

ALLIANCE PARTNERS AND FIRM PERFORMANCE: RESOURCE COMPLEMENTARITY AND STATUS ASSOCIATION[†]

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Bridging the resource-based view and the institutional perspective, this study explores the performance consequences of firms' alliance partner selections by examining the interactions of resource complementarity and institutional associations (reflected through both societal and network status) between the firm and its partners. The integrative framework suggests that a joint consideration of resource complementarity and status effects, as well as important firm- and environmental-level contingent factors, are critical for understanding the underlying mechanisms of alliance formations and their effects on firm performance. Further, our study suggests that it is necessary to consider both societal and network status as they can have distinct effects under certain conditions. Our analyses of four U.S. industries (computer, steel, pharmaceuticals, crude petroleum and natural gas) over a span of 13 years largely support our framework. Copyright © 2009 John Wiley & Sons, Ltd.

INTRODUCTION

How are resources exchanged and status utilized between partners in strategic alliances? What are the performance implications of such exchange mechanisms for parent firms? The economic rationale for resource needs and the sociological justification for status seeking represent two major streams of research in strategic alliances, especially in the partner selection process. Researchers who subscribe to the resource-based view (RBV) argue that resources of particular interest in alliances include financial capital, technical capabilities, managerial capabilities, and other relevant

assets (Hitt *et al.*, 2000). Partners should be sufficiently differentiated to provide missing elements or new/complementary capabilities (Osborn and Hagedoorn, 1997). Firms search for alliance partners with resources that they can leverage and integrate to create synergy (Das, Sen, and Sen-gupta, 1998; Lin, Yang, and Demirkan, 2007).

Researchers who rely on the institutional perspective instead argue for a normative rationality of partner selection, contending that alliances are formed for the conformity of social justification and social obligation (Zukin and Dimaggio, 1990). In particular, an economic actor's performance in the marketplace is affected by the status level of its close associates (Baum and Oliver, 1991; Podolny, 1994). Alliances are often developed to enhance a firm's own status and image by tapping into the reputation of more established partners (Hitt *et al.*, 2000).

Although the above theories provide valuable explanations for partner selection in alliances,

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they are often treated separately or as mutually exclusive views without much interaction. Alliances are depicted as either a route to financial or physical resource access or a form of seeking status support in the institutional environment. The economic rationality of RBV focuses on *value-maximizing* choices that are constrained by imperfect information and uncertainty about future outcomes, while the normative rationality of the institutional perspective emphasizes value-laden choices that are constrained by social context and may be vulnerable to *economic suboptimization* (Oliver, 1997: 701–702). Given that firms may seek both resources and status in one alliance, it is intriguing how firms approach these seemingly divergent needs and how the exchange of these needs may affect firm performance. To the best of our knowledge, this topic has rarely been examined both theoretically and empirically in the literature. Our study intends to address these important gaps and investigate how the interaction between resource and status in alliance relations impacts parent firm performance. In doing so, we suggest that these two perspectives complement rather than compete with each other, though with different emphases.

In addition, while there is a general recognition of the importance of status in firms' institutional associations, there is much less understanding or agreement regarding what actually constitutes a firm's status. A firm's institutional context includes forces from the state, society, and interfirm relations that define socially acceptable economic behavior (Oliver, 1997). Prior research generally has not differentiated the multiple aspects of status, or simply assumed them to be identical in nature. Most studies in sociology and strategy have also defined status as a reflection of a firm's position in interfirm relations, in particular with the use of eigenvector centrality, rather than its standing in the state and society (Baum *et al.*, 2005; Jensen, 2003; Podolny, 1993). We believe such treatment of status may not reflect its complex nature. This study extends research in this area by differentiating two types of status: societal and network status. Societal status refers to the ranking of social esteem that is ascribed by society and constructed on the basis of various criteria, such as social responsibility, financial soundness, innovation, and so on (Washington and Zajac, 2005; Weber, 1978), while network status denotes a firm's positional standing in its interfirm relations (Podolny, 1993).

Our study shows that this differentiation is critical theoretically and has performance implications.

Finally, in addition to exploring the interactions between resource complementarity and status associations in alliance relations, we further argue that there are boundary conditions for their respective main effects. Specifically, environmental dynamism and firm age can act as important moderating factors for us to understand the relationships among resources, status, and firm performance.

In this study, we identify a large sample from four U.S. industries (computer, steel, pharmaceuticals, crude petroleum and natural gas) over a span of 13 years (1988–2000). This sample gives us a good opportunity to study interorganizational alliances in a broad range of industrial contexts. By analyzing their alliance data and parent firm performance, we find that what matters in these alliances rests on not only resource considerations, but also institutional explanations.

THEORETICAL BACKGROUND

RBV, with a strong emphasis on economic rationality, concentrates on the development of resource bundles and tends to bypass the dynamic process of interactions between organizations and their institutional environments, which impose a legitimacy requirement for firms. In contrast, the institutional perspective shows that interorganizational linkages are motivated by exogenous pressures for legitimacy, although it may require the incorporation of RBV to help determine whether the combination of resources that firms have assembled in the institutional environment correlates with firm-level performance (Oliver, 1997). The integration of the institutional perspective and RBV thus makes it possible to investigate whether or not affiliations between peers with both complementary resources and intangible organizational attributes such as status yield larger payoffs.

Resource-based view on alliances

RBV is firm focused and concerned with the management of internal resources for achieving competitive advantages (Barney, 1991; Peteraf, 1993). Since resources are heterogeneously distributed across firms, this perspective recognizes that some important internal resources can be obtained from

external sources via interorganizational relationships such as alliances, or by engaging in mergers and acquisitions. In contrast, resource dependence theory focuses on external sources as a means for obtaining resources critical to organizational survival and prosperity (Pfeffer and Salancik, 1978). The rationale for strategic alliances from RBV is distinct from resource dependence theory, as alliances are viewed as vehicles that not only provide access to other firms' valuable resources, but also present an opportunity for maximizing rents through the firm's own internal resources.

Scholars have adopted RBV to better understand the characteristics of the partners that firms choose to ally with (Das and Teng, 2000). RBV suggests that alliances are formed for the value-creation potential of pooled resources. In their study on alliance partner selection decisions, Hitt *et al.* (2000) found support for resource-based reasoning. In particular, developed market firms sought partners with complementary resource endowments such as local market knowledge and access to distribution channels, which offered potential for strategic development. Similarly, emerging market firms sought partners that helped them secure access to resources that they lacked, namely financial and technical resources, and strategic positions in the marketplace. Alliances enable sharing of complementary resources among firms, making synergy creation possible.

Although RBV provides a reasonable and solid rationale for choosing alliance partners, it mainly examines the partner selection process from an economic perspective, which emphasizes the efficiency of combining complementary resources. Consequently, there is a lack of sufficient consideration of external institutional influences (Oliver, 1997). Failure to acknowledge firms' embeddedness in their institutional environments may impose serious theoretical problems as firms increasingly demand both *economic* and *social* resources. We believe that this gap may be better filled by incorporating the institutional perspective.

Institutional perspective on alliances

Firm behavior is embedded in a broader political, economic, and social context, and so are firms' alliances (Dacin, Ventresca, and Beal, 1999). Firms respond to environmental constraints by seeking recognition and legitimacy. Legitimacy refers to the level of social acceptability bestowed upon a

set of activities or actors (Dowling and Pfeffer, 1975). An organization is more likely to survive, obtain resources, and justify its rights and competence if it is endowed with legitimacy (Baum and Oliver, 1991). In other words, legitimacy can provide critical social resources that facilitate and complement financial and physical resources. While legitimacy is important to all firms, it is more so for small or young firms that need to establish themselves in their own business environments or enter a new business domain, due to their liability of newness or smallness (Carroll, 1983; Hannan and Freeman, 1977).

Legitimacy can be procured through firms' social activities, technical recognition, and associated partners. Though institutional-legitimacy researchers depict legitimacy as a set of constitutive beliefs that organizations cannot extract from the environment, strategic-legitimacy researchers maintain that organizations can view legitimacy as an operational resource, which can be extracted competitively from the environment (Suchman, 1995). Organizations can actively conform, select, manipulate, and create norms and practices to gain legitimacy. One of the effective ways to enhance firm legitimacy is through strategic alliances (Eisenhardt and Schoonhoven, 1996). Oliver (1990) argued that firms enter interorganizational relationships to enhance their legitimacy by improving their reputation or congruence with prevailing norms in the institutional environment.

Firms also seek to improve their status in their institutional environments. By status, we refer to, 'a socially constructed, intersubjectively agreed-upon and accepted ordering or ranking of individuals, groups, organizations, or activities in a social system' (Washington and Zajac, 2005: 284). It reflects an actor's relative standing in a group based on prestige, honor, and deference (Thye, 2000). Status is a socially constructed concept that may not always be economically rational. It differs from the economic notion of reputation, which is derived from perceived quality (for details see Washington and Zajac, 2005). In the economic models of reputation, investments in product quality at one point in time will convey information about the current quality and affect subsequent market opportunities over time, whereas sociological models of status emphasize social justification and capture differences in social ranks that generate privilege or discrimination (Benjamin

and Podolny, 1999; Washington and Zajac, 2005). Although a reputation for quality can influence firms' status, 'the status ordering helps to determine which firms will develop reputations for quality and which will not' (Benjamin and Podolny, 1999: 585).

Status ordering can come from multiple sources as a firm's institutional context comprises forces in state, society, and interorganizational relationships. In particular, we differentiate two types of status: societal and network status. Societal status refers to the social ranking of esteem that is ascribed by the society on the basis of a firm's conformity to social norms: social responsibility, financial soundness, innovativeness, long-term investment value, ability to attract and keep talented people, wise use of corporate assets, and so on. Network status refers to a firm's positional ranking in its interfirm networks. The former concerns a firm's standing in a social hierarchy as determined by respect and deference, while the latter concerns a firm's influence in interfirm relationships (Podolny, 1993; Washington and Zajac, 2005).

The differentiation of these two types of status is meaningful and important; however, researchers tend to predominantly pay attention to network status, with Bonacich's (1987) eigenvector centrality in an interfirm network being a widely used measure of status in prior works (Baum *et al.*, 2005; Jensen, 2003; Podolny, 1993). A firm's eigenvector centrality captures its central position in a network in terms of the 'global' or 'overall' structure of the network. A firm has a high network status 'to the extent that it maintains strong ties with other firms that have network status because they maintain strong ties with other firms that have network status and so on' (Jensen, 2003: 481). This network status may not reflect whether firms have a high social standing in terms of acceptance in the society. For instance, Nike could have a high network status as it is highly embedded in its interfirm relationships during the process of product outsourcing; however, Nike has often been criticized by the press for its lack of social responsibility and may not be admired by the public. Its subcontracted factories have used child labor and paid scant wages to workers who are working in unsafe and unprotected environments; therefore, Nike's societal status may not necessarily correspond to its network status.

Status,¹ reputation, and legitimacy are not competing specifications of organizational identity; rather, they are complementary to each other (Rao, 1994; Washington and Zajac, 2005); 'if models of reputation emphasize a tight coupling between endowments and evaluations, then models of legitimacy direct attention to the collective processes by which reputation is created and sustained' (Rao, 1994: 30–31). To some extent, a legitimized status may generate a favorable reputation through endorsement and cognitive validation. In this study, we view status as not only the manifestation of firms' reputation and legitimacy but also the means for firms to further enhance reputation and legitimacy for resource and economic gains, in particular in alliance relationships.

Toward a theoretical integration

Both RBV and the institutional perspective offer motivations for strategic alliances; however, each has a very different emphasis. The institutional perspective is concerned with the alignment process of organizations and their institutional environments, while RBV focuses on the development of unique resources bundles. Environment, from the perspective of RBV, is a place for exchanging products and services that enable organizations to create sustained competitive advantages, while according to the institutional perspective, environment is an embodiment of rules and requirements to which individual organizations must conform if they are to receive support and legitimacy (Scott, 1987).

According to RBV, alliances are used to absorb and develop necessary and distinct resources to build sustained competitive advantages, while the institutional view takes alliance as a method to achieve alignment with environments, win recognition, and gain legitimacy. On the one hand, RBV emphasizes economic rationality, while, on the other hand, the institutional view advocates a normative rationality, which emphasizes the role of historical precedent and social justification (Oliver, 1997). At first sight, it seems that these two perspectives are at odds; however, RBV and the institutional perspective are not mutually exclusive and can be integrated to shed new light on strategic alliances.

¹ Hereafter the single term 'status' refers to both societal and network status if not otherwise specified.

The institutional perspective complements and consolidates RBV in three aspects. First, from a broader view of resources, both reputation and legitimacy are integral and valuable assets to firms (Barney, 1991; Hall, 1992). Second, status has been shown to facilitate resource exchanges (e.g., Granovetter, 1985). Reputation and legitimacy invite and generate continuous resource supplies from the environments. Third, institutional reputation and legitimacy lead to enhanced strategic position and are necessary for establishing sustainable competitive advantages.

Integrated and valuable assets

Reputation and legitimacy are considered as inseparable assets of organizations. A positive reputation is a valuable and intangible asset, which generates rents for firms (Fombrun and Shanley, 1990); thus, we would like to reexamine reputation and legitimacy through the lens of RBV in terms of its four classic indicators (valuable, rare, imperfectly imitable, and substitutable).

First, resources are valuable when firms exploit opportunities or neutralize threats in an environment (Barney, 1991). Reputation and legitimacy can be reflected through a firm's status and harmonize a firm's relationships with its environment. Specifically, a high status allows a firm to be more acceptable by other institutional players and invites more chances to cooperate, while extracting more economic rent from alliance relationships (Stuart, 2000). Second, if a particularly valuable resource is not possessed by many firms, this kind of resource has the potential to generate a competitive advantage (Barney, 1991). Reputation and legitimacy are heterogeneously distributed among firms in one industry. In most cases, the status structure has a pyramidal shape in terms of accessibility and control of such resources, and only a few players will enjoy high reputation (Lin, 1999). The rarity of such resources also makes a high-status firm more sought after by potential partners, in the hope of advancing their reputation and legitimacy. Third, 'valuable and rare resources can only be sources of *sustained* competitive advantage if firms that do not possess these resources cannot obtain them' (Barney, 1991: 107, italics in original). Barney (1991) argued that a firm's reputation among customers and suppliers falls into the category of social complexity, which is beyond the ability of other firms to systematically imitate.

Fourth, 'the last requirement for a firm resource to be a source of sustained competitive advantage is that there must be no strategically equivalent valuable resources that are themselves either not rare or imitable' (Barney, 1991: 111). Without reputation and legitimacy, firms will have a very hard time competing in the market. Though other firms can also forge alliances with high-status partners, a valuable resource such as reputation is rare and hard to imitate.

Attracting and generating continuous resource supply

Baum and Oliver (1991) contended that by associations with organizations that already possess high legitimacy or the conferral of more specific resources and endorsements, a firm can obtain resources and social support through the establishment of helpful institutional linkages. Such linkages enhance the public image of the focal firm and increase its attractiveness as a candidate for future cooperation. Organizations, by aligning with their environments, win support from their communities, customers, competitors, and stakeholders as well. With reduced environmental threats, such legitimacy is crucial to unleashing external resource flows, especially for those firms in poor neighborhoods (Wiewel and Hunter, 1985). Reputation and legitimacy thus can generate a continuous flow of resource supply on which firms' sustained competitive advantage is based.

Enhanced strategic position

Dyer and Singh (1998) stressed the value of interfirm relationships for accessing resources and creating competitive advantages. Eisenhardt and Schoonhoven (1996) mentioned that enhanced legitimacy improves the strategic position of firms. The relations with high-status firms will generate firm visibility, signal increased status to their customers, buyers, and suppliers (Stuart, 2000), and help distinguish firms from competitors (Eisenhardt and Schoonhoven, 1996). This kind of recognition is necessary for drawing organizations closer to resources and reducing the search and monitoring costs associated with finding a partner, lowering the overall transaction costs involved (Williamson, 1975).

The above reexamination of institutional concerns in alliance partner selections unequivocally

shows that positive institutional relations not only constitute special assets for firms competing in the market, but also ensure the future resource supply and improve strategic positions. The intangible benefits of reputation and legitimacy are concretized into and interact with resource needs in strategic alliance to enhance firms' competitive advantages.

HYPOTHESES DEVELOPMENT

In this section, we intend to develop hypotheses for the integrative framework and illustrate the importance of a joint consideration of both resources and status. Our focus is not to investigate the respective role of each, but rather to examine their interaction effects and boundary conditions.

Interactions of resource complementarity and partner status on firm performance

Firms may be able to enhance their own standing through associations with partners of high societal or network status. In alliance relations, the selections of partners may influence a firm's capabilities as well as others' perceptions of its capabilities (Baum, Calabrese, and Silverman, 2000). It is of vital importance for low-status firms to form alliances if the quality of their products is difficult to evaluate. It is generally assumed that it is easier to observe the affiliation relationship than to observe differences in quality (Benjamin and Podolny, 1999). Stuart (1998) contended that a technology alliance with a high-status organization is a public endorsement of another firm's products or quality. A firm's important constituents (customers, the financial community, the media, etc.) will view having a large or high-status alliance partner as an endorsement of its quality (Stuart, Hoang, and Hybels, 1999).

In addition to the effect of institutional endorsement, affiliation with high societal or network status partners will allow a firm's access to some knowledge pools that cannot be easily obtained in the market. Knowledge spillover is possible through daily interactions, as social ties purvey access to information possessed by one's contacts (Burt, 1992). Consequently, alliances with high-status partners will make it possible for a firm to access other kinds of resources within the network of those high-status partners (Stuart, 2000).

Although allying with partners of high societal or network status may lead to benefits in institutional endorsement and resource flows, this practice may be challenged when there is little or no resource complementarity from the partners. A sole emphasis on institutional linkages rather than economic efficiency can dampen firm performance. First, there is a high cost associated with allying with high-status partners. Firms of high status tend to be very selective (and can afford to be so in most cases) in their choice of alliance partners because their status or economic returns will be in danger if they are associated with disreputable partners (Stuart, 2000). Firms wanting to ally with high-status partners may have to go through rigorous investigations and negotiations that add significant cost to business transactions.

Second, the ultimate purpose of alliances is to leverage firm resources along with the complementary resources of partner firms to create synergy effects. Without the synergy effect ($1 + 1 > 2$), firms may not be able to create positive performance with high-status partners if the high transaction cost is also considered. Mounting evidence shows that combining partner resources promotes the sharing of cost and risk as well as product development, while increasing speed to market (Osborn and Hagedoorn, 1997). Hamel, Doz, and Prahalad (1989) suggested that firms can achieve mutual gains if partners can complement each other's weakness. By pooling complementary skills, small firms with specific technical skills and larger firms with experience in development could produce products faster and cheaper than either firm could do alone (Deeds and Hill, 1996). We argue that the positive interaction between resource complementarity and status (societal or network) will bring better performance to the firm.

Hypothesis 1a: Ceteris paribus, a high degree of resource complementarity with alliance partners will be positively associated with a firm's performance when the partners also have high societal status.

Hypothesis 1b: Ceteris paribus, a high degree of resource complementarity with alliance partners will be positively associated with a firm's performance when the partners also have high network status.

Interactions of resource complementarity and own status on firm performance

RBV suggests that firms have to depend on resources to develop competitive advantages. Consequently, complementary resources from alliance partners will enhance a firm's competitive advantages. In the meantime, firms also need to rely on institutional support to establish themselves in institutional environments. Both kinds of dependency are crucial to firms' survival. We argue that resource complementary and institutional dependency can complement and substantiate each other, since resource endowments lay a good foundation for firms to gain legitimacy in institutional environments, and institutional recognition also leads to increased resources for firms. Low societal or network status firms encounter greater challenges in obtaining necessary resources from their environment. Complementary resources, if any, from alliance partners will greatly boost the performance of low-status firms. Conversely, high-status firms may have already enjoyed a steady supply of resources from their environment. The marginal effect of additional complementary resources may be minimal for these high-status firms. In addition, their past success may become a competency trap (Levitt and March, 1988) and motivate them to rely on established routines, policies, and procedures that allow for little or no additional learning from complementary partners (Hoang and Rothaermel, 2005).

Hypothesis 2a: Ceteris paribus, a high degree of resource complementarity with alliance partners will improve the performance of a firm with low rather than high societal status.

Hypothesis 2b: Ceteris paribus, a high degree of resource complementarity with alliance partners will improve the performance of a firm with low rather than high network status.

Interactions of status asymmetry and own status on firm performance

In addition to resource complementarity, status asymmetry with alliance partners can be an important predictor of firm performance. We argue that a large difference in status between the firm and its partners will have varying effects for firms with different own status. Specifically, low-status firms

will benefit more from a large status asymmetry. The institutional endorsement and resource flows are more critically needed by low-status firms in alliances. Low-status firms face the liability of smallness and newness (Carroll, 1983; Hannan and Freeman, 1977). Critical institutional support and resource flow cannot be obtained from their peers; allying with partners that have dramatically higher status will significantly elevate the focal firm's social standing. For instance, a new venture may have greater benefits in institutional support from an alliance with IBM or Microsoft than a partner with similar status. Conversely, a well-established and high-status firm may be more likely to favor firms of similar status in its selection of alliance partners, as an association with low-status firms may result in a deterioration of its own performance (Podolny, 1994). For example, Washington and Zajac (2005) found that a high-status basketball team is likely to erode its status through negative association with low-status basketball teams in the NCAA (National Collegiate Athletic Association) postseason basketball tournament. In other words, a large status asymmetry in the alliance will not help high-status firms, but boost the social reputation and standing of low-status firms.

Hypothesis 3a: Ceteris paribus, a large asymmetry in societal status between a firm and its alliance partners will bring more benefit to the firm with low rather than high societal status.

Hypothesis 3b: Ceteris paribus, a large asymmetry in network status between a firm and its alliance partners will bring more benefit to the firm with a low rather than a high network status.

In addition to the interplay between resource complementary and status association, there are some boundary conditions that may constrain their respective roles in firm performance. For instance, it is not clear under what environmental conditions the resource complementarity/status association may have a larger payoff and which firms can benefit from it. To pursue further in this line, we contend that it is necessary to investigate the moderating effects of environment factors such as environmental dynamism, and firm characteristics such as firm age.

The moderating effect of environmental dynamism on resource complementarity

The importance of the fit between firm strategy and external environment has long been stressed in the strategy literature. Environmental dynamism, the degree of turbulence or instability in the competitive environment, shapes the complexity of decision making and accentuates firms' organizational efficiencies (Dess and Beard, 1984; Hill and Hoskisson, 1987; Jones and Hill, 1988). Specifically, unpredictability in the environment will increase the difficulty of realizing the potential embedded in complementary resources. In contrast, in a stable environment firms will have less pressure to find right partners and to ensure the smooth functioning of partner relations (Baum *et al.*, 2005; Hitt *et al.*, 2000). As a result, we argue that resource complementarity between partners will generate more benefits for firms in a stable environment than in a dynamic environment. The synergy creation between complementary partners needs the support of predictable organizational routines, stable information flow, and smooth collaboration in alliances.

Hypothesis 4: Ceteris paribus, a firm's high degree of resource complementarity with its alliance partners will bring more benefit to its performance in a stable environment than in a dynamic environment.

The moderating effect of environmental dynamism on status asymmetry

A large status asymmetry in alliances may have distinctive performance implications under different environmental conditions. We argue that environmental dynamism will have opposing effects on the two types of status.

We contend that a large asymmetry in societal status is beneficial for firm performance in a stable environment for two reasons. First, firms with a low societal status will benefit more from the status spillover or endorsement from a firm with high societal status when the environment has less noise to affect the status spillover (Podolny, 1993, 1994). The stable relationship with high-status partners will denote a long-term commitment from both parties, and send a clear signal to the public that these low-status firms are valuable partners (Chung, Singh, and Lee, 2000). Such status benefit, however, will be much less in a dynamic

environment where alliances are formed and terminated at a very fast rate for short-term exploitation purposes such as one-shot market transactions, which may not confer much institutional endorsement to partner firms. Second, firms with a high societal status also benefit more from a large status asymmetry in a stable environment. In a dynamic environment, firms with a high societal status may not be able to easily identify valuable low-status partners due to managers' bounded rationality under more stressful conditions (Bourgeois and Eisenhardt, 1988); however, this concern will be alleviated in a stable environment, allowing high-status firms to fully evaluate potential partners and extract the most rent from their alliance relationships with low-status firms. Thus, it is expected that a large asymmetry in societal status will bring higher performance for both firms in a stable environment than in a dynamic environment.

A large asymmetry in network status, on the other hand, may be more beneficial in a dynamic environment. By definition, network status is about a firm's capability to access information, and a central firm in an interfirm network will have a high network status. Imagine that there are two firms: one is in the central position of the network, and the other is in a peripheral position of the network. An alliance between these firms will enable access to a wide spectrum of information, including both the central and the peripheral channels, capturing rather complete information in the network and helping firms to better deal with a dynamic environment (Gnyawali and Madhavan, 2001; Lin *et al.*, 2007). Conversely, if two firms are both in a similar position in the network, their information access may be constrained or overlap, offering little help to face a dynamic environment (Gulati, 1999; Stuart, 2000).

Hypothesis 5a: Ceteris paribus, a large asymmetry in societal status between the firm and its partners will benefit the firm more in a stable environment than in a dynamic environment.

Hypothesis 5b: Ceteris paribus, a large asymmetry in network status between the firm and its partners will benefit the firm more in a dynamic environment than in a stable environment.

The moderating effect of firm age on status asymmetry

Many researchers (e.g., Hagedoorn and Schakenraad, 1994) have explored the initial characteristics of alliance partners in determining alliance outcomes. Saxton (1997) argued that the characteristics of the relationships between the firms as an ongoing pattern should be the focal point for understanding alliance behavior and outcomes. In this study, we will examine the moderating effects of newness on performance. We do so with a focus on status asymmetry not only because of space constraints for this article, but also because the age effect on resource complementarity has been more extensively investigated in the prior literature (Baum *et al.*, 2000).

Researchers have found that both the liability of smallness (Baum and Oliver, 1991) and the liability of newness (Carroll, 1983) increase the mortality of new organizations; 'the liability of newness hypothesis assumes that a lack of social approval, stability, and sufficient resources typifies recent entrants into a population and that these shortcomings increase their risk of failure' (Baum and Oliver, 1991: 191). Young firms suffer from inexperience as well as a lack of recognition and legitimacy. Baum *et al.* (2000) argued that the development of an appropriate alliance network at founding may enable a young firm to enjoy relationships and resources typical of a more established firm, overcoming the liabilities of newness. Start-up firms can potentially access social, technical, and commercial competitive resources that normally require years of operating experience to acquire (Ahuja, 2000; Baum *et al.*, 2000). Stuart *et al.* (1999) also contended that technology start-ups with prominent alliance or exchange partners perform better than comparable ventures without endorsements. A large status asymmetry in alliances makes it possible for young firms to tap into the resources of other high-ranking partners, decrease the uncertainty, reduce the risk, and increase the legitimacy of these young firms. The larger the status asymmetry is in alliances, the more status endorsement a young firm can benefit from it, whereas a large status asymmetry in alliances may hurt the ranking of old firms. In addition, the enhanced legitimacy as well as the resource leverage will be much greater for young firms than for established firms. From a different angle, it may also be argued that there is a

firm-level boundary condition under which status asymmetry may or may not help firm performance.

Hypothesis 6a: Ceteris paribus, a large asymmetry in societal status between the firm and its partners will benefit a young firm more than an old firm.

Hypothesis 6b: Ceteris paribus, a large asymmetry in network status between the firm and its partners will benefit a young firm more than an old firm.

METHODOLOGY

Sample

In this study, we identified a large sample from four U.S. industries (computer, steel, pharmaceuticals, crude petroleum and natural gas) over the period of 1988–2000. Analysts classify industries on multiple dimensions such as capital investment, knowledge intensity, technological innovation, and resource consumption (Todeva and Knoke, 2005). The steel industry is recognized to be capital intensive (Rowley, Behrens, and Krackhardt, 2000), while the computer industry is technology intensive and relies on innovation for competitiveness. Distinctive motives of firms in the petroleum and natural gas industry condition their alliance partner decisions and the types of alliances that they participate in (Ernst and Steinhubl, 1997). Pharmaceutical companies generally engage in dyadic bilateral research and development alliances and do not exhibit alliance blocks as seen in other industries (Hoang and Rothaermel, 2005). Differences in alliance formation strategies give us an excellent opportunity to study alliance partner characteristics in a broad range of industrial contexts. The selection of these industries also allows us to have a large variance of environmental dynamism, enabling us to observe a full spectrum of its effect.

We examined firms' alliance activities from the 13-year period, covering 41 firms in the computer, 43 in the steel, 55 in the pharmaceutical, and 56 in the petroleum industries. In total, there are 195 focal firms involved with 3,498 alliances in our sample. These firms were randomly selected from *Standard & Poor's Compustat (SPC)*; and *Moody's FIS Online* was used to complement firms' financial data in SPC. There is a large variance of

firm assets and sales across different industries. For instance, firms' total assets in the pharmaceutical industry range from 0.03 to 41,778.00 million U.S. dollars (USD), while firms' net sales vary from 0.00 to 40,363.20 million USD. In the steel industry, firms' total assets range from 3.44 to 14,176.96 million USD, and net sales range from 3.81 to 14,220.71 million USD. Alliance data were retrieved from *SDC Platinum* for each firm and verified using *Lexis-Nexis* and *Dow Jones News Retrieval Service*.

Measures

Dependent variable

Firm performance. The effects of alliances on parent firms are multidimensional. Many empirical studies show that alliances may contribute to firm growth (Stuart, 2000), product innovativeness (Kotabe and Swan, 1995), reduced mortality (Mitchell and Singh, 1996), and facilitated organizational learning (Hamel, 1991). In this study, we have focused on the economic effect on parent firms for ease of generalization and comparison with previous research. To capture economic performance, researchers have adopted both perceptual measures and objective measures. Perceptual measures have the merits of measuring overall performance from subjective indices, such as partner's expectation and strategic considerations (Saxton, 1997). However, these perceptual measures are affected by different characteristics of managers and their positions in organizations. Such measures are more often subject to inconsistency and ambiguity compared to the objective measures; therefore, we chose to use an objective measure, return on assets (ROA)², to capture the economic performance of parent firms in alliances.

Independent variables

Own societal status. To measure a focal firm's societal status, we used rankings from *Fortune's* annual list of 'Most Admired Corporations' (for both America and the world) from 1988 to 2000. While other rankings such as *Fortune's* 'Global 500' firms and Standard & Poor's industry surveys

largely equate revenues and assets with reputation, *Fortune's* 'Most Admired Corporations' rankings are based on the average score of eight explicit criteria that capture a firm's social standing. These criteria include community and environmental responsibility, innovativeness, long-term investment value, financial soundness, quality of management, quality of products or services, ability to attract and keep talented people, and wise use of corporate assets, all rated on a scale of 0 (poor) to 10 (excellent). Given that *Fortune* uses a common set of criteria across different industries and that our sample includes firms from four industries, we believe that these rankings offer a more suitable basis for measuring societal status when compared with other measures that are industry specific.

Further, *Fortune's* 'Most Admired Corporations' rankings are evaluated by experts who are in a position to study and compare competitors in each field. These rankings are compiled each year from a survey of over 8,000 senior executives, outside directors, and financial analysts. These rankings provide public certification of a firm's societal status, and as a result the activities of these high-status players and their relations with others can have great impact on an industry. Thus, the national and global champions included on *Fortune's* 'Most Admired Corporations' rankings enjoy high societal status. Specifically, *own societal status* was coded as a dummy variable (1 = high societal status, 0 = low societal status) using either *Fortune's* 'America's Most Admired Corporations' for U.S.-based firms, or *Fortune's* 'World's Most Admired Companies' for foreign-based firms.

Fortune's 'America's Most Admired Corporations' rankings categorize firms into 'most admired' and 'least admired' based on the scores each firm received on a 10-point scale. We examined the scores from 1988 to 2000 and found that companies with a score of 4.10 or above are usually accredited with the title of 'Most Admired Company.' Accordingly, we treated all firms listed in a particular year with an overall score of 4.10 or above as firms with high societal status (*own societal status* = 1), while others (including those that are in our sample but not listed on *Fortune's* lists) were considered as firms with low societal status (*own societal status* = 0). We did not use a continuous measure of status here

² We experimented with the adjusted ROA of each firm in comparison to the industry ROA. The results have remained consistent.

because of the ambiguous nuances among different levels of status. Also, this dichotomous division can address our research issue quite well.

In our sample of 195 firms, 10 are foreign-based. Due to the fact that *Fortune's* 'The World's Most Admired Companies' ranking was not available before 1997, when coding a foreign-based focal firm's *own societal status* we had to use the 1997 list to map out firm status before 1997. To ensure the validity, we compared the variation between 1988 and 1997 in 'America's Most Admired Corporations.' It exhibits little variation, as out of the 40 ranked U.S.-based firms from the computer, pharmaceutical, petroleum, and steel industries that were listed in 1988, 31 were still ranked as high-status firms in 1997. More simply, 78 percent of the firms from the industries under study ranked in 1988 continued to be ranked in 1997. Further, a supplementary test showed that the drop of these 10 foreign-based firms from our sample does not affect our general findings.

Partner societal status. This was measured as a focal firm's total number of alliance partners with high societal status divided by the total number of alliance partners allied with the firm. The identification of high-status partners is similar to that of a focal firm using *Fortune's* 'Most Admired Corporations' rankings. Again, due to the unavailability of *Fortune's* 'The World's Most Admired Companies' rankings prior to 1997, we had to use the ranking of 1997 as a proxy for foreign-based partners from 1988 to 1996. To ensure the validity of this approach, we conducted similar checks to that for *own societal status*. The test on 150 randomly selected firms from our sample revealed that of the 340 foreign partners of these firms, only 43 were ranked as having high societal status prior to 1997, or 13 percent. This significantly reduces the chances that our measure would be severely distorted by using the 1997 global list as a proxy for previous years, although there is a chance of under-ranking foreign-based partners prior to 1997. For the years 1997 through 2000, *Fortune's* 'The World's Most Admired Companies' for each of those years was used to rank focal firms and their partners not based in the United States.

The SDC database reports complete data for new alliances announced each year, but not their termination date. Scholars have argued that the life span of alliances is no more than five years (Kogut,

1988). To ensure that we are capturing the status effects of existing alliances, we used a five-year moving window to calculate the ratio of high-status alliance partners for each firm. We also used a one-year lag, as this will allow us to more clearly identify the effect of alliances on the focal firm's performance. For example, for the year of 2000 we calculated both the total number of partners with high societal status and total number of alliance partners from 1995 through 1999.

Societal status asymmetry. We created this construct for the societal status difference between a focal firm and its partners, thereby capturing their status interactions. Specifically, a firm is said to have high societal status partners (coded as 1; otherwise as 0) if its partners' average societal status score is at or above 0.50, the midpoint between 0 and 1. *Societal status asymmetry* was then calculated as the absolute difference between a firm's own societal status and the above averaged partner societal status.

Own network status. We measured the network status using Bonacich's (1987) eigenvector centrality in firms' industry networks (Baum *et al.*, 2005; Jensen, 2003; Podolny, 1993). We constructed yearly network matrices for each industry based on the nondirectional alliance ties within each industry. For instance, there are 1,205 alliances formed by 41 focal firms in the computer industry within our study period, involving 583 different alliance partners; we constructed a yearly network matrix with 583×583 dimensions. Following Baum *et al.* (2005), we computed each firm's eigenvector centrality for each five-year network and assigned the value to the final year of each five-year period. For instance, the 1992–1996 network was used to measure a firm's centrality for 1996, the 1993–1997 network for positions in 1997, and so forth. The centrality calculation was conducted in Ucinet 6 (Borgatti, Everett, and Freeman, 2002).

Partner network status. We calculated partner network status by looking at the network status of a firm's alliance partners based on the above five-year moving window. As a firm may have multiple alliances each year, we used the summed eigenvector centrality for all alliance partners divided by the total number of alliance partners possessed by the focal firm.

Network status asymmetry.

We created this construct for the network status difference between a focal firm and its partners. Specifically, a firm is argued to have partners of high network status (coded as 1; otherwise as 0) if their average network status score is above the midpoint of the full scale. *Network status asymmetry* was then calculated as the absolute difference between a firm's own network status and the above averaged partner network status. For instance, if partners' average network status is at 20, above the midpoint of the status range in the network, then this firm is claimed to have alliance partners with high network status. If the focal firm's own network status is also high (above the midpoint), then the network status asymmetry between the firm and its partners is 0.

Resource complementarity. Prior research employed continuous measures derived from the Standard Industrial Classification (SIC) code system to operationalize business relatedness in corporate portfolios (Hoskisson *et al.*, 1993). The SIC approach, though with some limitations (Robins and Wiersema, 1995), is still considered as an effective way to map out the relatedness between firms (e.g., Villalonga and McGahan, 2005).

Our measurement of resource complementarity is based on a comparison between the focal firm's four-digit SIC code and that of its partners in alliance relations. We first counted the number of partners that have different SIC codes from the focal firm, and then divided that number by the total number of alliance partners. For example, if a firm has three partners among which one having the same SIC code as the firm and the other two having different SIC codes from the firm, the resource complementarity measure between the firm and its alliance partners will be 2/3 or 0.667. Again, we used a five-year moving window.

We also experimented with the approach of Wang and Zajac (2007) in measuring resource complementarity. Based on a pilot sample of the four industries, we found a correlation of 0.97 between their approach and our SIC-based measure.

Environmental dynamism. *Environmental dynamism* was measured as the unpredictability of the net sales of all firms in a four-digit SIC industry. We followed Bergh and Lawless's (1998)

approach and the basic equation was:

$$Y_t = b_0 + b_1t + a_t \quad (1)$$

where Y = industry sales, t = year, and a = residual. Dynamism was measured as the standard error of the regression slope coefficient divided by the mean of sales to create a standardized index of industry dynamism, and was calculated by regression analyses in which the variable *year* was regressed on the net industry sales variable (Keats and Hitt, 1988). Five years of data were used for each regression (e.g., net industry sales values for 1983 through 1987 were used to predict volatility in 1988). Data for four-digit industry sales were collected from COMPUSTAT. Larger values of unpredictability indicated greater environmental dynamism.

Control variables

Cumulative alliance numbers. These were calculated as the total number of existing alliances excluding the current year, in which firm performance is measured for each firm. We also used the five-year moving window to control for the path-dependence effect.

Business diversification. It has been well established that a firm's degree of business diversification affects its economic performance. We controlled for a firm's level of diversification by using the Jacquemin-Berry entropy measure (Jacquemin and Berry, 1979), which is defined as:

$$E = \sum_{i=1}^n P_i \ln(1/P_i) \quad (2)$$

where P_i is the share of the i_{th} segment in the total sales of the firm, which operates in n segments. The higher the index, the more diversified the firm.

Industry concentration. The extent of industry competition may also affect firms' risk orientation in their alliance formation. We controlled for *industry concentration*, which was operationally defined as the percentage of top-four firms' shipments in a firm's dominant industry.

Firm size. Size was measured as the number of employees (in thousands). A firm's size can affect its market power and its ability to dominate

partners in alliances. Large firms are likely to seek different types of characteristics in alliance partners than smaller firms (Hitt *et al.*, 2000).

Firm age. Age was measured by subtracting the incorporated year from the alliance event year. It is controlled because age difference will greatly change the ultimate result of the alliance (Baum *et al.*, 2000).

Year. To control for the unobserved heterogeneity during the study period, we coded the 13 years as dummy variables.

Analysis

Since we have multiple observations/alliances for each firm in our sample, we used the cross-sectional time-series regression models with fixed effect to control for the interdependence among clusters. Specifically, we used the command of ‘*XTREG*’ (with fixed effect) in the STATA 8 package. *XTREG* fits the cross-sectional time-series regression model, which is represented by the following equation:

$$R_{it} = X_{it} \times \beta + \mu_i + \varepsilon_{it} \quad (3)$$

where *R* is the ROA for firm *i* at time *t*; *X_{it}* is a vector of characteristics of firm *i* at time *t*, including resource complementarity, status, and control variables; *μ_i* is a time-invariant firm *i* effect, which can be treated as either fixed or random, respectively, in fixed- or random-effects models (equivalent to a firm-level dummy in fixed-effects models); and *ε_{it}* is an error term. Following Aiken and West (1991), we also mean-centered the variables before generating their interaction terms.

RESULTS

Table 1 reports the observation numbers, means, standard deviations, and correlations for all the independent variables and control variables. To save space, the correlations for the *year* dummy variable are not presented. Table 2 reports the results of hierarchical cross-sectional time-series regression on firm performance. Control variables such as *cumulative alliance number*, *firm size*, *firm age*, and *environmental dynamism* are entered in the equation first (Model 1). Since the inclusion

Table 1. Descriptive statistics and correlations

Variable	N.	Mean	S. D.	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Firm performance	2508	-0.10	0.86													
2. Cumulative alliance number	2535	5.25	19.86	0.07												
3. Firm size	2486	6.39	16.49	0.15	0.50											
4. Business diversification	2216	0.24	0.41	0.12	0.09	0.32										
5. Industry concentration	1807	0.37	0.10	0.03	0.08	-0.02	-0.17									
6. Firm age	2522	27.12	22.20	0.13	0.27	0.44	0.38	-0.17								
7. Environmental dynamism	2535	0.17	0.15	-0.18	0.17	0.07	-0.01	-0.08	0.11							
8. Resource complementarity	1024	0.75	0.31	-0.01	-0.01	-0.05	0.03	0.17	-0.06	-0.18						
9. Own societal status	2535	0.11	0.31	0.15	0.42	0.65	0.30	0.04	0.40	0.06	-0.03					
10. Own network status	2535	1.82	14.24	0.03	0.30	0.23	0.00	-0.06	0.18	0.19	-0.10	0.20				
11. Partner societal status	1023	0.18	0.24	-0.13	0.06	-0.02	-0.09	0.14	-0.11	0.10	-0.12	0.04	0.00			
12. Partner network status	2535	0.16	6.87	0.03	0.05	0.01	-0.04	0.05	0.02	0.07	-0.04	0.03	0.31	0.02		
13. Societal status asymmetry	2535	0.18	0.38	-0.09	-0.09	-0.15	-0.13	0.09	-0.20	0.08	-0.07	-0.25	-0.03	0.51	0.02	
14. Network status asymmetry	2535	0.09	0.29	-0.09	0.10	-0.05	-0.07	-0.02	-0.02	0.15	-0.01	0.02	0.13	0.10	-0.08	0.10

p < 0.05 for *r* > |0.05| and *p* < 0.01 for *r* > |0.07|

Table 2. Hierarchical regression analysis with fixed effect on firm performance

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Control variables							
Cumulative alliance number	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Firm size	0.003**	0.00	0.00	0.00	0.00	0.00	0.00
Business diversification	0.15**	0.12†	0.13†	0.14†	0.11	0.15*	0.12†
Industry concentration	0.04	0.35	0.10	0.09	0.19	0.11	0.23
Firm age	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Environmental dynamism	-0.43†	-0.67†	-0.79*	-0.71*	-0.80	-0.50	-0.78*
Predictor variables							
Resource complementarity		-0.24**	-0.18	-0.18*	-0.25*	-0.22*	-0.20*
Own societal status		0.13	0.15†	0.24**	0.15†	0.14†	0.19*
Own network status		0.00	0.00	0.00	0.00	0.00	-0.00
Partner societal status		-0.40***	-0.44**	-0.64***	-0.45**	-0.44**	-0.43**
Partner network status		-0.00	0.01*	0.00	0.00	0.00	0.00
Societal status asymmetry		0.06	0.09	0.16*	0.06	-0.00*	0.08
Network status asymmetry		-0.06	-0.06	-0.08	-0.08	-0.03	-0.07
Interactions							
Resource complementarity × Partner societal status		0.74*					
Resource complementarity × Partner network status		0.03*					
Resource complementarity × Own societal status			-0.48*				
Resource complementarity × Own network status			-0.01*				
Societal status asymmetry × Own societal status				-0.46*			
Network status asymmetry × Own network status				0.00			
Resource complementarity × Environmental dynamism					-1.10†		
Societal status asymmetry × Environmental dynamism						-1.32*	
Network status asymmetry × Environmental dynamism						1.66**	
Societal status asymmetry × Firm age							-0.004†
Network status asymmetry × Firm age							0.00
N	1487	718	718	718	718	718	718
F	7.92***	4.48***	4.23***	4.21***	4.24***	4.77***	4.00***
R ²	0.05	0.10	0.09	0.09	0.09	0.11	0.10

1. Year dummy variables were included, but not shown in the model. Dependent variable is return on assets.
 2. † $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

of all interaction terms in one model may increase multicollinearity, we added them into the regression models separately in the order of hypotheses testing. For example, Model 2 testifies the relationship stated in Hypothesis 1, Model 3 for Hypothesis 2, and so forth. This approach has also been widely adopted in prior research (e.g., Dowell and Swaminathan, 2006).

Hypotheses 1a and 1b argue that having alliance partners with both resource complementarity and

high societal and/or network status will be positively associated with a firm’s performance. In Model 2, the interaction effect of *resource complementarity* and *partner societal status* is positively significant at the $p < 0.05$ level, so does the interaction between *resource complementarity* and *partner network status*. Therefore, Hypotheses 1a and 1b are supported.

Hypotheses 2a and 2b argue that the degree of resource complementarity with alliance partners

will improve the performance of a firm with low societal/network status rather than that of a firm with high societal and/or network status. In Model 3, the interaction effect of *resource complementarity* and *own societal/network status* is negatively significant at the $p < 0.05$ level, supporting both Hypotheses 2a and 2b.

Hypotheses 3a and 3b argue that firms with a low societal and/or network status will benefit more from a large status asymmetry between alliance partners. In Model 4, the interaction effect between *societal status asymmetry* and *own societal status* is negatively significant at the $p < 0.05$ level, supporting Hypothesis 3a; however, the interaction between *network status asymmetry* and *own network status* is not significant, failing to support Hypothesis 3b and revealing potential differences between the two types of status.

In Hypothesis 4 we argue that a firm's high degree of resource complementarity with its alliance partners will bring more benefit to its performance in a stable environment than in a dynamic environment. In Model 5, the interaction term between *resource complementarity* and *environmental dynamism* is negatively significant at the $p < 0.10$ level, supporting Hypothesis 4.

Hypothesis 5a contends that a large asymmetry in societal status between the firm and its partners will benefit the firm more in a stable environment than in a dynamic environment. The interaction between *societal status asymmetry* and *environmental dynamism* in Model 6 is negatively significant at the $p < 0.05$ level, supporting Hypothesis 5a; however, in Hypothesis 5b we argue for a different effect of the interaction between *network status asymmetry* and *environmental dynamism*. Its positively significant effect at the $p < 0.01$ level in Model 6 suggests that a large asymmetry in network status between the firm and its partners will benefit the firm more in a dynamic environment than in a stable environment, in support of Hypothesis 5b.

In Hypothesis 6a we argue that a large asymmetry in societal status will significantly improve the performance of a young firm. In Model 7 the interaction between *societal status asymmetry* and *firm age* is negatively significant at the $p < 0.10$ level, supporting Hypothesis 6a. Hypothesis 6b argues for a similar relationship for network status asymmetry; however, the interaction between *network status asymmetry* and *firm age* is not significant,

and Hypothesis 6b is not supported. A summary of the hypotheses testing results is listed in Table 3.

To provide additional confirmation for the interaction terms, we also plotted them in Figure 1. To save space, we only presented four interaction plots. For instance, Panel A and Panel B report consistent findings with the regression table, supporting Hypotheses 1a and 1b. Similarly, Panel C provides support for Hypothesis 3a, and Panel D for Hypothesis 5b.

DISCUSSION

Our study examines the two seemingly different needs in alliance partner selection and relates them to parent firms' performance. Specifically, our study demonstrates that the economic rationale for resources and the sociological justification for status-seeking are not contradictory, but rather complementary to each other, which requires an integrated approach to better understand firm performance. Our integrative framework provides much-needed details and insights into the exchange mechanisms between resources and status. Our analyses on thousands of alliances in four industries over 13 years suggest that what matters in alliances not only rests on resource considerations, but also on institutional explanations. Further, a proper combination between resources and status predicts a higher performance. Contingencies as well as distinctive aspects of status also need to be considered when we apply the integrated approach, which offers improved explanatory power for predicting sustained benefits to alliance partners. In particular, having alliance partners with high resource complementarity will boost firm performance when those partners also have high network status. A firm's status is not at odds with the resource consideration in alliance relationships; intangible institutional benefits may affect firm performance by improving the resource flow in both quality and quantity.

Our study further suggests that resource complementarity also interacts with a firm's own status. Firms with low societal and/or network status will benefit more from partners with resource complementarity, while firms with high societal and/or network status will be less likely to do so. In addition to the benefits of associating with partners with an absolute level of status, our study also calls attention to the status asymmetry in alliance

Table 3. Summary of hypotheses and empirical conclusions

Hypothesis	Expected sign	Empirical conclusions
Hypothesis 1a: <i>Ceteris paribus</i> , a high degree of resource complementarity with alliance partners will be positively associated with a firm's performance when the partners also have high societal status.	+	Supported
Hypothesis 1b: <i>Ceteris paribus</i> , a high degree of resource complementarity with alliance partners will be positively associated with a firm's performance when the partners also have high network status.	+	Supported
Hypothesis 2a: <i>Ceteris paribus</i> , a high degree of resource complementarity with alliance partners will improve the performance of a firm with low rather than high societal status.	-	Supported
Hypothesis 2b: <i>Ceteris paribus</i> , a high degree of resource complementarity with alliance partners will improve the performance of a firm with low rather than high network status.	-	Supported
Hypothesis 3a: <i>Ceteris paribus</i> , a large asymmetry in societal status between a firm and its alliance partners will bring more benefit to the firm with low rather than high societal status.	-	Supported
Hypothesis 3b: <i>Ceteris paribus</i> , a large asymmetry in network status between a firm and its alliance partners will bring more benefit to the firm with low rather than high network status.	-	Not supported
Hypothesis 4: <i>Ceteris paribus</i> , a firm's high degree of resource complementarity with its alliance partners will bring more benefit to its performance in a stable environment than in a dynamic environment.	-	Supported
Hypothesis 5a: <i>Ceteris paribus</i> , a large asymmetry in societal status between the firm and its partners will benefit the firm more in a stable environment than in a dynamic environment.	-	Supported
Hypothesis 5b: <i>Ceteris paribus</i> , a large asymmetry in network status between the firm and its partners will benefit the firm more in a dynamic environment than in a stable environment.	+	Supported
Hypothesis 6a: <i>Ceteris paribus</i> , a large asymmetry in societal status between the firm and its partners will benefit a young firm more than an old firm.	-	Supported
Hypothesis 6b: <i>Ceteris paribus</i> , a large asymmetry in network status between the firm and its partners will benefit a young firm more than an old firm.	-	Not supported

relationships. A large status asymmetry, especially in terms of societal status, will bring more benefits for firms with low status, shedding light on the often-debated issue of who reaps the most benefit in alliance relations (Das *et al.*, 1998; Thye, 2000).

In addition to examining the interactions between the resource-based view and the institutional perspective, we have also identified some important moderating factors that may delineate their respective theoretical boundaries. Our study shows that a stable environment, rather than a dynamic environment, will facilitate the synergy creation between firms with resource complementarity in alliances. We differentiate two types of status: societal vs. network. Our study suggests that the two types of status can have their distinctive roles and unique boundary conditions. For

example, we find that because of the different nature of societal and network status, a large asymmetry in societal status will be beneficial in a stable environment, while a large asymmetry in network status will help firms in a dynamic environment.

Contributions

Our research makes several major contributions to the strategic management literature. First, it is one of the first attempts to integrate the resource-based view and the institutional perspective in addressing the consequences of alliance partner selections. Although each perspective has been intensively explored in the literature, an interaction mechanism between them has rarely been investigated. Our integrative approach suggests that alliance

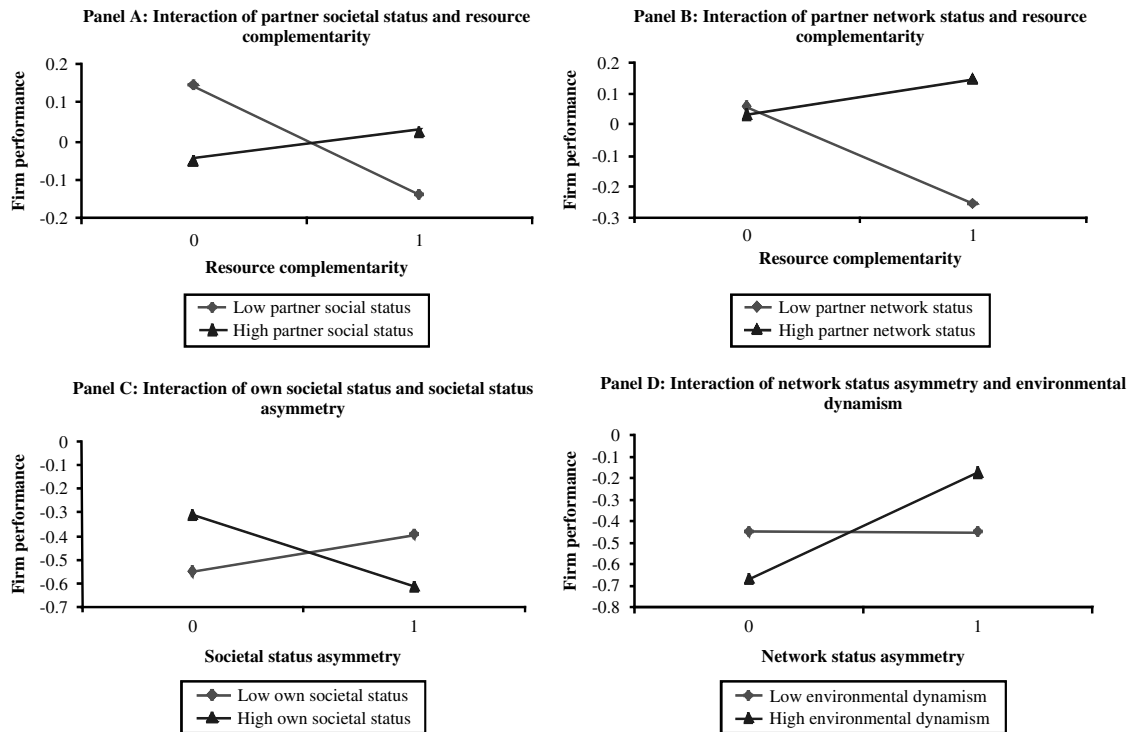


Figure 1. Interaction plots

behavior is a function of both resources and status seeking. Resource demand itself fails to capture the intercorrelated relationships among partners in the institutional environment. The status need interacts with the resource demand in alliances, and such interactions have a strong positive bearing on the ultimate performance for parent firms.

Second, our integrative approach reveals a possible source for firms to obtain valuable resources for sustained competitive advantage. Porter argued that RBV fails to answer ‘What is a unique resource? What makes it valuable? Why was a firm able to create or acquire it?’ (Porter, 1991: 108). Our integrated approach shows that status can also be a valuable and rare social resource and that it needs to be jointly considered along with financial and physical resources to better understand the performance consequences of firms’ partnering choices. In particular, young firms can have access to this valuable resource by allying with high-status partners.

Third, we have differentiated two important types of status (societal vs. network status) and highlighted their distinct roles under different contexts. Although research in sociology and strategy areas has widely acknowledged the importance of

status, a common understanding of what constitutes status is both lacking and sometimes even confusing. Our research contributes to a better understanding of these constructs and shows that it is important to differentiate them theoretically and empirically. While our study finds some shared nature between these two types of status in their interaction with resource complementarity, we also find different effects in certain conditions. Firms with a low societal status will benefit from a large status asymmetry, while firms with a low network status may not be able to extract value from a large status asymmetry. More interestingly, we find that a large asymmetry in societal status will have more benefits in a stable environment than in a dynamic environment, while a large asymmetry in network status will be more beneficial in a dynamic environment. These interesting findings show that future research along this direction will be warranted.

Limitations and directions for future research

Although this study has endeavored to advance the alliance literature, the findings should be considered in light of its limitations. The first limitation

is that certain more in-depth organizational factors, such as organizational learning, organizational fit, and compatibility (Inkpen and Beamish, 1997), are not included in this study due to the accessibility of data. A further study may include these variables and test their interactive effects on performance.

Second, only ROA is used to test the profitability of parent firms in this study. Other measures such as return on investment and Tobin's q can be adopted to further examine this synthesized model. Although other measures may provide additional insights to the study, we expect that the main effect will remain the same.

A third limitation lies in the sample selection. Although the firms are selected randomly from four industries in *Standard & Poor's Compustat (SPC)* database, SPC doesn't include many small firms in this database. At the same time, firms that do not have economic data for the full 13 years are excluded from this study. This will lead to potential truncation bias toward those firms that exited in this period.

Future research could examine the applicability of the integrated model in different settings, such as domestic and global environments. It will be interesting to extend both RBV and the institutional perspective into the international context and to examine their joint effect on alliance formation. Peng (2001) also proposed that more RBV work should be devoted to emerging economies by drawing on the rich insights of the institutional perspective. As institutional transition calls for significant changes in strategic choices, alliance formation pattern is expected to vary with the different institutional environments and resource demands across the world (Lin *et al.*, 2009).

CONCLUSION

This study departs from the existing research by integrating RBV and the institutional perspective in alliance partner selection processes, and investigates the interactive effects of resources and two important types of status on parent firms' performance. It shows that an in-depth understanding of the exchange mechanism between the needs of resource efficiency and social recognition is not only necessary, but also feasible through an integrated approach. These two needs, with their own boundary conditions, interact with each other and have a strong bearing on firm performance.

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