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The Effects of Interfirm Networks on Corporate Risk-Taking: Korean Venture Capitals Investing in Younger Start-Ups

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〈Abstract〉

Most research on the determinants of corporate risk-taking behaviors has focused on factors that are internal to organizations, such as prior performance and organizational slack. This research aims to shed light on a factor that is external to organizations: interfirm networks. To examine networks' effects on risk-taking, this research takes the case of Korean venture capitals that consider investing in younger firms as risk-taking. Network theorists have argued that advantageous positions in social networks provide informational benefits through which organizations achieve competitive advantages in reducing actual risks taken in managerial decisions. Based on an analysis of an inter-venture capital network, this research shows that the venture capitals whose connections span across different groups－non-redundant connections－invest in younger firms, compared to the ones whose connections are based on similar groups-redundant connections.

Keywords : Risk-Taking, Social Network, Venture Capital, Structural Hole

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Ⅰ. Introduction

Corporate risk-taking has long interested organizational theorists. In the pursuit of the determinants of risk-taking, studies have examined various managerial choices, such as corporate takeovers, adoption of innovations, and intense R&D activities (Hayes and Abernathy, 1980; Hoskisson and Johnson, 1992; Pablo, Sitkin, and Jemison, 1996). However, does a similar managerial choice imply the same amount of risk to every firm? It is possible that the "riskiness" of the same managerial choice is different based on how much information each firm has about the predicted outcome of the choice. There are various channels for information, and one of the most prominent is social networks (Beckman and Haunschild, 2002; Davis, 1991; Haunschild, 1993; Podolny, 2001). This research argues that social networks can provide a complement to the studies on corporate risk-taking.

Existing research has found certain organizational factors facilitating risk-taking that are *internal* to firms, such as ownership, diversification, previous performances, manager incentive, and slack resources. These internal factors determine motivations for risk-taking. For example, owner-led companies have a stronger motivation for risk-taking than agent-led companies because agent CEOs, unlike owner-managers, put their human capital at risk when sponsoring risky investments (Amihud and Lev, 1981; Esty, 1997). A diversified company has less motivation for risk-taking because their divisional managers are evaluated on summary financial measures, where risky projects are not a good way to meet periodical financial targets (Hayes and Abernathy, 1980; Hoskisson and Hitt 1988). Low performances in previous periods are positively related to risk-taking because managers are under pressure to compensate for their bad performances (Bowman, 1984; Lant and Montgomery, 1987).

This research aims to complement the above research on risk-taking by providing the findings on one of the *external* features of firms: interfirm networks. Network analysts have demonstratedthat access to information largely depends on one's social network. Davis (1991) shows that, during the hostile takeover wave of the 1980s, firms learned about and adopted an innovative defense strategy—the poison pill—mainly from board-interlocking interfirm networks. Podolny (2001) finds that interfirm networks are a crucial source through which investor companies collect information on potential investees.

Haunschild (1993) and Beckman and Haunschild (2002) report cases where firms gather information from their networks before pursuing mergers and acquisitions. These findings on the informational benefits of interfirm networks make it worth investigating the effects of interfirm networks on risky managerial decisions.

To assess networks' influence on corporate risk-taking, I analyze a corporate decision that is widely regarded as risk-taking: venture capitalsinvesting in younger firms. Younger ventures have higher mortality rates and uncertainty in generating stable income than older ones (Gompers, 1996; Ruhnka and Young, 1991). However, investing in a promising company in itsearly stage can incur an extraordinary return. Thus for venture capitals, investing in younger firms is the typical high-risk and high-return managerial choice.This research shows that even after controlling essential conventional determinants for risk-taking, networks of venture capitalists lower the average age of investee firms.

This research does not argue that networks induce the "mindset" for risk-taking. With the information gathered through networks, the actual risk a firm takes gets reduced. In a hypothetical situation, where a similar managerial decision is made by many corporations which is generally regarded as "risky", ifone company has perfect information to predict the outcome from its network, then it is hard to say that the company is taking any risk. It is only that they seem to be taking risks because of the general perception associated with the decision. Thus, this research only provides a complementary insight that when studying corporate risk-taking networks can be a valuable addition to the set of independent variables due to their informational benefits.

The application of social network theory to corporate risk-taking is particularly appropriate because, the information that gives a competitive edge against other companies in risky choices is, in many cases, not publicly available in the early stages. For example, a firm about to acquire another firm would seek information on how many potential competitors are bidding, who they are, and what price they are likely to offer.This information will be eventually open to the public, but at the early stages of decision-making, it will most likely be circulating within close connections of core managers or other insiders because of confidentiality or because it is too early to be confirmed as facts by official media. This type of information is unevenly distributed in social networks, and organizations that occupy better positions in the network will be able to make managerial choices

that are deemed risky without actually taking the perceived level of risks. This research uses the data on Korean venture capitals between 1999 and 2006 to examine the network's effect on risk-taking behavior.

Ⅱ. Theoretical Backgrounds

1. Managerial Risk-Taking vs. Organizational Risk

There has hardly been a consensus on the meaning of riskamong scholars, but Palmer and Wiseman (1999) give useful taxonomy on risk. They distinguish between "managerial choices associated with uncertain outcomes (*managerial risk-taking*)" and "characteristic of organizations experiencing volatile income streams (*organizational risk*)." Conceptually, organizational risk is the outcome of managerial risk-taking. Volatility in the income stream in an organization is one of the possible products of risky managerial choices. Many research studies focusing on strategic managerial choice used organizational risk as a proxy measure of managerial risk-taking (e.g. Boubakri, Cosset, and Saffar, 2013; Faccio, Marchica, and Mura, 2011, 2016; Paligorova, 2010). However, as Palmer and Wiseman show in their empirical analysis, managerial risk-taking is not always transferred into organizational risk. And income volatility can be incurred by various economic and social factors such as labor strikes and economic turbulence of national economies.

I define risk-taking as *managerial risk-taking* because my focus is on the network's effect on strategic and managerial decision-making. In measuring the degree of risk-takingof a venture capitalist, I use the average age of ventures that it invests in; the younger firms a venture capital invests in, the more risk the venture capital is taking. While start-up firms are much more likely to fail than established firms, they bring larger returns than established firms when they succeed (Gompers, 1996; Ruhnka and Young, 1991).

2. Determinants of Risk-Taking in Previous Research

Scholars haveaccumulated valuable findings on what determines corporate risk-taking. A substantial number of studies havelooked *inside* organizations and found factors such

as corporate performances and slack resources. There are other studies that looked *outside* organizations for determinantssuch as environmental volatility and intensity of competition between firms. This section reviews these studies and identifies the existing gap that my research seeks to fill.

Various studies focus on internal factors for corporate risk-taking. For example, corporate performances in the previous term affect risk-taking. Studies demonstrated that low prior performances and performances below aspirations induce riskier managerial choices (Bowman, 1984; Lant and Montgomery, 1987). Behavioral theories of the firms discussed the influence of slack resourcesThe difference between total available resources and total necessary payments is called organizational slack (Cyert and March, 1963). on decision-making (Cyert and March, 1963). According to them, the relationship between slack and risk-taking is U-shaped: when slack is below a target level, organizations take risks to gain more slack. When slack is at the desirable level, they do not take risks because they are satisfied with the current operation. When slack is above the target level, they take risks again as a slack search (Cyert and March, 1963; March, 1981). A group of scholars explored the effects of ownership on risk-taking (Agrawal and Mandelker, 1987; Amihud and Lev, 1981; Esty, 1997; Hill and Snell, 1988; Mintzberg and Waters, 1982). The research is based on the proposition by Knight (1921) that agent-led companies are more conservative toward risk than owner-managed companies because non-owner managers would have their employment jeopardized if the risky choice failed. Another determinant in previous research is diversification: managers in highly diversified organizations have difficulty in knowing detailed projects and performances of each division due to high levels of specialization. Thus they evaluate divisions using summary financial measures such as return on investment and performance against profit budgets. It discourages divisional managers from pursuing risky projects such as aggressive R&Ds since these types of investments do not pay off in short terms and need substantial knowledge about the fields to justify (Hayes and Abernathy, 1980; Hoskisson and Hitt, 1988). Heterogeneity in top management teams (TMT) also affects risk-taking. The more heterogeneous a group is, the greater diversity of ideas it has, which ultimately leads to non-routine and riskier strategies (Bantel and Jackson, 1989). CEO characteristics are also found to be associated with risk-taking, such as younger ages of CEOs (Yim

and Jung, 2020).

In contrast to the above examples of studies that look inside organizations, Palmer and Wiseman (1999) look outside of organizations and considered the organizational environment. According to them, while munificence, which is the abundance of resources in the industry that enables organizations to survive, facilitates risk-taking, dynamism, which refers to the volatility of the environment, hampers risk-taking because, in uncertainconditions, organizations focus on maintaining the status quo. Their research contributed to expanding the scope of research to outside the organization,linking industrial conditions and risk-taking behaviors. Kook and Kang (2010) studied institutional environments like investor protection and growth opportunity to explain risk-taking.

In line with this external view, an article examined the *relationship* among organizations to explain risk-taking. Using National Association for Stock Car Auto Racing (NASCAR) races, Bothner et al. (2007) revealed that crowding from below the rank of an actor induces risk-taking behavior, which has a stronger effect than crowding from above. Racers took the highest risks when they were aggressively chased by the lower rankers. This is the closest study to my research in that it considers external factors of organizations for risk-taking, and the external focus is on the relative positions of actors. However, a rank order in racing games only reflects the hierarchical aspect of the relationships of actors. It does not capture the horizontal aspect of the relationships through which they exchange resources and information. I seek to explore how actual connections through network ties among actors affect risk-taking.

3. Risk-reduction and Interfirm Networks

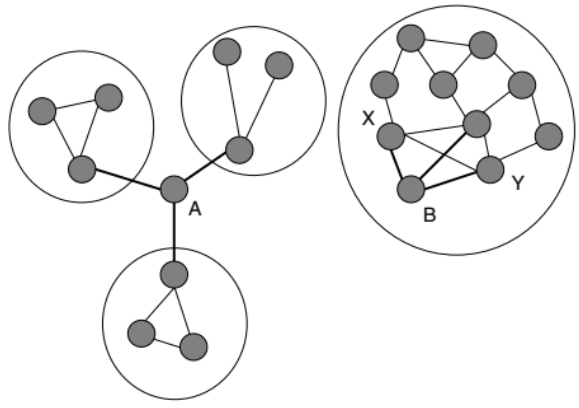
One topic worth exploring in analyzing corporate risk-taking is the process of risk-reduction by information. There hardly is an organization that does not gather information before making risky decisions, and, due to different abilities to gather information, the substantive level of risk associated with the same managerial decision can be different across organizations. Social networks play an important role as an information source. Publicly availableinformation such as financial statements does not produce a competitive advantage against others, whereas the information that only flows within social networks

creates a competitive edge (Borgatti and Halgin, 2011; Burt, 1992; Granovetter, 1974).

Network theorists examined the uneven distribution of information across network positions. Especially, Burt (1992), in his seminal work, presented the concept of *structural hole* to describe the informational advantages of being in a position in social networks that bridges different groups of actors. To visualize this rationale in [Figure 1], Actor A is more likely to get novel information than Actor B because Actor A's connections span across different social groups, whereas B's connections are within thesame group. The information that flows within a tightly-connected group is likely redundant, meaning that it is likely that Actor B is unlikely to get novel information through his/her connections. On the contrary, Actor A's three connections are from different groups, and the information that flows into A is likely novel.In an example of a college student who seeks a job market information, Actor B would be equivalent to a student in economics whose most friends are also in the economics, whereas Actor A is equivalent to a economics student who has friends in, for example, computer science, political science, and sociology. Based on Burt's theory (1992), the student with friends from diverse majors is more likely to receive novel information about job market than the student with friends in one major. It is notable that this difference emerges despite that both Actor A and B have the same number of connections (three).

[Figure 1] Structural Hole in Social Networks

Example diagram of a node with a high level of structural holes (A) and a node with a low level of structural holes (B). Reprinted from "On Network Theory," by S.P. Borgatti and D. S. Halgin, 2011, Organization Science, 22(5), p. 1171. Copyright 2011 by INFORMS.



Actor A has more structural holes in its network, meaning that the groups to which A is connected are not connected to each other, resulting in a sparser network for A. On the contrary, Actor B has fewer structural holes, meaning that his/her network is denser because the groups to which B is connected are also connected to each other. The more structural holes one has in its network, the more information the actor gets through more diversified information sources (Burt, 1992). Similarly, Granovetter (1974) suggests that actors with more bridging ties can have more information on job opportunities. Other studies demonstrated the informational benefits of brokerage position in social networks (Fritsch and Kauffeld-Monz, 2010; Gould and Fernandez, 1989; Di Maggio et al., 2019). What this line of research tells us is that access to information varies depending on one's position in the social network.

Informational benefits are especially relevant for venture capitals. A major concern of venture capitals is discovering promising start-ups from a market where myriads of ventures are newly established and vanish constantly. If there is a flow of information in the inter-venture capitalist network, just as other types of networks previously studied by network theorists, a venture capital that holds an advantageous position in that network will have informational benefits. Access to sources of risk-reduction will be positively associated with the frequency of risk-taking. This reasoning gives rise to the following hypothesis:

Hypothesis 1: Venture capitals with less redundant connections to other venture capitals are more likely to invest in younger firms.

As reviewed in the previous section, the existing studies on risk-taking have illuminated the factors that create the motivation for risk-taking. Then, how does the network interact with the motivation variables? The major benefit of structural holes is informational. I predict that the effects of structural holes will be larger for venture capitalists who have a stronger motivation to take risks. Conversely, the effects of motivation for risk-taking will be larger for venture capitalists who occupy advantageous positions in the network and, thus, have more information on promising start-ups than those with less information. To sum up, network positions with structural holes will have a synergy effect on risk-taking

with motivation variables. Or, stated in form of a hypothesis:

Hypothesis 2: The effect of a venture capital's networks on risk-taking will be greater for those with more slack than with less slack.

Hypothesis 3: The effect of a venture capital's networks on risk-taking will be greater for those with worse prior performances than with better prior performances.

Ⅲ. The Empirical Context: Korean Venture Capital Market, 1999~2006

1. Korean Venture Capital Market

The way venture capitals make a profit makes it an excellent setting to study corporate risk-taking. Typically, venture capitals invest in firms in need of financial capital in exchange for an ownership stake. As the investee firm grows, venture capitalsget a return from the increased value of the stake. Studies on venture capital argue that younger firms have higher risks of bankruptcy or not being able to generate profits (Ruhnka and Young, 1991; Gompers, 1996), and this trend also applies to Korean venture capitals (Lee et al., 2019).

The industry of venture capital in Korea began around the year 1986after the government made legal infrastructure for start-up firms. While there were few venture capitals before that, the venture boom following the IT revolution and the 'new economy' in the mid-1990s provided the momentum for the Korean venture industry to grow rapidly. Then, as the Korean economy recovered from the economic crisis in 1997, the government established KOSDAQ (Korean Securities Dealers Automated Quotations), which is the equivalent of NASDAQ in the U.S., and became the springboard for the venture capital industry. From the standpoint of a Korean venture, taking a loan from banks is also a viable option that leads to increased productivity (Jang and Kim, 2017). But venture capitals have their certification effects such as alleviating the underpricing at the time of IPO (Song and Lee, 2018) and positively influence the innovative performance (Park and

Shin, 2020) and ROA (Lee, Shin, and Kim, 2019).

Korean venture capitals have two types of investments. The first one is the *association account investment*. In this investment, they occupy brokerage roles between investors and entrepreneurial companies. They raise funds from investors and organize them into a partnership. Then, the fund is invested in an entrepreneurial company in exchange for an ownership stake or for bonds or as a loan. After a fixed period of time, venture capitals take a fraction of the proceeds and distribute the remainder to the investors. The second type of investment is the *company account investment*. In this type of investment, venture capitals invest their own fund, not the fund raised from other investors, of which the profit is registered as the revenue of the venture capital. This type of investment provides valuable information for risk-taking research since it is a direct investment of their own funds so that losses or gains of investments largely affect their performances.

2. Model

I apply pooled time-series cross-sectional regression analysis to an annualized panel of data that covers all of the venture capitals in Korea from 1999~2006. This analysis allows me to observe variation over both time and space simultaneously. Pooled analysis has the disadvantage of violating standard OLS assumptions - homoscedasticity and uncorrelation of errors. To accommodate this problem, I employ an ordinary least squares model with panel-corrected standard errors (PCSE), following Beck and Katz (1995). This modelis widely used by social scientists because it corrects both heteroscedasticity and spatial autocorrelation. By including a lagged independent variable, I correct serial autocorrelation. The specification of the generic model is as follows:

$$Y_{i,t} = \alpha + \beta X_{i,t-1} + \epsilon_{i,t}$$

where $Y_{i,t}$ is the degree of risk-taking of Venture Capital i at time t. $X_{i,t-1}$ is a vector of covariates each lagged one year. All independent variables are lagged one year to better capture causality.

3. Data

The data collection was performed twofold: the first on venture capitals and the second on all investee firms of each venture capital. My data covers all venture capital firms in Korea during the time period between 1999 and 2006, inclusive. The data before 1999 are too scant and not systematically restored in any organization. It was from 1999 that the government collected data on the venture capital industry and released it on DART (Data Analysis, Retrieval and Transfer System, operated by Korean Financial Supervisory Service). This time span covers the venture boom, which started in the late 1990s, when the total number of Korean venture capitals was around 100. From 1999 to 2006, the number varied from 80 to 120. I obtained the list of venture capitals from Small and Medium Business Administration. In Korea, all venture capitals are registered in this organization.

I collected the full list of investee companies for each venture capital using two databases: NICE online (operated by Korean Credit Information company) and KIS (Korea Information Service), which provide the financial status of a wide range of Korean companies. I gathered age information of investee firms from these databases to measure the risks of investments. In addition, I constructed a two-mode network data using lists of invested firms by venture capitals where two venture capitals are considered *connected* when they invest in the same firm in a year. This network changes every year.

From Auditor's Reports on venture capitals, I obtained information on the amount of money invested in the company-account investment. I excluded the association-account investment from the data because, in Korea, this form of investment is guided by government policy. To draw financial resources into a focal industry, the Korean government participates in fundraising for association-account investments and encourages venture capitals to invest in firms in that industry with various incentives. Therefore, to study risk-taking as a strategic choice made by venture capitals on their own, I chose company-account investment.

4. Dependent and Independent Variables

My dependent variable is straightforward: how much risk the venture capital takes.

I measure it with the average age of investee firms. I weighted the averages by the amount of funds invested. The weight is the proportion of the amount of money invested in a start-up out of the total amount of money invested by the focal venture capital. The formulation of the dependent variable is as follows:

The weighted mean age of invested firms by $VC_i = \sum_1^j \frac{A_j I_j}{TI_i}$

Let us assume that the number of firms which VC_i invested in is j. A_j denotes the age of j^{th} firm invested by VC_i and I_j denotes the amount of fund invested in that firm by VC_i. TI_i is the total amount of fund that VC_i invested in the year.

The independent variable is the structural holes a venture capital possesses in the network. A structural hole is a rather abstract concept for which there are several measurements (Burt, 1992, p. 51). The most frequently used measurement is the *effective size* that measures the degree to whichthe ties of a venture capital are nonredundant so that they cover a wide range of information. The more redundant ties a venture capital has, the more homogeneous the information flowing in the ties with other venture capitals is and the lower the possibility to find promising start-up firms. Burt defines Actor i's effective size as follows:

Effective size of i's network $= \sum_j [1 - \sum_q P_{iq} m_{jq}],\ q \neq i, j$

This formula aims to measure the non-redundancy of Actor i' network where i has j contacts. Its redundancy is measured by this expression:

$$\sum_q P_{iq} m_{jq}$$

where P_{iq}denotes the proportion of Actor i's investment in the relationship with contact q (i.e. proportion of i's interaction with q divided by total interaction of i to any alters), and m_{jq} denotes the marginal strength of contact j's relation with contact q (j's interaction with q divided by the strongest of j's relationships with anyone). Adding up this expression across all nodes q generates the redundancy in i's network. The Sum of one minus

redundancy across all relationships denotes the number of nonredundant ties, that is the effective size of Actor *i*.

I include three control variables in the analysis. The first is the sizes of venture capitals measured by the total amount of capital. Also, I control prior performances measured by capital adjustments that reflect gains and losses generated during each term divided by total capital size. Organizational slack is measured by the assets not invested in entrepreneurial companies. <Table 1> summarizes the descriptive statistics for my key variables, and <Table 2> presents the correlation between the variables.

<Table 1> Descriptive Statistics

Variable	Mean	SD	Observations
Mean Age of Investee Firms	5.07	2.58	519
ln(Capital)	23.41	0.87	519
Performance	-0.51	4.71	519
ln(Slack)	7.27	1.93	519
Structural Hole	0.57	0.15	519

<Table 2> Correlation Matrix (Pairwise Correlation)

	ln(capital)	performance	ln(slack)	Structural Hole
ln(Capital)	1			
Performance	0.4722***	1		
ln(Slack)	0.286	-0.007	1	
Structural Hole	0.004	0.033	-0.162***	1
Mean Age of Investee Firms	-0.135***	0.026	0.034	0.126***

Ⅳ. Results

Iwant to call attention to the idea that a negative coefficient means that the variable facilitates risk-taking because the dependent variable is the average age of invested firms. If a coefficient has a positive value, the variable is associated with a higher average age of invested firms, which means less risk-taking. As for controls, performances in the previous term are negatively associated with the lower average age of investee firms (i.e. higher risk-taking), which is in line with the predictions from existing theories

that a bad performance leads to risk-taking. Organizational slack has negative coefficients on the average age of investee firms (i.e. higher risk-taking), congruent with the results of existing research that it facilitates risk-taking. In model 2, the variables used to explain risk-taking in existing theories are excluded. Iinclude only the variables of size and structural hole. The structural hole variable has a positive effect on risk-taking as Hypothesis 1 predicts, without other control variables. In Model 3, the structural hole variable maintains its positive coefficient with other controls included. This result supports Hypothesis 1 that the less redundant a venture capital's network ties, the more risk it takes.

Model 4 examines Hypothesis 2 and 3 by adding interaction effects between conventional variables and the network variable to Model 3. In this model, the network variable maintains its negative coefficient with a p-value at 0.101, which is slightly above the statistically significant level. The interaction between the performance and network variable is negative, which means that the network's effect of reducing the average age of investee firms

<Table 3> Cross-Sectional Time-Series Regression of Mean Age of Investee Firms of Venture Capitals with Panel-Corrected Standard Errors

	Mean age of investee firms			
	Model1	Model2	Model3	Model4
ln(capital)	-0.671***	-0.401***	-0.692***	-0.733***
	(0.130)	(0.110)	(0.130)	(0.130)
performance	0.0731***		0.0724***	0.460**
	(0.020)		(0.020)	(0.200)
ln(slack)	0.134*		0.167**	-0.0253
	(0.080)		(0.080)	(0.140)
structural hole		2.151**	2.427***	-4.533
		(0.870)	(0.920)	(4.010)
performance×SH				-0.692**
				(0.350)
ln(slack)×SH				0.339*
				(0.190)
Constant	9.720***	3.11	8.591***	10.87***
	-2.92	-2.65	-2.95	-3.12
Observations	519	519	519	519
Number of cases	114	114	114	114

***p<0.01, **p<0.05, *p<0.1, Standard errors in parentheses.

gets stronger with higher prior performance. This does not support Hypothesis 2 that predicts the effect of the network gets stronger with worse performances. Similarly, concerning the interaction with slack, the network variable's intensity gets lowered with more organizational slack. This result does not support Hypothesis 3 that predicts the synergy effects between networks and slack.

Ⅴ. Conclusion

Organizational theorists have illuminated that market participants are embedded in social structure and how positions in the structure influence their behavioral patterns (Burt, 1992; Granovetter, 1985). I applied this perspective to organizational risk-taking. Organizations collect information to predict the future outcome of a managerial choice, particularly when the choice is a risky one. In this regard, the problem of risk-taking requires consideration of organizational access to information. Information, especially those on other organizations, is unevenly distributed depending on the positions in the network. Based on this logic, I hypothesized that patterns of the relationship of organizations influence risk-taking behavior. This hypothesis is statistically supported by the Korean venture capital industry. Venture capitals occupying bridging positions in the inter-venture capitalist network conducted riskier investments.

This finding can contribute to the exploration of the connection between the network positions and market performances of organizations. Network theorists have established that advantageous positions in social networks are linked to superior performances. For example, Burt (1992) showed that industries with more structural holes in their network garner high profits. Uzzi (1996) showed that New York apparel firms with denser connections to other firms have higher chances of survival. However, this line of research tends to treat actual behaviors of actors as a black box that is located between social positions and market performances. An advantageous position in a socials network does not automatically produce a successful outcome but needs to solidify to sound strategies and decision-making. I present risk-taking behaviorswith access to information as a possible factor for a successful outcome, especially in the market with high uncertainties.

References

Agrawal, A. and G. N. Mandelker, "Managerial Incentives and Corporate Investment and Financing Decisions," *The Journal of Finance*, 42(4), (1987), 823-837.

Amihud, Y. and B. Lev, "Risk Reduction as a Managerial Motive for Conglomerate Mergers," *The Bell Journal of Economics*, 12(2), (1981), 605-617.

Bantel, K. A. and S. E. Jackson, "Top Management and Innovations in Banking: Does the Composition of the Top Team Make a Difference?," *Strategic Management Journal*, 10(S1), (1989), 107-124.

Beckman, C. M. and P. R. Haunschild, "Network Learning: The Effects of Partners' Heterogeneity of Experience on Corporate Acquisitions," *Administrative Science Quarterly*, 47(1), (2002), 92-124.

Borgatti, S. P. and D. S. Halgin, "On Network Theory," *Organization Science*, 22(5), (2011), 1168-1181.

Bothner, M. S., J. Kang, and T. E. Stuart, "Competitive Crowding and Risk Taking in a Tournament: Evidence from NASCAR Racing," *Administrative Science Quarterly*, 52(2), (2007), 208-247.

Boubakri, N., J. Cosset, and W. Saffar, "The Role of State and Foreign Owners in Corporate Risk-Taking: Evidence from Privatization," *Journal of Financial Economics*, 108(3), (2013), 641-658.

Bowman, E. H., "Content Analysis of Annual Reports for Corporate Strategy and Risk," *Interfaces*, 14(1), (1984), 61-71.

Burt, R. S. *Structural Holes: The Social Structure of Competition*, Cambridge: Harvard University Press, 1992.

Cyert, R. M. and J. G. March, "A Behavioral Theory of the Firm," *Englewood Cliffs, NJ*, 2(4), (1963), 169-187.

Davis, G. F., "Agents without Principles? The Spread of the Poison Pill through the Intercorporate Network," *Administrative Science Quarterly*, 36(4), (1991), 583-613.

Di Maggio, M., F. Franzoni, A. Kermani, and C. Sommavilla, "The Relevance of Broker Networks for Information Diffusion in the Stock Market," *Journal of Financial Economics*, 134(2), (2019), 419-446.

Esty, B. C., "Organizational Form and Risk Taking in the Savings and Loan Industry," *Journal of Financial Economics*, 44(1), (1997), 25-55.

Faccio, M., M. Marchica, and R. Mura, "CEO Gender, Corporate Risk-Taking, and the Efficiency of Capital Allocation," *Journal of Corporate Finance*, 39, (2016), 193-209.

Faccio, M., M. Marchica, and R. Mura, "Large Shareholder Diversification and Corporate Risk-Taking," *The Review of Financial Studies*, 24(11), (2011), 3601-3641.

Fritsch, M. and M. Kauffeld-Monz, "The Impact of Network Structure on Knowledge Transfer: An Application of Social Network Analysis in the Context of Regional Innovation Networks," *The Annals of Regional Science*, 44(1), (2010), 21.

Gompers, P. A., "Grandstanding in the Venture Capital Industry," *Journal of Financial Economics*, 42(1), (1996), 133-156.

Gould, R. V. and R. M. Fernandez, "Structures of Mediation: A Formal Approach to Brokerage in Transaction Networks," *Sociological Methodology*, 19, (1989), 89-126.

Granovetter, M., "Economic Action and Social Structure: The Problem of Embeddedness," *American Journal of Sociology*, 91(3), (1985), 481-510.

Granovetter, M., *Getting a Job. Cambridge*, MA: Harvard University Press, 1974.

Haunschild, P. R., "Interorganizational Imitation: The Impact of Interlocks on Corporate Acquisition Activity," *Administrative Science Quarterly*, 38(4), (1993), 564.

Hayes, R. H. and W. J. Abernathy, "Managing Our Way to Economic Decline," *Harvard Business Review*, 58(4), (1980), 67-77.

Hill, C. W. L. and S. A. Snell, "External Control, Corporate Strategy, and Firm Performance in Research intensive Industries," *Strategic Management Journal*, 9(6), (1988), , 577-590.

Hoskisson, R. E. and M. A. Hitt, "Strategic Control Systems and Relative R&D Investment in Large Multiproduct Firms," *Strategic Management Journal*, 9(6), (1988), 605-621.

Hoskisson, R. O. and R. A. Johnson, "Corporate Restructuring and Strategic Change: The Effect on Diversification Strategy and R&D Intensity," *Strategic Management Journal*, 13(8), (1992), 625-634.

Jang, Y. H. and M. K. Kim, "Finance and Productivity: The Effect of Bank Capital on Total Factor Productivity of Korean Manufacturing Venture SMEs," *The Korean Journal of Financial Management*, 34(3), (2017), 193-216.

Knight, F. H., "Risk, Uncertainty and Profit," *Houghton Mifflin*, 31, (1921).

Kook, C. P. and Y, S. Kang, “Investor Protection, Growth Opportunity and Risk Taking,” *The Korean Journal of Financial Management*, 27(2), (2010), 115-144.

Lant, T. K. and D. B. Montgomery, “Learning from Strategic Success and Failure,” *Journal of Business Research*, 15(6), (1987), 503-517.

Lee, K. Y., H. H. Shin, and S. Y. Kim, “An Empirical Analysis of Corporate Performance According to Existence and Types of Venture Capital,” *Asia-Pacific Journal of Business Venturing and Entrepreneurship*, 14(2), (2019), 15-30.

March, J. G., “Decisions in Organizations and Theories of Choice,” *Perspectives on Organization Design and Behavior*, 205(44), (1981).

Mintzberg, H. and J. A. Waters, “Tracking Strategy in an Entrepreneurial Firm,” *Academy of Management Journal*, 25(3), (1982), 465-499.

Pablo, A. L., S. B. Sitkin, and D. B. Jemison, “Acquisition Decision-Making Processes: The Central Role of Risk,” *Journal of Management*, 22(5), (1996), 723-746.

Paligorova, T., “Corporate Risk Taking and Ownership Structure,” *Bank of Canada Working Paper*, 2010.

Palmer, T. B. and R. M. Wiseman, “Decoupling Risk Taking from Income Stream Uncertainty: A Holistic Model of Risk,” *Strategic Management Journal*, 20(11), (1999), 1037-1062.

Park, J. Y. and H. H. Shin, “The Effect of Venture Capital Investment on Corporate Innovation Performance,” *Asia-Pacific Journal of Business Venturing and Entrepreneurship*, 15(1), (2020), 1-15.

Podolny, J. M. “Networks as the Pipes and Prisms of the Market,” *American Journal of Sociology*, 10(1), (2001), 33-60.

Ruhnka, J. C. and J. E. Young, “Some Hypotheses about Risk in Venture Capital Investing,” *Journal of Business Venturing*, 6(2), (1991), 115-133.

Song, C. and Y. J. Lee, “Certification Effect of Venture Capital on KOSDAQ IPO Firms,” *The Korean Journal of Financial Management*, 35(1), (2018), 195-214.

Uzzi, B., “The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect,” *American Sociological Review*, 61(4), (1996), 674-698.

Yim, J. and S. Jung, “CEO Age and Corporate Risk-Taking: Evidence from Korea,” *The Korean Journal of Financial Management*, 37(1), (2020), 125-152.

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조직간 연결망이 기업의 위험감수행동에 미치는 영향: 한국 벤처캐피탈을 중심으로

한그루*

〈요 약〉

조직의 위험감수 행동에 관한 기존의 연구들은 조직성과나 조직의 여유자원(slack)과 같은, 조직 내의 특성에 관하여 주로 살펴보았다. 본 연구는 조직간 연결망이라는, 조직 외부의 결정요소에 대한 탐구이다. 위험감수 행동에 미치는 연결망의 효과를 파악하기 위해, 본 연구는 한국의 벤처캐피탈을 분석하였다. 벤처캐피탈 산업에서 대표적인 위험감수 행동은 초기의 스타트업에 투자를 하는 것이다. 연결망 이론에 의하면 연결망에서 특정한 위치를 점하는 조직들이 더 다양한 정보를 접할 수 있으며, 이러한 정보는 조직이 실제로 감수하는 위험을 줄이는데에 사용될 수 있다. 그 결과, 비슷한 형태의 투자가 수반하는 실제의 위험도는 조직이 가진 정보에 따라 다를 수 있으며, 좋은 연결망을 가진 벤처캐피탈이 더 초기의 스타트업에 투자를 할 것이라는 예측이 가능하다. 이 연구의 벤처캐피탈 연결망 분석결과, 다양한 그룹들에 걸친 포괄적인 연결망을 가진 벤처캐피탈들이 비슷한 그룹들에 걸친 폐쇄적인 연결망을 가진 벤처캐피탈들에 비해 더 초기의 회사에 투자하는 경향을 보였다.

주제어 : 위험감수, 사회연결망, 벤처캐피탈, 구조적 공백

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