networks. Anderson and Lee (2008) found that entrepreneurs leverage their social networks to help identify business opportunities. Human capital, social capital, and social skills facilitate the acquisition and accumulation of knowledge that helps entrepreneurs overcome institutional constraints (Tang, 2009). *Guanxi* plays an important role in Chinese entrepreneurship (Batjargal & Liu, 2004) and is a source of major competitive advantage to the entrepreneur.

Given the importance of social networks in Asia, we predict that a close relationship will exist between VCs and entrepreneurs in this context. This should result in a greater degree of advice-giving and reduce the level of disagreement between the VC and entrepreneur. Moreover, conflict avoidance is central to Asian cultures (Leung, Koch, & Lin, 2002) suggesting that VCs and entrepreneurs may wish to avoid disagreements where possible in their relationships.

Hypothesis 5 The relationship between VCs and Asia-based entrepreneurs will exhibit more VC advice and fewer disagreements than for non Asia-based entrepreneurs.

Data and method

We administered a survey of venture-backed startup companies in the United States and Singapore. Gathering data from private entrepreneurial firms is costly and labor-intensive, as such we are confined in this study to these two countries.

The survey questionnaire was used to obtain information from each respondent's most recent investment round. The VentureXpert database was used to identify relevant startup companies to include in the survey. We identified firms that matched the following criteria: (1) they received funding at least once in the period 2000–2004 so that they had adequate time to interact with the VC, (2) only private firms because the governance mechanisms are different for public firms (Campbell & Frye, 2005), and (3) firms financed solely by angel investors were excluded from the list because of different post investment behavior (Osnabrugge, 2000). Using these criteria, we identified a total of 960 startups.

Collecting data was a challenging undertaking because the questionnaire contained questions that required respondents to divulge private and highly sensitive information. A cover letter that contained a link to an online survey was sent out to a member of senior management for these companies. Additional emails were sent out every 2 weeks following the first email for a period of 2 months. One of the authors made telephone calls to each company to explain the nature of the study and to assure respondents of confidentiality.

A total of 122 surveys were collected, representing a response rate of 12.7%. After discarding incomplete surveys, the final sample size comprised of 85 completed responses, 70 of which were from ventures in the United States and 15 from Singapore.

Dependent variables

Two dependent variables were obtained through the survey: the level of advice given by the VC to the entrepreneur, and the degree of disagreement between them.

Advice We measure advice as the degree to which a VC provided help to an entrepreneur in several business functions. VCs are able to observe and learn about diverse types of business problems across the companies they invest in. As such, they gain significant experience in dealing with problems associated with startups in some form or another (Rosenstein et al., 1993). This places VCs in a good position to offer advice to the startup on how to tackle problems and to improve the business (Ferrary, 2003).

In our survey, we asked each entrepreneur to evaluate the amount of advice the VCs provided for various activities. A scale of 1 to 10 was used, with N/A for "no advice given." We used the same activity areas as in Cumming and Johan (2007) and Sapienza, Manigart, and Vermier (1996), covering all nine major areas of value-

added contribution by VCs (i.e., strategic advice, marketing advice, financial advice, R&D, product development, human resources, exit strategy, interpersonal, and networking).

Principal Component Analysis (Table 1) revealed that "advice" falls into three components that are consistent with MacMillan and Subbanarasimha (1987)—business strategy, product strategy, and hiring strategy. Hence, we utilize the following dependent variables for *advice*: the total advice ratings across all functional areas, the total advice ratings for business strategy related advice, the total advice ratings for product related advice, and the total advice ratings for human resources related advice.

Disagreement The level of disagreement was measured along eight dimensions—strategy, marketing, financial, R&D, product development, human resources, others, and replacement of the CEO. The ranking was on a scale of 1 to 5, with N/A indicating no disagreements (yet). The individual disagreement ratings were summed up to generate the dependent variable. As with the dependent variable for *advice*, we also created three broader measures of disagreement—strategy related disagreements, product related disagreements, and human resources related disagreements.

Independent variables

Direct and indirect social ties To measure the strength of ties, we asked respondents to choose among several statements that described the type of relationship she had with the VC before the investment was made. If the respondent indicated that her relationship with the investor was either one of the following: relative, personal friend, former colleague, or personal acquaintance, we set the variable "direct tie" to 1 and "indirect tie" to 0. For respondents that indicated one of the following: common friend, referral from friend, referral from colleague, or alumni relationship, we set the "indirect tie" variable to 1 and the "direct tie" variable to 0. If the

Table 1 Principal components analysis for *advice* as the dependent variable.

	Components		
	Product Development	Strategic	Human Resources
Strategic Advice	0.495	**0.663**	0.225
Marketing Advice	0.498	**0.535**	0.284
Financial Advice	0.057	**0.818**	0.381
R&D	**0.929**	0.110	0.232
Product Development	**0.883**	0.217	0.136
Human Resources	0.374	0.245	**0.627**
Exit Strategy	0.153	**0.867**	0.066
Interpersonal	0.147	0.174	**0.842**
Networking	0.126	0.169	**0.848**

Items in bold within the columns were those included in each component.

respondents indicated that they did not have any tie with the investor, both direct tie variable and indirect tie variable were set to 0.

Contractual favorableness Manigart and colleagues (2002) found that entrepreneurs who have a higher degree of trust in the VC are more willing to include pro-investor provisions in the contract. Entrepreneurs, depending on how they view the relationship they have with the VC, perceive certain contractual terms with varying degrees of favorableness. As per Landstrom and colleagues (1998), we asked respondents to evaluate ten different contractual provisions in terms of their favorableness on a scale of 1 to 10, with N/A indicating that the provision was not present in the contract. The contractual provisions included: company valuation, type of security, liquidation preferences, amount and timing of the investments, number of VC-elected directors, conversion rights, dilution protection, voting rights, vesting of founder's stock, and management control. An average of the ratings was then taken across the provisions that were present to derive our favorableness rating.

Contractual flexibility The flexibility around major contractual terms was measured by asking respondents to rank how flexible the VC was around key business areas (Hsu, 2004; MacMillan & Subbanarasimha, 1987). A scale of 1 to 5 was used, with N/A to indicate absence.

Singapore dummy To test the hypothesis on Asian versus non Asian firms (Hypothesis 5), we identify Singapore-based firms using a dummy variable.

Control variables

Prior academic research measured the strength of contracts based on the number of contractual provisions included (Kaplan & Stromberg, 2001; Landstrom et al., 1998). Following Cumming and Johan (2007), we asked each entrepreneur to identify the control rights present in the contract. The *total number of provisions* was then used as a control variable.

We also controlled for the *size of the investment* made in the venture, which can affect post-investment decisions made by VCs (Tyebjee & Bruno, 1984; Wetzel, 1987). Large investments can lead to greater levels of advice and to more intense disagreements because the VC faces greater pressures to ensure a reasonable return on investment.

Another control variable used was the *degree of monitoring*. Advice and monitoring should not be confused as substitutes: the VC provides advice to help a company to succeed, but she also monitors the firm to ensure that performance goals are met. While monitoring seeks to decrease information asymmetry and opportunistic behavior, the role of advice is to offer help to the firms and allow them to create additional value that they may not be able to on their own. We follow Lerner (1995) in using the *percentage ownership* and *percentage of the board occupied* as proxies for the level of monitoring.

The *total number of meetings* that the VCs had with the entrepreneurial firm each month was also used as a control variable. The degree of interaction between the VC

and the entrepreneur is likely to affect knowledge sharing and information asymmetry (Barney et al., 1996; Florida & Kenney, 1988).

Newer ventures typically have a higher level of risk and this affects the level of advice and disagreement between entrepreneurs and venture. Gompers (1995) found that VCs exert greater monitoring on their portfolio firms during earlier stages of the investment. Steiner and Greenwood (1995) also found that the newness of the firm affects the level of monitoring of the VC. We therefore controlled for the *stage the firm was at* when the investment was made. The firm stages used were from the PWC MoneyTree classifications scheme (seed, early stage, expansion stage, later stage).[2] The *investment round* at which the VC entered an investment was also used as a control variable: there is greater certification of the venture during later investment rounds as a result of other VCs entering at earlier investment rounds providing signal of quality (Steiner & Greenwood, 1995; Sweeting, 1991).

Results

Descriptive statistics are presented in Table 2. We now present the results of independent sample *t*-tests before delving into regression results. Table 3 compares the mean level of *advice* and *disagreement* among respondents with direct ties versus those without. In line with the prior, we find that respondents with direct ties generally received more advice relating to the product (2.379, $p < 0.05$), more advice on social networking (3.475, $p < 0.05$), as well as more overall advice (7.798, $p < 0.1$).

As for disagreements, we observe negative values in the areas of strategy, marketing, and finance (−2.025, $p < 0.01$). The overall level of disagreement is also lower for those with direct ties as compared to those with indirect ties (−3.408, $p < 0.01$). Thus, entrepreneurs without direct ties have a higher average level of disagreements with the VCs.

Regression results for advice

Table 4 shows the mean, variance, and correlations for the variables used in the regressions. The table shows that correlations for the independent variable are generally low with the largest correlation being that of percentage of ownership and percentage of board seats occupied (0.687, $p < 0.01$). This positive correlation is to be expected (Mayers, Shivdasani, & Smith, 1997). The low correlation among independent variables implies that multicollinearity will not be a serious concern in the regression results. We find that variance inflation factors (VIF), used to indicate the presence of multicollinearity among the independent variables, are generally below 2.5 and therefore acceptable (Allison, 1999) except between the *percentage ownership* and the *percentage board ownership*, both of which are just control variables.

Because the dependent variables are discrete and inherently ordered an ordered logistic regression was used (Greene, 2002). In this model, the dependent variables are representative of unobserved continuous variables, which in our case is the true

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[2] For definitions, see http://www.pwcmoneytree.com/MTPublic/ns/nav.jsp?page=definitions.

Table 2 Descriptive statistics.

Startups	Total/Average 101	Direct Tie 35	Indirect Tie 40	No Tie 26
Investment Characteristics				
Type of Investment				
Common Stock	13	4	2	**7**
Convertible Debt	14	**7**	4	3
Preferred Shares	79	26	**34**	19
Investment Stage				
Startup/Seed	57	22	22	13
Early Stage	37	12	**15**	10
Expansion Stage	7	1	3	3
Investment Size				
Did not Respond	2	**2**	0	0
Less than $1m	27	**13**	9	5
$1.1m to $2m	13	3	**7**	3
$2.1m to $3m	18	5	5	**8**
$3.1m to $4m	4	**2**	1	1
$4.1m to $5m	10	3	**5**	2
$5.1m to $6m	7	1	**5**	1
$6.1m to $7m	8	3	3	2
More than $7m	12	3	**5**	4
% Ownership				
Less than 25%	52	**21**	18	13
26% to 50%	35	9	**17**	9
51% to 75%	12	**5**	4	3
76% to 100%	1	0	**1**	0
How Long Before the Investment was Made				
Less than 3 months	19	6	**8**	5
3 to 5 months	35	11	**18**	6
5 to 7 months	28	**10**	9	9
7 to 9 months	9	3	2	**4**
9 to 11 months	3	1	**2**	0
More than 11 months	7	**4**	1	2
Average Favorableness of Contractual Provisions				
Valuation	5.97	5.97	**6.08**	5.79
Type of Security	5.29	**5.43**	5.23	5.20
Liquidation Preference	5.45	**6.06**	5.00	5.32
Amount/Timing of Investments	6.44	**6.83**	6.26	6.20
No. of Directors VC Can Elect	6.59	**7.43**	6.10	6.20
Conversion Rights	6.01	**7.03**	5.90	4.80
Dilution Protection	5.26	5.06	**5.92**	4.52
Voting Rights	6.18	**6.69**	6.33	5.28

Table 2 (continued)

Startups	Total/Average 101	Direct Tie 35	Indirect Tie 40	No Tie 26
Vesting of Stock	5.76	5.24	**6.21**	5.76
Management Control	6.88	7.11	6.45	**7.24**
Average Disagreements				
Strategy	1.85	1.34	2.05	**2.24**
Marketing	1.43	1.03	**1.78**	1.44
Financial	1.94	1.43	**2.48**	1.79
R&D	1.09	0.89	**1.43**	0.84
Product Development	1.22	0.91	**1.68**	0.92
Human Resources	1.50	1.06	**1.92**	1.46
Change CEO	0.77	0.45	**1.12**	0.64
Average Advice Giving				
Strategy	5.13	**5.29**	5.23	4.80
Marketing	3.61	**3.97**	3.55	3.20
Financial	4.91	4.80	4.93	**5.00**
R&D	2.35	**2.94**	2.33	1.60
Product Development	2.63	**3.12**	2.78	1.76
Human Resources	3.10	**3.40**	3.10	2.71
Exit Strategy	3.89	4.00	**4.28**	3.16
Interpersonal Support	4.10	**4.57**	4.05	3.56
Help in Networking	5.31	**5.94**	5.05	4.84
Other Control Measures				
% Board				
No Response	2	0	1	1
Less than 25%	56	21	21	14
26% to 50%	30	11	11	8
51% to 75%	12	3	**6**	3
76% to 100%	1	0	**1**	0
Veto Rights				
Asset Sales	21	7	**8**	6
Change in Control	36	9	**17**	10
Issuance of Equity	40	11	**18**	11

Bold text indicates the number which is highest across the columns for direct, indirect and no ties.

level of advice giving and disagreement. A similar regression model (binary logistic) was used by Shane and Cable (2002) to measure whether social ties increase the probability that an investor will finance a venture. The coefficients that will be presented should not be interpreted like that of an OLS regression. These coefficients are the ordered log-odds estimates for a unit of increase in the independent variable. For a positive coefficient, each unit increase in the independent variable represents an increase in the ordered log-odds scale by the coefficient's amount, all other variables held constant. The reverse is true for negative coefficients.

Table 3 Difference in means: *t*-tests.

Advice	
Strategic Advice	0.717 (0.686)
Marketing Advice	1.014* (0.592)
Financial Advice	0.273 (0.636)
R&D	1.456*** (0.474)
Product Development	0.922* (0.528)
Human Resources	1.086** (0.535)
Exit Strategy	−0.05 (0.761)
Interpersonal	0.913 (0.627)
Networking	1.382** (0.651)
Totals in each PCI Category (as per Table 1)	
Strategic/Marketing/Finance Advice Total	1.946 (2.210)
Product Development and R&D Advice Total	2.379** (0.957)
HR and Networking Advice Total	3.475** (1.493)
Total of Advice Measures	7.798* (3.942)
Disagreements	
Strategic Advice	−0.765** (0.326)
Marketing Advice	−0.539** (0.269)
Financial Advice	−0.741** (0.310)
R&D	−0.263 (0.225)
Product Development	−0.418* (0.224)
Human Resources	−0.538* (0.270)
Replace CEO	−0.270 (0.324)
Totals in Each Category	
Disagreements Total	−3.408** (1.551)
Disagreement Total for Strategy, Marketing, and Finance	−2.025*** (0.756)
Disagreement Total for R&D and Product Development	−0.682 (0.439)
Disagreement Total for CEO and HR	−0.808 (0.509)

The table above are the results of independent sample *t*-tests for the difference in means between those with direct ties and those without. A positive value indicates that the mean value of a variable is higher with direct ties than with indirect ties, and vice-versa.

Table 5 shows the regression results using *advice* as the dependent variable. As shown in the Model 1, the estimated coefficient for *direct ties* is positive and significant with the dependent variable being the total advice given by the VC to the entrepreneur. This is consistent with Hypothesis 1(a). Direct ties imply a certain level of identity-based trust between the two parties. As indicated by the empirical data, this trust increases the likelihood that advice will be given by the VC to the entrepreneur. Analyzing different types of advice, Models 2–4 break down *advice* into its three principal categories. We find that among the three categories of advice, only *strategic advice* has no correlation to direct ties. This could be because advice on strategy is something that VCs will offer to investee companies regardless of the strength of the tie they have with the entrepreneur. However, direct ties increase the

log-odds that an entrepreneur will receive product advice and networking advice from the VC.

In contrast to the results for direct ties, we do not find statistically significant correlations between the measure of *indirect ties* and the advice-giving behavior of VCs. The data do not provide evidence to support the idea that indirect ties reduce the likelihood of advice-giving behavior by the VC (Hypothesis 2[a]).

As for contractual characteristics, we find that contract favorableness is important—the more the entrepreneurs view the contract to be favorable, the greater the likelihood that advice will be given by the VC (Model 1). This is in line with Hypothesis 3(a). The positive effect on advice is primarily in the areas of strategy and networking (Models 2 and 4), whereas the coefficient for contractual favorableness is not statistically significant for product advice (Model 3). The flexibility of the contract is not statistically significant in any of the models, contrary to Hypothesis 4(a). One possible explanation is that contractual provisions are highly standardized across multiple investment deals for each VC, so contractual provisions are largely a function of the VC's fiduciary duty to protect its investors in the event of unforeseen circumstances.

Surprisingly, our tests for Hypothesis 5 (US-versus Singapore-based firms) shows no statistical difference. Across Models 1 through 4, the Singapore dummy variable is not significant. Doing a split sample test does not change the results, nor does introducing the dummy as an interaction term. We explore this further in the "Discussion and conclusions" section.

Regression results for disagreements

Table 6 shows the regression results with the level of *disagreement* between VC and entrepreneur as the dependent variable. As before, ordered logistic regressions are used. Unlike in Table 5, the coefficients for *direct ties* are not statistically significant when all disagreements are taken into account (Model 5). Thus, although direct ties increase the likelihood that advice is given, there is no evidence to suggest that direct ties reduce the likelihood of disagreements between the two parties. Hypothesis 1(b) is not supported.

Breaking *disagreement* into its components, we learn that *direct ties* are unrelated to product disagreements and human resources disagreements (Models 7 and 8). However, a strong negative correlation exists between direct ties and strategy disagreements (Model 6). Hence, a direct tie is likely to *reduce* the log-odds of a disagreement in the strategy area between the VC and entrepreneur. This could be because the two parties potentially have higher goal-congruence in terms of the strategy and direction.

Another interesting result in Table 6 is that *indirect ties* increase the log-odds of disagreements between the VC and the entrepreneur (Model 5). This is consistent with Hypothesis 2(b). The result is driven by disagreements over product issues (Model 7). So, although Shane and Cable (2002) found indirect ties to positively influence an investment decision, we find that these benefits do not carry over to the post-investment period. A possible reason is that VCs do not share the trust placed in the entrepreneur by an indirect party who refers the entrepreneur to the VC. Entrepreneurs need to develop their own trust relationships with their VCs.

Table 4 Pairwise correlations.

	Mean	St Dev	N	Disagreements Total	Total of Advice Measures	Operations Total	Product Total	Total Advice	Direct Ties	Indirect Ties
Disagreements Total	10.52	6.585	85	1						
Total of Advice Measures	36.83	16.57	83	0.108	1					
Operations Total	19.35	9.163	85	0.155	0.906**	1				
Product Total	4.917	4.094	85	0.125	0.728**	0.547**	1			
Networking Advice Total	12.50	6.357	85	−0.02	0.812**	0.547**	0.452**	1		
Direct Ties	0.282	0.452	85	−0.23*	0.214*	0.096	0.263*	0.247*	1	
Indirect Ties	0.482	0.502	85	0.299**	−0.00	0.019	0.002	−0.01	−0.39**	1

(Additional column headers: Number of Contractual Provisions, Average Favorable, Flexibility Average, Investment Size, Board Occupied, Board Ownership, Investment Round, Investment Stage, VC Syndication)

	Mean	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cont Prov	5.329	2.638	85	0.196*	0.050	0.115	0.096	-0.10	-0.06	0.174	1								
Favorable Average	6.712	1.527	83	-0.41**	0.293*	0.282*	0.102	0.268*	0.148	-0.04	0.034	1							
Flexibility Average	6.045	2.445	85	-0.13	0.101	0.044	0.078	0.143	0.222*	0.009	0.110	0.21	1						
Investment Size	3.717	2.432	85	0.073	-0.01	0.019	-0.02	-0.05	-0.15	0.041	0.151	-0.11	-0.11	1					
Board Occupied	1.559	0.750	84	0.332**	0.101	0.151	0.059	-0.04	-0.08	0.147	0.291*	-0.19	-0.10	0.168	1				
Board Ownership	1.623	0.723	85	0.209*	0.131	0.154	-0.00	0.065	-0.07	0.112	0.290*	-0.03	0.060	0.207	0.687**	1			
Investment Round	1.430	0.678	86	-0.03	-0.01	0.139	-0.15	-0.11	-0.03	0.004	-0.03	0.204	0.102	0.168	-0.19	-0.19	1		
Investment Stage	1.546	0.644	86	0.001	-0.07	0.039	-0.02	-0.20*	-0.04	-0.04	-0.11	-0.14	-0.22*	0.312*	-0.10	-0.17	0.424**	1	
VC Syndication	5.559	3.326	84	-0.02	-0.01	-0.00	0.001	0.000	-0.11	-0.13	0.031	-0.05	0.118	0.092	-0.18	-0.03	0.089	-0.16	1

$* \ p < 0.1; \ ** \ p < 0.05; \ *** \ p < 0.01.$

Table 5 Ordered logistic regression results for advice.

Advice	Model I All Areas of Advice	Model 2 Advice in for each PCI Component Area (Table 1)	Model 3	Model 4
		Strategic, Marketing, and Finance Advice	Product Development and R&D Advice	HR and Networking Advice
	B (S.E.)	B (S.E.)	B (S.E.)	B (S.E.)
Social Ties				
Direct Tie	1.150** (0.520)	0.651 (0.508)	1.453*** (0.534)	1.330** (0.521)
Indirect Tie	0.260 (0.443)	0.245 (0.434)	0.616 (0.449)	0.337 (0.435)
Contractual Provisions				
Favorableness Average	0.480*** (0.151)	0.464*** (0.149)	0.156 (0.145)	0.297** (0.145)
Flexibility Average	−0.031 (0.097)	−0.084 (0.095)	−0.077 (0.098)	0.015 (0.095)
Singapore Dummy	Not Significant	Not Significant	Not Significant	Not Significant
Control				
# of provisions	−0.038 (0.081)	−0.000 (0.081)	0.026 (0.083)	−0.153* (0.082)
Size of investment	−0.031 (0.093)	−0.048 (0.092)	−0.038 (0.095)	0.125 (0.094)
% of board occupied	0.429 (0.408)	0.518 (0.406)	0.145 (0.411)	0.054 (0.403)
% ownership	0.044 (0.425)	0.122 (0.422)	−0.068 (0.430)	−0.119 (0.423)
Investment round	−0.076 (0.351)	0.282 (0.349)	−0.522 (0.363)	−0.404 (0.351)
Investment stage	−0.156 (0.383)	0.071 (0.380)	−0.196 (0.391)	−0.682* (0.386)
Total # of Meetings	0.211*** (0.058)	0.154*** (0.056)	0.161*** (0.057)	0.149*** (0.056)
Cox Snell Pseudo-R	0.29	0.23	0.22	0.29
N	79	81	81	81
P-Value	0	0.03	0.04	0

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Otherwise, the VC will have a greater probability of having disagreements with them, particularly on issues concerning product development and R&D.

We also find strong negative correlations between contract favorableness and disagreements (Models 5–8). This is consistent with Hypothesis 3(b). Favorableness measures goal congruence, so a higher level of favorableness is expected to involve fewer disagreements between VC and entrepreneur. While contracts are incomplete and cannot be solely relied upon to exert control by one party over another, favorableness in the parties' view of the control provisions can still affect the level of control. Unlike for contractual favorableness, contractual flexibility is not statistically significant in Table 6. Thus Hypothesis 4(b) is not supported.

As before, the Singapore dummy variable is not significant with *disagreement* as the dependent variable. So, we do not find evidence that the Singapore sample is statistically different than the US sample. We return to this issue in next section.

Table 6 Ordered logistic regression results for disagreements.

Disagreements	Model 5 All Disagreements	Model 6 Strategy+Mkt+Fin Disagreements	Model 7 Product + R&D Disagreements	Model 8 HR+ReplaceCEO Disagreements
	B (S.E.)	B (S.E.)	B (S.E.)	B (S.E.)
Social Ties				
Direct Tie	−0.539 (0.511)	−1.050** (0.523)	0.003 (0.548)	−0.434 (0.528)
Indirect Tie	0.777* (0.441)	0.164 (0.441)	1.446*** (0.487)	0.615 (0.451)
Contractual Provisions				
Favorableness Average	−0.537***(0.153)	−0.548***(0.155)	−0.304*(0.157)	−0.514*** (0.158)
Flexibility Average	−0.025 (0.095)	−0.044 (0.096)	−0.197* (0.104)	0.066 (0.099)
Singapore Dummy	Not Significant	Not Significant	Not Significant	Not Significant
Control				
# of provisions	0.012 (0.081)	0.034 (0.082)	0.030 (0.087)	0.055 (0.084)
Size of investment	−0.017 (0.093)	0.011 (0.095)	−0.026 (0.099)	−0.025 (0.095)
% of board occupied	0.238 (0.405)	0.511 (0.410)	−0.116 (0.430)	0.177 (0.414)
% ownership	0.365 (0.425)	0.100 (0.43)	0.447 (0.451)	0.379 (0.435)
Investment round	0.536 (0.355)	0.712* (0.375)	−0.150 (0.387)	0.248 (0.365)
Investment stage	−0.447 (0.386)	−0.321 (0.404)	−0.870** (0.432)	−0.131 (0.398)
Total # of Meetings	0.158*** (0.056)	0.061 (0.055)	0.143** (0.060)	0.092 (0.057)
Cox Snell Pseudo-R	0.35	0.34	0.33	0.26
N	81	80	81	81
P-Value	0	0	0	0.01

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Discussion and conclusions

Our results, while based on a small sample, may be interpreted to suggest that the VC-entrepreneur relationship does not exist in a social vacuum. While past work has examined the effects of social networks on the financing decisions of VCs (Shane & Cable, 2002), we suggest that social networks formed in the pre-financing phase have effects that persist in the post-investment period. These social ties mitigate problems arising from asymmetric information. However, the nature of the relationship matters: *direct ties* result in the VC offering more advice to the entrepreneur but has no significant effect on disagreements between the VC and entrepreneur; indirect ties have *no* effect on the level of advice given by the VC, but they result in a greater level of disagreement between the VC and entrepreneur.

Moreover, we find that subtle differences exist contingent upon the *area* of advice and disagreement: (1) direct ties are most strongly correlated with advice concerning product development, R&D, human resources, and networking, rather than overall strategic direction (Models 2–4), while (2) indirect ties are primarily associated with disagreements over product-related issues rather than strategy/marketing/finance or HR issues (Models 6–8). The first set of results make sense because core strategic advice from the VC is likely to have been solicited and aligned by the time the

investment is made, whereas the VC's advice on how to implement and market the original ideas (including R&D, product development, HR, and marketing) as well as whom to network with (thus gaining access to technologies and markets) are quite important in the post-investment phase.

The second set of results is interesting because asymmetric information is likely to be more pronounced around product issues rather than strategy/marketing/finance or HR (which are more observable and familiar to the VC). One interpretation is that the entrepreneur has the greatest knowledge with regards to product and technological areas, and these areas offer the greatest opportunities for the entrepreneur to withhold information. Hence, indirect ties are likely to be associated with a greater level of disagreement concerning R&D and new product development than other areas.

But while social ties are important, so too are contractual characteristics. Contracts that are perceived to be more favorable increase the probability that the VC will provide advice to the venture, while decreasing the probability of disagreements. So Hypotheses 3(a) and 3(b) are supported. A likely cause is that favorableness implies a higher degree of goal alignment between the two parties.

Surprisingly, we find that the flexibility of the contract does not lead to either greater advice or disagreement (Hypothesis 4). This could be caused by our relatively small sample size, since the estimated coefficients in Models 1 and 5 are negative even though not statistically significant. Another possible explanation is that contractual flexibility (as well as the number of provisions) can be renegotiated even after the investment is made, whereas the perception of favorableness at the time of investment remains static. We hope to examine this issue more thoroughly in subsequent work.

The Singapore dummy variable was found to be not statistically significant. It is important to clarify this means that the results of the US sample and the Singapore sample are not different: direct ties are associated with higher levels of VC advice, while indirect ties are associated with more disagreements. It does not mean that social ties are unimportant in the Singapore context. One possible explanation for the lack of statistical significance may be that our Singapore sample is too small. A second explanation is that the US and Singapore are not very different in terms of the VC-entrepreneur relationship. So while earlier research showed differences between Asian and Western firms, it may be that Singaporean firms are more similar to US firms, as compared to other countries like China or Japan. This would be in line with prior work showing that VCs are quite varied across different Asian countries (Lockett, Wright, Sapienza, & Pruthi, 2002). A third explanation is that the VC industry is a global one, and that in both the US and in Singapore, VCs invest in young, entrepreneurial firms, whereas much of the literature on Asian businesses has focused on established family empires and business groups (e.g., *keiretsu*).

Our empirical data is insufficiently detailed to allow us to identify which of these three explanations is most salient. We shared our results with two VCs who found the greatest resonance with the third explanation (i.e., that our results reflect the globalized nature of the VC industry, especially in Singapore). Mixed results were also found by Lu and Hwang (2010) who found that while foreign VC firms in Singapore rely more heavily on social ties than domestic VCs, there was no statistical difference between foreign and local VCs in terms of management risk,

financial risk, and product/market risk. In any case, we suggest that additional research be carried out to probe this question deeper.

There are several limitations of this paper. We do not measure the tie strength, and a natural extension of this paper would be to measure the strength of each direct and indirect tie to provide better insight into the cost and benefits of building a small set of strong ties or just maintaining a large number of weak ties. We are also limited by the questionnaire design to a cross-sectional analysis. Yet, ties between VCs and entrepreneurs do not remain static (Barney et al., 1996) and it would be interesting to observe how the dynamics affect conflict and control over time. And while we are able to obtain interesting and statistically significant results, our sample is relatively small and it would be important in future to expand it.

Despite these limitations, our paper makes several contributions to the literature. Firstly, it implies that scholars must pay attention to how social ties and contractual issues affect post-investment behavior by VCs and entrepreneurs. Secondly, we hope our study will make practitioners—both VCs and entrepreneurs—more aware of how their network ties affect and shape the way in which they interact, and perhaps to think more carefully about cultivating their ties. If getting good advice from a VC matters, then perhaps the entrepreneur should make greater efforts early on to establish direct ties (or to nurture an indirect tie into a direct tie); if the entrepreneur is reliant upon a VC who is an indirect tie, then she should be prepared to be more independent in making decisions and be ready to resolve a greater number of disagreements with the VC. Finally, our paper suggests important research directions. In analyzing different types of advice and disagreements, we show that considerable heterogeneity exists, which requires more careful research. Differences in cultural norms and investment regulations across countries may also affect the VC-entrepreneur relationship. And while we did not take into account the dynamics of each relationship over time, they are worth exploring further.

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