

RESEARCH NOTES AND COMMENTARIES

INDUSTRIAL DYNAMICS AND MANAGERIAL NETWORKING IN AN EMERGING MARKET: THE CASE OF CHINA

YADONG LUO*

School of Business Administration, University of Miami, Coral Gables, Florida, U.S.A.

This study examines how industrial conditions influence the level of executives' managerial networking with decision-makers in other entities such as buyers, suppliers, competitors, distributors, and regulators in an emerging market. Corroborating a view that social capital holds contingent value, we theorize that executives facing different industrial conditions have different levels of commitment to exploiting interpersonal ties for fulfilling organizational needs. We propose that managerial networking is influenced by exogenous industrial attributes such as structural uncertainty, sales growth, regulatory stringency, competitive pressure, and production capacity utilization. Our analysis of executives in 364 firms in China demonstrates that the level of managerial networking increases when uncertainty, regulation, and competition increase and production capacity utilization decreases. For a specific firm, the link between industrial dynamics and managerial networking is moderated by its strategic proactiveness. Copyright © 2003 John Wiley & Sons, Ltd.

Managerial networking is the process of developing and exploiting top managers' social ties, contacts, and connections with executives in external entities to reduce transaction costs or increase transaction values through facilitated exchange of resources, information, and knowledge. Especially in recent years, it has received significant attention as a focus of strategic management research. While previous research on the subject largely emphasized strategic value or strategic

choice of external networks (e.g., Burt, 1997; Geletkanycz and Hambrick, 1997; Granovetter, 1985; Mizuchi, 1997; Seabright, Levinthal, and Fichman, 1992; Walker, Kogut, and Shan, 1997; Zajac, 1988), recent studies have shifted more attention to the structure, pattern, and contingencies of these networks (e.g., Ahuja, 2000; Gnyawali and Madhavan, 2001; Gulati, 1999; Gulati and Gargiulo, 1999; Stevenson and Greenberg, 2000). It is now widely recognized that managerial networking itself is endogenous, rather than exogenous, and is affected by internal factors associated with organizational needs and external factors associated with strategic opportunities or environmental threats (Gulati and Gargiulo, 1999;

Key words: managerial networking; industrial conditions; emerging market

*Correspondence to: Yadong Luo, School of Business Administration, University of Miami, 414 Jenkins Building, Coral Gables, FL 33124, U.S.A.

Koka and Prescott, 2002). As a deliberate attempt, managerial networking seeks returns of economic capital and social capital, requiring an appropriate identification of opportunities to add value to an organization (Burt, 1997). Executives view managerial networking as a variable action, contingent on some expectations of net returns (economic and social) after adjusting for costs incurred in cultivating, developing, and maintaining such networks (Mizruchi and Galaskiewicz, 1994).

Following this line of reasoning, we attempt to elucidate how the level of managerial networking is shaped by the industrial dynamics that reflect market opportunities (e.g., industrial growth) or threats (e.g., industrial regulation) and also how strategic proactiveness moderates the relationship between industrial dynamics and managerial networking. We recognize that managerial networking is designed to aid in seizing market opportunities (Levinthal and Fichman, 1988; Mizruchi and Galaskiewicz, 1994) or countering market threats (Carroll and Teo, 1996; Geletkanycz and Hambrick, 1997). Following this argument, we assume that industrial conditions such as competitive pressure, industrial growth, structural uncertainty, and industrial regulation are likely to affect an executive's desire and effort in establishing and exploiting managerial ties with external entities. We join Daft, Sormunen, and Parks (1988) in the argument that the degree of managerial networking is a function of environmental uncertainty. Since this prior study only emphasized the uncertainty of environmental sectors (customer, economic, competitor, technological, regulatory, and sociocultural) rather than industrial traits, we still do not have a complete understanding of how specific attributes of industry structure such as industrial growth, capacity utilization, rivalry intensity, and industrial regulation affect managerial networking.¹ Managerial networking is used to respond not only to environment uncertainty but also to market opportunities as reflected in industrial growth, to government policies as reflected in industrial regulation, to efficiency enhancement pressure as reflected

in industry-level capacity utilization, and to competitive threats as reflected in rivalry intensity. Because firms differ in strategic proactiveness and thus in their dependence on industrial resources and forces, we attempt to verify whether strategic proactiveness moderates the industry-networking link in such a fashion that industrial attributes will exert a stronger influence on networking of executives from more proactive businesses. This moderating effect, if it exists, reinforces the contingency property of networking and enlightens the role of strategy in the industry-networking links.

Contingencies of managerial networking are context-specific (Baker, 1992). In this study we emphasize managerial networking in an emerging market and use China as the empirical setting. China's emerging economy is undergoing fast growth with immense volatility. China is a rich setting for this analysis, for three reasons. First, in China, relationship building among executives of different firms is particularly critical to firm growth because they need networking to counteract uncertainties in task and institutional environments. Several studies have already validated that the frequency or level of using managerial networking exerts a positive impact on the performance of Chinese firms (Peng and Luo, 2000; Xin and Pearce, 1996). Second, China has a long tradition in using managerial networking (i.e., *guanxi* in Chinese) as a conduit to nurture business transactions. For many centuries, China was governed by people in power rather than ruled by law, resulting in a lack of trust of legal frameworks. Third, most industries in China are undergoing structural transformation, which provides complex industrial dynamics that significantly affect firm behavior and business conduct.

Managerial networking can be assessed from process, structure, or extensiveness perspectives (Mizruchi, 1997). In this research, we focus on the extensiveness of networking; that is, the level of *using* personal ties with business community members. Although this level does not necessarily mirror the effectiveness of networking, an important issue that can be explored through diagnosing structure and actions, it nevertheless remains a major indicator of how proactive an executive is in using personal networks for fulfilling corporate objectives (Carroll and Teo, 1996) or responding to environmental parameters (Boyd and Fulk, 1996). Increased competition as a result of economic liberalization in China requires more comprehensive

¹ Daft, Sormunen, and Parks (1988) addressed how environmental conditions impact personal networking. Nevertheless, they focused on using personal information sources but we are concerned with using networking for various strategic purposes beyond personal information. They also focused on generic environments in a region (Texas) but we emphasize industrial dynamics in a national emerging economy.

networks and more frequent contacts with these networks, thus propelling a more extensive and greater use of managerial networking as a substitute for formal institutional support or a stimulus for securing scarce resources controlled by regulators or other firms.

THEORY AND HYPOTHESES

Networking arises in situations of interdependence (Ouchi, 1980; Pfeffer and Salancik, 1978). During economic transition in an emerging market, this interdependence becomes stronger. As governments liberalize economies and eliminate subsidies, firms are more dependent on each other. Resource dependence increases because firms can no longer rely on governments for dispatching needed resources, and networking becomes heightened as a substitute for formal governmental support or institutional privileges. In this environment, firms benefit from sharing not only operational resources (raw materials, production facilities, technologies, financial capital, or distribution channels) but also organizational resources (information, experience, knowledge, and connections). This network-based sharing helps reduce the hazardous effect of market volatility on firm growth during economic transformation. Since the markets for production factors (e.g., materials, capital, labor, and information) have not yet developed in most emerging markets (Nee, 1992), this sharing overcomes a shortage of product inputs. When resources are complementary and there is ongoing reciprocity, transaction costs decrease for all parties participating in this exchange (Williamson, 1985). In addition, while the market structure is transforming, high uncertainty in related industries is inevitable, which, in turn, causes greater operational volatility for firms. Increased interdependence during these times accentuates managerial networking, which occurs at the personal level and is constrained by social norms and standards (Carroll and Teo, 1996). Executives are willing to use personal ties for corporate purposes during economic transition. In privately owned firms, an executive's individual goals are essentially the organization's goals. Thus, agency costs are not an issue. In state-owned enterprises, the widely used incentive systems such as ownership participation, stock option, and liability-reward contracts, ties executives' individual income, benefits, and

promotion with the organization's actual achievement and performance. They become 'stewards' of organizations, using their personal ties for firm evolution (Davis, Schoorman, and Donaldson, 1997).

One common feature permeating emerging markets is the existence of institutional voids resulting from a lack of market-supporting institutions. Executives often have to perform many functions that are otherwise played by market mechanisms in developed market economies. Examples of these functions include obtaining market information, interpreting regulations, enforcing contracts, and settling payments. In an environment where formal institutional constraints such as legal frameworks and industrial and intellectual property rights system are underdeveloped or under-enforced, informal institutional constraints, such as those embodied in managerial networking, may play a more important role in facilitating economic exchanges. In China, businesspeople often prefer to rely on their contacts with those in power to get things done rather than depending on the abstract notion of impartial justice.

In this case, networking provides a balance to cumbersome bureaucracy by giving individuals a way to circumvent rules using personal relations. Networking helps overcome resource problems while avoiding the substantial bureaucratic costs of internalizing operations. It provides flexible resource allocation in an environment where factor mobility is severely confined and governmental interference remains. Finally, because information markets in many emerging economies such as China are not fully developed, information passed through managerial networking may be more trustworthy, richer, and more useful than information gained by other means. This saves information search costs and allows executives to make more informed decisions.

Networking is performed not only to respond to threats but also to seize opportunities. According to Krackhardt's *philos* argument (Krackhardt, 1992: 219), opportunity for external gains is a leading force motivating executives to network. Economic transition generates preemptive opportunities that can be transformed into economic returns. Networking through personal ties is a necessary step for obtaining these opportunities because opportunities are largely controlled by government officials in power or executives at other firms on which the focal firm depends (Park and Luo, 2001). Boyd

and Fulk (1996) and Daft, Sormunen, and Parks (1988) document that an increased need for networking exists to cope with the need for information gathering and processing in a complex environment. In our view, both market opportunities and threats escalate the demand for information processing, and executives manage this demand by committing more to networking.

Industrial dynamics provide a window to market opportunities and threats, and managerial networking is a deliberate response to those dynamics. During economic transition, industry structure in China has revealed several characteristics. First, this structure is highly uncertain, arising from the experimental nature of numerous new industrial policies. Second, growth in sales and profitability varies markedly across industries due to an industrial policy that allows only some sectors to be privatized and also to long-rooted imperfections in industry structure. Third, government regulation differs among industries, deriving from idiosyncratic paths of decentralization between industries and also from governmental needs for controlling strategically vital industries. Fourth, competitive pressure varies by industry and is attributable to the fact that the level of equilibrium between market demand and market supply varies across industries. Finally, production capacity utilization differs among industries. Economic reforms change industrial structure and reshape market supply and demand. This makes production capacity underutilized in industries where supply exceeds demand and overutilized in industries where demand exceeds supply. These five characteristics are industrial dynamics this study examines in relation to the level of managerial networking. They individually represent different attributes of an industry's structure and yet collectively reveal this industry's profile about opportunities and threats.

Structural uncertainty

An industry's structural uncertainty implies an absence of sufficient information about industry structure, its changes, and executives' inability to predict these changes and their impact on organizational decision-making alternatives (Duncan, 1972). Executives increase their search for, and scanning of, external information in response to heightened uncertainty (Boyd and Fulk, 1996). Decision-makers also respond to uncertainty by

making more personnel, structural, and strategic adjustments (Daft *et al.*, 1988). As a set of ties linking decision-makers of different firms and providing various types of exchanges, a managerial network facilitates the coordination of information exchange, especially in a turbulent environment (Boyd and Fulk, 1996). It provides business intelligence that enables executives to trade upon ambiguity and possibly moderate structural uncertainty. Since the information exchanged within the network is not widely available and may be more trustworthy, such information becomes a source of competitive advantage (Mizuchi, 1997). This line of reasoning, which applies to all firms, whether in an emerging or advanced economy, suggests that the level of managerial networking increases with structural uncertainty.

In an emerging market, structural uncertainty implies more market challenges as well as more opportunities, which may emerge simultaneously (Rawski, 1994). When structural uncertainty increases, resource sharing between firms becomes more necessary. This may boost an executive's commitment to networking in order to facilitate interfirm resource exchanges. Under greater uncertainty, networking with managers at supplier firms becomes even more essential since it helps create more stable and reliable outsourcing relationships. Likewise, managerial ties with decision-makers of major clients or customers may strengthen customer loyalty or reduce buyer switching. Facing increased uncertainty, executives are also likely to commit more to networking with regulators who may be able to help the firm attenuate market challenges and/or benefit more from market opportunities associated with structural uncertainty. Research on Chinese business finds that personal ties with officials help the company achieve more institutional supports to mitigate challenges arising from market uncertainty (Peng and Luo, 2000; Xin and Pearce, 1996). We thus propose:

Hypothesis 1: The level of managerial networking is positively associated with the level of structural uncertainty in an industry in which the firm participates.

Industrial growth

An industry's growth is an indicator of market attractiveness and industry evolution (Scherer

and Ross, 1990). In an emerging economy, some industry sectors undergo transition while others do not. When an industry is freed from governmental control, rapid market growth usually ensues for that industry. This take-off is reflected in a surge in an industry's sales growth. The level of managerial networking is expected to increase with industrial growth because salient external ties improve interorganizational connections with the business community on which the firm depends. Firms may be able to develop all capabilities needed to run businesses in a growing market on their own, but this strategy may not be quick enough nor efficient enough to meet organizational needs for expansion in a rapidly growing industry (Starr and MacMillan, 1990). Firms need improved relations with these stakeholders to create a more favorable environment in which they benefit from resource sharing or information exchange. Finally, when operating in an emerging market, firms in a fast-growing industry are likely to confront more volatile market fluctuations than those in a slow-growing industry (Rawski, 1994), further propelling managerial networking.

One may wonder whether the opposite holds true. In a general context, firms in a stagnant industry may be forced to do more networking in order to survive. Nonetheless, we expect that managerial networking required in a fast-growing industry is greater than that required in a stagnant industry in an emerging market. This is because firms in booming industries (most of which are newly liberalized) have to depend more not only on buyers but also suppliers, distributors, marketers, and regulators in order to expedite getting quality products or services to end-users. Increased networking is needed in this situation to counteract the underdeveloped infrastructure in distribution and retailing. Generally, executives in a sluggish industry need managerial networking to attenuate threats from industrial forces whereas those in a prosperous industry need networking not only to reduce such threats but also to gain from market opportunities. Thus:

Hypothesis 2: The level of managerial networking is positively associated with the growth of an industry in which the firm participates.

Industrial regulation

Industrial regulation heightens a firm's dependence

on regulators and other firms in an emerging market.² Executives at firms in a regulated industry need greater networking to counterbalance industrial regulation than those operating in a less-regulated industry. Daughety (1984) and Oliver (1991) suggest that networking with decision-makers in business community is an important strategic response to stringent regulation. Eisenhardt and Bourgeois (1988) demonstrate that networking is a part of organizational politics necessitated by a regulatory, high-velocity environment. In addition, Park and Luo (2001) report that networking can serve as a catalyst for acquiring exceptions from some regulation in China. Specifically, when industrial regulation becomes more stringent, executives may put more emphasis on networking to secure needed resources from other firms. Firms in a stringent regulatory environment can use fortified interlocks between executives in the same business community to strengthen their collective bargaining power over the regulatory body so as to change regulations. They can also accentuate interorganizational sharing of complementary resources to decrease their susceptibility to government regulations (Oliver, 1991; Zajac, 1988). Managerial networking may thus be used as a counterforce to reduce organizational dependence on the regulatory environment. This is feasible because other firms (suppliers, competitors, buyers, and distributors) in the same industry are also subject to these regulations and are also committed to network development. Thus:

Hypothesis 3: The level of managerial networking is positively associated with the regulatory stringency of an industry in which the firm participates.

Competitive pressure

Competitive pressure increases as a function of the number of firms entering an industry (Scherer and Ross, 1990). Because many industries in emerging markets reside in embryonic or growing stages, the growth in the number of firms in an industry

² Industrial regulation by governments of emerging economies typically includes industry access control, new investment ratification, value-added tax differentiation, control of pace and pattern of privatization or decentralization, and government involvement in business activities such as materials sourcing, distribution, and marketing.

exacerbates existing as well as incoming competition.³ Competitive pressure challenges the competitive positions achieved by incumbent firms and reinforces dependence on other firms (Caves and Porter, 1978). To maintain positioning, firms need to not only better develop building blocks of competitive advantages—especially innovation and customer responsiveness—but also solidify managerial ties with members of the business community. When competitive pressure increases, informal interlocks and/or formal alliance agreements with current competitors may be actively used in order to neutralize the pressure. Meanwhile, managerial networking with regulators may also be enhanced in this situation in an attempt to create governmentally instituted entry barriers against new local and foreign entrants. During economic transition, officials have the power to erect these barriers, often in the form of project approval. Networking with top managers at supplier firms may also be strengthened because new entrants often compete for inputs from the same suppliers. Similarly, competitive pressure may escalate networking with marketers and distributors because promotion and responsiveness become more fundamental to firm success. Networking with executives in the business community may be a superior choice to formal alliances in this situation since strong competitive pressure often leads to increased market volatility (Rawski, 1994), which obstructs alliance prospects (Madhavan, Koka, and Prescott, 1998). Thus:

Hypothesis 4: The level of managerial networking is positively associated with the competitive pressure of an industry in which the firm participates.

Capacity utilization

The utilization rate of existing production capacity varies across industries, attributable mainly to differences in life cycle stage, market demand, and industry-wide production capacity. As an industry's capacity utilization declines, firms participating in the industry will encounter stronger pressure

to expand to new markets and strengthen existing markets, thus stimulating networking with managers at other firms in the business community. In particular, receiving new and more production orders from current buyers is the primary channel to raise production capacity utilization. Thus, managerial ties with executives at buyer firms become critical. Because such ties are to some extent socially embedded, social norms such as reciprocity and favor exchanges play a facilitating role in acquiring new orders, even though buyer firms might not have strong organizational demands for placing the orders. This inverse link between capacity utilization and networking commitment may also exist in marketing and distribution. Improved relationships with marketers, distributors, or wholesalers through managerial networking are beneficial to sales growth (Peng and Luo, 2000), thus increasing the use of existing production capacity. Underutilized production capacity may also fortify networking with regulators. The firm may work with officials to attain some financial privileges (e.g., lower financing costs or cheaper governmentally controlled resources) to partly offset overhead associated with idle machines and equipment or to allow access to regulated but more profitable industries in which firms can utilize existing production facilities. Thus:

Hypothesis 5: The level of managerial networking is negatively associated with the production capacity utilization of an industry in which the firm participates.

Strategic proactiveness as a moderator

Firms, however, are heterogeneous in their susceptibility to industrial dynamics (Porter, 1985). This susceptibility is specifically determined by a business's strategic proactiveness (Miller and Friesen, 1983). More proactive businesses interact more rigorously with industrial environments, depend more heavily on structural resources and forces, and are more constrained by industrial conditions (Porter, 1985; Rumelt, 1991). In order to reap the benefits of market opportunities or suppress competitive or regulatory threats, executives at more proactive firms need to strengthen managerial networking in response to structural conditions. Executives are decision-makers for various strategic issues and know where and when to cultivate and utilize managerial networking in order to

³ Concentration ratio is used to measure competition pressure in advanced market economies. This ratio, however, is not applicable in most emerging markets due to the fact that inequality of firms' market share does not necessarily reflect the vigor of competition as a result of government intervention and the 'state-owned' identity of leading firms.

accommodate business needs and streamline strategically proactive activities. This leads to the expectation that industrial dynamics will exert a stronger influence on the level of managerial networking for more proactive businesses. For instance, executives at a given proactive firm may react to regulations by using personal ties with officials more extensively, which then results in a stronger link between networking and regulation. Several studies suggest that proactive firms in China have to interact more frequently with industrial stakeholders, especially buyers, suppliers, distributors, and regional governments, and they are more vulnerable to changes of industrial or market parameters (Peng and Luo, 2000). With continued liberalization of state-owned sectors and governmental control over backward and forward resources, firms are increasingly concentrating on such functions or areas in which they have a competitive advantage, leaving other functions or areas for outsourcing. Given the greater interactions between more proactive firms and industrial environments, structural attributes are expected to affect more strongly networking needed to accommodate the firms' dependence on industrial conditions and on industrial stakeholders. Thus:

Hypothesis 6: Strategic proactiveness will positively moderate the relationship between industrial dynamics and managerial networking. That is, for more strategically proactive firms, the industry's structural attributes will exert a stronger influence on the level of managerial networking.

DATA AND METHODS

Data for this study originated mainly from two sources: data on industrial variables came from the *China Statistical Yearbook*, and data on managerial networking came from surveys of top executives of Chinese firms conducted in China during 1999–2000. From the *China Statistical Yearbook* (1997–99 editions) published by China Statistical Publishing House (Beijing, China), we obtained information (industry section) to measure structural uncertainty, industrial growth, competitive pressure, industrial regulation, and production capacity utilization. To check the instrument validity of the survey, the pilot test was conducted with 30 executives participating in an advanced

management training program in Nanjing, China. Some wording changes were made based on their feedback. We used sample firms from the *Top 22,000 Businesses in the P.R. China (1996)* published by China International Business Investigation Co. Ltd (Hong Kong, China). Since China's service sector remains rigorously controlled by the government and does not share similar industrial attributes as the manufacturing sector, our sample focuses on those firms in manufacturing industries. We sent each questionnaire to executives in a random sample of 1000 Chinese enterprises, with a focus on such provinces as Jiangsu, Zhejiang, Shanghai, Shandong, Anhui, and Beijing. After two rounds of follow-up reminders, 364 useful questionnaires were received, representing a 36.4 percent response rate. The average number of employees is 1373 and the average number of years for operations is about 22 years. Among the total sample, 148 are state-owned, 85 are collectively owned, 79 are China–foreign joint ventures, and 52 are privately owned. Of this sample, 260 are located in rich cities or counties, with the rest in poor regions.

We checked nonresponse bias using information from the *Top 22,000 Businesses*. From this source, we were able to compare some firm attributes such as length of operations (age), number of employees (size), sales, and profit between responding and nonresponding sample firms, identified from code numbers we had stamped on each questionnaire. The mean differences between them along these attributes were tested using an unpaired *t*-test. The results demonstrated that all *t* statistics were insignificant. To check the reliability of survey responses, we semi-structurally interviewed 40 executives from 20 firms (a pair from each firm) that participated in our survey. They were asked to orally answer the same questions in the survey. The results exhibited a high consistency between their answers during interviews and their answers in the survey and also between the two respondents from each firm (Guttman $R > 0.80$).

Variables and measurement

In the questionnaire, we asked each respondent to circle the number (7-point Likert scale, from 1, 'very little/low,' to 7, 'very extensive/high') best describing the extent to which top executives (general and deputy general managers) at his or her firm have utilized personal ties, networks, and

connections during the past 3 years with (1) top executives at supplier firms; (2) top executives at buyer firms; (3) top executives at competitor firms; (4) top executives at distributor or marketer firms; (5) officials in industrial departments (or bureaus); and (6) officials in other governmental authorities. These questions are more general than the name-generator approach often employed in social network analysis, asking respondents to name their contacts (Burt, 1997).⁴

Our pre-survey field study found that executives tend to view their personal ties as a personal or business secret, and are generally reluctant to disclose such contacts. It is also unrealistic to name these contacts in a single survey by Chinese executives who normally have dozens of such contacts dispersed nationwide known through various social channels such as relatives, townsman, school classmates, and colleagues. Accordingly, we measured the level of managerial networking using the average of the above six items. Cronbach's α for this variable is 0.73, suggesting a reasonable level of internal consistency.

Industrial variables were measured based on archival data from the *China Statistical Yearbook*. Structural uncertainty was defined as the geometric average of standard deviations (1996 through 1998) in output, sales, and profit of the industry in which the firm participates (i.e., $[S.D.(output) \times S.D.(sales) \times S.D.(profit)]^{1/3}$). Industrial growth was measured by the compound growth rate (%) of the respective industry's sales from 1996 to 1998. Competitive pressure was the compound growth of the number of firms during these 3 years. An industry's production capacity utilization was operationalized as the arithmetic average (1996–98) of utilization rate (%) reported in the Yearbook. Finally, industrial regulation level was measured by the arithmetic average (1996–98) of an industry's tax and fiscal charges intensity (i.e., $[sales\ tax\ and\ fiscal\ charges + value-added\ tax] \div an\ industry's\ sales$). This is an appropriate proxy for the degree of regulation because in China governmental regulation in a particular industry is reflected in this industry's burden of VAT, sales tax, and various fiscal charges (*China's*

Industrial Development Report, 2000: 109–117). Since 1994, governmental administrative control over industries has been largely replaced by financial control through levying different financial and taxation burdens or financial charges on different industries (e.g., this intensity is 50% in the tobacco processing industry but only 4% in the food processing industry during the above period).⁵

Using survey information framed within the most recent 3 years, we measured strategic proactiveness, the proposed moderator, by the average of five items, each on 7-point Likert scale (1, strongly disagree, to 7, strongly agree), including: (1) In making strategic decisions, we respond to signals of opportunities quickly; (2) Whenever there is ambiguity in government regulation, we will move proactively to try to take a lead; (3) In making strategic decisions, we constantly seek to introduce new brands or new products in the market; (4) We are always aggressive in various advertising activities for promoting our products; and (5) We are willing to sacrifice short-term cash inflow for long-term strategic goals. The reliability and dimensionality of this construct was confirmed by Cronbach's α (0.83) and communality estimates (0.82–0.92).

We controlled for several organizational and individual variables in our analysis. These include firm size (# of employees, in 1000), age (# of years in operation), location (1 if in richer city, 0 otherwise),⁶ type of industry (1 if light industry, 0 otherwise), previous performance (profit per employee, in 1000 yuan), and foreign involvement (1 if foreign joint venture, 0 otherwise). The information measuring these variables was obtained from *Top 22,000 Businesses*. We controlled for an executive's education (number of schooling years), tenure (number of years working in the current company), and experience (total number of years working in all organizations). These individual traits were obtained from the survey. Table 1

⁴ It should be encouraging to see the types and areas of managerial networking. In our field study we found that these types or areas of networking appeared to be more dependent on organizational or individual factors (e.g., corporate objective and manager's background), while the level of networking seemed to depend more on industrial or market conditions.

⁵ When the degree of regulation measured by this tax intensity was replaced by the categorical variable (3 if restricted industry, 2 if regular industry, 1 if encouraged industry) based on the State Council's *Priority List of Industrial Development* (see *China's Industrial Development Report*, 2000), we found similar results about the effect of industrial regulation on networking in Table 2.

⁶ We used the mean of annual income per capita in the urban area, which is 5188.54 yuan according to the 1998 *Market Statistical Yearbook of China* (China Statistical Bureau, Beijing), to distinguish between rich (higher than the mean) and poor (lower than the mean) cities. City-level income information was obtained from provincial statistical yearbooks published by the statistical department of our sample provinces.

Table 1. Descriptive statistics and Pearson correlation matrix

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Managerial networking	3.78	0.97														
2 Structural uncertainty	17.90	7.22	0.24***													
3 Industrial growth	15.30	4.36	-0.05	0.15*												
4 Industrial regulation	6.85	2.33	0.20***	0.07	-0.10											
5 Competitive pressure	7.06	4.88	0.32***	0.03	0.13*	0.06										
6 Capacity utilization	75.30	15.60	-0.19**	0.09	0.16*	0.09	0.12*									
7 Organizational size	1.37	0.83	-0.16*	0.02	0.04	-0.05	-0.05	0.15*								
8 Organizational age	21.70	6.55	0.03	-0.01	-0.07	0.10	-0.02	0.08	0.19**							
9 Previous performance	2.06	11.80	-0.28***	-0.08	-0.11	0.04	0.09	-0.20**	-0.10	-0.07						
10 Foreign involvement	0.22	0.41	0.07	0.03	0.07	-0.14*	0.11	0.03	-0.05	-0.32***	0.19**					
11 Executive education	16.20	3.55	-0.18**	0.01	0.02	0.06	-0.02	-0.04	0.03	-0.11	-0.08	0.14*				
12 Executive tenure	5.71	3.94	0.04	-0.04	-0.05	0.04	-0.03	0.01	0.05	0.07	0.06	-0.07	-0.05			
13 Executive experience	22.50	4.34	-0.05	0.02	0.02	0.07	-0.04	0.04	0.17**	0.05	-0.04	-0.03	-0.07	0.08		
14 Firm location (rich)	0.71	0.45	-0.22**	0.04	-0.07	-0.06	0.08	-0.02	0.11	0.10	0.05	0.17**	0.12*	0.04	-0.06	
15 Industry type (light)	0.67	0.47	0.09	0.09	0.08	-0.15*	0.25***	-0.06	-0.20**	-0.03	-0.07	0.13*	0.07	0.09	-0.08	0.06

N = 364; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

exhibits some descriptive statistics of all variables and Pearson correlations between them.

RESULTS

We performed multiple regressions to examine how managerial networking is influenced by industrial dynamics facing the firm (Model 1, Table 2). The results of variance inflation factors (VIF) values (all ≤ 2.3) eliminated the possibility of multicollinearity among all predicting (independent and control) variables. A modified Kolmogorov–Smirnov test was also conducted to verify the assumption of normality for each variable in these models. Except for capacity utilization, which was positively skewed, the results for all variables confirmed the validity of the normality

of these variables. Capacity utilization was thus transformed by taking its logarithm, and it demonstrated normality after transformation. The threat of unequal variances (heteroscedasticity) was also checked by the Levene test. The results ($p > 0.10$ for all predictor variables) showed no pattern of increasing or decreasing residuals, thus suggesting the presence of homoscedasticity in the regression test.

As Model 1 shows, structural uncertainty, industrial regulation, and competitive pressure are positively associated with the level of managerial networking, while capacity utilization is negatively linked to networking ($p < 0.05$ or lower).⁷ These

⁷ We checked the curvilinear effect of these industrial attributes on networking by examining their respective quadratic terms in Model 1. We found that the curvilinear effects of industrial

Table 2. Industrial dynamics and managerial networking
Moderated hierarchical regressions ($N = 364$)^a

Variables	Managerial networking		
	Model 1	Model 2	Model 3 ^b
<i>Intercept</i>	0.78(0.49)	0.43(0.32)	−0.76(0.48)
Structural uncertainty (X1)	0.24(0.08)***	0.23(0.08)***	0.16(0.07)**
Industrial growth (X2)	−0.10(0.09)	−0.06(0.08)	−0.08(0.08)
Industrial regulation (X3)	0.09(0.05)*	0.10(0.06)†	0.09(0.07)
Competitive pressure (X4)	0.10(0.04)**	0.11(0.04)**	0.08(0.04)*
Capacity utilization (X5)	−0.11(0.06)*	−0.10(0.06)*	−0.10(0.06)*
Strategic proactiveness (M1)		0.07(0.04)†	0.05(0.05)
X1 * M1			0.17(0.07)**
X2 * M1			−0.09(0.10)
X3 * M1			0.19(0.11)†
X4 * M1			0.13(0.07)*
X5 * M1			−0.04(0.05)
<i>Control variables</i>			
Organizational size	−0.17(0.09)†	−0.16(0.09)†	−0.15(0.10)
Organizational age	0.06(0.05)	0.05(0.05)	0.05(0.05)
Previous performance	−0.19(0.05)***	−0.19(0.05)***	−0.18(0.05)***
Foreign involvement	0.04(0.04)	0.06(0.05)	0.05(0.04)
Executive education	−0.09(0.05)*	−0.11(0.05)*	−0.10(0.06)*
Executive tenure	0.05(0.05)	0.04(0.04)	0.05(0.04)
Executive experience	0.09(0.07)	0.06(0.07)	0.08(0.07)
Firm location (rich)	−0.15(0.08)*	−0.16(0.08)*	−0.15(0.08)*
Industry type (light)	0.09(0.09)	0.08(0.09)	0.06(0.08)
Model <i>F</i>	16.04	17.25	25.12
<i>p</i> <	0.001	0.001	0.001
Adjusted <i>R</i> ²	0.51	0.52	0.68
ΔAdjusted <i>R</i> ²		0.01	0.16
Hierarchical <i>F</i>		4.99**	34.30***

^a The entries in the table are regression coefficients with standard errors in parentheses.

^b The mean centering technique (Aiken and West, 1991) was used for all interaction terms in Model 3.

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

results lend support to Hypothesis 1 and Hypotheses 3–5. Hypothesis 2, however, is not supported since industrial growth is not significantly related to networking. This means that managerial networking is performed regardless of how fast the firm's industry grows; i.e., networking does not differ significantly between industries with different growth rates. A possible explanation is that networking is needed in a similar magnitude in both fast-growing and declining industries. It is likely that more networking is needed for resource sharing in prosperous industries, and likewise that more networking is needed to mitigate competitive threats in depressed industries.

We applied moderated hierarchical regressions to test how the industry–networking link is moderated by strategic proactiveness (Models 2–3). Collectively, five interaction terms significantly increase the predicting power of the model (hierarchical $F = 34.30$, $p < 0.001$). Individually, interactions of strategic proactiveness (M1) with structural uncertainty (X1), industrial regulation (X3), and competitive pressure (X4) have a significant and positive effect on managerial networking. Our plot tests further confirmed that this networking is an increasing function (positive slope) of X1, X3, and X4, respectively, conditional on three different single values of M1 (one standard deviation above the mean of M1, the mean of M1, and one standard deviation below the mean of M1). Our *post hoc* statistical testing (*t*-tests) also confirms that slopes of these three interaction terms differ significantly from zero. These results suggest that strategic proactiveness is a moderator affecting the effects of structural uncertainty, industrial regulation, and competitive pressure on networking. It moderates them in such a way that for executives of firms with higher strategic proactiveness there will be an even stronger impact of structural uncertainty, industrial regulation, or competitive pressure on managerial networking. These industrial conditions affect the level of managerial networking more profoundly for more proactive businesses.

regulation (X3) and capacity utilization (X5) are not significant but the curvilinear effects of structural uncertainty (X1) and competitive pressure (X4) are significant and monotonic. It implies that the influence of X3 or X5 on networking remains linear whereas the effect of X1 or X4 on networking reduces (but still positive) when X1 or X4 continues to increase.

DISCUSSION AND CONCLUSION

This study explicates how the level of managerial networking is shaped by conditions of an industry in which the firm participates. Departing from early studies addressing how environmental uncertainty influences managerial networking (e.g., Daft *et al.*, 1988), we assessed multiple structural attributes that reflect not only uncertainty but also industrial growth, market competition, regulation stringency, and the level of capacity utilization. To extend previous studies articulating managerial networking in advanced economies, this study shifted its focus to emerging markets. The analysis of 364 Chinese firms suggests that executives tend to increase managerial networking with executives at supplier, buyer, competitor, and distributor firms, as well as with government officials when their businesses reside in industries that are more volatile, more regulated, more competitive, or when production capacity is underutilized. We further demonstrate that the link between industrial dynamics and managerial networking is moderated by a firm's strategic proactiveness. In firms that are more strategically proactive, managerial networking is more susceptible to industrial conditions. Thus, industrial attributes such as uncertainty, regulation, and competition exert a stronger influence on networking for more proactive firms.

These results confirmed a major argument of this study—managerial networking is shaped by industrial conditions—and validated the contingency and dependency view of networking. The level of utilizing social or personal ties is contingent upon (i) industrial characteristics, which encompass different opportunities or threats, and (ii) executives' perceptions of how their businesses are dependent on these opportunities or vulnerable to these threats. Executives commit differently to the level of networking based on the conditions their industries face regarding uncertainty, regulation, competition, and capacity utilization. They commit more to developing and utilizing personal connections with the business community when they see the industrial resources or forces on which their businesses depend becoming more uncertain, more regulated, more competitive, or less utilized. Executives at more proactive firms recognize a greater dependence on or interaction with industrial forces, and thus their networking commitment

is more strongly tied with the conditions of these forces.

The above results also have implications for strategic management research relating to emerging markets. Industry structure in an emerging market such as China is comprised of multiple attributes that affect managerial networking, but not necessarily in the same way. For example, an industry's sales growth is not found to affect networking. This implies that networking activities may be necessary in fast-growing as well as slow-growing industries. Firms need networking to better share resources in fast-growing industries and better attenuate competitive threats in slow-growth industries. Most emerging markets have greater volatility and more regulation compared to advanced economies. This study discloses that such volatility and regulation are significantly associated with networking efforts. In addition, the systematic link between industry effects and managerial networking leads us to infer that executives in an emerging market are rational in pursuit of organizational goals. Without this rationality, it would be impossible to interpret the significant association between the use of personal ties by Chinese executives and industrial conditions facing the firms. Early research assumed that Chinese executives are not stewards of firms but stewards of governments (e.g., Wall, 1990). This perception is now likely obsolete. All firms, including those that are state-owned, are moving toward a system in which executives are 'legal men' who are responsible for the losses or profits of the organizations they serve.

Managerial networking is a complex research issue involving numerous foci such as process, structure, approach, evolution, and utilization. This study emphasized only the level of utilization and it did not address the process, activity, or structure of developing managerial networks. Further efforts are needed to examine how the evolution of industry structure is associated with the evolution of managerial networking (a dynamic perspective), how industrial conditions shape networking areas in product development, lobbying, advertising, outsourcing, and distribution (an activity perspective), and how different industrial attributes are linked to networking with different external entities such as buyers, suppliers, competitors, and regulators (a structural perspective).

ACKNOWLEDGEMENTS

The author would like to thank two anonymous reviewers and Associate Editor Edward J. Zajac for their thoughtful comments.

REFERENCES

- Ahuja G. 2000. Collaboration networks, structural holes, and innovation: a longitudinal study. *Administrative Science Quarterly* **45**: 425–455.
- Aiken LS, West SG. 1991. *Multiple Regression: Testing and Interpreting Interactions*. Sage: Newbury Park, CA.
- Baker W. 1992. The network organization in theory and practice. In *Networks and Organizations: Structure, Form, and Action*, Nohria N, Eccles RG (eds). Harvard Business School Press: Boston, MA; 397–429.
- Boyd B, Fulk J. 1996. Executive practices and perceived uncertainty: a multidimensional model. *Journal of Management* **22**(1): 1–21.
- Burt R. 1997. The contingent value of social capital. *Administrative Science Quarterly* **42**: 339–365.
- Carroll GR, Teo AC. 1996. On the social networks of managers. *Academy of Management Journal* **39**: 421–440.
- Caves RE, Porter ME. 1978. Market structure, oligopoly, and stability of market shares. *Journal of Industrial Economics* **26**: 289–313.
- China's Industrial Development Report*. 2000. Industrial Economic Research Institute, China National Academy of Social Science.
- Daft R, Sormunen J, Parks D. 1988. Chief executive scanning, environmental characteristics and company performance: an empirical study. *Strategic Management Journal* **9**(2): 123–139.
- Daughety AF. 1984. Regulation and industrial organization. *Journal of Political Economy* **92**: 932–953.
- Davis JH, Schoorman FD, Donaldson L. 1997. Toward a stewardship theory of management. *Academy of Management Review* **22**: 20–47.
- Duncan RB. 1972. Characteristics of organizational environments and perceived environment uncertainty. *Administrative Science Quarterly* **17**: 313–327.
- Eisenhardt KM, Bourgeois LJ. 1988. Politics of strategic decision making in high-velocity environments: toward a midrange theory. *Academy of Management Journal* **31**: 737–770.
- Geletkanycz MA, Hambrick DC. 1997. The external ties of top executives: implications for strategic choice and performance. *Administrative Science Quarterly* **42**: 654–681.
- Gnyawali DR, Madhavan R. 2001. Cooperative networks and competitive dynamics: a structural embeddedness perspective. *Academy of Management Review* **26**: 431–445.
- Granovetter M. 1985. Economic action and social structure: a theory of embeddedness. *American Journal of Sociology* **91**: 481–510.

- Gulati R. 1999. Network location and learning: the influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal* 20(5): 397–420.
- Gulati R, Gargiulo M. 1999. Where do interorganizational networks come from? *American Journal of Sociology* 104(5): 1439–1493.
- Koka BR, Prescott JE. 2002. Strategic alliances as social capital: a multidimensional view. *Strategic Management Journal* 23(9): 795–816.
- Krackhardt D. 1992. The strength of strong ties: the importance of *Philos* in organizations. In *Networks and Organizations: Structure, Form, and Action*, Nohria N, Eccles RG (eds). Harvard Business School Press: Boston, MA; 216–239.
- Levinthal DA, Fichman M. 1988. Dynamics of interorganizational attachments: auditor–client relationships. *Administrative Science Quarterly* 33: 345–369.
- Madhavan R, Koka BR, Prescott JE. 1998. Networks in transition: how industry events (re)shape interfirm relationships. *Strategic Management Journal* 19(5): 439–460.
- Miller D, Friesen PH. 1983. Strategy-making and environment: the third link. *Strategic Management Journal* 4(3): 221–235.
- Mizruchi MS. 1997. What do interlocks do? An analysis, critique, and assessment of research on interlocking directorates. *Annual Review of Sociology* 22: 271–298.
- Mizruchi MS, Galaskiewicz J. 1994. Networks of interorganizational relations. In *Advances in Social Network Analysis*, Wasserman S, Galaskiewicz J (eds). Sage: Thousand Oaks, CA; 230–253.
- Nee V. 1992. Organizational dynamics of market transition: hybrid forms, property rights, and mixed economy in China. *Administrative Science Quarterly* 37: 1–27.
- Oliver C. 1991. Strategic responses to institutional processes. *Academy of Management Review* 16: 145–179.
- Ouchi WG. 1980. Markets, bureaucracies, and clans. *Administrative Science Quarterly* 25: 124–141.
- Park SH, Luo Y. 2001. Guanxi and organizational dynamics: organizational networking in Chinese firms. *Strategic Management Journal* 22(5): 455–477.
- Peng MW, Luo Y. 2000. Managerial ties and firm performance in a transition economy: the nature of a micro–macro link. *Academy of Management Journal* 43: 486–501.
- Pfeffer J, Salancik G. 1978. *The External Control of Organizations*. Harper & Row: New York.
- Porter ME. 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press: New York.
- Rawski TG. 1994. Chinese industrial reform: accomplishments, prospects and implications. *American Economic Review* 84: 271–275.
- Rumelt RP. 1991. How much does industry matter? *Strategic Management Journal* 12(3): 167–185.
- Scherer FM, Ross D. 1990. *Industrial Market Structure and Economic Performance*. Houghton Mifflin: Boston, MA.
- Seabright MA, Levinthal DA, Fichman M. 1992. Role of individual attachments in the dissolution of interorganizational relationships. *Academy of Management Journal* 35: 122–160.
- Starr J, MacMillan I. 1990. Resource co-optation via social contracting: resource acquisition strategies for new ventures. *Strategic Management Journal*, Summer Special Issue 11: 79–92.
- Stevenson WB, Greenberg D. 2000. Agency and social networks: strategies of action in a social structure of position, opposition, and opportunity. *Administrative Science Quarterly* 45: 651–678.
- Walker G, Kogut B, Shan W. 1997. Social capital, structural holes and the formation of an industry network. *Organization Science* 8(2): 109–125.
- Wall JA. 1990. Managers in the People's Republic of China. *Academy of Management Executive* 4(2): 19–32.
- Williamson OE. 1985. *The Economic Institutions of Capitalism*. Free Press: New York.
- Xin KR, Pearce JL. 1996. Guanxi: connections as substitutes for formal institutional support. *Academy of Management Journal* 39: 1641–1658.
- Zajac EJ. 1988. Interlocking directorates as an interorganizational strategy: a test of critical assumptions. *Academy of Management Journal* 31: 428–438.