Growing and Sharing the Pie

A Study of Performance in Strategic Alliances

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Growing and Sharing the Pie: A Study of Performance in Strategic Alliances
ISBN: 978 90 8659213 5

Cover design: Breed Creative Communications
Printing: Print Partners Ipskamp, Enschede

Growing and Sharing the Pie
A Study of Performance in Strategic Alliances

Een wetenschappelijke proeve op het gebied van de Managementwetenschappen

Proefschrift

ter verkrijging van de graad van doctor
aan de Radboud Universiteit Nijmegen
op gezag van de rector magnificus prof. mr. S.C.J.J. Kortmann,
volgens besluit van het College van Decanen
in het openbaar te verdedigen op vrijdag 6 juni 2008
om 10.30 uur precies

door

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geboren op 8 februari 1973
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Chapter 1 Introduction to the Dissertation

Over the past several decades, we have witnessed enormous growth in alliance activity (Anand & Khanna, 2000; Dyer, Kale, & Singh, 2001; De Man & Duysters, 2005). Alliances seem to have established themselves as cornerstones for the competitive strategy of many firms, as they enable those firms to achieve objectives that otherwise would be difficult to realize. In spite of this unprecedented increase in alliance activity, strong empirical evidence indicates alliance performance has remained weak over the years (Harrigan, 1988; Judge & Dooley, 2006; Kogut, 1988a; Park & Ungson, 1997). To achieve superior alliance performance, firms need to overcome internal and external challenges by efficiently and effectively designing (Ring & Van de Ven, 1992) and managing (Ring & Van de Ven, 1994) their relationships. Furthermore, firms need to resolve the difficulties surrounding joint value creation and overcome problems in appropriating their share of this realized value (Jap, 2001a; Lavie, 2007). However, we show through a review of the alliance literature that researchers examining these issues produced fragmented, partial, and, in some instances, inconclusive findings. Therefore, the main aim of our research is to address these concerns and contribute to a comprehensive understanding of performance in an alliance context.

To achieve this objective, we adopt a theoretically rich approach, in that we contend that previous alliance research adopting a single theoretical focus may have overlooked important explanations. That is, we contribute to a much needed and better understanding of the relationships among alliance structure, alliance process, and alliance performance by demonstrating that a reconciliation of the structure and process perspectives provides a more complete explanation of alliance performance. Furthermore, while drawing on the power, learning, and behavioral perspectives, we extend previous alliance research by showing that the simultaneous examination of the relationships among cooperation, competition, alliance performance and firm performance contributes to a finer-grained understanding.

This first chapter introduces our research, and we organize it as follows. In Section 1.1, we present our definitions of a strategic alliance and performance. In Section 1.2, we elaborate on the empirical and theoretical motivation of this dissertation. Then, we develop our research framework and research questions in Section 1.3. In Section 1.4, we discuss the dissertation's theoretical and managerial relevance, and we present the scope of the research in Section 1.5. We conclude this chapter with an outline of the book in Section 1.6.

1.1 Definitions: Strategic Alliance and Alliance Performance

We define a **strategic alliance** as *a voluntary, long-term, contractual relationship between two firms to achieve mutual and individual objectives through the sharing of resources*. Our definition corresponds with other definitions (Ariño, De la Torre, & Ring, 2001 p. 110; Gulati, 1995a p. 621; Ireland, Hitt, & Vaidyanath, 2002 p. 413) and has several implications. First, once engaged in an alliance, two partnering firms remain independent organizational entities connected through an alliance contract. Second, due to their intent to share and exchange resources, parties become interdependent (Pfeffer & Salancik, 1978).

As firms desire one another's resources to achieve their individual objectives, goal attainment depends on firms working together toward some collective agenda (Eliashberg & Michie, 1984). Third, due to these reciprocal financial and organizational relationships, uncertainty and vulnerability surround alliances. For instance, within alliances, parties need to develop joint business propositions, share control and management, accept overlapping roles and responsibilities, engage in adaptation through mutual cooperation, install internal and proactive monitoring mechanisms, and develop long-term incentive systems (Heide, 1994). Sharing of these tasks and activities creates uncertainty and vulnerability. Fourth, our definition implies that firms can dissolve a strategic alliance at a time convenient to them. For instance, a firm may terminate an alliance by itself when it has achieved its objectives, or both firms together may decide to end the alliance. In summary, our definition suggests that strategic alliances are transitional organizational forms established by two firms to achieve objectives that would otherwise be difficult to realize.

In this study, we define **alliance performance** as *the degree of accomplishment of the partners' intentional and emergent objectives*.[1] Defining alliance performance is a difficult endeavor with many potential problems (Anderson, 1990; Ariño, 2003; Geringer & Hebert, 1991; López-Navarro & Molina-Morales, 2002; Olk, 2002). To enable researchers to compare our research with past and future work, it is necessary to be explicit about three of these problems: (1) level of analysis, (2) process or outcome orientation, and (3) performance dimensions.

First, our conceptual definition captures performance at the dyadic level. Researchers have proposed theoretical models and tested hypotheses with alliance performance while adopting different levels of analysis. Focusing on the firm as level of analysis, researchers used, for instance, stock market responses (Anand et al., 2000; Kale, Dyer, & Singh, 2002) and firm profitability (Hagedoorn & Schakenraad, 1994) as outcome variables. Several researchers adopted a portfolio perspective and aimed to provide explanations with respect to alliance portfolio performance (Heimeriks & Duysters, 2007), whereas other researchers adopted a network perspective (Elfring & Hulsink, 2003; Elfring, & Hulsink, 2007; Gulati, Nohria, & Zaheer, 2000). We focus on dyadic performance, which differs from the firm, portfolio, and network levels of analysis, because we capture performance with respect to both partner firms involved in the relationship. This conceptualization is consistent with our primary objective, which is to provide explanations of performance within an alliance context. Moreover, a dyadic perspective enables us to theorize and conduct tests of relationships among antecedents and alliance performance (Hypothesis 1). Furthermore, we also focus on the relative performance firms derive through an alliance, which we refer to as firm performance imbalance. Consequently, a dyadic view enables us also to examine the relationships among cooperation, competition, alliance performance, and firm performances derived through the alliance (Hypotheses 2–4).

[1] Here, our focus is on the conceptual definition. In Section 6.3, we present the operational definition.

Second, our definition captures performance outcomes rather than the performance of alliance processes (Kumar & Nti, 1998). For instance, previous alliance research captured performance with process-oriented concepts, such as relational norms, commitment, and trust (Büchel & Thuy, 2001; Bucklin & Sengupta, 1993; Cullen, Johnson, & Sakano, 2000). Other researchers adopted an outcome-orientation with variables such as joint goal attainment, alliance duration, and alliance termination (Barkema, Shenkar, Vermeulen, & Bell, 1997; Geringer et al., 1991; Park & Russo, 1996; Park et al., 1997; Parkhe, 1993a). We adopt an outcome orientation with a focus on goal attainment, asserting that firms enter relationships to achieve objectives. Post-formation processes are a means to support the realization of objectives, but they do not constitute a goal. We also acknowledge that firms with particular objectives during the formation stage may change or replace those with new objectives as the alliance unfolds (Ariño, 2003; Olk, 2002).

Third, several researchers conceptualized alliance performance with a holistic approach (Kale et al., 2002; Kauser & Shaw, 2004; Yan et al., 2001), using process and outcome indicators to capture goal attainment across performance dimensions, spill-over effects, and overall satisfaction. Other researchers captured alliance performance by referring to specific performance dimensions, such as financial (Blankenburg Holm, Eriksson, & Johanson, 1999; Lambe, Spekman, & Hunt, 2002), learning (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004; Kale, Singh, & Perlmutter, 2000), and strategic (Aulakh, Kotabe, & Sahay, 1996; Child & Yan, 2003). We conceptualize performance without making an explicit distinction among the various performance dimensions, as previous alliance research did not indicate the need to develop hypotheses with respect to each dimension (see Chapter 2 and 4). However, for our operational definition we capture performance with three distinct dimensions: financial, learning, and strategic (see §6.3), enabling us to contrast theoretical explanations.

1.2 Empirical and Theoretical Motivation

The strategic value of alliances is apparent in the context of rapidly growing and changing markets, global competition, network organizations, and dynamic, complex, expensive technologies (Contractor & Lorange, 2002). Firms view alliances, as instruments that they can deploy to achieve objectives that otherwise would be difficult to achieve (see Box 1.1). For instance, strategic alliances may reduce production and transaction costs (Hennart, 1988), provide a means to obtain, exchange, and harvest knowledge (Inkpen, 2000; Inkpen & Dinur, 1998; Lubatkin, Florin, & Lane, 2001), shift external dependencies to the firm's advantage (Pfeffer et al., 1978), reduce operational and strategic risks (Kogut, 1988b), help access valuable and complementary resources (Das & Teng, 2000b; Dyer & Singh, 1998), offer legitimacy and reputation effects (Baum & Oliver, 1991; Stuart, 2000), help the firm engage into group-to-group competition (Gimeno, 2004), and accelerate internal growth (Grant & Baden-Fuller, 2004). Thus, adopting collaborative strategies enables firms to focus on their core competences and develop competitive advantages (Dyer et al., 1998).

The importance of strategic partnerships is supported by empirical reports showing that the number of alliances used by firms during the past two decades has been continuously increasing. Kang and Sakai (2001) found that the number of alliances was six times as high in 1999 than a decade earlier. Duysters, De Kok, and Vaandrager (1999) reported a similar exponential increase of strategic technology alliances during the period 1970 to 1996. Anand and Khanna (2000) reported that during 1990–1993, companies announced more than 9000 alliances just in the U.S. manufacturing sector. On the basis of their research, Dyer, Kale, and Singh (2001) concluded that in 2001, the top 500 global business had an average of 60 major alliances each. De Man (2005) reported that within the period 1998 to 2002, high-tech companies announced a substantial number of strategic alliances, including those by IBM (168), Cisco (56), Eli Lilly (40), and Philips-EU (61). Another report indicated that multinational firms such as BP, Amoco, Dow Chemical, and Sony maintained more than 100 alliances in their portfolios (Bamford & Ernst, 2003). Harbison and Pekar (1998) found that the percentage of annual revenue that the 1000 largest U.S. companies earned from alliances grew from less than 2 percent in 1980 to 19 percent by 1996 and was expected to grow to 35 percent by 2002. Moreover, with respect to the future, survey research results indicated that managers consider strategic alliances primary growth vehicles (Schifrin, 2001). Together, these illustrations show that in the twenty-first century, firms are not likely to create value on a stand-alone basis (Contractor et al., 2002) and that the way business is conducted is based on partnerships (Castells, 2000).

Paradoxically, the increased focus on and use of strategic alliances by firms is paralleled by empirical research indicating moderate to high alliance failure rates over the years (Hoang & Rothaermel, 2005; Kogut, 1988a; Pekár & Allio, 1994). More specifically, researchers reported failure rates as high as 70 percent (Harrigan, 1988). Franko (1971) and Killing (1983) reported, respectively, 24 percent and 30 percent premature alliance dissolutions. In another study, Porter (1987) considered 33 randomly chosen U.S. firms and disclosed a dissolution rate of 50.3 percent during the period 1950–1986. Spekman et al. (1996), as well as Kok and Wildeman (1997) and Dacin and Hitt (1997), found a failure rate of strategic alliances of approximately 60 percent. Park and Ungson (1997) investigated joint venture termination and found in a U.S.–Japanese sample a dissolution rate of 43 percent during 1979–1995. De Man (2005) reported an average failure rate of 52 percent across a sample of 140 European and U.S. firms. Together, these reports indicated that though firms consider alliances attractive alternatives to achieve their objectives, they are subject to failure and premature dissolution.

From an empirical perspective, a clear need exists to study strategic alliances, because the necessity of achieving competitive advantage through partnerships is paralleled by high failure rates. As firms enter alliances, they face considerable challenges from external dynamics, including changing market conditions, industry dynamics, and new technological developments, as well as internal dynamics, such as strategic shifts, opportunistic behavior, or failures to comply with contract obligations. To achieve superior alliance performance, firms

need to overcome these challenges by efficiently and effectively designing and managing their relationships. However, observing the high failure rates, it seems that firms are not sufficiently prepared to deal with these challenges.

Box 1.1 Empirical Motivation: Two Business Illustrations

Pixar–Disney Alliance (1991–2005): Pixar combines creative and technical artistry to create stories in the medium of computer animation and has been responsible for innovations in the application of computer graphics for filmmaking. Disney has a long history of developing, producing, and distributing animated films. In May 1991, Pixar entered into an alliance with Disney to produce three computer-animated films to be marketed by Disney. In February 1997, Pixar entered into another agreement (which superseded the first), whereby Pixar and Disney agreed to produce and distribute five feature-length motion pictures. The movies were *Toy Story* (1995), *A Bug's Life* (1998), *Toy Story 2* (1999), *Monsters, Inc.* (2001), *Finding Nemo* (2003), *The Incredibles* (2004), and *Cars* (2005). Pixar and Disney agreed to: co-finance the production, co-own the pictures, co-brand the pictures, share equally in the profits, and share equally in the profits from related merchandise after recovery of all marketing and distribution costs, a distribution fee paid to Disney, and other fees and costs. Although financially very successful, the alliance was subject to tensions. The views of the two CEOs (i.e., Michael Eisner and Steve Jobs) clashed, profits were asymmetrically appropriated (i.e., 68–32 in favor of Disney), and bargaining power shifted (i.e., Pixar gained power). Despite the successes, in 2005 Pixar ended renegotiations with Disney. After fulfilling its contractual obligations, Pixar intended to retain full ownership of its future productions and, as of 2006, began discussions with other distributors. However, in mid-2006, Disney acquired Pixar for approximately $7 billion.

Takeda–Eli Lilly Alliance (1999–2006): Eli Lilly, a U.S.-based company, creates and delivers innovative medicines that enable people to live longer, healthier, and more active lives. Lilly's pipeline is the strongest in the pharmaceutical industry with numerous best-in-class products. Takeda, a Japanese firm, is a research-based company with a focus on pharmaceuticals and one of the industry's leaders worldwide. In 1998, Takeda chose Eli Lilly as the co-promotion partner of its newly formed, U.S.-based company. As a part of the contractual agreement, Takeda's U.S. company co-promoted Lilly's select insulin product starting from sometime in 1999 and received fees based on net sales of the products as compensation from Lilly. The alliance also covered the distribution of Takeda's insulin sensitivity enhancer, ACTOS™. Takeda and Eli Lilly expended substantial efforts to overcome cultural barriers and exploit resources. They agreed to share costs and revenues equally. Since ACTOS became available in the United States in 1999, physicians have issued more than 3,512,000 prescriptions. The alliance turned out to be success, and in December 2003, Eli Lilly and Takeda announced that they had signed an agreement for joint development and co-marketing of another diabetes medicine in the Japanese market. In 2006, Takeda acquired the joint venture, as agreed upon in the original agreement.

Sources: Publicly available information, companies' Web sites, and companies' press releases.

Implications for this study

1. **Firms design initial alliance structures that foster or hamper alliance success**. Both alliances are characterized by synergetic resources, hybrid compensation structures, and safeguarding mechanisms. Together, these mutually supportive formation conditions contributed to the alliances' strengths.
2. **Firms develop post-formation processes that foster or hamper alliance success.** Whereas Takeda and Eli Lilly bridged cultural differences, working toward a healthy relationship, Pixar and Disney developed a hostile relationship. Alliance processes may stimulate/hamper parties' willingness and ability to change.
3. **Firms need to find a balance between cooperation and competition.** Both alliances are characterized by hybrid compensation, providing parties with incentives to contribute to achieving individual and joint objectives. The ex-ante distribution of anticipated rewards affects alliance development and outcomes.
4. **Superior alliance performance does not imply superior firm performance.** Whereas in the Takeda–Eli Lilly alliance, each firm received equal profits, in the Pixar–Disney alliance, Disney received more profits than Pixar. Alliance success does not imply that partners receive equitable shares.

Theoretical Motivation

To date, academic research has produced a substantial body of knowledge to aid managers with answers to their question and problems. However, a comprehensive understanding still is lacking in alliance literature due to the partial, fragmented, and sometimes inconclusive findings. The alliance field is relatively fragmented and subject to disciplinary, theoretical, and topical diversity (Osborn & Hagedoorn, 1997; Smith, Carroll, & Ashford, 1995). For instance, alliance performance has emerged as an important topic within marketing (Dwyer,

Schurr, & Oh, 1987), international business (Buckley & Casson, 1988), and strategic management (Hennart, 1988; Kogut, 1988b). Within these various disciplinary fields, researchers have used a variety of theoretical perspectives, ranging from economic theories (e.g., transaction cost economics) to behavioral theories (i.e., relational governance) to explain performance (for overviews, see e.g. Barringer & Harrison, 2000; Child & Faulkner, 1998; Gulati, 1998; Osborn et al., 1997; Robson, Leonidou, & Katsikeas, 2002). Furthermore, researchers examined a variety of topics, such as alliance formation (Colombo, 2003; Eisenhardt & Schoonhoven, 1996; Hagedoorn, Roijakkers, & Van Kranenburg, 2006), alliance management (Das & Teng, 2000a; Ireland et al., 2002), alliance development (Ariño & De la Torre, 1998; Doz, 1996; Ring et al., 1994; Zajac & Olsen, 1993), and alliance performance (Ariño, 2003; Geringer et al., 1991; López-Navarro et al., 2002).

According to this body of knowledge, a plethora of factors can contribute to or inhibit the achievement of superior performance (Hoffmann & Schlosser, 2001; Robson et al., 2002; Spekman, Isabella, MacAvoy, & Forbes, 1996), including environmental dynamics (Kogut, 1989l; Koza & Lewin, 1998), cultural distance (Barkema, Bell, & Pennings, 1996), alliance scope (Khanna, 1998; Khanna, Gulati, & Nohria, 1998), contractual design (Hagedoorn & Hesen, 2007; Mendi, 2005), governance form decisions (Sampson, 2004a), alliance instability (Das et al., 2000a; Yan, 1998), management control (Yan & Gray, 1994; Yan et al., 2001), relational aspects (Ariño et al., 2001), and learning processes (Inkpen, 2000; Lane, Salk, & Lyles, 2001). Confronted with this diversity, we need theory development and testing that focuses on the properties that distinguish strategic alliances from other organizational entities and that aims to align theoretical perspectives. Consistent with previous alliance research, we argue that (1) structure and process (Bell, Den Ouden, & Ziggers, 2006; Contractor, 2005; Hennart, 2006) and (2) cooperation and competition (Lavie, 2007; Ouchi, 1980; Tiessen & Linton, 2000) represent two themes that are relatively understudied but may advance understanding of performance in an alliance context.

Structure and Process

A comprehensive model reconciling structure and process explanations with respect to performance is currently lacking within the alliance literature but is much needed (Nooteboom, 2004; Sobrero & Schrader, 1998). A theoretical model that specifies relationships among alliance structure, alliance process, and alliance performance, while acknowledging the complexities surrounding alliances, would constitute a major contribution to alliance literature. For instance, Contractor (2005 p. 128) stated that "The two approaches, structure and process, inevitably go hand in hand, at both the pre-formation stage, as well as afterwards in the management of the alliance." Building on our review of the literature (see Chapter 2), we posit that conceptual and empirical work to date provides sufficient insights to guide a reconciliation that can overcome the limitations and critiques pertaining to the structure and process perspectives.

Researchers adhering to the structure perspective have advocated that an efficient alliance structure curbs exchange hazards and therefore positively affects alliance performance (David & Han, 2004; Hennart, 2006). Initially, drawing on transaction cost economics logic (Williamson, 1975; Williamson, 1981), the causes and consequences of various governance forms, such as equity and non-equity arrangements (Hennart, 1988; Pisano, 1989), were examined. More recently, researchers adopted broader conceptualizations of alliance structure and focused on contracts (Ariño & Reuer, 2004; Hagedoorn et al., 2007; Mendi, 2005) and interfirm characteristics resulting from partner selection (Douma, Bilderbeek, Idenburg, & Looise, 2000; Saxton, 1997). For instance, some researchers used game theory to develop a better understanding of the consequences of different pay-off structures (Parkhe, 1993a; Zeng & Chen, 2003), whereas others used a control perspective to examine the relationships among informal and formal control, and alliance performance (Carson, Madhok, & Wu, 2006; Lui & Ngo, 2004; Luo, 2002a; Yan et al., 2001). Notwithstanding their valuable contributions, studies solely drawing on a structure perspective are not without critiques and limitations.

Researchers using theories, such as transaction cost economics and game theory, focused on different aspects of an alliance structure, resulting in fragmentized and partial explanations with respect to alliance performance. For instance, though empirical studies demonstrated that firms design alliance structures consistent with transaction cost economics predictions (Gulati & Singh, 1998), performance implications are often inferred (Reuer & Ariño, 2002; Sampson, 2004b). In addition, research contributing to the structure perspective often adopted a firm-level perspective and thus failed to recognize the consequences of one-sided decisions on joint value creation (Madhok & Tallman, 1998; De Wulf & Odekerken-Schröder, 2001). Some academics also criticized the structure perspective for its overly deterministic nature (De Rond & Bouchikhi, 2004; De Wulf et al., 2001). That is, proponents of the structure perspective assumed that if unforeseen circumstances emerged, structural safeguards should be adequate to enable firms to deal with these contingencies. Refuting this form of determinism, researchers demonstrated that firms actually are quite successful in responding to new circumstances (Dussauge, Garrette, & Mitchell, 2000; Reuer & Ariño, 2002).

Therefore, to advance theory development, proponents of the process perspective have argued that post-formation processes are critical to achieving superior alliance performance (Doz, 1996; Ring et al., 1994; De Rond et al., 2004; Salk, 2005; Zajac et al., 1993). An alliance represents a purposeful entity, able to learn and adapt over time to changing circumstances (Reuer, Zollo, & Singh, 2002). Moreover, alliances are long-term exchange relationships, which parties cannot fully specify in advance (Ring et al., 1994), because the costs to design an alliance structure that anticipates all possible future contingencies extend beyond the possible benefits of this design (Macneil, 1980). Post-formation processes entail continuous cycles of goal formulation, implementation, evaluation, and adaptation based on what the partner firms learn (Zajac et al., 1993). That is, parties' willingness and ability to make modifications to the relationship mitigate concerns about inertial forces, which hamper alliance performance.

Although alliance process research redirected scholars' attention from the structure perspective toward post-formation processes related to the "soft side" of alliances, the process perspective is not without critics (Contractor, 2005; Hennart, 2006). Alliance processes constitute a critical factor in explaining alliance performance (Doz & Hamel, 1998; Hamel, 1991), but advocates of the process perspective may have overvalued the importance of post-formation processes. That is, neglecting the arguments put forward by advocates of the structure perspective inhibited the development of a comprehensive theory of alliance performance. For instance, empirical research produced evidence that initial alliance conditions function as an architecture that imprints on post-formation processes (Doz, 1996; Gundlach, Achrol, & Mentzer, 1995; Zaheer & Venkatraman, 1995). In summary, conceptual (Das & Teng, 2002; Kumar & Nti, 1998; Ring et al., 1994) and empirical (Ariño et al., 1998; Doz, 1996; De Rond et al., 2004) work examining post-formation processes made relevant contributions with respect to alliance performance. However, a thorough understanding of the relationship between alliance structure and post-formation processes is still lacking.

Several conceptual and empirical studies aimed to address these limitations of the structure and process perspectives, and researchers aligned alliance structure and alliance process variables in their theoretical models to develop and test explanations of superior alliance performance. For instance, drawing on the relational governance, management control, organizational learning, and power perspectives, empirical studies incorporated relational variables into their hypotheses and examined simultaneously the impact of structure variables, such as contract completeness (Lee & Cavusgil, 2006; Luo, 2002a), management control (Aulakh et al., 1996; Ding, 1997), and non-recoverable investments (Jap, 1999; Jap & Anderson, 2003), on alliance performance. Other researchers adopted a holistic approach and examined relationships between various structure and process variables (Ariño et al., 1998; Doz, 1996; Jap, 1999; Lane & Lubatkin, 1998). However, this stream of alliance literature is characterized by partial and difficult-to-compare insights, as researchers focused on different governance forms, adopted different conceptual and operational definitions, used different levels of analysis, and hypothesized different relationships between the variables of interest.

To conclude, in addition to the empirical necessity to study alliances, we also observe that from a theoretical point of view, the need exists to better understand the relationships among alliance structure, alliance processes, and alliance performance. Neither the structure nor the process perspective alone provides sufficient insight into performance in an alliance context. Advocates of the structure perspective downplayed the function of post-formation processes, while proponents of the process perspective may have overvalued the role of alliance processes at the expense of alliance structure. In this dissertation, we build on prior alliance research, address existing concerns, and reconcile the structure and process perspectives to develop and test a theoretical model.

Cooperation and Competition

Although early work on alliances acknowledged that the tension between cooperation and competition within temporary interorganizational exchange relationships is a distinctive property, compared with intra-organizational analysis (Buckley et al., 1988; Evan, 1965; Jarillo, 1988; Klein, Crawford, & Alchian, 1978; Litwak & Hylton, 1962; West, 1959), to date, understanding of value creation and value appropriation remains limited. For instance, Zeng (2003, pp. 587-588) argued that "an overarching theoretical framework is needed to guide researchers in studying the complex interdependence between cooperation and competition." More recently, Lavie (2007) suggested that to advance understanding of firm performance derived through an alliance, we must distinguish between value creation and value appropriation mechanisms. These illustrations underpinned our observation that we (still) need an in-depth understanding of cooperation and competition. However, we also observe that though extant research has been conducted, the empirical findings are difficult to compare and interpret due to the theoretical fragmentation and questionable assumptions.

Drawing on the results of our literature review (see Chapter 4), we argue that, to the best of our knowledge, no theoretical perspective[2] alone can provide a coherent set of explanations that incorporate value creation and appropriation mechanisms and simultaneously specify relationships between these mechanisms and the alliance and firm performances derived from the relationship. For instance, alliance researchers drawing on transaction cost economics (TCE) argued that the alignment between governance forms and transaction characteristics should lead to efficient exchanges between firms (Williamson, 1975). However, researchers using TCE logic approached the decision to cooperate from one side of a dyadic relationship (Weitz & Jap, 1995; De Wulf et al., 2001) and focused on cost minimization (i.e., appropriation) rather than value creation (Madhok et al., 1998; Weitz et al., 1995). Therefore, TCE explanations are limited. Researchers drawing on game theory argued that the pay-off structure determines parties' decision-making process. That is, within an alliance setting, different pay-off structures stimulate either ex-post cooperation or competition between partner firms (Zeng et al., 2003). However, game theorists adopted a dilemma approach with respect to cooperation and competition and assumed that the pay-off structure is ex-ante known (Zeng et al., 2003) and that actors are hyper-rational (Sebenius, 1992); hence, game theory explanations only provided a partial understanding of cooperation and competition. We argue that to address and overcome such theoretical fragmentation, we need to develop a coherent theoretical model that specifies the relationships among cooperation, competition, alliance performance, and firm performance.

[2] Alliance researchers have used various theoretical perspectives to examine the relationship between cooperation and competition within an alliance context, among which transaction cost economics (Gulati et al., 1998; Parkhe, 1993a), game theory (Gulati, Khanna, & Nohria, 1994; Parkhe, 1993a; Song & Panayides, 2002; Zeng et al., 2003), the resource-based view (Barney & Arikan, 2001; Eisenhardt et al., 1996; Lavie, 2006), equity theory (Adams, 1965; Scheer, Kumar, & Steenkamp, 2003), organizational justice theory (Johnson, Korsgaard, & Sapienza, 2002; Kumar et al., 1998b; Luo, 2005), the power perspective (Blankenburg Holm et al., 1999; Pfeffer et al., 1978), the learning perspective (Hamel, 1991; Holmqvist, 2003; Kumar et al., 1998b; Larsson et al., 1998; Lubatkin et al., 2001), and the behavioral perspective (Aulakh, Kotabe, & Sahay, 1996; Kauser & Shaw, 2004; Uzzi, 1996).

With respect to empirical research, the findings also have been relatively fragmented and inconclusive. For instance, to the best of our knowledge, only two alliance studies have presented empirical findings that included variables pertaining to cooperation, competition, alliance performance, and firm performance derived from the relationship (i.e., Child et al., 2003; Yan et al., 2001). Other researchers adopted a dyadic level of analysis and examined the relationships among cooperation, competition, and alliance performance using variables such as power imbalance, conflict, partner fit, anticipated pay-off, trust, commitment, goal congruence, and bilateral investments (Bucklin et al., 1993; Demirbag & Mirza, 2000; Jap et al., 2003). Furthermore, adopting a focal firm perspective, researchers examined the relationships among cooperation, competition, and firm performance using variables such as a firm's network resources, the firm's relative bargaining power, normative contracting, and bilateral dependence (Buchanan, 1992; Lavie, 2007; Lusch & Brown, 1996). These examples illustrate that the different levels of analysis and different conceptualizations of cooperation and competition make the empirical findings difficult to compare.

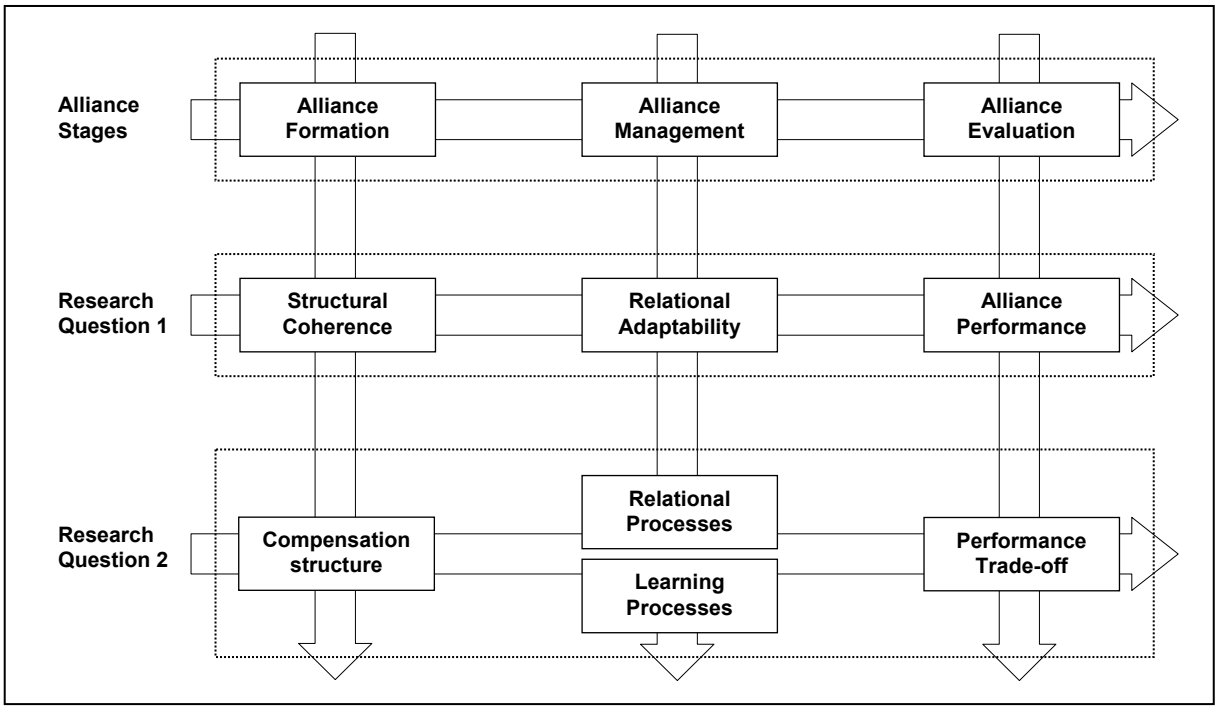
More important, we also conclude that a substantial amount of empirical research was built on implicit, yet questionable, assumptions. Researchers adopting a dyadic level of analysis implicitly assumed that efforts by firms to create value did not affect the degree to which firms were able to appropriate value. For instance, Judge and Dooley (2006) found that opportunistic behavior negatively related to alliance performance, and trustworthiness and contractual safeguards negatively affected opportunistic behavior. However, their research did not investigate whether opportunistically behaving firms appropriated value at the expense of their counterparts. In contrast, research focusing on the firm level of analysis assumed that efforts by firms to appropriate value did not affect the degree to which the firms could jointly create value. For instance, Chen (2004) found that a firm's absorptive capacity and partner interaction (e.g., trust) positively influenced a firm's learning performance, but he did not examine whether an imbalance in parties' absorptive capacities negatively affected joint knowledge creation and exchange.

From a theoretical point a view, the need exists to gain a better understanding of value creation and appropriation in an alliance context. Theoretical fragmentation and difficult-to-compare empirical research create the need for a theoretical model that makes clear distinctions among value creation mechanisms, value appropriation mechanisms, alliance performance, and firm performance derived from an alliance. The theoretical model should specify the relationships between these variables, be built on a solid theoretical foundation, and contain empirically testable hypotheses. In this dissertation, we build on prior alliance research, address existing concerns, and align the power, learning, and behavioral perspectives to develop and test such a theoretical model.

1.3 Research Framework and Research Questions

Confronted with empirical and theoretical motivations to study performance in an alliance context, we decided to transform the two research themes, structure–process and cooperation–competition, into two research questions and organize them within one research framework (see Figure 1.1). One major advantage is that it enables us to develop a coherent set of explanations. In addition, it allows us to theorize on not only alliance performance but also the relationship between alliance performance and firm performance, while still acknowledging that antecedents that explain performance may pertain to different alliance development stages. Furthermore, our research framework enables us to reconcile and align various theoretical perspectives to increase its explanatory power with respect to performance.

Figure 1.1 Research Framework



We pose our two research questions against the background of three alliance development stages (Brouthers, Brouthers, & Harris, 1997; Das et al., 2002; Niederkofler, 1991). During the alliance formation stage, firms decide to form an alliance to achieve their objectives (Lavie & Rosenkopf, 2006) and then select a partner (Dacin, Hitt, & Levitas, 1997), engage in negotiation (Rao & Schmidt, 1998), and formalize the initial alliance design (Ariño et al., 2004). As the alliance becomes operational, parties need to direct their focus toward alliance management (Ireland et al., 2002). In this post-formation stage, parties make decisions with respect to building post-formation processes (Brouthers & Bamossy, 2006), which primarily pertain to relational (Ariño et al., 2001) and learning (Lubatkin et al., 2001) processes. Finally, as the alliance unfolds, firms assess their alliance with respect to equity (i.e., fairness), adaptability (i.e., flexibility), and efficiency (i.e., outcomes) (Ariño et al., 1998; Doz, 1996; Kumar & Nti, 1998). However, consistent with our definition of performance (see §1.1), we adopt an outcome orientation.

Research Question 1: Alliance Structure and Alliance Processes

We argue that to develop a coherent set of explanations of alliance performance, we must reconcile the structure and process perspectives. That is, we postulate that coordination between two partnering firms constitutes a unique characteristic of alliances, because firms cannot rely on a price or hierarchical mechanisms to organize their exchange relationship (Dwyer et al., 1987; Ouchi, 1980). Consequently, firms depend on other coordination and enforcement mechanisms; we propose that structural coherence and relational adaptability may fulfill these functions (see Figure 1.1). Structural coherence is defined as the degree to which an initial alliance structure constitutes a constellation of mutually supportive structural safeguards, including governance form, contractual provisions, and interfirm characteristics (Dussauge & Garrette, 1995; Miller, 1986). Relational adaptability pertains to parties' willingness and ability to make modifications to an ongoing relationship, without resorting to changes in the formalized alliance structure (Aulakh & Madhok, 2002; Doz, 1996; Hallen, Johanson, & Seyedmohamed, 1991; Heide & John, 1992). We draw on the structure perspective to understand why firms erect structural safeguards and how these safeguards protect the relationship against exchange hazards. In addition, we use the process perspective to understand why firms invest time and resources to build process safeguards and how these safeguards may foster relational adaptability. Building on these insights, the limitations of the structure and process perspectives, and recommendations of previous alliance studies (Contractor, 2005; Nooteboom, 2004; Sobrero et al., 1998), we contend that a reconciliation of structure and process explanations would increase understanding of the relationships among alliance structure, alliance processes, and alliance performance. Hence, our first research question:

Research Question 1: ***What is the relationship among alliance structure (ex-ante), alliance processes (ex-post), and alliance performance?***

Research Question 2: Cooperation and Competition

For the second research question, we argue that to develop a coherent set of explanations of performance in an alliance context, we must examine the relationships among cooperation, competition, and the performance trade-off (see Figure 1.1).[3] We view cooperation as parties' efforts directed toward implementing ex-ante and ex-post value creation conditions and processes (Das & Teng, 2003). Cooperation depicts firms' decisions that result in efficient and effective alliance design and management (Robson et al., 2002), by minimizing transaction costs and maximizing value (Madhok, 2001; Madhok et al., 1998). Competition pertains to parties' efforts directed toward value appropriation conditions and processes, with the goal of extracting value from the alliance, if necessary at the expense of counterparts.

[3] Researchers have referred to the tension between cooperation and competition as the "joint venture management dilemma" (Schaan, 1988), the "fundamental problem of cooperation" (Ouchi, 1980), the "joint venture dilemma" (Tiessen et al., 2000), "co-opetition" (Brandenberger & Nalebuff, 1996), the "inter-organizational learning dilemma" (Larsson, Bengtsson, Henriksson, & Sparks, 1998), the "cooperation dilemma" (Zeng et al., 2003), and the "cooperative dilemma" (Zeng, 2003).

It is important to note that whereas cooperation and competition refer to value creation and value appropriation mechanisms, alliance performance and firm performance refer to the degree to which parties have been able to create value jointly and appropriate a share of this realized value. We refer to this relationship between realized value and appropriated value as the performance trade-off.

Past alliance research identified various mechanisms associated with cooperation and competition within alliances, such as bargaining power (Lax & Sebenius, 1986; Pfeffer et al., 1978), learning (Hamel, 1991; Larsson et al., 1998), and relational norms (Gouldner, 1960; Heide & John, 1992). Drawing on the power perspective, we argue that during the alliance formation stage, firms use bargaining power to design the alliance's compensation structure, which in turn affects alliance performance and firm performance (Contractor & Ra, 2000; Hennart & Zeng, 2005). In addition, as the alliance unfolds, learning and relational processes may enable partner firms to create and appropriate value. That is, using a learning perspective, we propose that contingent on the learning conditions established by the partners (Larsson et al., 1998; Lubatkin et al., 2001), they are more or less able to realize mutual and individual performance objectives (Chen, 2004; Lane et al., 2001). Drawing on the behavioral perspective, we also propose that firms may develop interaction patterns (i.e., relational norms) that guide their behavior toward cooperation or competition (Gouldner, 1960). For instance, a firm may exploit a partner firm's vulnerability by behaving opportunistically to extract additional rewards for itself (Wathne & Heide, 2000).

We need a theoretical model that specifies the relationships among value creation mechanisms, value appropriation mechanisms, and the performance trade-off. Developing and testing such a model would answer calls made in previous alliance studies (Alvarez & Barney, 2001; Tiessen et al., 2000; Zeng et al., 2003), should overcome the limitations present in empirical research, and can incorporate multiple value creation and appropriation mechanisms, as identified in prior research. Hence, our second research question:

Research Question 2: ***What is the relationship among cooperation, competition, alliance performance, and firm performance derived from an alliance?***

1.4 Theoretical and Managerial Relevance

By providing answers to our two research questions, we respond to calls for research on alliance performance (see e.g., Barringer et al., 2000; Dwyer et al., 1987; Gray & Wood, 1991; Gulati, 1998; Osborn et al., 1997; Parkhe, 1993b; De Rond et al., 2004; Smith et al., 1995; Wood & Gray, 1991). More specifically, we make two substantial theoretical contributions: (1) We propose and test a reconciliation of the structure and process perspectives, and (2) we conceptualize and empirically test three types of cooperation and competition trade-offs.

First, our research develops and tests one of the first theoretical models to specify the relationships among alliance structure, alliance process, and alliance performance. Drawing on the structure and process perspectives, we argue that superior alliance performance can be achieved in alliances when the parties establish an alliance structure that enables them to improve progressively on initial conditions by developing post-formation relational and learning processes. In contrast, unsuccessful alliances are characterized by an alliance structure that impedes post-formation processes, resulting in parties' unwillingness and inability to make necessary adaptations. We develop a theoretical framework and conduct an empirical test to examine whether the relationship between structural coherence and alliance performance is (partially) mediated by relational adaptability. Therefore, notwithstanding the valuable contributions of previous alliance research on this topic (Ariño et al., 1998; Brouthers et al., 2006; Doz, 1996; Fryxell, Dooley, & Vryza, 2002), our research makes an important contribution: We demonstrate that a reconciliation of the structure and process perspectives provides a more complete explanation of alliance performance.

Second, our research develops and tests an early theoretical model that specifies the trade-off between cooperation and competition and the consequences for alliance and firm performance. Drawing on management research, we develop a typology of trade-off types and apply it to the alliance context. Subsequently, we develop and test three types of cooperation and competition trade-offs. Drawing on the power perspective, we propose a set of hypotheses that depict a compensation trade-off. Building on the learning perspective, we hypothesize about the learning trade-off, and drawing on the behavioral perspective, we develop hypotheses representing the relational trade-off. Compared with previous alliance studies (Dyer et al., 1998; Jap, 2001a; Lavie, 2007), our research makes an important contribution: We show that aligning explanations with respect to cooperation (i.e., value creation) and competition (i.e., appropriation) provides a more complete understanding of the relationship between alliance performance and firm performance derived from the alliance.

In addition to providing answers to our two research questions, our research makes four other relevant contributions. First, our research contributes to an improved understanding of performance as a multidimensional construct. Although we do not ex-ante theorize on the distinction among financial, learning, and strategic performance, our empirical findings suggest that this distinction is crucial. Second, our research is among the first to theorize about trade-offs. Confronted with a plethora of trade-off definitions, our research also presents a first attempt to develop a typology. We use this typology to develop and test our conceptualization of cooperation and competition trade-offs; our empirical findings suggest that different types of trade-offs exist within, and therefore perhaps outside, an alliance context. Third, we adopt the idea that aligning distinct theoretical perspectives provides an enriched understanding of alliance performance (Colombo, 2003; Kogut, 1988b; Nooteboom, 2004; Osborn et al., 1997). Our empirical findings indicate that our theoretically rich approach increases explanatory power substantially with respect to performance in an alliance context. We conclude that theoretical integration represents a fruitful path for future alliance

research. Fourth, alliance research, and in particular cross-sectional alliance research, is subject to various methodological concerns (Kumar, Stern, & Anderson, 1993; Parkhe, 1993b). Although it was not our primary aim to discuss and review research design choices, the dissertation provides a clear overview and possible solutions to address these concerns.

Managerial Relevance

The results of this study suggest several normative implications for managers of contractual alliances (see §10.3). First, our findings suggest that managers should make decisions with respect to alliance design and post-formation processes conditional on the alliance objectives. For instance, alliance structure is more critical with respect to financial objectives, alliance processes are more critical with respect to learning objectives, and alliance structure and alliance processes both directly and indirectly drive strategic performance. Second, we derive several managerial implications that can assist firms in dealing with cooperation and competition trade-offs as the alliance progresses from formation to termination. During the formation stage, parties must resolve a compensation trade-off, whereas during the post-formation stage, they confront a learning trade-off. One important implication we derive is that firms, conditional on the alliance objectives, should pursue deals differently according to the specific cooperation and competition trade-offs. For instance, addressing the compensation trade-off is particularly relevant to realize financial outcomes, whereas the learning trade-off must be resolved to achieve learning and strategic outcomes. Third, we derive another important managerial implication that pertains to relational quality. Relational quality fulfills a double role, and conditional on the performance objective, firms may decide to invest more or less to build a high-quality relationship. In summary, the dissertation provides several clear guidelines for firms on how to use strategic alliances successfully as critical tool in their competitive arsenals.

1.5 Research Scope

Because we aim to develop a coherent theoretical model, we must delineate the scope of our research. Previous alliance research argued and demonstrated that different governance forms are subject to different dynamics (Ariño, 2003; Chen & Chen, 2003; Gulati et al., 1998; Hagedoorn et al., 2007; Inkpen, 2001). Therefore, we decided to focus on one type of governance form: contractual alliances. Our main argument for focusing on non-equity partnerships is that, compared with other governance forms such as equity partnerships, contractual alliances are increasing (Duysters & De Man, 2003; Duysters, Kok, & Vaandrager, 1999; Hagedoorn et al., 1994). In addition, from a theoretical perspective, researchers have argued that contractual alliances, compared with other governance types, are relatively understudied (Contractor, 2005; Inkpen, 2001). Our delineation of contractual alliances thus implies that market transactions, franchises, licenses, joint ventures, and mergers and acquisitions are outside our research scope.

We focus on contractual alliances with specific properties. Rather than examining one type of alliance, such as buyer–supplier, marketing, or research and development alliances, we investigate contractual alliances that share one common property: a certain degree of complexity due to their reciprocal relationships. That is, we only focus on contractual alliances with a long-term orientation to ensure that firms have been able to develop post-formation processes. Furthermore, we only examine contractual alliances with multiple objectives, which may include financial, learning, or strategic objectives (Heide, 1994; Jap, 2001a). Finally, we focus on contractual alliances in which partners, at least to a certain degree, need to exchange knowledge and information before they can achieve their alliance objectives (Lubatkin et al., 2001). Together, these characteristics enable us to develop and test hypotheses valid within a setting of complex contractual alliances. However, because of this delineation, our theoretical contributions are limited to this particular empirical setting.

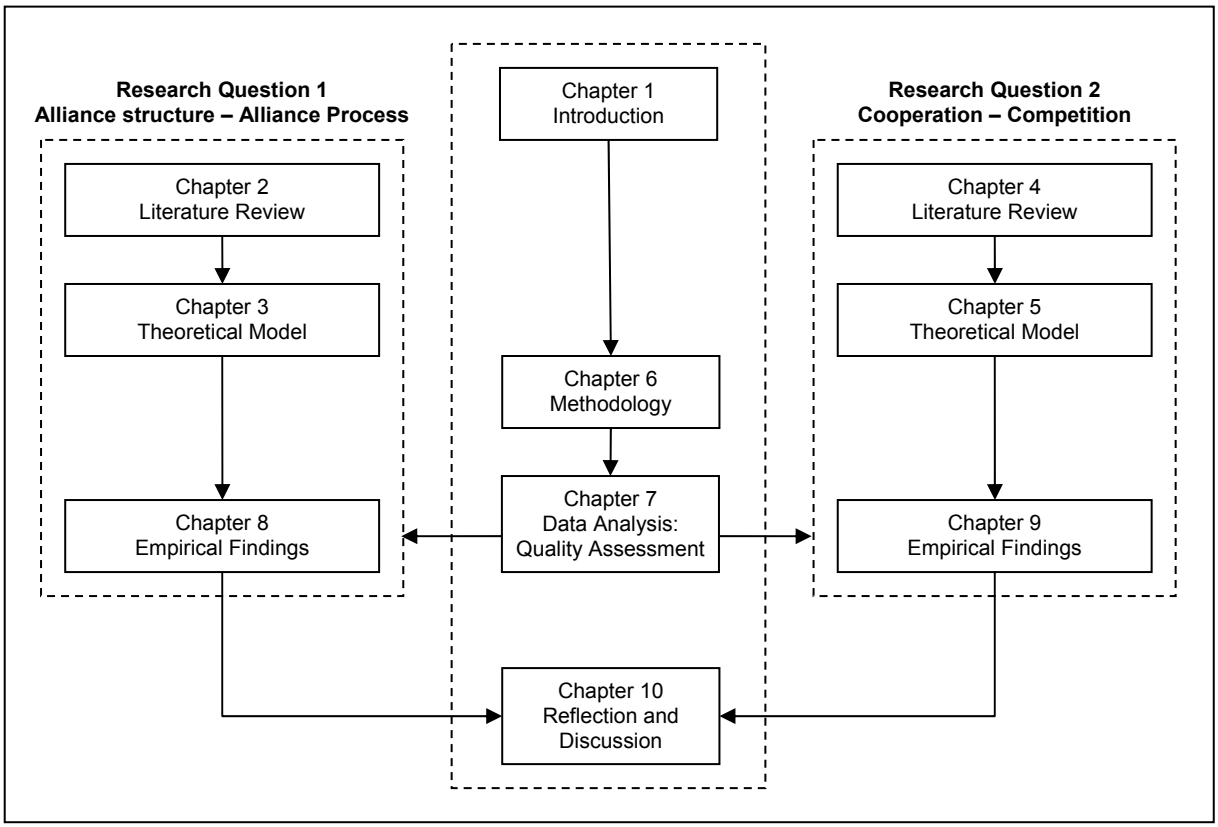
Finally, consistent with our definitions of strategic alliance and performance, we have adopted a dyadic level of analysis. When examining alliances, researchers may adopt different levels of analysis (Inkpen, 2001; Ritter & Gemünden, 2003). For instance, adopting a firm-level analysis, alliance performance research examined stock market reactions (Anand et al., 2000) and company profits (Hagedoorn et al., 1994), whereas other research focused on the alliance portfolio and network levels (Gemünden, Ritter, & Heydebreck, 1996; Gulati et al., 2000). Adopting a dyadic level has one main advantage. That is, theorizing and testing hypotheses at the dyadic level resolves the concerns in the alliance literature with respect to the level of analysis. By explicitly conceptualizing and operationalizing the variables of interest at the dyadic level, we can compare our findings with prior and future alliance research. Nonetheless, to avoid ambiguity and inconsistencies, we clearly explicate our arguments with respect to the level of analysis when developing our hypotheses. In addition, we discuss the consequences for our research design in Chapter 6.

1.6 Structure of the Dissertation

We structure the dissertation around three blocks (see Figure 1.2). The backbone of the dissertation consists of four chapters: Chapters 1, 6, 7, and 10. Chapter 1 provides the background to the dissertation and elaborates on the motivation, questions, and scope of this research. Because the empirical portion of our research is similar for each research question, we discuss all our research design decisions in one chapter. In Chapter 6, we elaborate on the pretest procedure, data collection methods, operational definitions, and data analysis techniques we use. Chapter 7 functions as a bridge between the hypotheses development, methodology, and empirical findings; in it, we discuss several statistical tests that we conduct to assess the quality of our data. For instance, we provide a summary of sample descriptives and examine the degree to which non-response bias and common method bias are present in our data. The dissertation ends with Chapter 10, in which we reflect on and discuss our findings, provide answers to our research questions, discuss the theoretical and managerial implications, address several limitations, and provide suggestions for further research.

The second and third blocks each consist of three chapters (left and right in Figure 1.2). With respect to the first research question, we present in Chapter 2 the results of a literature review, which functions as a guide for theory development. Subsequently, we present our theoretical model and Hypothesis 1 in Chapter 3, then the empirical results in Chapter 8. With respect to the second research question, we present in Chapter 4 the results of a literature review, and subsequently, we develop our theoretical model and Hypotheses 2–4 in Chapter 5. We elaborate on the empirical findings in Chapter 9.

Figure 1.2 Structure of the Dissertation



Chapter 2 Structure, Process, and Alliance Performance Literature Review

In this chapter, we review existing alliance literature with a focus on alliance structure, alliance processes, and alliance performance. The results of the literature review indicate that researchers drawing on the structure and process perspectives primarily have focused on specific aspects of alliances, such as contractual provisions and learning processes, which tended to hamper explanations of alliance performance. Building on our findings, we conclude that a better understanding of the relationship among alliance structure, alliance process, and alliance performance requires coherent conceptualizations of alliance structure and alliance processes. Hence, consistent with calls in previous alliance studies (Contractor, 2005; Nooteboom, 2004; Sobrero et al., 1998), we conclude that a testable theoretical model that reconciles structure and process explanations with respect to alliance performance is necessary.

We structure the chapter as follows. First, building on prior alliance research, we present our conceptualization of alliance structure and elaborate on three alliance structure dimensions: governance form, contractual provisions, and interfirm characteristics (§2.1). We use these three structure dimensions to review conceptual and empirical alliance performance studies. Second, in Section 2.2, we present our conceptualization of alliance processes and present two alliance process dimensions: relational processes and learning processes. We use these process dimensions to guide our review of conceptual and empirical alliance performance literature. Third, we present the results of our review of conceptual and empirical studies aimed at integrating structure and process perspectives. Fourth, this chapter ends with some conclusions and implications for theory development (§2.4).

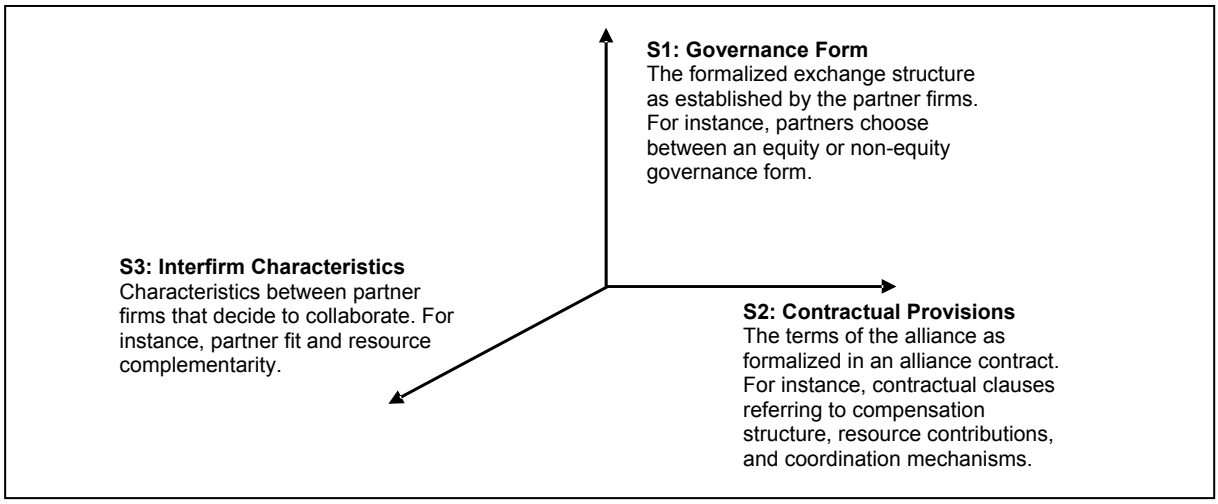
2.1 Structure Perspective: Conceptualization and Empirical Studies

Researchers adhering to the structure perspective have advocated that an efficient alliance structure curbs exchange hazards and thus positively affects alliance performance (David et al., 2004; Hennart, 2006). Initially, alliance researchers focused on governance forms, such as equity and nonequity arrangements, because proponents of the structure perspective argued that the governance form would affect alliance performance (Hennart, 1988; Pisano, 1989). However, more recently, researchers adopted broader definitions of alliance structure (Contractor, 2005) to refer to contract design (Ariño et al., 2004; Hagedoorn et al., 2007; Mendi, 2005) and interfirm characteristics resulting from partner selection (Douma et al., 2000; Dyer et al., 1998; Saxton, 1997). We adopt this broader view and we focus on three dimensions that together capture the outcomes of the decisions parties make with respect to establishing an alliance structure: (1) governance form (S1), (2) contractual provisions (S2), and (3) interfirm characteristics (S3). Figure 2.1 provides a graphical representation.

Governance Form (S1)[4]

Researchers identified a broad range of organizational structures (i.e., governance forms) that constitute alliances, including equity joint ventures, contractual alliances, bilateral licensing arrangements, shared product development projects, minority equity relationships, and shared purchasing and manufacturing (Barringer et al., 2000; Child et al., 1998; Contractor & Lorange, 1988; Root, 1988). These governance forms commonly represent a formalized exchange relationship between two or more firms. However, to better understand the antecedents and consequences of decisions about governance forms, researchers argued that alliances actually represent a hybrid governance form on a "market–hierarchy" continuum (Borys & Jemison, 1989; Heide, 1994; Williamson, 1985).

Figure 2.1 Three Alliance Structure Dimensions[5]



According to Borys and Jemison (1989, p. 235), a hybrid governance form represents an organizational arrangement that uses resource and/or governance structures from more than one existing organization. Researchers focused on two major hybrid forms of interfirm collaborating: equity joint ventures and non-equity partnerships (Gulati et al., 1998; Hagedoorn et al., 2007). Joint ventures are quasi-hierarchical in nature (Gulati, 1998), in that the establishment of a new organizational entity between two independent parent companies embodies the creation of a hierarchy structure. Non-equity partnerships are "pure" hybrid forms (Williamson, 1985) that do not involve the creation of a new venture. The lack of ownership means this contractual alliance is characterized by alliance contracts that organize property rights and profit allocation schemes (Hagedoorn et al., 2007). Proponents of the structure perspective argued that in specific exchange conditions, a hybrid governance form is more efficient than a hierarchy or market transaction (Borys et al., 1989). That is, in such conditions, alliances are more effective in curbing exchange hazards (Ouchi, 1980).

[4] Although the research scope is delineated to contractual alliances (see §1.5), we deem it necessary to include governance forms in our literature review, because this stream of research has produced relevant insights.

[5] Although previous research has demonstrated the associations among governance form, contractual provisions, and partner selection (Buvik & Reve 2001; Hagedoorn & Hesen, 2007), we argue that parties can make these choices independently (see §6.4 for methodological implications).

According to advocates of the structure perspective, the choice of governance form constitutes an important decision that directly affects alliance performance (David et al., 2004; Hennart, 2006; Williamson, 1985). When a governance structure aligns with the characteristics surrounding the exchange, superior alliance performance results. That is, when the relationship unfolds according to expectations, efficient governance mitigates concerns about exchange hazards. Moreover, it pushes parties to fulfill their contractual obligations (Reuer & Ariño, 2002). If contingencies emerge, a governance form becomes inefficient, and premature dissolution is likely, because according to transaction cost economics advocates, inefficient alliances end before parties can intervene (Reuer & Ariño, 2002). However, though firms choose governance forms consistent with these theoretical arguments (Chen et al., 2003; Colombo, 2003; Gulati et al., 1998; Pisano, 1989), the performance implications of governance form decisions still have received relatively little attention (David et al., 2004; Sampson, 2004b).

A few empirical studies explored the performance implications of governance forms but focused mainly on transaction costs (Barthelemy & Quelin, 2006; Buvik & Andersen, 2002; Dahlstrom & Nygaard, 1999) or used firm-level performance indicators (Noordewier, John, & Nevin, 1990) rather than alliance performance indicators (Dussauge & Garrette, 1993; Dussauge et al., 1995; Sampson, 2004b). One exception is Sampson (2004b), who examined the implications of misaligned governance in R&D alliances and found that alliance governance selected according to transaction cost arguments improved alliance performance (i.e., innovation) substantially. In summary, though the market–hierarchy categorization received substantial conceptual support (Leiblein, 2003; Nooteboom, 2004) and researchers produced empirical support for governance form decisions (Chen et al., 2003; Colombo, 2003; Gulati et al., 1998), the relationship between governance form and alliance performance remains poorly understood.

Contractual Provisions (S2)

According to the advocates of the structure perspective, the presence of an alliance contract increases the likelihood of superior alliance performance (Ariño et al., 2004), because contracts reduce the likelihood of exchange hazards, such as opportunistic behavior. Moreover, the purpose of a formal alliance contract is to institutionalize coordination and enable enforcement (Ring et al., 1992), which increases the likelihood that parties will fulfill their contractual duties. Contracts represent promises or obligations to perform particular actions in the future (Macneil, 1978) and function as risk allocation mechanisms that incorporate all relevant future contingencies and obligations (Hagedoorn et al., 2007).

To achieve the objectives of coordination and enforcement, an alliance contract may include at least four terms (Barthelemy et al., 2006; Luo, 2002a). First, a contract should include terms pertaining to the rationale that underlies the alliance formation, such as goals, capitalization, and forms of contribution (Blodgett, 1991a; Jap, 2001a; Klein et al., 1978). Second, contractual terms should refer to specific aspects of daily alliance operation and

management, such as product development, marketing, and finance (Mohr & Spekman, 1994). Third, the contractual terms should include certain aspects of alliance cooperation, such as the responsibilities of each partner and conflict resolution mechanisms (Bai, Tao, & Wu, 2004; Khanna, 1998; Oxley & Sampson, 2004). Fourth, the contract should address damage and termination procedures (Hagedoorn et al., 2007; Minehart & Neeman, 1999). Together, a coherent set of contractual provisions reduces the likelihood of exchange hazards, enables coordination and enforcement, and guides partner firms' behavior closer to cooperation by providing formal rules and procedures to maintain their relationship. However, conceptual and, particularly, empirical research in this area is scarce (Contractor, 2005; Hagedoorn et al., 2007; Mayer & Argyres, 2004). Researchers who examined contractual provisions primarily explored only three areas: (1) contract standardization, (2) contract completeness and complexity, and (3) content of contractual provisions.

Contract Standardization

Alliance researchers investigated the conditions in which standard contracts rather than tailored contracts would be preferred, as well as their respective antecedents and consequences (see Vlaar, 2006 p. 139-160). Unlike tailor-made contracts, standard contracts appear relatively legitimate, robust, and easy to interpret, so they lower the effort required to design alliance contracts and increase the flexibility associated with interacting with a broad variety of partners. In addition, the use of standard contractual provisions reduces any problems pertaining to ambiguous interpretations of contractual clauses. However, formalizing a negotiation in standard contracts often demands negotiation strategies that do not contribute to the creation of shared expectations or joint sense making (Vlaar, Van den Bosch, & Volberda, 2007). In contrast, tailored contracts must meet the demands of a specific situation and thus stimulate involvement and flexibility (Poppo & Zenger, 2002). The negotiation process leading to a tailored contracts demands more resources and time, which indicates that parties are more likely to develop joint expectations through their more frequent interactions (Ariño et al., 2004). Although a few studies examined the relationship between contract standardization and alliance outcomes (Vlaar, 2006), to the best of our knowledge, no study has examined its relationship with alliance performance.

Contract Completeness

Alliance researchers also focused on the causes and consequences of contract completeness and contract complexity (see e.g., Barthelemy et al., 2006; Luo, 2002a; Reuer & Ariño, 2007). Contract completeness and complexity means that firms opt for higher levels of formal codification, which implies more contractual provisions and enforcement in an attempt to coordinate and control alliance activities. An incomplete contract may create ambiguity, which provides a breeding ground for exchange hazards (Luo, 2002a). However, contract completeness facilitates control at the expense of higher transaction costs (Williamson, 1985) and reduced flexibility (Luo, 2002a). Several empirical studies supported the relationship between contract completeness and different alliance outcomes (Barthelemy et al., 2006; Gong, Shenkar, Luo, & Nyaw, 2001; Lui et al., 2004; Shenkar & Zeira, 1992), but the

relationship with alliance performance remains understudied, with the exception of Barthemly and Quelin (2006), who offered an indirect measure for ex-post transaction costs and found that to restrict vendor opportunism (i.e., reduce ex-post costs), contracts would need to contain incentives and penalties, as well as pricing and monitoring clauses.

Content of Contractual Provisions

Researchers examining contract standardization and contract completeness contributed to the notion that alliance contracts are critical to achieve superior alliance performance. More specifically, they focused on the nature (i.e., standard or tailored) and scope (i.e., number and nature of contractual provisions) of the contract. However, their work did not elaborate on the relationship between the content of contractual provisions and alliance performance. Researchers commented on these approaches and argued that the content of contractual provisions may be important for better understanding alliance development and alliance performance (Reuer et al., 2007: Mendi, 2005). To guide this literature review, we distinguish three categories of contractual provisions: (1) compensation structure, (2) coordination mechanisms, and (3) safeguarding mechanisms.

First, researchers argued that different compensation structures may have different consequences for alliance development and performance (Aulakh, 2001; Contractor et al., 2000; Hennart, 1988; Mendi, 2005; Zeng et al., 2003). For instance, Hennart and Zeng (2005) argued that ex-ante sharing, such as lump-sum and advance payments, provides parties with strong incentives to engage in an alliance, but residual sharing mechanisms, such as royalties and transfer pricing, create mutual forbearance and commitment between parties as the alliance unfolds.[6] Drawing on game theory, Zeng and Chen (2003) postulated that structural and motivational changes in an alliance's pay-off structures affect the extent of cooperation between partner firms. Similarly drawing on game theory, Parkhe (1993a) examined the impact of pay-off structures and found that a structure characterized by mutual cooperation resulted in higher levels of alliance performance than one characterized by unilateral defection and cooperation. Although conceptual studies have addressed the advantages and disadvantages of different compensation structures with respect to reducing the likelihood of exchange hazards (Hennart et al., 2005), empirical work examining the relationship between compensation and alliance performance is scarce (Contractor, 2005).

Second, with regard to coordination mechanisms, alliance research addressed the antecedents and consequences of coordination mechanisms, arguing that coordination mechanisms, such as management control, monitoring systems, conflict resolution techniques, and decision-making (Lee, Chen, & Kao, 2003; Mjoen & Tallman, 1997; Pearce & Hatfield, 2002; Yan et al., 1994, 2001; Zhang & Li, 2001), reduce the likelihood of exchange hazards and thus relate directly to alliance performance (Yan et al., 2001). For instance, Yan and Gray (1994) argued that management control enables parties to monitor progress and direct actions toward

[6] See Box 3.2 for a distinction between ex-ante sharing and residual sharing.

achieving common and individual objectives. Drawing on an information-processing perspective, Makhija and Ganesh (1997) argued that control reflects a purposeful, goal-oriented activity that influences the acquisition, interpretation, and dissemination of information within an alliance. Information processing influences interpartner learning, so control affects alliance development and alliance performance. Wathne and Heide (2000) postulated that the presence of monitoring systems curbs opportunistic behavior, because the likelihood that deceitful behavior will be detected and punished accordingly increases. Coordination mechanisms also provide partners with the ability to institute policies and procedures that direct the alliance toward achieving its objectives. Despite substantial conceptual support for the relationship between coordination mechanisms and alliance performance, empirical research produced only inconclusive findings (Geringer & Hebert, 1989; Glaister & Buckley, 1998a; Glaister, Husan, & Buckley, 2003; Yan et al., 1994). For instance, Glaister and Buckley (1998) found weak support for the relationship between dominant control and alliance performance (joint venture), and Glaister, Husan, and Buckley (2003) indicated autonomous joint ventures are more successful than joint ventures characterized by strong parental control. Furthermore, Lee, Chen, and Kao (2003) found that asymmetrical management control has no significant impact on JV profitability.

Yan and Gray (1994) argued that the presence of inconclusive empirical findings could be attributed to a lack of proper theorizing (e.g., level of analysis, operational definitions) with respect to the relationship between coordination mechanisms and alliance performance In addition, empirical studies used different operational definitions of coordination mechanisms and alliance performance. For instance, some researchers captured coordination in terms of exercising influence and control (Aulakh et al., 1996; Child et al., 2003; Child & Yan, 1999; Kauser et al., 2004), whereas others measured it on the basis of decision-making rights (see e.g., Cullen, Johnson, & Sakano, 1995; Johnson, Cullen, & Sakano, 1996). Finally, with respect to alliance form, empirical findings are difficult to compare, because the majority of researchers examined JVs (see e.g., Glaister et al., 1998a; Zhang et al., 2001). In summary, we require a better understanding of the relationship between coordination mechanisms and alliance performance, particularly with respect to contractual alliances.

Third, with respect to safeguarding mechanisms, researchers argued that contractual clauses focused on non-recoverable investments (Parkhe, 1993a), reducing alliance scope (Khanna, 1998), and task specialization (Zeng & Hennart, 2002) affect alliance performance. Non-recoverable investments are expenditures that are difficult (i.e., costly) to redeploy for alternative purposes. According to advocates of the structure perspective, mutual investments function as mutual hostages and curb opportunistic behavior (Klein et al., 1978). Therefore, the presence of this type of specialized investments positively affects alliance development and alliance performance (David et al., 2004). Researchers also argued that parties might decide to make unilateral non-recoverable investments, which can have negative or positive consequences. On the one hand, unilateral non-recoverable investments make one party vulnerable to opportunistic behavior by its counterpart (Klein et al., 1978), but on the other

hand, they may signal commitment to maintaining the relationship (Gulati et al., 1994). Empirical research produced substantial support for the importance of non-recoverable investments (David et al., 2004) but also provided fragmented and inconclusive findings, often because they used different dependent variables, such as commitment (Anderson & Weitz, 1992), contractual safeguarding (Buvik et al., 2001; Reuer et al., 2007), and firm-level performance indicators (Dyer, 1997). Furthermore, to understand the relationship between non-recoverable investment and alliance performance, researchers included process variables into their analysis (see e.g., Parkhe, 1993a). We discuss these studies in Section 2.3.

Reducing an alliance's scope (Khanna, 1998) and designing an alliance with specialized tasks (Zeng et al., 2002) offer alternative safeguarding mechanisms that affect alliance performance. They differ from non-recoverable investments, in that parties use them to limit the amount of unwanted transfers of proprietary knowledge. Reducing the scope of the alliance means that parties purposefully take measures to decrease the overlap between individual firm markets and markets targeted by the alliance (Khanna et al., 1998). For instance, including an exclusivity provision for target markets increases parties' incentives to contribute to achieving each other's interests, but it reduces incentives to appropriate knowledge that is not part of the initial agreement. Similarly, task specialization impedes parties' ability to appropriate knowledge,[7] because it means that parties formally divide alliance activities. Therefore, there is minimal need for the parties to communicate or exchange knowledge and information. Thus, as parties focus on their designated tasks, their knowledge foundations remain differentiated (Grant et al., 2004). Although prior studies demonstrated the importance of alliance scope (Oxley et al., 2004; Pan, 1997) and task specialization (Reuer Zollo, & Singh, 2002), their impact on alliance performance has received little empirical support, beyond anecdotal or case-study evidence (see e.g., Doz, 1996). With respect to safeguarding mechanisms, we conclude that substantial conceptual support is available to substantiate relationships among non-recoverable investments, alliance scope, task specialization, and alliance performance, but better empirical understanding about the impact of these different safeguarding mechanisms on alliance performance still is needed.

Interfirm Characteristics (S3)

We define interfirm characteristics as those properties of an exchange relationship that result from two firms engaging in collaboration. These structural properties might refer, for instance, to attributes such as partner fit (Douma et al., 2000), resource complementarity (Harrison, Hitt, Hoskisson, & Ireland, 2001), market overlap (Khanna, 1998), or cultural distance (Barkema et al., 1996). To clarify the impact of interfirm characteristics, Parkhe (1991) distinguished between Type I and Type II diversity, such that Type I diversity positively affects alliance development and alliance performance, whereas Type II diversity inhibits the achievement of alliance objectives. Type I diversity deals with the reciprocal and

[7] Researchers introduced similar conceptualizations as task specialization, such as the "black box" approach (Doz, 1996) and "cooperative specialization" (Zeng & Hennart 2002).

collective strengths between the alliance partners (Das et al., 2002; Parkhe, 1991), in that the differences between the parties actually facilitate the formation and development of the alliance. For instance, the presence of resource complementarity between the partners enables them to create synergy (Das et al., 2000b; Dyer et al., 1998; Harrison et al., 2001). In contrast, Type II diversity refers to differences that negatively influence the effective functioning of alliances, such as cultural distance and absence of partner fit, which impede the achievement of collective and, therefore, individual objectives (Barkema et al., 1996; Douma et al., 2000).

Table 2.1 Alliance Structure and Alliance Performance: Empirical Studies

Article	S.[a]	Theory[b]	Points of interest
Dussauge & Garrette, 1995	S1	–	Based on an empirically based taxonomy; semistructured alliances have better economic performance than unstructured coproduction alliances.
Glaister & Buckley, 1998	S2	MC	Weak support produced for the relationship between dominant management control and alliance performance (IJV).
Glaister, Husan, & Buckley, 2003	S2	MC	Joint venture autonomy positively associated with alliance performance, but once performance deteriorates, parents get involved in decision-making and operations.
Lee, Chen, & Kao, 2003	S2	MC	An asymmetrical management control structure (i.e., operational control) has no significant impact on alliance performance (i.e., JV profitability).
Mjoen & Tallman, 1997	S2	MC TCE	Alliance performance (IJV) is directly influenced by bargaining power and indirectly influenced through control mechanisms (i.e., overall control, specific control).
Parkhe, 1993a	S2	TCE GT	Non-recoverable investments positively influence alliance performance; transparency, time horizon, and interactions reduce the use of contractual safeguards.
Parkhe, 1993b	S2	GT	Empirical findings indicate that a game-theoretic alliance structure positively affects alliance performance, but the impact of structure is contingent on partner nationality.
Pearce & Hatfield, 2002	S2	RB	Balanced resource responsibility structures associate more with improved alliance performance (JV) than self-resourcing or dominant responsibility structures.
Zhang & Li, 2001	S2	MC	Control designs (IJV) evolve over time from shared types toward autonomous types; the latter is associated with better alliance performance.
Harrigan, 1988	S3	–	Alliances are more successful (i.e., longevity) when partners have similar cultures, asset sizes, and venturing experience levels.
Lambe, Spekman, & Hunt, 2002	S3	RB	Joint alliance competences are positively related to alliance performance, both directly and indirectly through resource complementarity and idiosyncratic resources.
Child, 2002	S1 S2	MC	Alliance performance (JV) derives from a combination of ownership, resourcing, and management factors; different combinations have a positive impact on performance.
Sampson, 2004	S1 S3	TCE	Established governance forms consistent with TCE logic improve alliance performance (i.e., innovation) compared with misaligned governance forms.
Child & Yan, 2003	S2 S3	MC RB	Alliance performance (JV) positively influenced by parties' prior experience, resource quality, and shared control, but only in conditions of quality resourcing.
Lane & Lubatkin, 1998	S2 S3	OL	Knowledge similarity, management formalization, research centralization, compensation practices, and communities positively relate to learning performance

[a] S. = alliance structure dimensions; S1 = governance form; S2 = contractual provisions; S3 = interfirm characteristics.
[b] TCE = transaction cost economics; GT = game theory; OL = organization learning; RB = resource-based; MC = management control; – = eclectic perspective.

Substantial support has been found for relationships between interfirm characteristics and alliance performance (Child et al., 2003; Lane et al., 1998; Sampson, 2004b), including Harrigan (1988), who found that alliances are more successful when partners have similar cultures, asset sizes, and experience with alliances. Other empirical findings also indicated that resource complementarity relates positively to alliance performance (Lambe et al., 2002; Sarkar, Echambadi, Cavusgil, & Aulakh, 2001). Thus, conceptual and empirical support exists for the relationship between various interfirm characteristics and alliance performance. But still lacking is an in-depth understanding, both theoretical and empirical, of how interfirm characteristics affect alliance performance together with variables that pertain to the other two structure dimensions, namely, governance form and contractual provisions.

Conclusions

Researchers drawing on and contributing to the development of the structure perspective produced various valuable insights (Contractor, 2005), including a better understanding of the conditions in which parties choose a particular type of governance form to organize their exchange relationships efficiently. In addition, researchers produced a fine-grained conceptual understanding of contractual design choices with respect to compensation structure, coordination mechanisms, and safeguarding mechanisms. Finally, researchers examined a variety of interfirm characteristics and produced substantial conceptual and empirical support for the idea that interfirm characteristics directly affect, either positively or negatively, alliance development and alliance performance. However, despite these contributions, the structure perspective is not without its critics and limitations.

First, the structure perspective was built by researchers drawing on a variety of theories, including TCE to examine antecedents and consequences of governance form decisions, game theory to understand pay-off structure consequences, and management control perspectives to recognize the relationship between coordination and alliance performance. Although each theory is subject to its own limitations (see Appendix 1), this theoretical diversity also means that alliance performance researchers have contributed to partial explanations. Moreover, this fragmentation supports the observation that we require a conceptualization of alliance structure that incorporates governance form, contractual provisions, and interfirm characteristics altogether. A few exemplary empirical studies incorporated variables pertaining to multiple structure dimensions to provide a better understanding about alliance performance (Child, 2002; Child et al., 2003; Lane et al., 1998; Sampson, 2004b). For instance, Child (2002) conducted a configurational analysis of JVs and found that different combinations of ownership, resourcing, and management factors had similarly positive impacts on alliance performance, and Lane and Lubatkin (1998) examined the simultaneous impact of basic knowledge similarity, lower management formalization, research centralization, compensation practices, and research communities on alliance performance. These studies provided a fruitful foundation for further theory development.

Second, though empirical studies demonstrated that firms design alliance structures consistently with the structure perspective, alliance performance implications in terms of governance forms decisions were often inferred (Reuer & Ariño, 2002; Sampson, 2004b). Moreover, the majority of studies adopted a firm-level perspective and failed to recognize the consequences of one-sided decisions on alliance performance (Madhok et al., 1998; De Wulf et al., 2001). To best of our knowledge, no empirical study has tested hypotheses that specified relationships between compensation structure and alliance performance (Contractor, 2005). Although substantial empirical research investigated coordination mechanisms, safeguarding mechanisms, and interfirm characteristics, its empirical findings tended to be fragmented and inconclusive. Hence, in addition to a comprehensive conceptualization of alliance structure, we need a testable theoretical model that incorporates the relationship between alliance structure and alliance performance to advance theory development.

Third, academics criticized the structure perspective for its overly deterministic nature (De Rond et al., 2004). Proponents of the structure perspective simply assumed that if unforeseen circumstances emerged, the alliance structure in place would be sufficient to manage those contingencies. If an alliance structure becomes misaligned with the exchange conditions, partners would prematurely end the relationship. Refuting this strong form of determinism, researchers adopting a process perspective showed that parties are quite successful in managing new circumstances (Dussauge et al., 2000; Reuer & Ariño, 2002). In other words, current researchers theorizing about and empirically testing the relationship between alliance structure and alliance process may consider alternative explanations (i.e., variables) put forward by advocates of the process perspective (Ring et al., 1994; Salk, 2005). Before we present the results of the literature review with respect to such studies (Section 2.3), we discuss conceptual and empirical studies that drew exclusively on the process perspective.

2.2 Process Perspective: Conceptualization and Empirical Studies

Proponents of the process perspective argued that post-formation processes are critical to alliance development and superior alliance performance (Doz, 1996; De Rond et al., 2004; Zajac et al., 1993). More specifically, they considered an alliance a purposeful entity, able to learn and adapt over time to changing circumstances. Thus, alliances are long-term exchange relationships that parties cannot fully specify in advance (Ring et al., 1994), because the costs to construct an alliance contract that anticipates all future contingencies do not outweigh the possible benefits (Macneil, 1980). Alliance processes refer to continuous cycles of goal formulation, implementation, evaluation, and adaptation based on lessons learned by the parties (Zajac et al., 1993). That is, parties' willingness and ability to modify the relationship, without necessarily changing the initial alliance structure, mitigates concerns about exchange hazards. More important, adaptability enables parties to overcome inertia that may destabilize the alliance. We review this stream of literature with a focus on the relationship between alliance processes and alliance performance and identify two types of post-formation processes: (1) relational processes (P1) and (2) learning processes (P2).

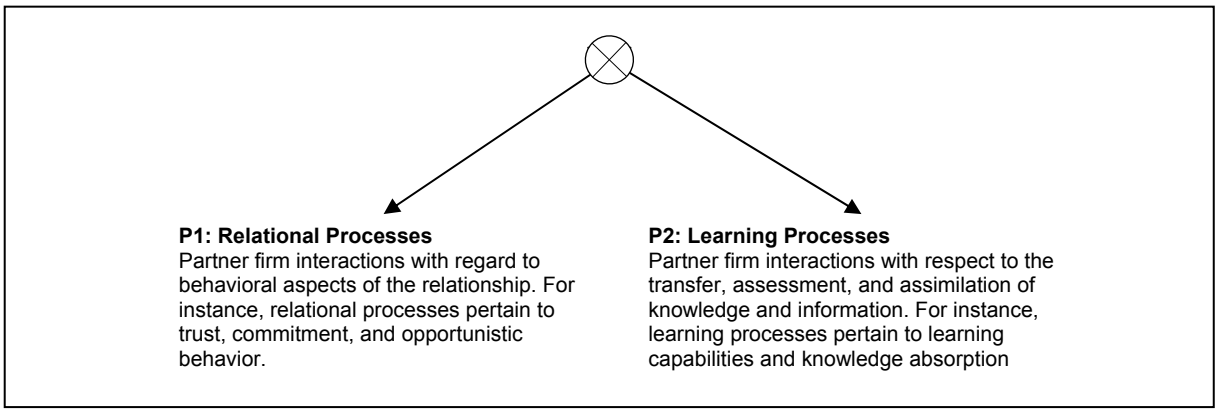
Relational Processes (P1)

Relational processes constitute a critical ex-post alliance process, because they can foster or impede alliance performance. Moreover, they influence one party's belief that the other party will or will not fulfill its contractual obligations and undertake actions beneficial to the alliance. Relational processes thus function as an informal guideline, in contrast to a formal contract, for how parties should interact (Macneil, 1980). This type of process refers to the quality of their relationship (Ariño et al., 2001). To better understand the relationship between relational processes and alliance performance, we build on prior alliance studies and distinguish between (1) cooperative relational processes (Ariño et al., 2001; Ring et al., 1994) and (2) competitive relational processes (Maitland, Bryson, & Van de Ven, 1985; Wathne et al., 2000).[8]

[8] We elaborate on the antecedents of relational processes in Section 5.2.

Alliance researchers advocated for and demonstrated that building and initiating cooperative relational processes between partners is crucial to maintaining the alliance (Cullen et al., 2000; Kale et al., 2000; Zaheer, McEvily, & Perrone, 1998). Relational enforcement occurs as a result of partner interactions that promote relational norms of flexibility, solidarity, and information exchange (Lusch et al., 1996; Macneil, 1980). Flexibility facilitates adaptation to unforeseen contingencies, solidarity promotes joint problem solving, and information sharing facilitates problem solving and adaptation (Poppo et al., 2002). These relational norms promote cooperative processes (Heide & John, 1990; Zaheer et al., 1998; Zaheer et al., 1995), manifested in mutual bilateral trust, commitment, and respect (Ariño et al., 2001; Cullen et al., 2000; Muthusamy & White, 2005). The presence of cooperative processes stimulates collaboration, which operates as a self-enforcing safeguard (Ring et al., 1994) that allows the parties to work on the relationship and respond to problematic situations without continuously referring to an contract (Ariño et al., 1998).

Figure 2.2 Two Alliance Process Dimensions[9]



In contrast, competitive relational processes, which refer to partner interactions characterized by conflict and opportunistic behavior (Das et al., 2002), impede superior alliance performance. For instance, parties may have conflicts about the alliance strategy, the division of outcomes, or how to resolve day-to-day operational problems. The presence of conflict destabilizes the relationship, which negatively affects its development and hence its performance (Das et al., 2000a). Moreover, opportunistic behavior indicates that parties are seeking to gain for themselves at the expense of their counterparts (Williamson, 1985). This type of conduct can take many forms, such as misrepresenting abilities, shirking, withholding information, incomplete disclosure of information, expropriation of know-how, exploitation of partner-specific assets, or distorting information (Maitland et al., 1985; Wathne et al., 2000). Partner firms that develop competitive relational processes thus hamper their alliance development and ultimately their alliance performance, because their efforts are directed toward achieving individual objectives at the expense of joint value creation.

[9] Interdependence is assumed with respect to the process dimensions. In addition to the conceptual implications, this approach has implications for hypothesis testing (see §6.4).

Most researchers reporting empirical findings with respect to relational processes focused on the causes and consequence of cooperative relational processes. However, empirical results pertaining to alliance performance are limited, because researchers used the outcomes of relational processes as the dependent variable (Heide, 1994; Heide & John, 1992), employed firm-level performance indicators (Kale et al., 2000; Lusch et al., 1996), or included a structure element into their analysis (see §2.3). Empirical studies that actually focused on the relationship between cooperative relational processes and alliance performance produced support for a positive relationship (Lee et al., 2006; Mohr et al., 1994 1049; Pearce, 2001; Yan et al., 2001); for instance, Mohr and Spekman (1994) found that relational commitment, trust, and conflict resolution positively affect alliance performance. Yan and Gray (2001) also indicated a relationship between the quality of the relationship and strategic performance. However, no empirical study focused on the relationship between competitive relational processes and alliance performance, without drawing on the structure perspective (see §2.3). Thus, conceptual and empirical support exists for a positive relationship between cooperative relational processes and alliance performance, but insights into the direct relationship between competitive processes and alliance performance are scarce.

Learning Processes (P2)

Learning within strategic alliances serves multiple purposes (Inkpen, 2002).[10] In this context, learning may refer to knowledge and information transfer between partners that facilitates alliance management, such that firms learn about their alliance partners and how to interface and communicate with them (Cummings & Teng, 2003). However, learning also may refer to learning with and from alliance partners (Inkpen, 2002), which represents the reasons parties engage in an alliance (Kogut, 1988b). Moreover, it encompasses a type of learning in which partners develop jointly new competences (Holmqvist, 2003) and attempt to internalize that knowledge (Inkpen, 2000). Before a firm can exploit newly acquired knowledge, it must integrate that knowledge into its existing knowledge base (Holmqvist, 2003). For value creation in complex contractual alliances, both types of learning are required (Inkpen & Crossan, 1995; Kogut, 1988b; Mody, 1993), because learning processes foster mutual awareness about each party's internal and external contexts. We elaborate on two types of learning processes: (1) knowledge transfer and (2) knowledge acquisition.

First, knowledge transfer processes facilitate and stimulate the transfer of knowledge and information between partners (Inkpen, 2001; Inkpen et al., 1998). These learning processes refer to routines that the parties develop to share and exchange knowledge and information, such as document exchange, cultural training, job rotations, and joint management meetings (Cummings et al., 2003), all of which contribute to the willingness and ability to share information and communicate openly (Inkpen, 2000). Exchanging knowledge and information is important because it enables parties to reduce the costs associated with finding and

[10] A huge amount of conceptual and empirical literature relates to (inter)organizational learning (Cohen & Levinthal, 1990; Holmqvist, 2003; Inkpen & Beamish, 1997; Lubatkin, Florin, & Lane, 2001). It is beyond the scope of this study to review this literature; we delineate our review to work that examined alliance performance.

accessing different types of valuable knowledge, motivates them to participate and openly share valuable knowledge (while preventing undesirable spillovers), contributes to their awareness of individual interests, and teaches them how to make the alliance work (Berdrow & Lane, 2003; Doz, 1996; Dyer & Nobeoka, 2000). Therefore, knowledge transfer processes foster alliance performance. However, developing knowledge transfer processes is not sufficient for partner firms to assess and acquire knowledge through their relationship.

Second, alliance researchers argued that parties should initiate knowledge acquisition processes to assess and absorb knowledge and information through their alliance (Inkpen, 2000; Lubatkin et al., 2001). Moreover, they stated that a firm's potential to acquire knowledge depends on several factors, including a firm's absorptive capacity (Cohen et al., 1990; Jansen, Van den Bosch, & Volberda, 2005; Zahra & George, 2002), alliance structure (Grant et al., 2004; Zeng et al., 2002), and relational processes (Kale et al., 2000). Thus, a firm's historically developed organizational routines influence its effectiveness in terms of assessing and acquiring knowledge and information (Dyer et al., 1998; Lane et al., 1998). However, to understand the relationship between knowledge acquisition processes and alliance performance, alliance researchers made a clear distinction between symmetrical learning and differential learning (Hamel, 1991; Kumar & Nti, 1998; Larsson et al., 1998). Specifically, researchers argued that symmetrical learning between partners directly affects alliance performance (Hamel, 1991), such that if two parties can assess and assimilate knowledge and information into their existing knowledge base equally, alliance development benefits, because each party has an incentive to invest in mutual learning and maintain the relationship (Larsson et al., 1998). In contrast, when two partner firms have different opportunities to obtain knowledge and information, it impedes superior alliance performance, because their differential learning increases the likelihood of learning races (Hamel, 1991). Such a learning race is detrimental to alliance continuation, because once a party has achieved its objectives, it lacks an incentive to maintain the relationship (Khanna et al., 1998), as does the exploited partner.

Substantial empirical alliance research investigated learning within the context of alliances but examined learning at the firm level (Cummings et al., 2003; Holmqvist, 2004; Kale et al., 2000), conducted case studies with a focus on interorganizational learning (Chai, 2003; Inkpen et al., 1998; Inkpen & Pien, 2006), or drew on the structure perspective (see §2.3). In contrast, several studies examined the relationship between learning processes and alliance performance (Beamish & Berdrow, 2003; Hamel, 1991), such as Beamish and Berdrow (2003), who examined various learning processes between parents of JVs and the JV. Their empirical findings indicated that knowledge transfer, transformation, and harvesting influence mutual learning outcomes, but JV learning is not related to performance within production-based international joint ventures (IJVs). Hamel (1991) conducted nine case studies and found that firms differ with respect to their intent to learn, transparency, and receptivity to knowledge. These results indicate that differential learning between partners negatively affects alliance performance.

Table 2.2 Alliance Processes and Alliance Performance: Empirical Studies

Article	P.[a]	Theory[b]	Point of interests
Demirbag & Mirza, 2000	P1	BP	Alliance performance (JV) is positively influenced by trust, commitment, and cooperation; conflicts are negatively related through different performance dimensions
Pearce, 2001	P1	BP	Interparent cooperation (i.e., flexibility and joint problem solving) positively influences alliance performance (JV)
Yan & Gray, 2001	P1	BP	The quality of the interpartner working relationship is positively related to the achievement of strategic objectives for both partners.
Mohr & Spekman, 1994	P1 P2	BP	Alliance performance drivers are commitment, coordination, and trust; communication quality and participation; and a problem solving conflict resolution technique
Beamish & Berdrow, 2003	P2 P3	OL	Learning processes—transfer, transformation, and harvesting—affect learning outcomes, but learning is not related to performance within production alliances
Hamel, 1991	P2 P3	OL	Not all partners are equally adept at learning, and learning asymmetry ignites learning races that impede alliance development and performance
Inkpen & Pien, 2006	P1 P2 P3	OL	Alliance performance (i.e., learning objectives) is affected by collaborative and competitive partner firm interactions, such as social capital, tacit knowledge transfer, and differential absorptive capacities

[a] P1 = relational processes, P2 = knowledge transfer processes; P3 = knowledge acquisition processes.
[b] BP = behavioral perspective; OL = organization learning.

In summary, conceptual support for the relationship between learning processes and alliance performance is substantial (Holmqvist, 2003; Kumar & Nti, 1998; Larsson et al., 1998; Lubatkin et al., 2001), but empirical support, beyond anecdotal or case-based insights, is scarce. Hence, with respect to learning processes, what we need is a coherent theoretical model of alliance performance that (1) distinguishes between knowledge transfer and knowledge acquisition, (2) explains symmetrical and differential learning, and (3) enables empirical testing of related hypotheses.

Conclusions

Alliance research drawing on the process perspective contributed many valuable insights into alliance development and alliance performance (Salk, 2005). Conceptual and empirical research examined various causes and consequences of relational and learning processes within alliances and thus provided substantial support for the positive relationship between cooperative relational process and alliance performance. In addition, research showed that learning processes are critical to superior alliance performance. Although these research efforts redirected attention from the structure perspective toward a more fine-grained understanding of ex-post processes related to the "soft side" of alliances, the process perspective is not without problems (Contractor, 2005; Hennart, 2006).

Conceptual and empirical work reported insights into the causes and consequences of relational and learning processes, but it did not provide a strong understanding of the relationship between post-formation processes and alliance performance. Other than conceptual frameworks (Das et al., 2002; Kumar & Nti, 1998; Ring et al., 1994) and several case studies (Ariño et al., 1998; Doz, 1996; De Rond et al., 2004), large-scale empirical research on the performance consequences of alliance processes remains relatively scarce. Nonetheless, prior alliance research drawing on the behavioral perspective provided sufficient background to develop a testable theoretical model. Furthermore, though alliance processes

constitute a critical factor in explaining alliance performance (Doz et al., 1998; Hamel, 1991), advocates of the process perspective often overvalued its importance and neglected explanations pertaining to the structure perspective. Although it remains a question of whether alliance structure affects alliance performance—and if so, directly or indirectly—neglecting the structure perspective inhibits understanding. Empirical research already demonstrated that the initial conditions function as an architecture that imprints on partners' learning processes (Doz, 1996). Therefore, to gain a better understanding of alliance performance, we also need a better understanding of the relationship between alliance structure and alliance process.

2.3 Integrative Perspectives

Several researchers aimed to develop an integrative perspective by drawing on the structure and process perspectives simultaneously. That is, researchers used different theoretical approaches, such as transaction cost economics, game theory, management control, relational governance, the behavioral perspective, and organizational learning to develop hypotheses, and yet the literature still lacks a coherent theoretical model. Mainly, because researchers theorizing about the relationship among alliance structure, alliance process, and alliance performance generally focused on particular aspects (Holmqvist, 2003; Lubatkin et al., 2001; Madhok et al., 1998; Makhija et al., 1997; Nooteboom, 2004). For instance, Lubatkin, Florin, and Lane (2001) proposed an evolutionary model in which successive learning cycles—convergence, divergence, and reorientation—facilitate knowledge creation and innovation, but their analysis only implicitly included variables pertaining to the structure perspective. Makhija and Ganesh (1997) drew on resource-based, information-processing, and organizational learning theories to show how control processes affect interpartner learning. Yet the developed model, for instance, lacks insight on dissimilar learning intents and capabilities, and furthermore on how alliance structure may inhibit unequal learning. We thus may conclude that, researchers made valuable contributions but did not contribute a theoretical model reconciling the structure and processes perspectives.

With respect to empirical testing, researchers drew on the structure and process perspectives to understand post-formation processes and their consequences but unfortunately often used firm-level performance indicators (Chen, 2004; Combs & Ketchen, 1999; Dyer, 1996; Jap & Ganesan, 2000; Kale et al., 2000; Lusch et al., 1996; Muthusamy et al., 2005; Saxton, 1997; Zaheer et al., 1998) or focused on dependent variables other than alliance performance, such as relational processes (Berthon, Pitt, Ewing, & Bakkeland, 2003). Consequently, these empirical findings contribute to explanations of firm performance and alliance development but do not directly advance theory development with respect to alliance performance. However, building on the results of our literature review, we identify four groups of studies that conceptualized and tested integrated theoretical models of alliance performance: (1) studies drawing on a relational governance perspective, (2) studies drawing on management control perspective, (3) studies drawing on organizational learning insights, and (4) studies adopting a holistic perspective.

Relational Governance

Alliance researchers used a relational governance perspective (Macneil, 1978; Macneil, 1980) to provide more insight into the relationship among contractual safeguarding, relational safeguarding, and alliance performance. Whereas proponents of the classical contracting perspective focused on pure contractual enforcement (Hagedoorn et al., 2007; Macneil, 1978), advocates of the relational governance perspective argued that such enforcement is insufficient to achieve superior alliance performance. Because it is too costly to specify all possible contingencies in a contract, partners must rely on other types of enforcement, such as relational enforcement (Macneil, 1980). When exchanges are embedded within social relationships, such as alliances, relational enforcement reduces transaction costs (Noordewier et al., 1990). Through relational processes and the resulting reciprocal norms, relational governance functions to mitigate the exchange hazards targeted by formal contracts (Poppo et al., 2002). In addition, whereas contractual governance provides clearly articulated contractual terms, relational governance promotes relational norms of flexibility, solidarity, and continuance that are positively associated with relationship quality. However, the development and maintenance of relational governance may involve considerable costs in terms of time and resource allocations (Larson, 1992), which suggests that parties should invest in the development of relational mechanisms only when exchange hazards exist (Poppo et al., 2002). Overall, proponents of the relational governance perspective asserted that relational mechanisms operate as a self-enforcing safeguard that is effective and less costly than contractual governance (Lee et al., 2006).

Also by drawing on a relational governance perspective, empirical studies examined whether the relationship between contractual governance and relational governance might best be characterized as complementary or substitutable (Aulakh et al., 1996; Judge et al., 2006; Lee et al., 2006; Lui et al., 2004; Luo, 2002a; Poppo et al., 2002). For instance, Poppo and Zenger (2002) found that customized contracts complemented by relational governance result in higher levels of alliance performance, and Luo (2002a) showed that contract completeness guides the course of operation, ex-post cooperation overcomes the limitations of contracts, and both independently and interactively drive alliance performance. These empirical studies offered the insight that the purposes of alliance contracts, coordination and enforcement, can be achieved through relational and contractual governance. However, with respect to contractual governance, researchers focused on contract completeness (i.e., number and nature of contractual provisions) while neglecting the actual content of the contractual provisions, which may be important drivers of alliance performance (Reuer et al., 2007).

Management Control

Another group of researchers proposed and tested conceptual frameworks to understand the relationships among management control, alliance processes, and alliance performance (Das & Teng, 1998; Makhija et al., 1997; Yan et al., 1994). Whereas relational governance researchers focus on contractual control (Blodgett, 1991a; Hagedoorn et al., 2007), these researchers using a management control perspective concentrate on coordination mechanisms.

Advocates of this perspective posited that gaining management control over an alliance ensures that objectives would be actively pursued and enable the active monitoring and curbing of possible opportunism by partners (Yan et al., 2001). In addition, researchers argued that relationship quality and management control are two distinct, complementary, and supplementary avenues for generating cooperation. A high-quality relationship suggests that parties pursue mutually compatible interests rather than act opportunistically (Wathne et al., 2000), which reduces the need for costly coordination. However, low levels of cooperation encourage parties to behave opportunistically, increasing the need for formal control.

Empirical alliance performance studies drawing on a management control perspective also examined the relationships among management control, the quality of the relationship, and alliance performance (see e.g., Ding, 1997; Kauser et al., 2004; Yan et al., 1994). For instance, Yan and Gray (1994) noted that alliance performance is directly and interactively affected by informal and formal control, such as interfirm consensus, the absence of conflict, and the decision-making power of key personnel. Kauser and Shaw (2004) found strong support for relational processes but indicated that control mechanisms have a minimal impact on alliance performance. In contrast, Ding (1997) provided support that dominant control by one party relates positively to alliance performance, whereas conflict between parties relates negatives. Although empirical studies produced fragmented findings and primarily focused on JVs (see Child et al., 2003; Geringer et al., 1989; Yan et al., 1994, 2001), management control research supports our observation that we must examine alliance structure and processes simultaneously to provide coherent explanations of alliance performance.

Organizational Learning

Alliance researchers drew on an organizational learning perspective to examine knowledge transfer and acquisition processes, while also incorporating relational processes (see e.g., Lane et al., 2001; Lubatkin et al., 2001). With respect to theory development, researchers argued that interorganizational learning combined with socialization constitutes an important driver of alliance performance. For instance, Lubatkin, Florin, and Lance (2001) proposed a model focused on interfirm learning, in which the objective is knowledge creation, not knowledge acquisition or transfer. Their theoretical analysis included explanations of the relationship between socialization and learning. Kumar and Nti (1998) proposed a dynamic theory of alliances for examining outcome and process discrepancies that may emerge as the partners interact. Whereas outcome discrepancies refer to the ability of the partners to achieve their economic and learning objectives, process discrepancies relate to their satisfaction with the pattern of interaction. The degree to which the partners can realize their objectives depends on how they manage these outcome and process discrepancies. These conceptual contributions primarily focused on relational and learning processes, but it is unclear how post-formation learning processes relate to alliance design. Empirical studies drawing on this perspective focused on different antecedents of alliance performance. For instance, Dhanaraj, Lyles, Steensma, and Tihanyi (2004) found that tie strength, trust, and shared values and systems positively influence tacit knowledge transfer, which affects alliance performance

indirectly through the learning of explicit knowledge. Lane and Lubatkin (2001) also proposed and tested a comprehensive model on interfirm learning but examined, among other relationships, the impact of cultural compatibility, the relatedness of the parties' business, and trust on knowledge learned from partners and JV performance. With respect to the relationship between interorganizational learning and alliance performance, both conceptual and empirical work thus supports our idea that aligning the structure and process perspectives would advance theory development.

Table 2.3 Structure, Processes, and Alliance Performance: Empirical Studies

Article	S.[a]	P.[b]	Theory[c]	Point of interests
Ding, 1997	S2	P1	MC	Alliance performance (JV) is positively influenced by dominant management control (foreign partner), but conflicts between partners inhibit alliance performance
Judge & Dooley, 2006	S2	P1	TCE	Trustworthiness and contractual safeguards are negatively related to opportunistic behavior, which is negatively related to alliance performance
Kauser & Shaw, 2004	S2	P1	MC BP	Behavioral characteristics, such as commitment and trust, are strongly related to alliance performance; organizational characteristics, such as formal control, are weakly related
Lee & Cavusgil, 2006	S2	P1	RG	Relational governance as opposed to contractual governance is more effective in strengthening and stabilizing the alliance and facilitating knowledge transfer
Aulakh, Kotabe, & Sahay, 1996	S2	P1	MC	Relational norms and monitoring mechanism are determinants of trust and alliance performance in cross-border partnerships
Luo, 2002	S2	P1	RG	Contract completeness and cooperation drive international alliance performance (JV) independently and interactively
Poppo & Zenger, 2002	S2	P1	RG	Customized contracts complemented by relational governance result in higher levels of alliance performance
Yan & Gray, 1994	S2	P1	MC	Alliance performance (JV) is directly and interactively influenced by informal (e.g., trust, commitment) and formal (e.g., scope) control mechanisms
Dhanaraj , Lyles, Steensma, & Tihanyi, 2004	S2	P1 P2	OL	Tie strength, trust, and shared values and systems positively influence tacit knowledge transfer, which affects alliance performance (JV) indirectly via learning of explicit knowledge
Doz, 1996	S2	P2 P3	OL	Failing alliances are incapable of overcoming design flaws, whereas successful alliances are evolutionary and capable of adapting alliance structures
Ariño & de la Torre, 1998	S2	P1 P2 P3	BP OL	Alliances outcomes (i.e., performance, dissolution) result from continuous learning–action–reaction loops based on efficiency and equity assessments, mediated the quality of the working relationship
Luo, 2005	S3	P1	BP	Alliance profitability is high with high levels of shared perceptions of procedural justice, higher than with asymmetrical perceptions
Sarkar, Echambadi, Cavusgil, & Aulakh, 2001	S3	P1	BP RP	Resource complementarity and compatibility in cultural and operational norms differently impact alliance performance both directly and indirectly through relational capital variables
Tiessen & Linton, 2000	S3	P1	BP	Partner compatibility is positively related to cooperation but not significantly related to competition; cooperation positively influences alliance performance
Lane, Salk, & Lyles, 2001	S3	P1 P2 P3	OL	Alliance performance (JV) is positively related to knowledge application; knowledge understanding and assimilation are positively related to joint venture learning
Fryxell , Dooley, & Vryza, 2002	S2 S3	P1	MC	Social control mechanisms and alliance performance relate positively. Formal control mechanisms and alliance performance are positively related in younger IJVs, but this relationship becomes negative in more mature IJVs
Jap & Anderson, 2003	S2 S3	P1	BP	Differential effects of trust, bilateral-specific investments, and goal congruence on alliance performance with high and low levels of opportunism
Jap, 1999	S2 S3	P1	BP	Goal congruence and trust positively affect coordination; complementary capabilities foster coordination and specialized investments. Joint coordination and investments positively impact profitability and competitive advantage
Brouthers & Bamossy, 2006	S1 S2 S3	P1	BP MC	Implementing post-formation processes to overcome limitations of ex-ante conditions (i.e., cultural, ownership, control) and stimulate trust positively affects alliance performance (JV)

[a] S1 = governance form; S2 = contractual provisions; S3 = inter-firm characteristics.
[b] P1 = relational processes, P2 = knowledge transfer processes; P3 = knowledge acquisition processes.
[c] RG = relational governance; TCE = transaction cost economics; MC = management control; BP = behavioral perspective; OL = organization learning; RP = resource perspective.

Holistic Approach

Several empirical studies, primarily focusing on alliance development, adopted a comprehensive or holistic approach (Ariño et al., 1998; Brouthers et al., 2006; Doz, 1996; Fryxell et al., 2002; Jap, 1999). Instead of examining only one structure and one process dimension, these researchers aimed to propose a holistic description. Using an inductive case study design, Doz (1996) found that failing alliances could not overcome initial design flaws and were characterized by minimal learning processes, whereas successful alliances were highly evolutionary and able to adapt their initial conditions when necessary. In another case study, Ariño and De la Torre (1998) revealed that alliance performance is affected by learning–action–reaction loops between partners, which result in adaptations to the initial alliance structure, continuous knowledge transfers and knowledge acquisitions, and the building of high-quality relationships. Partner firms failing to initiate such learning cycles likely fail. In a longitudinal survey, Jap (1999) found that goal congruence and trust positively affect joint coordination, and complementary capabilities facilitate both coordination and non-recoverable investments. In turn, these results indicated that coordination and non-recoverable investments positively influence the buyer–supplier's profitability and competitive advantage. The results of these empirical studies therefore suggest that the relationship among alliance structure, alliance process, and alliance performance is more complex than often assumed.

Conclusions

Conceptual and empirical work contributing to an integrative perspective on alliance structure, alliance process, and alliance performance produced valuable knowledge. Researchers drawing on the relational governance perspective supported the hypothesis that contractual safeguards and relational safeguards drive alliance performance directly and interactively; those drawing on an organizational learning perspective found empirical support for a reinforcing relationship between relational and learning processes; and holistic studies produced evidence that structure and process elements are interrelated in their impact on alliance performance.

Notwithstanding the relevance of these contributions, two observations are worth mentioning. First, we require a theoretical model that aligns the structure and process perspectives. Previously, conceptual and empirical studies focused on a variety of alliance structure and alliance process elements—some focused on joint ventures (Ding, 1997; Luo, 2002a; Yan et al., 1994) and other studies on contractual alliances (Jap, 1999; Jap et al., 2003; Judge et al., 2006). Most empirical studies incorporated relational process into their explanations but also incorporated different structure variables, such as contract completeness (Lee et al., 2006; Luo, 2002a), management control (Aulakh et al., 1996; Ding, 1997), or non-recoverable investments (Jap, 1999; Jap et al., 2003). The few studies that adopted a holistic approach (Ariño et al., 1998; Child, 2002; Doz, 1996; Jap, 1999; Lane et al., 1998) provided valuable directions for theory development and testing. Second, as the results of the literature review indicate, empirical studies proposed and tested two types of theoretical models of alliance structure, alliance process, and alliance performance. On the one hand, those relying primarily

on a relational governance perspective tested hypotheses that specified alliance process variables as moderators (Lee et al., 2006; Luo, 2002a). For instance, Luo (2002a) used interaction models to examine whether contractual governance and relational governance substitute for or complement each other. On the other hand, empirical research specified alliance processes as mediators between alliance structure and alliance performance (Ariño et al., 1998; Doz, 1996; Poppo et al., 2002), such as when Doz (1996) concluded that initial alliance structure imprints the alliance processes, which in turn influence alliance performance. Moreover, Sarkar, Echambadi, Cavusgil, & Aulakh (2001) found that resource complementarity and partner firm compatibility with respect to cultural and operational norms affected alliance performance, both directly and indirectly through relational processes. However, a theoretical framework should be clear about the nature of the relationship between alliance structure and alliance process.

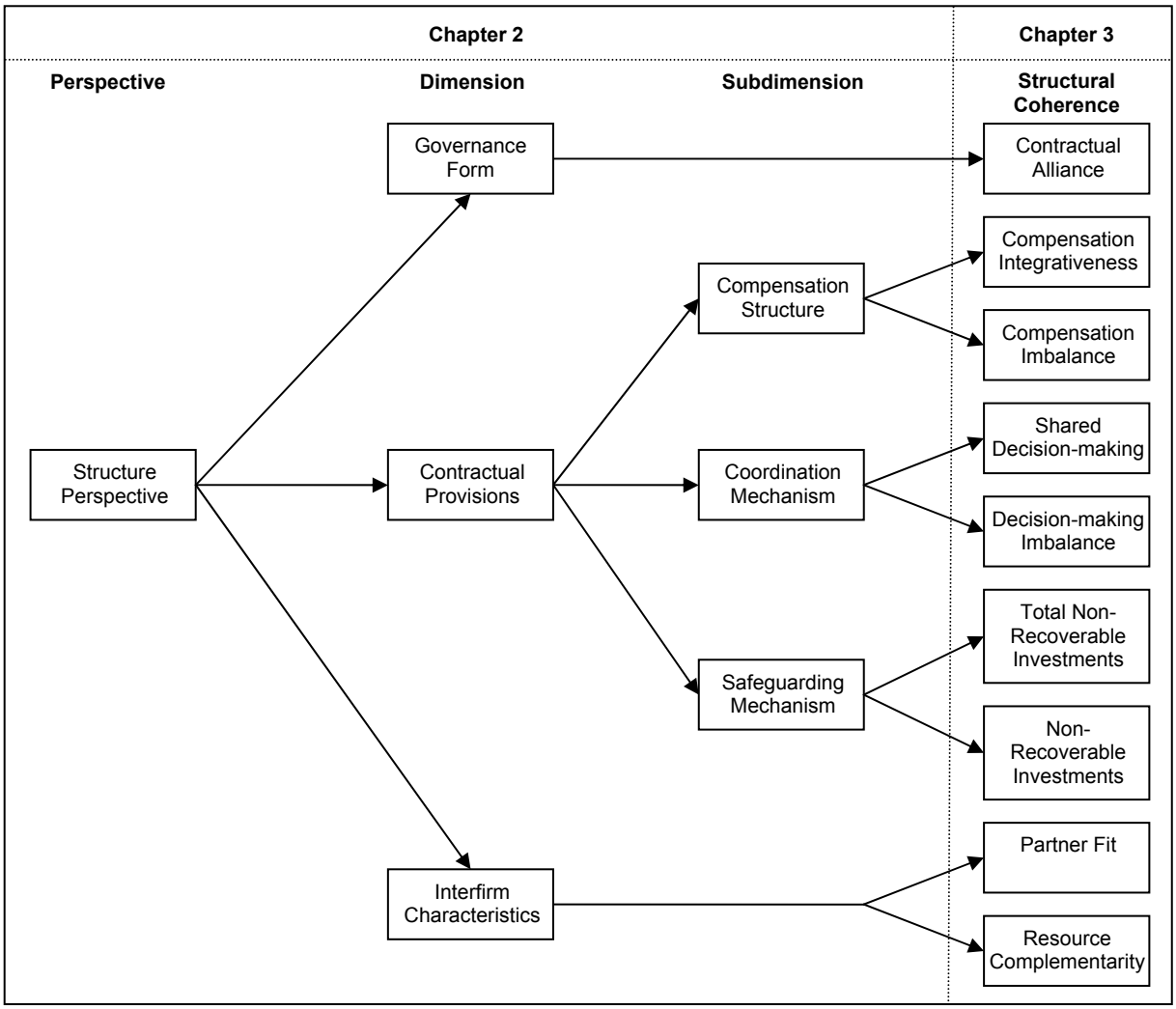
2.4 Implications for Theory Development

A comprehensive model providing structure and process explanations with respect to alliance performance is currently lacking within the alliance literature, despite frequent calls for one (Contractor, 2005; Nooteboom, 2004; Sobrero et al., 1998). The necessary theoretical model must depict the relationships among alliance structure, alliance process, and alliance performance while also acknowledging the complexities that surround alliance structure and alliance process. Researchers developing a theoretical model should aim to overcome the limitations and critiques of the structure and process perspectives. For instance, advocates of the structure perspective often downplayed alliance process functions, while proponents of the process perspective overvalued these functions at the expense of alliance structures. Because conceptual and empirical work has provided sufficient insight to guide theory development and testing, the next steps should include (1) developing a coherent conceptualization of alliance structure, (2) developing a coherent conceptualization of alliance processes, and (3) development of a coherent and testable theoretical model.

During the alliance formation stage, parties make decisions and attempt to design an alliance structure that maximizes alliance performance by curbing exchange hazards while still enabling coordination and enforcement between partner firms. A theoretical model must account for the consequences of these decisions with respect to the three structure dimensions: (1) governance form, (2) contractual provisions, and (3) interfirm characteristics. As depicted in Figure 2.3, we build on our literature review and, in Chapter 3, develop a coherent conceptualization of alliance structure that accounts for governance form, contractual provisions, and safeguarding mechanisms. With respect to governance form, we focus on contractual alliances (see §1.5); for contractual provisions, we include compensation structure, coordination mechanisms, and safeguarding mechanisms. More specifically, we introduce six constructs (i.e., compensation integrativeness, compensation imbalance, shared decision-making, decision-making imbalance, total non-recoverable investments, and non-recoverable investment imbalance) that together constitute the contractual foundation of an alliance. In addition, consistent with our definition of alliance structure, we present two

interfirm characteristics, partner fit and resource complementarity, which also represent two critical alliance formation conditions. Together, these constructs create what we call structural coherence, that is, the degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards. The gist of our argument holds that as the level of structural coherence increases, the risk of exchange hazards decreases, making it more likely that the partners will achieve superior alliance performance.

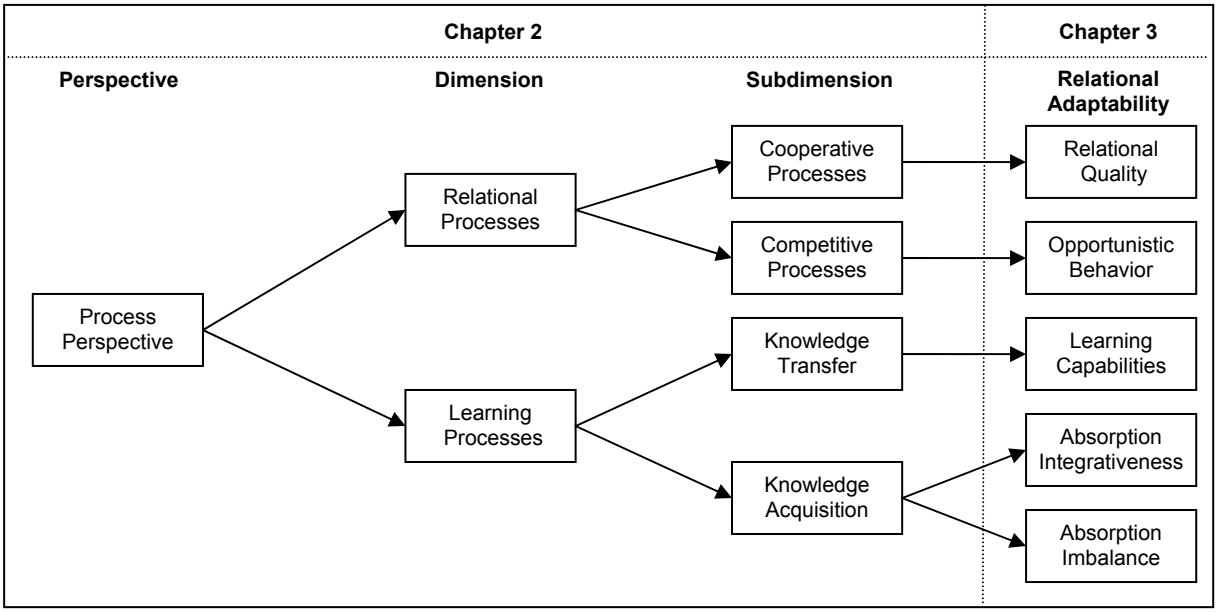
Figure 2.3 Structure Perspective: From Dimensions to Constructs



During the post-formation stage, parties interact and develop ex-post processes to build a relationship that maximizes alliance performance by curbing exchange hazards but again allows for coordination. Building on the results of our literature review, we argue that the theoretical model of alliance performance should incorporate two process dimensions: (1) relational processes and (2) learning processes (see Figure 2.4). With respect to relational processes, we distinguish between cooperative and competitive ex-post processes, which we capture with relational quality and opportunistic behavior constructs. For learning processes, we distinguish knowledge transfer processes from knowledge acquisition processes and argue that learning capabilities and absorption integrativeness reduce the risk of exchange hazards,

whereas absorption asymmetry increases their likelihood. Together, these variables constitute what we call relational adaptability, that is, the parties' willingness and ability to modify the ongoing relationship without changing the initial alliance structure. With this argument, we posit that as the level of relational adaptability increases, the likelihood of exchange hazards decreases, so the parties are more likely to achieve superior alliance performance.

Figure 2.4 Process Perspective: From Dimensions to Constructs



Finally, any theoretical model that attempts to reconcile the structure and process perspectives must be clear about the relationship between alliance structure (i.e., structural coherence) and alliance process (i.e., relational adaptability). Our literature review indicates that researchers have adopted two approaches: moderation and mediation. The moderation approach suggests that the relationship between alliance structure and alliance performance depends on the extent to which partners developed post-formation processes, whereas the mediation approach implies that alliance processes function as an intervening mechanism between alliance structure and alliance performance. This distinction has significant conceptual and methodological consequences (see Box 3.4). Therefore, in Chapter 3, we hypothesize that relational adaptability functions as a mediating variable between structural coherence and alliance performance. That is, we propose a theoretical model and a testable hypothesis to address the concerns we have identified while simultaneously filling some knowledge gaps identified among existing alliance performance literature.

Chapter 3 Structure, Process, and Alliance Performance Theoretical Model

In this chapter, we present Hypothesis 1, which states that the relationship between structural coherence and alliance performance is mediated by relational adaptability. Structural coherence refers to the degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards, whereas relational adaptability pertains to parties' willingness and ability to make modifications to an ongoing relationship. In addition to a direct effect of structural coherence on alliance performance, the level of structural coherence directly influences the extent to which partners develop relational adaptability. In turn, a high level of relational adaptability positively affects alliance performance. The partial mediation hypothesis is embedded within a comprehensive theoretical model, which draws on the structure and process perspectives. We contend that a reconciliation of the two perspectives increases explanatory power with respect to alliance performance, as alignment of structure and process explanations more completely describes the complexity of alliances than either perspective alone (Contractor, 2005; Nooteboom, 2004; Zaheer et al., 1995).

We organize this chapter as follows. Building on our conceptualization of alliance structure (see §2.1), we discuss the structure perspective's key characteristics and elaborate on its assumptions, identify exchange hazards, and consider solutions to overcome exchange hazards (i.e., structural safeguards) in Section 3.1. Then, building on our conceptualization of the process perspective (see §2.2), we elaborate in Section 3.2 on the process perspective's assumptions, exchange hazards and solutions, and process safeguards to reduce the likelihood of exchange hazards. In Section 3.3, we contrast the structure and process perspectives and address several issues, such as conflicting assumptions that must be resolved, before we present the partial mediation hypothesis in Section 3.4.

3.1 Structure Perspective: Assumptions, Exchange Hazards, and Safeguards

Alliance researchers drawing on a structure perspective argued that decisions with respect to alliance structure directly determine alliance performance (Hennart, 1988; Williamson, 1985). Consistent with this logic, we argue that as the level of structural coherence increases, the risk of exchange hazards diminishes, and hence, the likelihood of superior alliance performance increases. That is, under conditions of structural coherence, parties only need to fulfill their contractual obligations for the relationship to unfold according to expectations. If unforeseen contingencies emerge, an alliance structure provides sufficient leverage to overcome these challenges, or an alliance may become inefficient, resulting in a premature termination, because inefficient alliances likely end before partner firms can intervene (Reuer & Ariño, 2002). To better understand this relationship between structural coherence and alliance performance, we first discuss the structure perspective's assumptions, elaborate on exchange hazards, and discuss safeguards that parties can implement to overcome these exchange hazards. Table 3.1 presents an overview of the structure perspective's key characteristics.

Structure Perspective: Assumptions and Implications

Advocates of the structure perspective asserted that an efficient alliance structure reduces the likelihood of exchange hazards, which fosters superior alliance performance (David et al., 2004; Hennart, 1988). This main premise recognizes that managers are capable, though to a limited extent (Simon, 1947), of looking ahead and recognizing contractual hazards and investment opportunities (Williamson, 1999). Managers react to this foresight by designing an alliance structure that mitigates exchange hazards and enables the full realization of future gains. The structure perspective is built based on three assumptions about human nature: (1) managers may act opportunistically, (2) managers are subject to bounded rationality, and (3) managers' behavior is externally determined.

First, the structure perspective builds on the assumption that managers are likely to act opportunistically when they are confronted with an opportunity to do so (Williamson, 1985). Opportunistic behavior refers to the extent to which parties seek gain for themselves at the expense of another (Maitland et al., 1985; Wathne et al., 2000; Williamson, 1975, 1985). Opportunistic behavior may include making hollow promises or window-dressing efforts, unresponsiveness, unreasonable demands (e.g., asking the other party to pay more than their fair share), misrepresenting abilities, expressing reluctance to fulfill a commitment, shirking, withholding information, incomplete disclosure of information, expropriation of know-how, exploitation of partner-specific assets, and distorting information (Jap, 2001b; Wathne et al., 2000; Williamson, 1985). Advocates of the structure perspective did not assume that each manager behaves opportunistically but rather that, prior to an exchange, a person cannot have reliable information about the partner likelihood of opportunism (Gulati et al., 1998). Therefore, according to proponents of the structure perspective, opportunism (i.e., propensity to behave opportunistic) must be assumed as a basis for alliance structure decisions (Ghoshal, 2005), because addressing opportunistic behavior ex-post is too costly (Williamson, 1975). Thus, when two parties engage in an exchange relationship, they should attempt to design an alliance structure that reduces the propensity for parties to behave opportunistically.

Second, proponents of the structure perspective assumed that managers are subject to bounded rationality, which refers to the cognitive limitations humans, and thus alliance managers suffer in processing information (Simon, 1947, 1955). That is, it is expensive, both in time and resources, for managers to acquire and interpret information about the broader contracting environment (Leiblein, 2003). Despite even their best efforts to deal with complexity and unpredictability, managers remain limited in their ability to plan for the future and predict the various contingencies that may arise accurately (Nooteboom, 2004), which results in a need for formalization. However, limited information also may result in misaligned governance forms or incomplete contracts, because it is too costly for managers to negotiate and write claims that fully describe each party's responsibilities and rights for all contingencies that reasonably could occur during the life of an alliance (Macneil, 1978). When new circumstances arise, a contract must specify in adaptation clauses how to deal with it (Hagedoorn et al., 2007), the parties engage in costly renegotiations (Reuer & Ariño, 2002),

or the alliance prematurely ends (Williamson, 1985). Therefore, the assumption of bounded rationality suggests that managers should design an alliance structure that, on the one hand, enables parties to deal with unforeseen circumstances and, on the other hand, reduces the likelihood of exchange hazards.

Table 3.1 Structure Perspective's Characteristics

	Issue	Description	References
Focus	Alliance structure	Configuration of alliance formation conditions, which aim for legally organizing coordination, contractual enforcement, and safeguarding against exchange hazards.	Hennart & Zeng, 2005; Williamson, 1985, Hennart, 1988
Assumptions	Bounded rationality Opportunism Determinism	Managers' limited capacity to process information, likelihood to behave self-interested with guile, and lack of discretion to make adaptations necessitate an alliance structure that curbs exchange hazards.	Nooteboom, 2004; Reuer & Ariño, 2002; Williamson, 1985; Williamson, 1999; Simon, 1947
Exchange Hazards	Opportunistic behavior - Hold-up - Free-riding - Shirking Appropriation and spill-over Goal conflict	The vulnerabilities partner firms face in dealing with one another once the alliance is formed; parties are vulnerable to deceitful behavior, the extraction of benefits not part of the alliance contract, and conflicts about goals.	Gulati & Singh, 1998; Klein, Crawford, & Alchian, 1978; Oxley, 1997; Wathne & Heide, 2000; Williamson, 1985
Structural Safeguards	Partner selection Governance form Contractual provisions - Compensation structure - Coordination mechanisms - Safeguarding mechanisms	**Structural coherence**: Degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards, including governance form, contractual provisions, and interfirm characteristics	Douma et al., 2000; Gulati & Singh, 1998; Hagedoorn & Hesen, 2007; Macneil, 1978; Williamson, 1985

Third, proponents of the structure perspective assumed a strong variant of determinism (Whittington, 1988), suggesting that managers' behavior is determined by external stimuli. That is, managers can influence the future and its events, but their behavior depends on the present and past. Within the context of alliances, this assumption means that managers have little discretion (i.e., choice) with regard to how to respond to unforeseen circumstances after the alliance forms. Moreover, according to proponents of the structure perspective, past decisions with respect to alliance structure constrain future decisions. This lack of choice suggests that when circumstances change, parties cannot adapt their ongoing relationship to fit with new demands (Reuer & Ariño, 2002). Therefore, advocates of the structure perspective argued that an alliance structure should be capable of dealing with contingencies. For instance, alliance contracts should contain contingency clauses that provide parties with clear guidelines about how to deal with unforeseen events (Luo, 2002a). Together, the three assumptions of opportunism, bounded rationality, and determinism have one major implication: Managers should ex-ante design an alliance structure that reduces the likelihood that ex-post exchange hazards occur.

Structure Perspective: Exchange Hazards

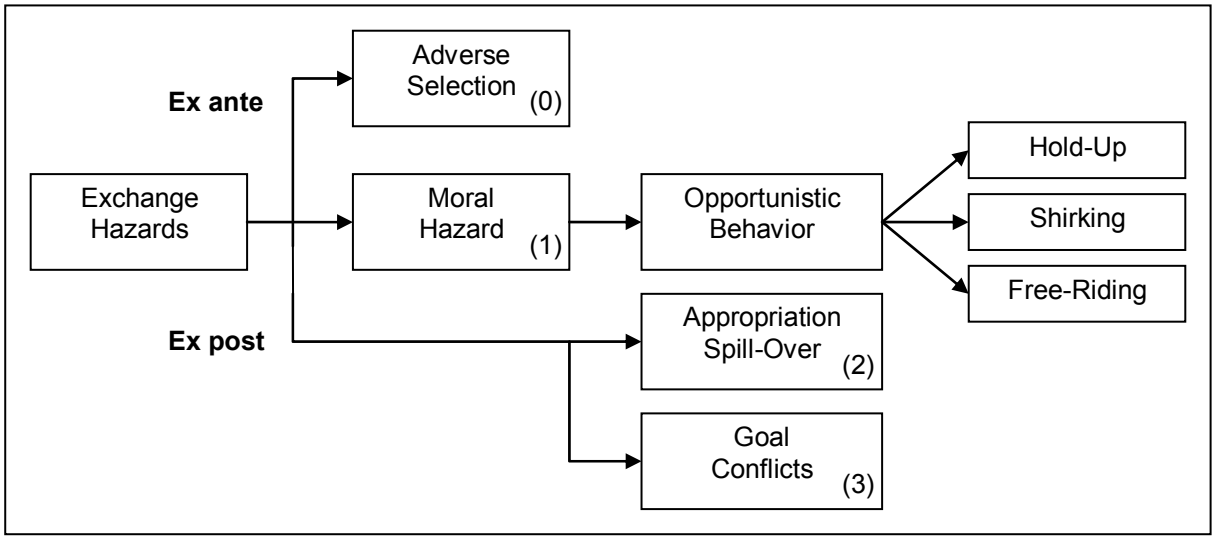
Exchange hazards have been defined as the vulnerabilities partner firms face in dealing with each other (see Figure 3.1). One type of exchange hazards pertains to alliance formation. Before engaging in an exchange relationship, parties may misrepresent information to secure individual interests, a manifestation of an exchange hazard that economists refer to as adverse selection (Akerlof, 1970). The purpose of this precontractual opportunistic behavior is to

exploit asymmetric information about future performance (Balakrishnan & Koza, 1993). However, we focus in this study on contractual alliances that already have been formed. Therefore, we focus on three types of ex-post exchange hazards: (1) moral hazard, (2) appropriation and spill-over, and (3) goal conflicts.

Opportunistic Behavior

Partner firms may exert low effort after they have agreed to engage into an exchange relationship, which is a moral hazard problem (Pauly, 1968). Parties engaging in such postcontractual behavior use the information asymmetry between the partner firms to exploit current performance. Moral hazard gets manifested through opportunistic behavior (Williamson, 1975, 1985). According to advocates of the structure perspective, opportunistic behavior, or even the likelihood that a party will behave opportunistically, represents an exchange hazard. Williamson (1976, p. 6) defined opportunistic behavior as "self-interested behavior with guile" and, in his later work (1985, p. 47), described guile as "lying, stealing, cheating, and calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse." An alliance structure should be designed to reduce the likelihood of various forms of opportunistic behavior, including (1) the hold-up problem, (2) shirking, and (3) free-riding.

Figure 3.1 Structure Perspective: Types of Exchange Hazards



Hold-up problems arise when one party exploits the other party's dependence on the alliance (Williamson, 1985), which may result from the presence of assets and investments with a value specific to the relationship, which in turn creates incentives for opportunism (Klein et al., 1978; Williamson, 1975). If a party is tied to the alliance through specialized investments, it cannot dissolve the alliance without incurring a substantial loss, namely, the costs associated with the loss of non-recoverable investments (Klein et al., 1978). In such conditions of unbalanced dependence, the dominant partner can exploit its bargaining power advantage to extract additional concessions from its counterpart (see Box 3.1). For instance, a party can use its bargaining power to coerce its partner into accepting a new, more advantageous financial arrangement and thus increase its return on investment at the expense

of the other party. When a firm makes non-recoverable investments in an alliance and thereby becomes increasingly dependent on its partner, it loses some of its bargaining power and may fall victim to opportunistic behavior by its partner.

Shirking refers to situations in which one party avoids its obligations and contracted duties (Wathne et al., 2000), which can increase that party's short-term rewards through, for example, an immediate cost saving, though it also imposes costs on the alliance and jeopardizes long-term value creation (Wathne et al., 2000). Consider an example in which a local partner fails to comply with a foreign partner's quality standards with regard to a newly developed product. From the local partner's perspective, shirking produces an immediate benefit in the form of cost savings. However, in the long-term, business opportunities from the alliance might be lost as customers become dissatisfied, decreasing the alliance's future revenues. Breaching contracts may increase one party's rewards, but it also damages alliance performance. For instance, violating an exclusivity agreement could generate additional revenue for one party while also imposing additional monitoring costs on the partner firm.

Box 3.1 Illustration of the Hold-Up Problem

The fate of Anamartic, a small British high-technology firm, provides an excellent example of the hold-up risk: Anamartic developed a component that was customized to work in Tandem's computers, using proprietary technology and a memory component purchased from Fujitsu. Eventually, Anamartic went bankrupt when the price for memory components dropped significantly but Fujitsu refused to lower its prices as well. Fujitsu could maintain its price level because contractually, it was Anamartic's sole supplier of memory components.

Source: Garnsey & Wilkinson (1994)

Free-riding arises when one party fails to fulfill its obligations to supply the right inputs to its partner (Hennart et al., 2005). If parties contractually agree to share inputs and outputs, assuming a failure to supply the agreed amount or quality of resources to the alliance is difficult to detect, then a party that fails to provide its share will reap additional benefits. Imagine one party devotes fewer working hours (i.e., staff) to an R&D alliance, but because the laboratory is in-house, the partner firm cannot detect this free-riding behavior easily. The likelihood of free-riding behavior therefore needs to be curbed through safeguarding mechanisms for two reasons. First, if a party engages in this type of behavior, the long-term value creation potential of the alliance cannot be realized, because prerequisite resources are not available. Second, to address ex-post free-riding, parties may need to install costly monitoring mechanisms, and these expenditures negatively affect alliance performance. In summary, to achieve superior alliance performance, parties must design an alliance structure that reduces the likelihood of hold-up problems, shirking, and free-riding.

Appropriation and Spill-over Concerns

After an alliance has been formed, parties may have concerns about the appropriation of benefits and spill-over (Gulati et al., 1998; Khanna et al., 1998; Oxley, 1997). Appropriation refers to a party's concern about its ability to capture a fair share of the common benefits

created through the alliance (Gulati et al., 1998 p. 788); spill-over refers to the transfer of knowledge from one partner to another with the aim to exploit it in activities not part of the initial agreement (Ariño, 2003; Parkhe, 1993a). Both appropriation and spill-over constitute exchange hazards, because with appropriation, a party may not receive its anticipated benefits, whereas spill-over may cause a party to lose valuable knowledge to a partner.

Appropriation concerns originate from the presence of behavioral uncertainty, combined with the difficulties of specifying intellectual property rights, as well as the challenges of contractual monitoring and enforcement (Oxley, 1997). Uncertainties associated with future performance and problems in observing partners' contributions aggravate the potential that a party does not receive its anticipated share of benefits. The presence of a knowledge component in an alliance raises additional appropriation concerns (Gulati et al., 1998), because knowledge is difficult to bound, monitor, and codify. These particular characteristics of knowledge hinder knowledge transfer between the partners (Chen, 2004), which increases appropriation concerns. Then these concerns become further aggravated when tacit knowledge is involved. Tacit knowledge, defined by Polanyi (1962) as knowledge that is non-verbalizable, intuitive, and unarticulated, innately entails ambiguity, which makes it difficult for parties to assess the value of knowledge accurately (Contractor, 2001). Furthermore, knowledge ambiguity raises knowledge transfer barriers (Simonin, 1999). Therefore, parties need to make decisions with respect to alliance designs that aim to reduce appropriation concerns about various performance objectives.

Spill-over is a specific type of appropriation, such that parties transfer what they have learned from their partner to other activities outside the alliance (Khanna et al., 1998; Zeng et al., 2002). The consequences of spill-over amplify when partner firms are (potential) competitors (Bengtsson & Kock, 2000). If a competitor appropriates knowledge through an alliance, it may improve its competitive advantage relative to the partner firm, because the acquired knowledge augments this firm's core competences or weakens its partner's core assets. Thus, a spill-over occurs when a party acquires knowledge through the alliances, and its counterpart cannot prevent the use of this knowledge for activities that are not part of the initial agreement. For instance, knowledge usage cannot be protected adequately by law as a result of insufficient patenting processes (Oxley, 1999). Thus, parties must design an alliance structure that reduces the risk of spill-over.

Goal Conflicts

As an alliance develops, the likelihood of goal conflicts between partner firms may increase as a result of internal and external dynamics (Yan & Zeng, 1999). Goal conflicts constitute an exchange hazard, because incompatible or misaligned goals reduce incentives for parties to cooperate and contribute to achieving the other's objectives (Eliashberg et al., 1984). Unlike the other two types of exchange hazards, goal conflicts do not necessarily pertain to the division of contribution and rewards. That is, whereas opportunistic behavior deals with the deceitful extraction of benefits and appropriation and spill-over refer to the division of

benefits between the partners, goal conflicts may arise regarding the long-term strategy of the alliance, day-to-day operations, product quality specifications, the use of technological expertise, or the use of conflict resolution mechanisms. As goal incompatibility between parties increases, the likelihood of conflicts increases as well (Douma et al., 2000), which in turn reinforces alliance instability. Hence, goal conflicts constitute an ex-post exchange hazard, whose likelihood should be reduced through choices with respect to the alliance structure (Eliashberg et al., 1984; Hennart et al., 2005).

Structural Safeguards against Exchange Hazards

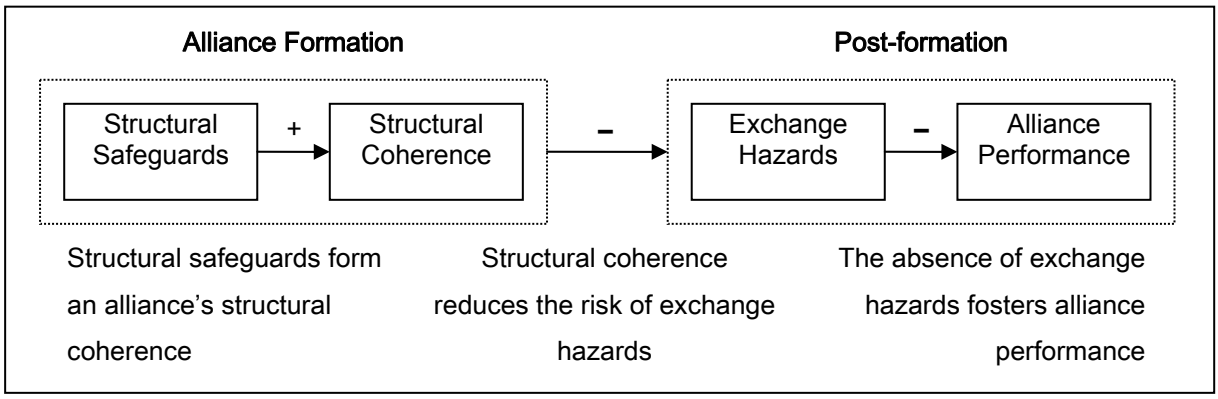
During the alliance formation stage, parties erect structural safeguards to secure their individual interests and protect their relationship against exchange hazards (Contractor, 2005). These structural safeguards provide, at minimum cost, the control necessary for parties to believe that engaging in the alliance will benefit them (Dyer, 1997; Williamson, 1985). Advocates of the structure perspective have argued that structural safeguards reduce the likelihood of exchange hazards, whereas the absence of exchange hazards positively contributes to the likelihood of superior alliance performance. That is, an alliance structure should align parties' interests by creating an incentive structure that stimulates the creation of long-term gains through cooperation while reducing short-term gains from competition (Wathne et al., 2000).[11] We introduce structural coherence as a factor that can represent the extent to which parties have succeeded in designing adequate alliance structures.

We define **structural coherence** as *the degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards, including governance form, contractual provisions, and interfirm characteristics* (Dussauge et al., 1995; Miller, 1986). This definition has two implications. First, it implies that decisions with respect to governance form, the scope and content of alliance contracts, and partner selection influence the extent to which parties are protected against exchange hazards. For example, researchers demonstrated that equity arrangements outperform non-equity arrangements with respect to reducing the likelihood of exchange hazards (Gulati et al., 1998), but other researchers argued that decisions with respect to contractual design and partner selection affect the likelihood of exchange hazards (Hagedoorn et al., 2007). Second, this definition of structural coherence implies that decisions with respect to governance form, contractual provisions, and partner selection can be mutually supportive and form a coherent configuration (Hennart et al., 2005). To the extent that this configuration becomes more coherent, it becomes similar to a unitary organizational entity (i.e., quasi-hierarchy). For example, parties may agree about hybrid compensation structures, share decision-making rights, or commit themselves to non-recoverable investments, which in combination create a set of reciprocal relationships between parties. Developing this type of reciprocal relationship contributes to the degree of structural coherence, which decreases the likelihood of exchange hazards (see Figure 3.2).

[11] See Chapters 4 and 5 for an in-depth discussion of the relationship between cooperation and competition.

In this study, we focus on contractual alliances (see §1.5), which implies that with respect to theory development, we do not have to consider the governance form. Previous research demonstrated that equity agreements are more likely to reduce exchange hazards and provide stronger incentives for parties to cooperate compared with non-equity agreements (Colombo, 2003; Hennart, 1988). However, non-equity agreements provide parties with a flexible governance form that is relatively easy to establish and terminate, though it offers less protection against exchange hazards (Gulati et al., 1998), because of the lack of hierarchical control through ownership (Nooteboom, 2004). As a consequence, contractual alliances incite parties to resort to a substantial range of other structural safeguards (Hagedoorn et al., 2007; Heide, 1994). We argue that the level of structural coherence is influenced by four types of structural safeguards, resulting from the decisions firms make during the alliance formation stage: (1) interfirm characteristics, (2) compensation structure, (3) coordination mechanisms, and (4) safeguarding mechanisms.

Figure 3.2 Structure Perspective: Main Logic



Interfirm Characteristics

After a firm has decided to engage in an alliance, selecting an appropriate partner represents the next step (Hitt, Dacin, Levitas, Arregle, & Borza, 2000). Partner selection involves the acts undertaken to identify potential exchange partners and assess their intentions (Gulati, 1995a). The main aim during this phase is to proactively solve any potential governance problems (Wathne & Heide, 2004). Thus, the most straightforward way to manage exchange hazards is to select partners that are a priori not opportunistically inclined and inherently cooperative for a particular task (Wathne et al., 2000). Although careful partner selection solves the adverse selection problem, ex-post exchange hazards still may prevail. Parties therefore must select partners that decrease the probability of opportunism, limit the risk of appropriation and spill-over, and attenuate the likelihood of goal conflicts.

Various interfirm characteristics affect the likelihood of exchange hazards, including national cultural differences (Barkema et al., 1997), overlap between partners' markets (Khanna, 1998), overlap between partners' technologies (Mowery, Oxley, & Silverman, 1998), the extent to which partners are competitors (Bengtsson et al., 2000), degree of alliance capabilities shared between the partners (Lambe et al., 2002), and prior experience with each

other (Gulati, 1995b). Building on previous alliance research (Douma et al., 2000; Harrison et al., 2001; Hitt et al., 2000; Saxton, 1997), we focus on two specific interfirm characteristics, (1) partner fit and (2) resource complementarity, supported by two arguments. First, partner fit and resource complementarity represent, respectively, Type II and Type I diversity (Parkhe, 1991). Second, partner fit and resource complementarity have received substantial conceptual and empirical support with respect to their importance as alliance formation conditions (Harrigan, 1988; Kale et al., 2000; Lambe et al., 2002; Mowery, Oxley, & Silverman, 1996; Park et al., 1997; Parkhe, 1993a; Saxton, 1997; Shenkar & Li, 1999).

Partner fit is the extent to which interfirm characteristics, such as strategic, cultural, organizational, and operational features are compatible at the formation stage (Douma et al., 2000; Park et al., 1997; Saxton, 1997). Partner fit represents Type II diversity (Parkhe, 1991), so if a difference between interfirm characteristics exists, it has a negative effect on alliance outcomes. For instance, if parties have diverging views about future industry developments, it likely will cause conflicts during alliance negotiation; similarly, parties with different organizational cultures likely experience difficulties during communication and decision-making (Pangarkar & Klein, 2001; Sirmon & Lane, 2004). Saxton (1997) distinguished between strategic and organization fit and demonstrated that partners with similar organizational attributes, such as customers, manufacturing capabilities, and other organizational processes, are more likely to enjoy synergies. Fit determines the extent to which organizations can get along and realize anticipated synergies that are critical to the alliance's success (Douma et al., 2000).

The propensity for opportunistic behavior declines when parties form an alliance marked by compatible firm characteristics, because partner fit contributes to a high-quality relationship (Gulati, 1995b; Saxton, 1997). Selecting partners that attribute similar strategic importance to the alliance reduces the likelihood of opportunistic behavior and increases cooperation (Pfeffer et al., 1978). Compatible cultures and organizational and operational systems also reduce incentives to act opportunistically and inhibit shirking and free-riding, because this compatibility reduces a firm's uncertainty about its partner's intentions, interests, or competences (Douma et al., 2000). Appropriation and spill-over concerns also can be remedied by careful partner selection. For instance, choosing high-fit partners increases the likelihood that a party can detect the unwanted transfer of proprietary knowledge, which discourages parties from doing it. Finally, goal conflicts are reduced by careful partner selection, determined by similar objectives and similar strategies (Hennart et al., 2005), because partner fit fosters cooperation even as it enables parties to develop a shared vision, assess the extent to which alliance strategies are compatible, and evaluate the added value for their individual businesses (Douma et al., 2000). The presence of partner fit further creates a perception that what is beneficial for the counterpart also is in the best interest of the firm (Jap, 1999). In summary, partner fit constitutes a structural safeguard that contributes positively to an alliance's structural coherence.

Resource complementarity is defined as the extent to which the joint use of distinct sets of resources yields a higher total return than the sum of returns that could be earned if each set of resources were used independently (Chi, 1994; Dyer et al., 1998). This definition implies that alliances offer a viable option to a firm if it does not possess the entire bundle of resources and capabilities it needs to sustain earned rents in a particular domain of activity or lacks the capability to develop them competitively (Madhok et al., 1998; Mowery et al., 1998). Selecting a partner that contributes to the firms' Type I diversity is essential to alliance formation (Parkhe, 1991). For instance, Toys 'R Us, wanting to expand into Japan at the beginning of the 1990s, engaged in a joint venture with McDonald's Japan. McDonald's bought the real estate for the toy company, which then made space for a McDonald's outlet. Because neither firm intended to enter the other's industry, each could benefit fully from their complementary resources (Hennart et al., 2005). In addition, because resource complementarity between partners increases the value creation potential of an alliance (Dyer et al., 1998), it also constitutes a structural safeguard against exchange hazards.

Moreover, resource complementarity between partners provides strong incentives to continue and maintain a relationship (Nakamura, Shaver, & Yeung, 1996). When parties align valuable resources, they may create synergetic outcomes that otherwise would be difficult to achieve (Dyer et al., 1998). Lambe, Spekman, and Hunt (2002) presented empirical findings indicating that resource complementarity enables parties to develop an idiosyncratic resource foundation, which thus fosters joint value creation. In this sense, resource complementarity reduces the risk of opportunistic behavior and goal conflicts, because the long-term value creation likely outweighs the short-term rewards. However, resource complementarity also may increase risk appropriation and spill-over. Partnering firms that contribute complementary resources confront a tempting opportunity to obtain valuable new resources possessed by their counterparts. The extent to which appropriation and spill-over occurs therefore depends on other structural safeguards, such as sufficient compensation (Hennart et al., 2005), shared decision-making (Yan et al., 2001), and the presence of non-recoverable investments (Williamson, 1985). Nonetheless, resource complementarity constitutes a structural safeguard that relates positively to structural coherence.

Compensation Structure

One provision of an alliance contract pertains to the compensation structure between the parties (Ariño et al., 2004). A compensation structure depicts, on the one hand, the rewards parties can expect, such as profits, royalties, or intellectual property, and, on the other hand, the contributions those parties are expected to make, including payments, provision of raw materials, and know-how (Contractor et al., 2000). As its basic premise, a compensation structure aligns parties' individual interests by creating an incentive foundation that ensures long-term gains from cooperative behavior exceed the short-term payoff of opportunistic behavior (Wathne et al., 2000). An adequate compensation structure provides incentives for the parties to continue a relationship while also reducing the likelihood of exchange hazards.

Box 3.2 Types of Compensation

Ex-Ante Sharing
Parties can enter an alliance with a contract that focuses on ex-ante sharing. This type of contract specifies each party's compensation before the alliance is implemented. For instance, lump-sum payments might be part of the prospective compensation structure and provide an immediate and certain return to the partner that receives them. Similarly, royalty fees are agreed upon ex-ante and typically are a percentage of sales. An advantage of ex-ante sharing through lump-sum fees or royalties is that even if ex-post profits are zero, rewards might be appropriated by the parties. However, an ex-ante contract presupposes that the partners are capable of specifying a priori the anticipated benefits and agreeing beforehand on the compensation structure. The parties assume that ex-post measurement is easy and that if a disparity emerges between ex-ante anticipations and ex-post realization, renegotiation provides them with an easy way to stabilize the alliance.

Residual Sharing
Another type of compensation focuses on ex-post sharing. A residual sharing contract is appropriate when it is difficult to specify ex-ante the desired performance, parties cannot ex-post measure performance, or enforcing the contract proves difficult. With regard to an alliance, two parties might opt to share costs and revenues or include trade of raw materials, components, or finished products (a dividend compensation structure is not applicable, because no equity is involved). Residual sharing has as its main advantage the alignment of incentives for parties to perform, because parties are promised a share of the anticipated benefits. Thus, if an alliance becomes a commercial success in later years, a party's rewards are not constrained by fixed payments or royalty percentages. In contrast to an ex-ante contract, residual sharing contracts are less sensitive to contingencies, so the need to renegotiate contractual terms decreases. With a residual sharing contract, parties' rewards depend on the profits of the alliance, not their specific contributions.

Hybrid Compensation
Many alliances are not organized according to just ex-ante sharing or just residual sharing but rather exhibit a hybrid compensation structure. In alliances with a technology component in particular, a hybrid compensation structure is appropriate. Whenever tacit knowledge is part of the agreement, the issue of information asymmetry emerges to favor the knowledge holder, because this type of knowledge implies increased difficulty in valuing and describing that knowledge. Residual sharing overcomes this problem, because residual contracts are less sensitive to all kinds of unforeseen circumstances than are ex-ante contracts. However, ex-ante sharing provides strong incentives for parties to engage in an alliance, even if future rewards are uncertain. If ex-ante sharing is complemented with residual sharing, the parties have strong incentives to maintain the relationship, because rewards depend on the extent to which the alliance is successful.

Sources: Contractor & Ra (2000); Gulati & Singh (1998); Hennart (1988); Hennart & Zeng (2005)

Compensation structures can take a variety of forms, including lump-sum fees, royalties, cost-revenue sharing, keeping own profits, and transfer pricing (Aulakh, 2001; Contractor et al., 2000; Mendi, 2005). Each compensation form has different properties. For instance, lump-sum payments typically are paid at the start of the agreement (i.e., ex-ante), whereas cost-revenue sharing typically gets settled after implementation (i.e., ex-post). Box 3.2 describes how parties might choose from a variety of compensation methods, including ex-ante sharing, residual sharing, and hybrid forms. During the formation stage, parties must make decisions about these compensation forms. Contingent on external and internal conditions, parties may design different compensation configurations, which implies each established alliance is likely characterized by its own specific compensation structure to match the alliance formation contingencies. To address this heterogeneity across alliance contracts, we introduce two constructs that capture parties' negotiation outcomes with respect to an alliance's compensation structure: (1) compensation integrativeness and (2) compensation imbalance.

Compensation integrativeness[12] is defined as the combination of parties' anticipated benefits as formalized in the alliance contract, regardless of whether parties' anticipated compensations are balanced or imbalanced (Blodgett, 1991b; Greenhalgh & Chapman, 1998; Kersten, 2001; Lax et al., 1986; Thompson, 1990). A high level of compensation integrativeness means that the parties have formalized a compensation structure that maximizes the value creation potential of the alliance. So, the parties' compensation will be *Pareto* optimal if there does not exist some other feasible solution or set of solutions that would improve the utility of one or both parties without harming either party (Thompson, 1990). More specifically, compensation integrativeness means that parties have agreed on a reward/contribution ratio that outweighs the alternative organizational forms that could have been adopted to achieve each party's objectives (Blodgett, 1991b; Madhok et al., 1998). A high level of compensation integrativeness suggests that partners perceive their compensation as consistent with their initial expectations (Thompson, 1990). Parties likely expect a sufficiently high return on their investment, for instance, through a combination of advance payments, royalties, and claims on intellectual property; at the same time, their resource contributions receive valuation that conforms to their expectations.

Drawing on equity theory (Adams, 1965), we contend that as the level of compensation integrativeness increases, parties' long-term orientation toward the relationship increases, because the adopted compensation structure guides parties' behavior toward achieving long-term collective interests and forgoing short-term individual interests (Contractor et al., 2000). Equity theorists have argued that a party evaluates an ongoing relationship by assessing its own inputs and the outputs it receives in return, relative to what the other party contributes to and receives from the relationship (Adams, 1965). With respect to compensation, a party experiences equity when it perceives that the rewards it and its partner receive are proportional to their respective contributions. Perceived equity promotes cooperation, because each firm compares the immediate gain from cheating with the possible sacrifice of future gains that may result from violating the agreement (Parkhe, 1993a). Through expectations of reciprocity and the association of anticipated gains from mutual cooperation, the future casts a shadow back on the present and affects partner firm efforts (Heide & Miner, 1992). Broken promises in the present decrease cooperation in the future, whereas a party fulfilling its contractual obligations can anticipate compliance by its partner. Compensation integrativeness thus stimulates long-term cooperation by providing incentives to the parties to pursue individual yet compatible interests, which reduces the likelihood of opportunistic behavior, appropriation and spill-over, and goal conflicts. That is, a compensation structure that promises to fulfill individual partner firms' objectives reduces opportunistic behavior, as such short-term, self-interested behavior would damage the possibility of the parties' long-term rewards. For instance, royalties reduce the probability of opportunistic behavior because they link ex-post payments to present value creation, which is not the case if compensation gets paid upfront (Mendi, 2005). Similarly, the likelihood of shirking, exploiting a hold-up

[12] We discuss in Section 5.1 the antecedents of compensation integrativeness and compensation imbalance.

situation, appropriation and spill-over concerns, and goal conflicts decline through compensation integrativeness. In summary, compensation integrativeness constitutes a structural safeguard that positively contributes to an alliance's structural coherence.

In contrast, if an alliance contract is characterized by **compensation imbalance**,[13] the risk of exchange hazards increases. Compensation imbalance is defined as the asymmetry between each party's anticipated benefits as formalized in the alliance contract (Blodgett, 1991b; Greenhalgh et al., 1998; Kersten, 2001; Lax et al., 1986; Thompson, 1990), such as when one party exploits its power advantage and seeks to maximize its individual gain at the expense of its partner (Olekalns, Smith, & Walsh, 1996). In this case, the partners have formalized an incentive structure that primarily, but not necessarily completely, favors one party. For example, a party may receive an exceptionally large advance payment, negotiate a better transfer price, or receive a higher valuation for its intangible resource contribution relative to its counterpart. The presence of compensation imbalance suggests that one party has been able to increase its expected return on investment relative to the return on investment of its counterpart, which increases the likelihood of exchange hazards.

A particular argument from equity theory supports our assertion that compensation imbalance increases the likelihood of exchange hazards. When the outcome–input ratios are unequal, inequity is created, so one firm will respond negatively, whether that inequity is positive or negative (Adams, 1965). Positive inequity leads to guilt because the benefiting party is not pulling its weight or is receiving disproportionately great outcomes, whereas negative inequity leads to hostility because the party feels disadvantaged (Scheer et al., 2003). Compensation imbalance pushes parties to secure their individual interests in the short term at the expense of long-term gains, which destabilizes the alliance (Das et al., 2000a). A party anticipating a relatively lower return on investment than its counterpart may perceive the distribution of rewards as unfair, which increases the likelihood of opportunistic conduct (Wathne et al., 2000). In contrast, the party with sufficient compensation anticipates this opportunism and therefore engages in preemptive opportunistic behavior. Consider a party that makes a lump-sum payment in exchange for expertise knowledge; if it has paid too much, it may engage in shirking as the alliance develops to increase its compensation, while the knowledge-supplying partner simultaneously engages in free-riding behavior (Contractor et al., 2000). Similarly, the likelihood of appropriation and spill-over concerns increases as the level of compensation imbalance increases, because parties seek to rebalance the perceived inequity through the transfer of knowledge and information that is not part of the initial agreement. A party that anticipates fewer rewards than its counterpart will receive is more likely to protect its valuable knowledge to compensate for possible losses. Hence, a higher level of compensation imbalance affects an alliance's level of structural coherence negatively.

[13] We distinguish compensation integrativeness from compensation imbalance, suggesting a conceptual and operational distinction between the two constructs. Whereas compensation integrativeness refers to the combination of parties' perception, compensation imbalance refers to the difference. This approach, which also applies to decision-making, non-recoverable investments, absorption, and performance, builds on prior research (see e.g. Casciaro & Piskorski, 2005) and is further explained in Box 4.2 and Section 6.3.

Coordination Mechanisms

Parties install coordination mechanisms to decrease the likelihood that exchange hazards will emerge, because these safeguards reduce information asymmetry between the partners. To the extent that information asymmetry between parties exists in a relationship, a party may act opportunistically, appropriate knowledge, and exploit goal conflicts to its advantage. Coordination mechanisms, such as decision-making (Glaister et al., 2003), exercising influence (Pearce, 2001), monitoring (Wathne et al., 2000), and management control (Mjoen et al., 1997), help parties mimic hierarchical control. Quasi-hierarchical control reduces parties' vulnerability to exchange hazards and enables them to protect individual interests (Gulati et al., 1998). During the alliance formation stage, parties can decide to use various coordination mechanisms, each of which varies in its effectiveness in terms of curbing exchange hazards (Wathne et al., 2000). A simple contractual arrangement may suffice when the information to be transferred is precise and highly explicit, such as a license agreement. But as the alliance becomes more complex and the likelihood of exchange hazards increases, other formal coordination mechanisms may be more appropriate, including structural grouping, departmentalization, planning and budgeting mechanisms, performance evaluations, and the creation of team and task forces (Makhija et al., 1997). A party with decision-making rights has formal authority to execute such management tasks, so we focus on decision-making (Glaister et al., 2003; Pearce, 1997) and argue that it constitutes an important structural safeguard. However, whereas shared decision-making between firms curbs exchange hazards, a decision-making imbalance increases the risk of exchange hazards.

Shared decision-making entails both parties' formalized formal authority over alliance activities (i.e., decision-making rights), regardless of whether parties' decision-making is balanced or imbalanced (Cullen et al., 1995; Johnson et al., 1996; Subramani & Venkatraman, 2003; Yan et al., 2001). If a firm has decision-making rights, it can make decisions about planning, executing, and monitoring alliance activities (Geringer et al., 1989; Yan et al., 2001). Parties aim to gain control within alliances, because formal authority provides them with the power to influence the direction of the alliance. Sharing decision-making rights between parties reduces information asymmetry, because relevant information pertaining to the alliance's progress, the counterpart's behavior, and the extent to which objectives have been achieved gets routed back to each party. Thus, obtaining decision-making rights is one way to ensure that the firm's strategic objectives remain actively pursued. As the level of shared decision-making between the parties increases, it should protect them against exchange hazards (Wathne et al., 2000). Shared decision-making further signifies that parties have committed to each other's interests and increases the likelihood of recognizing deceitful behavior (Saxton, 1997). From a behavioral perspective, shared decision-making places uncomfortable social pressure on the parties and thereby increases compliance (Wathne et al., 2000). When parties share decision-making rights, they can install monitoring mechanisms and thus increase the pressure to comply with the contractual obligations. From an economic perspective, shared decision-making increases partners' ability to detect opportunism and ultimately match rewards and sanctions appropriately to the partner's behavior (Wathne et al.,

2000). By signaling the implementation of efficient and effective information processing mechanisms, shared decision-making rights stimulates parties to communicate more intensively across a wide variety of issues, which may enable them to understand each other better. Because each firm has access to relevant information about its partner, shared decision-making reduces the likelihood of opportunistic behavior, as well as the involuntary transfer of proprietary assets (Makhija et al., 1997), and helps partners detect premature goal divergence (Wathne et al., 2000). Greater transparency between the parties, understanding, acknowledgement, and acceptance of the other's interests reduce the likelihood of appropriation, spill-over, and goal conflicts.

Parties also may formalize their decision-making rights asymmetrically—what we refer to as a **decision-making imbalance**, or as the asymmetry in each party's formal authority over alliance activities (Bucklin et al., 1993; Child et al., 2003; Child et al., 1999; Steensma & Lyles, 2000). Drawing on a management control perspective, researchers postulated that dominant control positively affects alliance performance (Geringer et al., 1989; Makhija et al., 1997). Killing (1983) showed that dominant control by one partner in a joint venture leads to more success, because dominant control approximates a unitary firm. Geringer and Hebert (1989) also stated that control over alliance activities helps protect a party from the risk of prematurely exposing its technological or other proprietary assets to other partners, and However, most research with respect to decision-making has focused on joint ventures, which are governed through ownership (Child et al., 2003; Zhang et al., 2001). In contrast to these insights, we contend that within contractual alliances, decision-making becomes more critical because of the absence of ownership arrangement; thus, a formalized decision-making imbalance likely negatively affects alliance development. A decision-making imbalance in an alliance contributes to the creation of information asymmetry, such that one party has more information about the alliance's progress and performance compared to its counterpart, enabling it to exploit this information advantage. For instance, it could behave opportunistically and withhold information, use its information to cover up its shirking and free-riding activities, or use the information advantage to appropriate knowledge that was not part of the initial agreement. The vulnerable party, with its diminished decision-making rights, grows less committed to maintaining the alliance and may engage in opportunistic behavior to reduce the information gap. Dominant decision-making further damages a party's willingness to contribute to what it regards as an unequal partnership, in which its own goals do not receive due weight (Child et al., 2003). In summary, a decision-making imbalance negatively contributes to an alliance's structural coherence.

Safeguarding Mechanisms

Consistent with past alliance research (Buvik et al., 2002; Combs et al., 1999; Dyer, 1996; Dyer, 1997; Jap, 1999; Jap et al., 2003; Parkhe, 1993a; Zaheer et al., 1995), we contend that non-recoverable investments constitute a safeguarding mechanism, as they support a given alliance and cannot be redeployed easily to another alliance without some sacrifice in the productivity of the assets or cost to adapt them to a new context (Williamson, 1975).

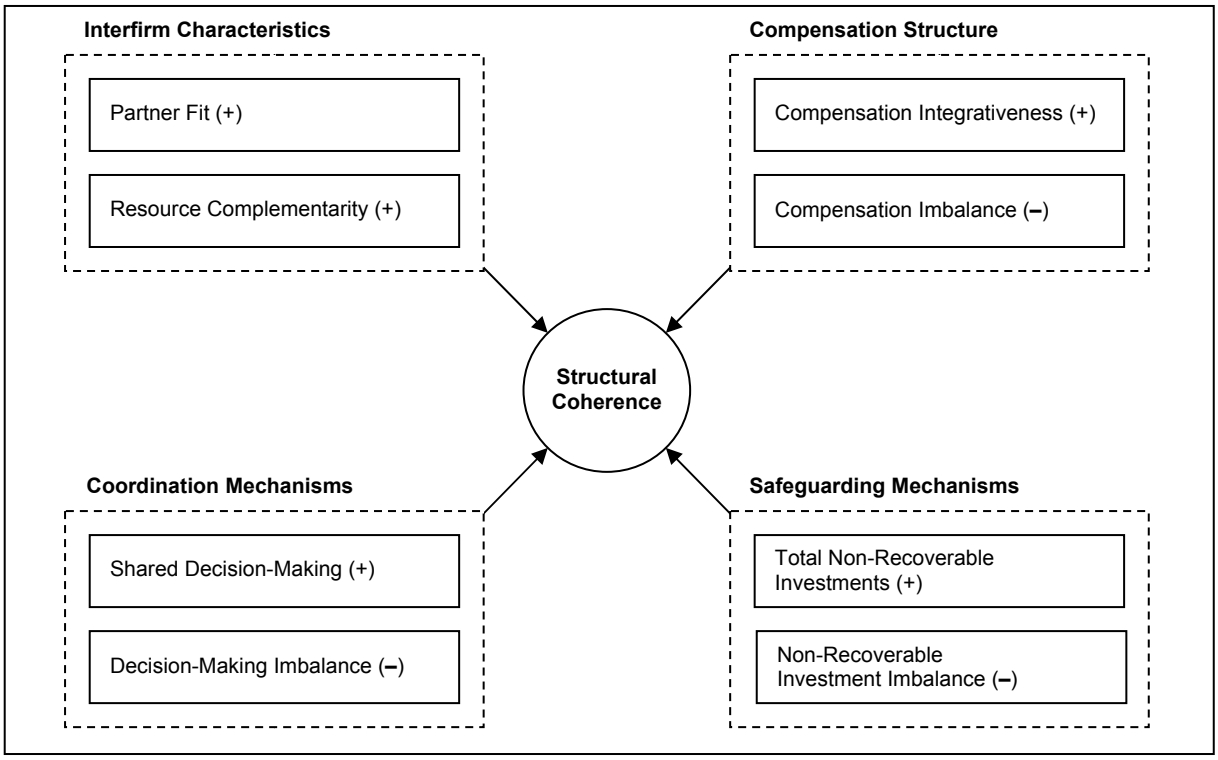
Specialized expenditures are tailored to the alliance (Jap et al., 2003) and difficult, if not impossible, to use in other alliances without substantial cost (Inkpen & Madhok, 2001). Unlike generic resource contributions, non-recoverable investments loose value or create an economic loss if the alliance terminates prematurely (Jap et al., 2003). Non-recoverable investments can be either tangible, such as development of customized machinery, a mutual information system, or specialized facilities, or intangible, including tailor-made training, specialized technology, or the allocation of specialized staff (Anderson et al., 1992; Dyer, 1996; Jap et al., 2003). Williamson (1985) stated that non-recoverable investments stabilize exchange relationships, because they function as mutual hostages that reduce the likelihood of exchange hazards (Dwyer et al., 1987). However, they also can destabilize the relationship if only one party makes such expenditures (Klein et al., 1978). Therefore, we distinguish between (1) total non-recoverable investments and (2) non-recoverable investment imbalance.

Total non-recoverable investments refer to both parties' formalized commitment to make specialized, tailored, and difficult to redeploy expenditures, regardless of whether parties' non-recoverable investments are balanced or imbalanced (Buvik et al., 2001; Jap et al., 2003; Williamson, 1985). When parties commit themselves to make such specialized investments, they offer a credible pledge (Anderson et al., 1992; Gulati et al., 1994) and a signal that each is willing to shoulder its portion of the risks (Ouchi, 1980). The joint commitment to non-recoverable investments stimulates cooperation (Dyer, 1996); as Zaheer and Venkatraman (1995) found, reciprocal investments relate positively to developing joint activities in the domain of new product launches. Hence, once formalized in an alliance contract, non-recoverable investments serve as mutual hostages that curb the likelihood of exchange hazards (Anderson & Weitz, 1989; Anderson et al., 1992). More specifically, during the alliance formation stage, parties can create a mutual hostage situation by committing themselves to non-recoverable investments (Williamson, 1985), which create exit barriers and increase switching costs and thereby curb opportunistic behavior (Jap et al., 2003). Engaging in defective behavior and risking the dissolution of the alliance conflicts with the long-term interests of each party—namely, losing their investments (Parkhe, 1993a). In addition, if two parties commit themselves to make such investments ex-ante, they both signal they are keen to develop a long-term relationship (Jap et al., 2003), which reduces concerns about appropriation and spill-over. Non-recoverable investments further shift parties' focus to cooperation and create incentives to maintain and continue the relationship until they recoup the value of the investments (Jap, 1999), which gives the parties greater incentives to resolve goal conflicts quickly. Thus, total non-recoverable investments constitute a structural safeguard that contributes positively to an alliance's structural coherence.

In contrast, **non-recoverable investment imbalance** negatively affects structural coherence, and its presence increases the likelihood of exchange hazards. We define non-recoverable investment imbalance as the asymmetry between parties' commitment to making specialized, tailored, and difficult to redeploy expenditures (Klein et al., 1978). If only one party agrees to make non-recoverable investments, it provides the other party with a potential opportunity to

reap the benefits of these investments unfairly (i.e., hold-up problem). As the level of one-sided non-recoverable investments increases, quasi-rents (i.e., the difference between earnings and opportunity costs) ensue and may be subject to hold-up (see Box 3.1). Non-recoverable investment imbalance also increases the likelihood of shirking and free-riding, because the committed party is tied to the alliance, so the counterpart has no reason not to shirk or free-ride, knowing its partner cannot retaliate without damaging its own interests. A lack of incentives to cooperate in turn increases appropriation and spill-over concerns, as well as the propensity for goal conflict. Thus, non-recoverable imbalance negatively contributes to an alliance's structural coherence.

Figure 3.3 Structural Safeguards and Structural Coherence



Notes: The focus here is exclusively on contractual alliances; hence, governance form is not considered a formative factor of structural coherence. We do not formulate hypotheses for the relationships among structural safeguards and structural coherence, as we test Hypothesis 1 with a second-order factor model (see §6.4).

Conclusion

In this section, we have argued that firms can use different types of structural safeguards to protect themselves against the likelihood of ex-post exchange hazards. More specifically, we introduced four types of structural safeguards that together form the structural coherence of an alliance (see Figure 3.3). First, through careful partner selection, parties can design alliances with interfirm characteristics that contribute to an alliance's structural coherence. Alliances with high partner fit and complementary resources enjoy better protection against exchange hazards compared with alliances with low partner fit and misaligned resources. Second, parties must determine the alliance's compensation structure, in which effort they should seek a balance between each partner's individual objectives. Whereas a formalized compensation structure characterized by compensation integrativeness contributes positively to structural

coherence, compensation imbalance has a negative impact. Third, parties need to make choices about decision-making rights and agree which partner has formal authority to make decisions about which alliance activities. Sharing decision-making rights contributes to structural coherence, whereas decision-making imbalance undermines it. Fourth, parties must specify the nature and extent of non-recoverable investments. If both parties commit themselves, these investments function as a mutual hostage, which increases the level of structural coherence. In contrast, non-recoverable investment imbalance creates hold-up problems, which contribute negatively to the level of structural coherence.

3.2 Process Perspective: Assumptions, Exchange Hazards, and Safeguards

Drawing on the process perspective,[14] we contend that alliance processes are critical drivers of alliance performance (De Rond et al., 2004; Salk, 2005). We view alliances as purposeful entities that can learn and adapt to changing circumstances to improve alliance performance (Zajac et al., 1993). Adaptability is critical to superior alliance performance (Doz, 1996), because this ex-post flexibility can overcome the limitations and inertial forces associated with an alliance structure. For instance, if unforeseen events that parties cannot address by falling back on contractual provisions (e.g., contingency clauses) emerge, alliance processes, such as relational and learning processes, foster the search for effective and efficient solutions without costly or time-consuming contractual renegotiations. In this sense, effective alliances are those in which parties constantly adapt their relationship, driving them to higher levels of efficiency, rather than those in which parties fulfill only their contractual obligations (Doz, 1996). To better understand the process perspective, we first discuss its assumptions, elaborate on ex-post exchange hazards, and then introduce process safeguards that parties can build to overcome exchange hazards. Table 3.2 presents an overview of the process perspective's key characteristics.

Table 3.2 Process Perspective's Characteristics

	Issue	Description	References
Focus	Alliance process	The nature, sequence, and order of activities and events to which an alliance is subject once formed	De Rond & Bouchikhi, 2004; Salk, 2005
Assumptions	Bounded rationality Self-interest Choice	Managers have limited capacity to process information, managers act out of self-interest, and their discretion to make ex-post adaptations enables them to make modifications	Nooteboom, 2004; De Rond & Bouchikhi, 2004
Exchange Hazard	Inertia	The vulnerabilities partner firms face in dealing with each other. Parties are vulnerable to inertial forces	Doz, 1996; Ariño, De la Torre, & Ring, 2001; Ariño and De la Torre, 1998 ; Yan, 1998
Process Safeguards	Relational processes Knowledge transfer processes Knowledge acquisition processes	**Relational adaptability:** The parties' willingness and ability to make modifications to the ongoing relationship without changing the initial alliance structure	Aulakh & Madhok, 2002; Doz, 1996; Hallen, Johanson, & Seyedmohamed, 1991; Heide & John, 1992

[14] We adopt the process perspective to underpin our hypothesis, however with respect to hypothesis testing we use outcomes variables (i.e., manifestations) of post-formation processes.

The Process Perspective: Assumptions and Implications

Advocates of the process perspective have argued that alliance processes are critical to achieve superior alliance performance, because these ex-post processes enable parties to overcome inertial forces. This basic premise of the process perspective builds on three assumptions: (1) managers are subject to bounded rationality, (2) managers act out of self-interest, and (3) managers have choice.

Due to bounded rationality, it is difficult for managers to acquire and interpret information about one another or about changing external conditions (Simon, 1947). Despite their best efforts to deal with complexity and unpredictability, managers are limited in their ability to plan for the future or accurately predict various contingencies that may arise (Nooteboom, 2004). As a consequence, alliances cannot be specified fully in advance, so an ongoing relationship may need to adapt to unforeseen future contingencies. However, due to managers' limited capacity to process information, parties must go through an iterative sequence of goal formulation, implementation, modification, and evaluation (Zajac et al., 1993). Superior alliance performance depends not only on fulfilling contractual obligations but also, and even more importantly, on the extent to which parties are willing and able to adapt their relationship. Advocates of the process perspective also assume that managers behave out of self-interest, pursue individual objectives, and initiate actions that secure their individual interests as the alliance unfolds. An important implication of this assumption is that during the post-formation stage, parties likely respond to unforeseen changes by protecting their individual interests. Moreover, parties' willingness and ability to implement changes depends on their partners' willingness and ability to make adaptations. Hence, from a process perspective, alliance processes are critical to enable parties to find appropriate solutions. In contrast to the structure perspective's strong deterministic nature, advocates of the process perspective assumed that managers have discretion in their responses to various external pressures (De Rond et al., 2004). Although internal and external dynamics present managers with unforeseen circumstances, managers can modify an ongoing relationship to fit with new demands (Doz, 1996; De Rond et al., 2004). Moreover, managers have a choice and can make changes to an alliance to hold premature termination at bay (Ariño et al., 1998; Dussauge et al., 2000; Reuer & Ariño, 2002). From a process perspective, the choice assumption implies that effective and efficient alliances are dynamic organizational entities that evolve over time.

Therefore, from a process perspective, the three assumptions of bounded rationality, self-interest, and choice have a major implication. In addition to the exchange hazards associated with the structure perspective, opportunistic behavior, appropriation and spill-over concerns, and goal conflicts, inertial forces constitute a fourth ex-post exchange hazard. To overcome inertia, safeguards other than the structural safeguards are required. That is, parties need to develop process safeguards that enable them to make adaptations to ongoing relationships whenever necessary (Das et al., 2002). More specifically, proponents of the process perspective have emphasized the importance of relational and learning processes to mitigate concerns about inertial forces (Gulati, Lawrence, & Puranam, 2005).

The Process Perspective: Exchange Hazard and Process Safeguards

Advocates of the process perspective further argued that inertia constitutes a threat to alliance development and alliance performance (Ariño et al., 1998; Doz, 1996). Inertia refers to a situation in which a party expresses some resistance or disinclination to adapt to internal or external dynamics (Hannan & Freeman, 1984). In the context of alliances, inertial forces impede the adjustments necessary to match new situations (Doz, 1996; Gulati et al., 2005). Unforeseen events may induce the need for change, but inertial forces inhibit the partner firms' capacity to make those changes (see Box 3.3). For instance, parties might be locked into a repeated mode of interaction, with little learning, which prompts greater frustration for both partners with regard to their interactions and lack of progress (Doz, 1996). To maximize alliance performance, parties should initiate post-formation processes (i.e., process safeguards) that reduce the likelihood of inertial forces (Brouthers et al., 2006).

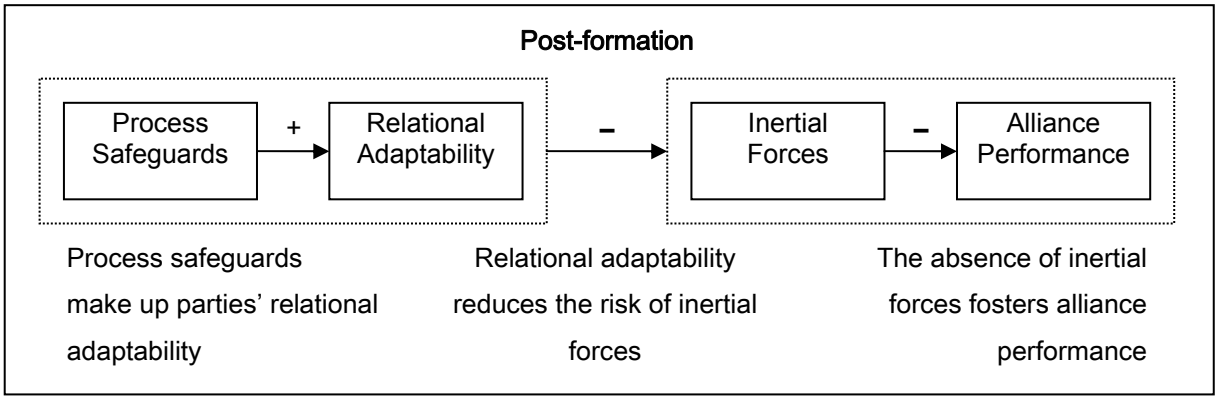
Box 3.3 Adaptation versus Inertial Forces

Adaptation	Inertial Forces
External Environment	
The alliance's broader environment might drive the need for change. For instance, an alliance's industry and political environment may change. Governments may shift foreign direct investment policies, or competitors may introduce new technologies that force parties to make changes.	The alliance's broader environment might contribute to inertial forces. Governments may raise legal and other barriers to exit or entry markets. Also, a firm's legitimacy in an environment may create inertia.
Firm Factors	
Firm factors might drive the need for change. For instance, internal reorganizations, a shift in corporate strategy, a shift in resource needs, and change in the board of directors may fuel modifications.	Firm factors might contribute to inertia. For instance, existing alliances with other firms, lack of necessary resources, internal political games, and administrative policies and procedures may create inertia.
Alliance Attributes	
Causes endogenous to the alliance might drive the need for change. For instance, alliance performance might be below initial expectations, partners may update their expectations, the governance form may appear inefficient, and differential learning may fuel the need for adaptation.	Causes endogenous to the alliance might create inertial forces. For instance, sunk costs due to non-recoverable investments in technology, machinery, and personnel; the dynamics of political coalitions (e.g., alliance management); and lack of partner interactions contribute to inertia.
Sources: Blodgett, (1992); Inkpen & Beamish (1997); Khanna (1998); Reuer & Ariño (2002); Shortell & Zajac (1988); Wathne & Heide (2000)	Sources: Das & Teng (2000a); Hannan & Freeman (1984); Li & Rowley (2002); Yan (1998)

During the alliance post-formation stage, parties may implement "process safeguards" to secure their individual interests. These process safeguards develop an alliance context in which parties become aware of a need to change and are capable of implementing the necessary adaptations. Process safeguards help overcome the inertial forces that are typical to an alliance. Similar to structural safeguards, process safeguards aim to direct the behavior of parties toward actions that promote individual interests while also securing mutual cooperation. Confronted with the high probability that the alliance will evolve differently from initial expectations (Reuer Zollo, & Singh, 2002), parties need to build process safeguards that enable them to efficiently and effectively implement the needed adaptations. In this study, we introduce relational adaptability as a factor that represents the extent to which parties develop process safeguards.

We define **relational adaptability** as the parties' willingness and ability to make modifications to the ongoing relationship, without changing the initial alliance structure (Aulakh et al., 2002; Doz, 1996; Hallen et al., 1991; Heide & John, 1992). It pertains to the willingness and ability of those parties to be flexible in conducting the relationship, above and beyond the constraints posed by alliance design, should that prove necessary (Heide, 1994). Relational adaptability causes parties to treat the relationship as an adjustable framework, in which they have bilateral expectations that changes will occur to redress imbalances in the relationship if either party is adversely affected by changing circumstances (Subramani et al., 2003). Moreover, parties are willing to make these adaptations without resorting to expensive and time-consuming contractual renegotiations (Heide, 1994; Young, Sapienza, & Baumer, 2003). Drawing on the process perspective (see Figure 3.4), we argue that parties may develop process safeguards that improve their relational adaptability. In turn, relational adaptability helps them overcome inertial forces and other exchange hazards, contributing to alliance stability. Alliance stability fosters superior alliance performance; thus, relational adaptability contributes to parties' joint value creation. Next, we discuss three types of process safeguards parties may develop: (1) relational processes, (2) knowledge transfer processes, and (3) knowledge acquisition processes.

Figure 3.4 Process Perspective: Main Logic



Relational Processes

Relational processes refer to the quality of the relationship between the partner firms. From a sociological perspective, the relationship building process usually consists of several stages of negotiation, commitment, and execution that get repeated sequentially (Ring et al., 1994). Parties going through these interactive stages develop relational norms, which guide partner firm behavior. Gouldner (1960) argued that relational norms are the basis for stable relationships. Relational norms call for parties to help those whose actions have benefited them and respond in kind to those who have damaged their interests. Building on this insight, we distinguish between two "manifestations" of relational processes: (1) relational quality and (2) opportunistic behavior.

Relational quality[15] is the extent to which parties feel comfortable, are willing to rely on trust in dealing with another, and are committed to the relationship (Ariño et al., 2001; Kumar, Scheer, & Steenkamp, 1995a). It results from partner interactions directed toward mutual cooperation (Ariño et al., 2001; Cullen et al., 2000) and is manifested, for instance, by the creation of trust, bilateral commitment, and mutual respect, as well as the absence of conflicts between the partners. Trust reflects the willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action important to the trustor (Anderson & Narus, 1990; Krishnan, Martin, & Noorderhaven, 2006), irrespective of its ability to monitor or control the other party. Commitment is an expectation that behavior will be directed toward relationship maintenance, placing a high value on the joint relationship (Gundlach et al., 1995) A high level of relational quality ensures that issues that arise in the course of the relationship will be treated as joint concerns.

Parties engaged in an alliance with relational quality are willing to overcome inertial forces. It enables partner firms to implement necessary adjustments to the alliance (Doz, 1996) , rebalancing the alliance system, such that parties can be confident that any changes are in their interests (Ariño et al., 1998). Relational processes promote norms of flexibility, solidarity, and information exchange (Macneil, 1980). Flexibility facilitates adaptation to unforeseen contingencies, whereas solidarity promotes joint problem solving, and information sharing facilitates problem solutions and adaptation (Poppo et al., 2002). A good relationship suggests that information exchange is transparent and that partners actively provide useful information to each other (Heide & John, 1992). It also eases decision-making and allows parties to make modifications to all aspects of the exchange, consistent with their mutual interests (Dwyer et al., 1987). Thus, relational quality constitutes a process safeguard that relates positively to relational adaptability.

In addition, relational quality decreases the likelihood of opportunistic behavior, appropriation and spill-over concerns, and goal conflicts. Trust and commitment stimulate parties' efforts toward achieving mutual interests (Cullen et al., 2000) and therefore reduce the likelihood of opportunistic behavior. A good relationship also eliminates costly contracts and coordination mechanisms, because its presence reduces the need to monitor parties' behavior (Dyer, 1997; Luo, 2002a; Macneil, 1980). Relational quality directs the focus of parties to mutual beneficial strategies and reduces appropriation and spill-over concerns, as a good relationship provides parties with confidence that they will receive their fair share of rewards (Ariño et al., 1998) and protects them against the unwanted transfer of proprietary knowledge (Kale et al., 2000). Having a good relationship, parties are more likely to discuss and resolve potential tensions between them, so relational quality attenuates concerns about goal conflicts (Ariño et al., 1998). Finally, relational quality shifts parties' focus from self-centered behaviors toward behaviors that foster unity through common responsibilities. It operates as a self-enforcing safeguard, which reduces the likelihood of exchange hazards.

[15] We discuss in Section 5.3 the antecedents of relational quality and opportunistic behavior.

In contrast, partner firm interactions may be characterized by **opportunistic behavior**,[16] or a party's active attempts to increase its benefits from the relationship, at the expense of its counterpart. Opportunistic behavior pertains to an extraction of benefits that is explicitly or implicitly prohibited within the relationship (Ping, 1993). For instance, lying, stealing, cheating, and calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse the partner illustrate opportunistic behavior. Parties that focus primarily on their individual interests are less likely to be flexible and accommodate modifications to the relationship (Wathne et al., 2000), because changes to the ongoing relationship could adversely affect their individual interests. Therefore, when parties build a behavioral interaction pattern characterized by opportunistic behavior, their relational adaptability is negatively affected.

Knowledge Transfer Processes

Knowledge transfer processes pertain to the routines that enable the exchange of knowledge and information (Inkpen et al., 1995). Knowledge transfer processes are critical, because once the alliance forms, partners must learn about other competences and interests. Parties must become aware of discrepancies in each other's knowledge foundations (Inkpen et al., 1995) and institutionalize practices and procedures to facilitate their knowledge and information exchange (Simonin, 1999). When partners develop such routines, they increase transparency (Hamel, 1991), which eases knowledge and information exchange (Heiman & Nickerson, 2004). Furthermore, transfer processes improve managers' assessments of their partner firm's capabilities, because they diminish uncertainty and ambiguity (Simonin, 1999). We argue that knowledge transfer processes are accelerated by building learning capabilities.

We define **learning capabilities** as the extent to which the partner firms create a regular and repeatable pattern of routines that support knowledge and information transfer (Chai, 2003; Dyer et al., 2000; Dyer et al., 1998; Hamel, 1991). As the relationship unfolds and parties develop and deploy learning capabilities, knowledge and information may be exchanged more easily (Simonin, 1999). As partners discover each other in collaboration, they recognize how differences in their structure, processes, and routines may need to be overcome or even constructively combined to make cooperation more efficient (Doz, 1996). Learning capabilities enable parties to exchange information, resulting in joint sense-making processes (Tsoukas, 1996). For instance, parties may scan the alliance's environment and discuss which responsive actions would be appropriate to address changing circumstances. Learning capabilities further enable parties to adapt organizational routines to work more efficiently (Zollo, Reuer, & Singh, 2002), improve the parties' task definition (Doz, 1996), and educate partners about the quality of the initial alliance design and how to make it more effective (Doz, 1996). Thus, learning capabilities involve the process of learning rather than the content of learning (Inkpen et al., 1995), and their presence allows partners to revisit and revise their expectations and gain a deeper understanding of their counterparts (Ariño et al., 1998).

[16] Whereas proponents of the structure perspective assumed that managers may act opportunistically if confronted with an opportunity (see §3.1), advocates of the process perspective view argued that opportunistic behavior could be considered an outcome of relational processes. We elaborate on this distinction in Section 3.3.

In removing information processing barriers between parties, learning capabilities increase the level of relational adaptability for two reasons. First, learning capabilities foster relationship openness, which captures the extent to which parties are willing and able to share information and communicate openly (Inkpen, 2000). Extensive communication between partners contributes to a meaningful and timely sharing of information (Anderson et al., 1990); for example, transferring staff, setting up joint teams, and developing best-practice guidelines represent knowledge transfer mechanisms that contribute to the quality, variety, and amount of information shared between partners (Chai, 2003). Relational openness helps parties learn about how to work with each other and increases awareness about individual interests. This increased awareness positively affects transparency between the partners, which contributes to a learning climate that eases the implementation of adaptations to the ongoing relationship.

Second, learning capabilities reduce the difficulties that surround the transfer of tacit knowledge (Simonin, 1999). Because tacit knowledge is context specific, it is difficult to formalize and communicate (Nonaka, 1994; Polanyi, 1962), and because it is "sticky," the incremental cost of transferring knowledge to a specific location in a form usable by a given party is high. Learning capabilities help parties acquire the other party's subjective viewpoint and develop a common language. Thus, learning capabilities contribute to awareness, which increases parties' willingness and ability to make modifications. Therefore, relational quality constitutes a process safeguard that relates positively to relational adaptability.

In addition to reducing the risk of inertial forces, learning capabilities decrease the likelihood of opportunistic behavior, appropriation and spill-over concerns, and goal conflicts. As uncertainty about the knowledge to be created grows, so does the risk of opportunism (Lubatkin et al., 2001). Learning capabilities constitute an informal feedback mechanism that provides partners with signals about each other's conduct. They ease the transport and interpretation of knowledge and information exchange, which motivates parties to participate and openly share valuable knowledge. Mutual knowledge and information sharing increases the risk of detection of opportunistic behavior and thereby prevents undesirable spillovers to partners, prevents free-riding behavior, and reduces the costs associated with formal conflict resolution (Dyer et al., 2000; Hamel, 1991). In summary, knowledge transfer processes, as manifested by learning capabilities, constitute an important process safeguard that relates positively to parties' relational adaptability.

Knowledge Acquisition Processes

Knowledge acquisition processes enable partner firms to assess and absorb knowledge through the alliance (Berdrow et al., 2003; Holmqvist, 2003; Martin & Salomon, 2003). Whereas knowledge transfer processes facilitate mutual learning and remove information exchange barriers (i.e., process of learning), knowledge acquisition processes pertain to each party's capability to evaluate and acquire knowledge to which it has been exposed through the alliance (i.e., content of learning). A firm's ability to assess and acquire knowledge is contingent on its absorptive capacity (Cohen et al., 1990; Zahra et al., 2002), its partner firm's

absorptive capacity (Dyer et al., 1998; Lane et al., 1998), decisions with respect to alliance structure (Gulati et al., 1998; Zeng et al., 2002), and the nature of the knowledge exchanged (Chen, 2004; Simonin, 1999). Together, these factors influence the nature and extent of knowledge flows between partners (Martin et al., 2003), which are important to exchange, integrate, and create knowledge (Lubatkin et al., 2001). Consistent with prior research, we make a distinction between partners that possess similar abilities in terms of assessing and acquiring knowledge and those in which partners possess dissimilar abilities (Hamel, 1991; Larsson et al., 1998). To address this distinction, we propose two constructs: (1) absorption integrativeness and (2) absorption imbalance.

Absorption integrativeness[17] is defined as the combination of both party's ability to assess and acquire knowledge to which they are exposed through their relationship, regardless of whether parties' capabilities are balanced or imbalanced (Dyer et al., 1998; Lane et al., 1998). Absorption integrativeness enables parties to assess the value of new knowledge and integrate that new knowledge into their existing knowledge base (Larsson et al., 1998; Lubatkin et al., 2001), because the parties likely have established a knowledge interface between them (Inkpen et al., 2006). A high-quality knowledge connection creates the potential for parties to evaluate each other's competencies, strengths, and weaknesses (Zahra et al., 2002). Moreover, parties can work toward their individual performance objectives at a similar pace, because they are equally capable of participating in knowledge flows. Therefore, parties are more likely to be flexible and cooperative if modifications to the ongoing relationship are needed.

A high level of absorption integrativeness also reduces the likelihood of inertia, because it enables parties to assess and acquire knowledge in an effective and efficient manner. More specifically, absorption integrativeness fosters reciprocal learning between partners, which entails knowledge creation, blended knowledge, colearning, and joint discovery and requires that both partners willingly disclose valuable aspects of their knowledge (Lubatkin et al., 2001). This transparency between partners eases learning about the other (Inkpen et al., 1995), new knowledge (Inkpen et al., 1998), and how to assimilate new knowledge (Inkpen, 2000). In other words, a high level of absorption integrativeness stimulates a deeper and broader understanding of the partner's interests, which increases parties' propensity to make necessary changes (Doz, 1996).

The likelihood of other exchange hazards is reduced as well. Opportunism decreases, because parties with similar learning paces are fully aware of the other's competences and interests (Hamel, 1991), can more easily detect deceitful behavior, and can be confident that the other party is committed to the alliance until both parties finish learning (Khanna et al., 1998). Appropriation and spill-over concerns decline because each party is equally able to assess and acquire knowledge. Furthermore, unwanted transfer of know-how can be detected easily, and partner firms can immediately retaliate by assimilating protected know-how themselves.

[17] We discuss in Section 5.2 the antecedents of absorption integrativeness and absorption imbalance.

Attenuated goal conflicts also result because high levels of absorption integrativeness make partners quickly aware of diverging interests. In summary, absorption integrativeness constitutes an important process safeguard against various types of exchange hazards.

In contrast, **absorption imbalance** refers to the asymmetry between each party's ability to assess and acquire knowledge to which it is exposed through the alliance (Dyer et al., 1998; Kumar & Nti, 1998; Larsson et al., 1998). Absorption imbalance reverberates with Hamel's (1991) notion of learning races. In learning races, an individually rational party pursues a maximum share of knowledge while protecting its own core competences (Kale et al., 2000). Differences in parties' absorptive capacity (Dyer et al., 1998), alliance structure (Zeng et al., 2002), or nature of knowledge to be exchanged (Simonin, 1999) create differential potentials to assess and acquire knowledge relative to the partner firm. Differential learning suggests that one party may appropriate knowledge at a faster pace than its counterpart (Inkpen et al., 2006), which creates information asymmetry. The faster learning partner obtains know-how pertaining to its partner firm's interests, competences, and progress, whereas the slower learning partner lacks similar information. As a consequence, the dominant party can exploit its learning advantage at the expense of its counterpart and thereby achieve its performance objectives at a quicker pace.

A high level of absorption imbalance, as perceived by the partners, increases the risk of inertial forces, because differential learning reduces parties' willingness and ability to make necessary modifications to the relationship. Hamel (1991) found in an empirical study that differential learning between partners impeded alliance development and reduced parties' willingness and ability to cooperate. A party with a potential to learn faster than its counterpart has no reason to make adaptations to an ongoing relationship, and a slower learning party likely cannot make those necessary adaptations. Moreover, a faster learning party has no incentives to foster a transparent knowledge interface (Hamel, 1991), nor does it benefit from frequent partner interactions, particularly when the knowledge to be acquired is clearly specified (Lubatkin et al., 2001). In contrast, a slower learner cannot make changes to the alliance without support from its faster learning counterpart. The faster learning partner eventually may become insensitive to the interests of a slower learning firm, perhaps even blaming it for its inability to capitalize on alliance-generated knowledge. Hence, an alliance characterized by an absorption imbalance likely is subject to inertial forces, because that imbalance negatively affects relational adaptability.

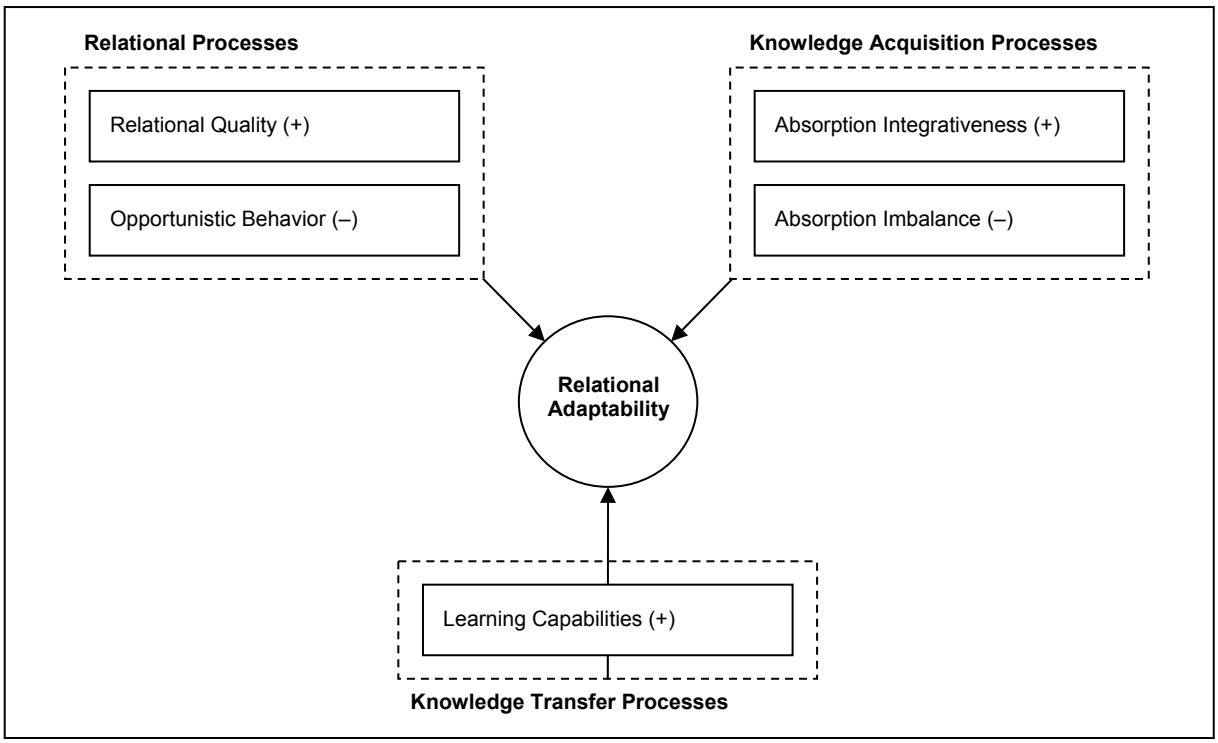
The likelihood of other types of exchange hazards also increases with absorption imbalance. Differential learning creates information processing barriers, which may increase the likelihood of opportunistic behavior, appropriation and spill-over concerns, and goal conflict. If one partner chooses to share its knowledge openly, the other partner might act opportunistically, which then activates retaliatory behaviors by the exploited partner (Inkpen et al., 1997). After the faster learning party finishes learning, its incentives to maintain the alliance disappear. Moreover, it may engage in opportunistic behavior to extract additional

rewards from the alliance. Appropriation and spill-over concerns increase, because the faster learning party can exploit its assimilated knowledge to improve its competences, thereby weakening the competences of its counterpart (Khanna, 1998), which in turn contributes to goal conflicts. Inkpen and Pien (2006) conducted a case study of a Chinese–Singaporean alliance and found that competitive learning between the partners negatively related to mutual collaboration. In summary, the presence of an absorption imbalance destabilizes the relationship and negatively contributes to parties' relational adaptability.

Conclusion

As the alliance unfolds, parties can develop three types of process safeguards that contribute to the level of relational adaptability (see Figure 3.5). First, relational processes contribute to parties' willingness to make necessary adaptations to the ongoing relationship. For instance, a high-quality relationship gives parties the confidence that they will accommodate each other's interests if problems arise. In contrast, a relationship characterized by opportunistic behavior attenuates parties' incentives to be flexible. Second, knowledge transfer processes affect parties' willingness and ability to overcome inertia. For instance, developing learning capabilities eases knowledge and information exchange, which provides parties with the necessary know-how about their partner's objectives (i.e., mutual sense-making). Third, knowledge acquisition processes can foster or impede parties' ability to make adaptations to the ongoing relationship. Absorption integrativeness enables parties to gain a better understanding about what needs to be adapted, whereas an absorption imbalance impedes their willingness and ability to make necessary modifications.

Figure 3.5 Process Safeguards and Relational Adaptability



Note: We do not formulate hypotheses for the relationships among process safeguards and relational adaptability, as we test Hypothesis 1 with a second-order factor model (see §6.4).

3.3 Structure and Process Perspectives: Closing the Loop

If alliance researchers investigate either the structural or the process perspective as a one-dimensional dichotomy or in isolation, the resultant emphasis on either alliance structure or alliance process tends to ignore that both structure and process dimensions exist simultaneously in dyadic relationships (Contractor, 2005; Hennart et al., 2005). Advocates of the structure perspective have neglected the need to incorporate post-formation processes into their explanations of alliance performance, and proponents of the process perspective should have incorporated insights from the structure perspective into their explanations. To understand alliance performance, we contend that we must reconcile the two perspectives and thereby increase the explanatory power of alliance performance, because combining structural and process dimensions describes the complexity of alliances better than either the structure or process dimension alone. However, melding these perspectives also requires a better understanding of their differences and similarities (see Table 3.3).

Table 3.3 Structure and Process Perspectives: A Comparision

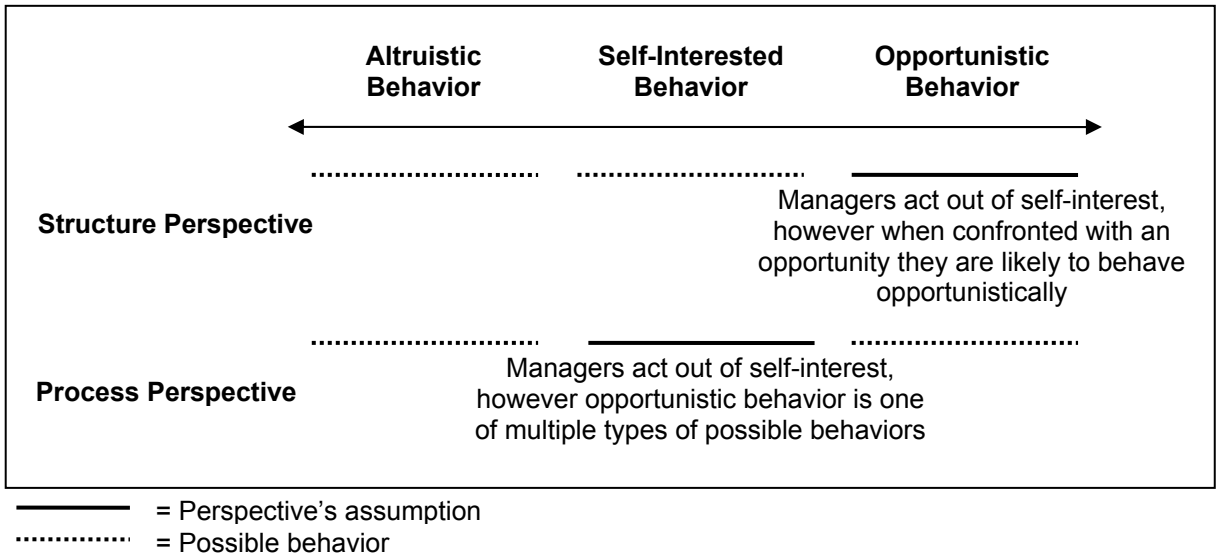
	Structure Perspective	Process Perspective
Focus	Alliance structure	Alliance process
Alliance Developmental Stage	Formation stage	Post-formation stage
Rationale	Efficiency	Adaptability
Contingencies	Static: anticipated	Dynamic: unforeseen
Assumptions	Bounded rationality Opportunism Determinism	Bounded rationality Self-interest Choice
Exchange Hazards	Opportunistic behavior Appropriation and spill-over concerns Goal conflicts	Inertia
Safeguards	Structural coherence - Governance form - Contractual provisions - Interfirm characteristics	Relational adaptability - Relational processes - Knowledge transfer processes - Knowledge acquisition processes

Proponents of the structure perspective focused on decisions about alliance structure and argued that an efficient governance form, accompanied by supportive contractual provisions, and interfirm characteristics are sufficient to achieve superior alliance performance. An alliance characterized by a high level of structural coherence thus is less prone to exchange hazards. If unforeseen events arise, parties can fall back on their contractual agreement to deal with the new circumstances. In contrast, advocates of the process perspective focused on post-formation processes and argued that relational and learning processes are sufficient to achieve superior alliance performance. Post-formation processes enable parties to decide on adaptations that overcome inertial forces, such as those due to the limitations of an alliance structure. Whereas the structure perspective involves efficiency, the process perspective focuses on adaptability as a rationale for parties' behavior.

Advocates of both perspectives depended on the bounded rationality assumption. For example, managers are limited in their capacity to process information. According to proponents of the structure processes, this bounded rationality leads to costly and time-consuming contractual (re)negotiations, whereas proponents of the process perspective argued

that bounded rationality leads to repetitive learning cycles between the partners. These diverging implications are not at conflict, and their implications are complementary, because ex-post learning cycles overcome the limitations of initial alliance design. To develop our hypothesis, we also adopt the assumption that managers act out of self-interest, but not necessarily with guile, if confronted with an opportunity. We consider opportunistic behavior one of many possible outcomes pertaining to the partner firm's behavioral pattern (Ghoshal et al., 1996); trust and commitment also could emerge as the relationship unfolds. Opportunistic behavior is considered a likelihood that should be curbed by implementing safeguard mechanisms, whether structural or process (John, 1984; Wathne et al., 2000). Thus, while rejecting the strongest form of the self-interest (see Figure 3.6), we accept that firms must create alliance structures and develop alliance processes that secure interests and provide sufficient incentives to cooperate. In summary, we adopt from the structure perspective the idea that parties are expected to obey rules and from the process perspective the idea that parties keep promises.

Figure 3.6 Self-interest Continuum



With respect to the assumption of managers' choice, proponents of the structure and process perspectives have held diverging views. Advocates of the structure perspective assumed that external pressures determine managers' behavior, whereas proponents of the process perspective assumed managers have a certain degree of choice. The process perspective's assumption of choice corresponds to the view adopted in this study. That is, we assume that managers have a direct influence on the future and its events, without being constrained by path dependencies created in the past. More specifically, parties can create different configurations in their alliance structures, and each configuration can be equally efficient. However, we also believe that parties have a choice with respect to developing post-formation processes, which they may use to overcome the limitations and constraints of previous alliance design decisions.

Together, the assumptions—managers are subject to bounded rationality, managers act out of self-interest, and managers can make choices—enable us to derive three implications with respect to reconciling the structure and process perspectives. First, parties seek to achieve individual objectives, before and after engaging in an alliance. However, various exchange hazards, such as opportunistic behavior, appropriation and spill-over, goal conflicts, and inertial forces, may prevent them from achieving their performance objectives. Second, parties have at their discretion both structural and process safeguarding mechanisms to reduce the likelihood of these exchange hazards. Ex-ante structural safeguards, such as governance form, contractual provisions, and interfirm characteristics resulting from partner selection, combined with ex-post process safeguards, such as relational processes, knowledge transfer processes, and knowledge acquisition processes, may foster or hamper the risk of exchange hazards. Third, to achieve superior alliance performance, parties must implement safeguarding mechanisms, but because decisions about alliance structure and alliance process are interrelated, we contend that structure and process cannot be examined in isolation. Building on these insights, we develop Hypothesis 1 in the next section.

3.4 Hypothesis 1: The Meditation Hypothesis

In the preceding sections, we elaborated on the structure and process perspectives. We developed a theoretical foundation and identified constructs that constitute structural coherence and relational adaptability. In this section, we present a mediation hypothesis, which states that the relationship between structural coherence and alliance performance is partially mediated by relational adaptability. To substantiate this hypothesis, we first discuss the three direct relationships between (1) structural coherence and alliance performance, (2) structural coherence and relational adaptability, and (3) relational adaptability and alliance performance, before discussing the mediation model (see Figure 3.7).

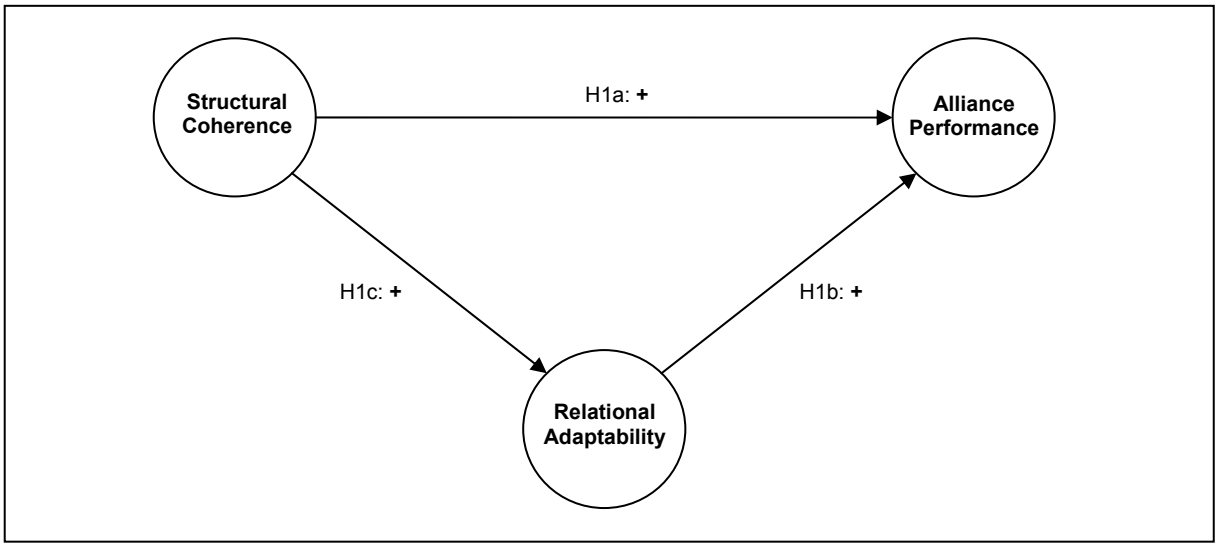
Direct Effect: Structural Coherence → Alliance Performance

Structural coherence relates positively and directly to alliance performance, because as the level of structural coherence increases, the likelihood of exchange hazards declines. The anticipated absence of exchange hazards contributes to parties' willingness to fulfill contractual obligations, and when fulfilled, superior alliance performance results. In Section 3.1, we elaborated on the relationships between the four structural safeguards, structural coherence, and exchange hazards. Next, we briefly repeat the gist of our argument to better explain the relationship between structural coherence and alliance performance.

Drawing on the structure perspective, we argue that during the formation stage, the most straightforward way to reduce the risk of exchange hazards and achieve superior alliance performance is to select partners a priori that are not opportunistically inclined or inherently competitive (Wathne et al., 2000). That is, we argue that two interfirm characteristics, partner fit and resource complementarity, positively contribute to an alliance's structural coherence. Partner fit enables parties to cooperate efficiently and effectively (Saxton, 1997), whereas resource complementarity provides parties with incentives to sacrifice their short-term

individual goals to achieve long-term value creation (Madhok et al., 1998). In addition, during the alliance formation stage, parties can formalize their agreements in an alliance contract. The content of three contractual provisions is particularly relevant in terms of reducing the risk of exchange hazards. First, an alliance's compensation structure constitutes an important structural safeguard against exchange hazards, because if efficiently designed, it provides parties with strong incentives to engage in and maintain a relationship. Second, the division of decision-making rights across the partners provides an important structural safeguard. Sharing decision-making rights gives parties a feedback mechanism that enables them to monitor each other's conduct and thereby reduce the risk of exchange hazards. Third, the content of contractual provisions may refer to the amount and nature of non-recoverable investments. Non-recoverable investments function as mutual hostages and curb opportunistic and other types of self-interested behaviors. Thus, in addition to partner selection, when parties design mutually supportive contractual provisions, they have strong incentives to fulfill their contractual obligations, which then results in superior alliance performance.

Figure 3.7 Hypothesis 1: The Mediation Model



Empirical research provides support for the hypothesis that structural coherence positively relates to alliance performance (Child et al., 2003; Harrigan, 1988; Jap, 1999; Jap et al., 2003; Park et al., 1997; Parkhe, 1993c; Parkhe, 1993a; Pothukuchi, Damanpour, Choi, Chen, & Park, 2002; Sampson, 2004b). Harrigan (1988) found that strategic direction asymmetries between partner firms and relatedness with the joint venture related negatively to alliance performance. Child (2002) found that joint venture performance emerged from complementary resource contributions, in combination with other management factors. Parkhe (1993a) examined the impact of pay-off structures (i.e., compensation) and found that a pay-off structure characterized by mutual cooperation resulted in higher levels of alliance performance than did pay-off structures characterized by unilateral defection and unilateral cooperation. Child and Yan (2003) found that shared decision-making related positively to alliance performance, though only with high-quality resourcing. Within a marketing channel setting, Jap and Anderson (2003) found a positive and significant relationship between mutual

non-recoverable investments and four alliance performance dimensions: evaluation of counterpart performance, competitive advantage, joint profits, and continuity expectations. Thus, extant conceptual and empirical support confirms the direct relationship between structural coherence and alliance performance.

Direct Effect: Relational Adaptability → Alliance Performance

Relational adaptability is positively and directly related to alliance performance, because as the level of relational adaptability increases by parties initiating relational and learning processes, the risk of various types of exchange hazards, including inertia, declines. In Section 3.2, we elaborated on the relationships between the three process safeguards, relational adaptability, and exchange hazards. Next, we briefly repeat the essence of our argument to clarify the relationship between relational adaptability and alliance performance. An alliance characterized by a high-quality relationship is more likely to achieve its performance objectives. Recall that an alliance with high levels of relational quality is characterized by trust, commitment, and the absence of conflicts (Ariño et al., 2001; Kauser et al., 2004), and partners have confidence in the other's reliability and integrity (Morgan & Hunt, 1994). It facilitates the effective functioning of the alliance on a day-to-day basis, enables organizations to gather high-quality information about the other, reduces ex-post contracting costs caused by information asymmetries, and creates strong disincentives for opportunistic behavior (Larson, 1992; Uzzi, 1996). Opportunistic behavior negatively influences alliance performance; such short-term, deceitful behavior undermines long-term value creation (Wathne et al., 2000). When parties develop cooperative rather than competitive relational processes, they have strong incentives to implement necessary adaptations to the ongoing relationship, which likely results in superior alliance performance. We also argue that learning processes, such as knowledge transfer and knowledge acquisition, foster relational adaptability, which reduces the risk of exchange hazards and thereby positively affects alliance performance. Irrespective of alliance objectives, in the type of contractual alliances we examine, partners must exchange, leverage, and create knowledge and information to achieve their goals (Beamish et al., 2003; Holmqvist, 2003). Knowledge transfer enables parties to communicate openly and exchange information, resulting in mutual awareness. In addition, knowledge acquisition facilitates or impedes parties' ability to assess and acquire knowledge. On the one hand, learning in absorption integrativeness conditions enables parties to obtain knowledge and information at a similar pace, which provides strong incentives to cooperate. On the other hand, learning under absorption imbalance incites a learning race, which reinforces parties' propensity to achieve their objectives through competition.

Extant empirical research supported the positive relationship between relational adaptability and alliance performance (Cullen et al., 2000; Kale et al., 2000; Lui et al., 2004; Luo, 2005; Parkhe, 1993a; Zaheer et al., 1998). For instance, examining Turkish–Foreign joint ventures, Demirbag and Mirza (2000) found that alliance performance was positively influenced by trust, commitment, and cooperation but negatively influenced by conflicts. Pearce (2001) found that cooperation—that is, flexibility and joint problem solving—influenced alliance

performance positively. Yan and Gray (2001) produced support for their hypothesis that the quality of the relationship related positively to the achievement of strategic objectives. Other studies have reported a negative relationship between opportunistic behavior and alliance performance (Jap et al., 2003; Judge et al., 2006). For example, Inkpen and Pien (2006) found in a case study that the transfer of tacit knowledge influenced alliance performance positively, whereas differential learning inhibited the achievement of learning objectives. Beamish and Berdrow (2003) found that knowledge transfer and acquisition processes related positively to joint learning. In summary, conceptual and empirical research supports the direct relationship between relational adaptability and alliance performance.

Direct Effect: Structural Coherence → Relational Adaptability

In addition to the direct relationships between structural coherence and alliance performance and relational adaptability and alliance performance, we hypothesize that structural coherence relates positively and directly to relational adaptability. As the level of structural coherence increases, parties establish formation conditions providing them with incentives and possibilities to exchange information, enabling them to build relational and learning processes. Such cooperative post-formation processes positively affect parties' willingness and ability to make adaptations to an ongoing relationship.

With respect to interfirm characteristics, the selection of partners directly affects the development of relational adaptability. For instance, partner fit reduces conflict and contributes to the development of trust and commitment by enabling information exchange (Saxton, 1997). The presence of partner fit also suggests that partners can implement knowledge transfer and acquisition processes through their compatible organizational and cultural aspects (Lane et al., 1998). With resource complementarity, partners can achieve objectives that otherwise would have been difficult to obtain. According to Sarkar, Echambadi, Cavusgil, and Aulakh (2001), parties need to engage in learning processes to exploit these synergies, which means that complementary resource strengths must be explored and understood before they can lead to higher levels of alliance performance (Lambe et al., 2002). Moreover, though parties may have created a synergetic resource foundation, they likely cannot capture those benefits if they are not willing or able to make changes. It is precisely the anticipation of future value that provides them with the incentives to behave flexibly. In sum, partner choice affects parties' willingness and ability to make modifications.

With respect to contractual provisions, an alliance contract functions as the architecture that guides alliance development by providing incentives to cooperate (Contractor et al., 2000). An alliance contract with mutually supportive provisions suggests that parties can anticipate sufficient compensation, have sufficient influence over alliance activities, and have implemented sufficient safeguards against exchange hazards, after the alliance becomes operational. A configuration with mutually supportive structural safeguards also enhances behavioral transparency and promotes cooperation between the partners. For instance, a high level of compensation integrativeness guides parties' efforts toward helping each other

achieve individual objectives (Parkhe, 1993c). Parties frequently interact and likely build a high-quality relationship. In addition, an adequate incentive system stimulates parties to initiate knowledge transfer and acquisition processes (Lane et al., 1998). Shared decision-making also fosters partner interaction, resulting in relational and learning processes. For instance, sharing decision-making rights with respect to new product development implies that parties can exercise equal influence on the tasks at hand, contributing to trust and commitment building. The promise to make total non-recoverable investments also functions as a signal that partners are willing to make the relationship work (Gulati et al., 1994).

In contrast, compensation imbalance, a decision-making imbalance, or a non-recoverable investment imbalance hampers the development of relational and learning processes. A compensation imbalance incites parties to behave opportunistically to extract additional benefits (Contractor et al., 2000), a decision-making imbalance impedes the development of mutual learning processes because parties do not need to interact (Makhija et al., 1997), and a non-recoverable investment imbalance creates hold-up problems (Klein et al., 1978). Thus, decisions with respect to alliance structure directly influence alliance development, as well as parties' willingness and ability to make necessary modifications to the ongoing relationship.

Extant empirical research supported the hypothesis that structural coherence constitutes an architecture that affects post-formation processes (Anderson et al., 1989; Buvik et al., 2001; Dahlstrom et al., 1999; Heide et al., 1990; Jap, 2001a; Kelly, Schaan, & Joncas, 2002; Lusch et al., 1996; Moxon, Roehl, & Truitt, 1988; Oxley et al., 2004; Zaheer et al., 1995; Zeng, 2003). Kelly, Schaan, and Joncas (2002) found that compensation structures must be designed carefully to avoid ex-post problems with relationship quality. Dahlstrom and Nygaard (1999) found that an alliance structure characterized by formalized procedures reduce the risk of ex-post opportunistic behavior. Zaheer and Venkatraman (1995) indicated that the degree of quasi-integration between buyers and supplier positively relates to joint action. Gundlach (1995) revealed that firms making smaller non-recoverable investments than their partners tend to act opportunistically in the relationship. Jap (2001) found that the creation of idiosyncratic resources between the partners positively influences relational quality, whereas complex compensation structures (i.e., equity sharing) negatively affect it. In summary, supported by conceptual and empirical research, we hypothesize that structural coherence relates positively to relational adaptability.

Mediation Effect

Building on conceptual and empirical insights pertaining to three direct relationships—(1) structural coherence directly influences alliance performance, (2), relational adaptability directly influences alliance performance, and (3) structural coherence directly influences relational adaptability—we hypothesize that relational adaptability partially mediates the relationship between structural coherence and alliance performance. In Box 3.4, we summarize our arguments for why we propose a mediation model rather than a moderation model.

Box 3.4 Mediation and Moderation

A **mediation** model seeks to identify and explicate the intervening mechanism that underlies a relationship between an independent variable and a dependent variable by including a third explanatory variable, known as a mediator variable. For instance, the relationship between ex-ante formation conditions and alliance performance may be mediated by ex-post learning processes. Phrased in statistical terms, mediation refers to the covariance relationships among three variables and indicates that the mediating variable accounts for a significant amount of the shared variance between the independent variable and dependent variable.

A **moderation** model seeks to identify and explicate the impact a third variable has on the direction and/or strength of the relationship between an independent variable and a dependent variable. A moderator variable specifies when or in what conditions an independent variable influences a dependent variable. For instance, the relationship between contract completeness and alliance performance may be moderated by the level of trust. Phrased in statistical terms, moderation pertains to the statistical interaction between two independent variables for predicting a dependent variable.

Mediation and moderation models are similar in that they are criterion specific (i.e., models include a dependent variable) and contain (at least) three variables: an independent variable, a dependent variable, and a mediation or moderation variable. However, they differ in four other aspects. First, whereas mediation models focus on intervening mechanisms, moderation models focus on interaction mechanisms. Second, whereas a mediating variable should be conceptualized on the same level of analysis, a moderating variable can be conceptualized at a different (i.e., higher level of analysis). Third, whereas an independent variable precedes a mediation variable, a moderating variable can precede or follow an independent variable.

Implications for this Study
We propose and test a medium-term theoretical model, as we assume that alliances in our data have not yet been subjected to substantial reorganizations. Building on this assumption, we argue that the relationship between structural coherence and alliance performance is **mediated** by relational adaptability. More specifically:

- Relational adaptability functions as an intervening mechanism between structural coherence and alliance performance, because the formation conditions directly influence post-formation processes,
- Decisions with respect to alliance structure precede the development of post-formation processes. In addition, parties make these decisions independently from ex-post decisions,
- Structural coherence, relational adaptability, and alliance performance are conceptualized at the same level of analysis: the alliance level.

Sources: Baron & Kenny (1986); Drazin & Van de Ven (1985); Heide (1994); Venkatraman (1989)

Drawing on the structure and process perspectives, our main argument posits that aligning structure and process explanations describes the complexity of alliances better than either the structure or process perspective alone. That is, structural coherence guides partner towards realizing their objectives, as it reduce the risk of exchange hazards, such as opportunistic behavior, appropriation and spill-over concerns, and goal conflicts. In addition, a high level of structural coherence stimulates the development of relational adaptability, because the parties have designed an alliance structure with strong incentives to make the alliance work. That is, structural coherence functions as an architecture that provides incentives to develop post-formation processes. Moreover, relational adaptability reduces the likelihood of inertial forces and simultaneously functions as a safeguard against other ex-post exchange hazards. If present, relational adaptability overcomes the limitations of an alliance structure. Although structural safeguards are designed to handle contingencies, they are costly, time consuming,

and unreliable, so a sole reliance on structural safeguards may burden the administrative organization and increase inertial forces in the system. As such, in a long-term relationship, relational adaptability is more efficient and effective in redirecting parties' behavior toward achieving their performance objectives. Together, these arguments suggest that the relationship between structural coherence and alliance performance is to some degree mediated by relational adaptability.

Empirical studies support a partial mediation hypothesis (Ariño et al., 1998; Aulakh et al., 1996; Brouthers et al., 2006; Doz, 1996; Jap et al., 2000; Judge et al., 2006; Lane et al., 2001; Tiessen et al., 2000). For instance, Doz (1996) found that failing alliances were highly inertial, with little ex-post learning processes, whereas successful alliances were highly evolutionary. Jap (1999) examined the relationship between structural factors, such as goal congruence and complementary resources, on a buyer–supplier relationship's profitability and competitive advantage and found that factors such as ex-post coordination efforts and non-recoverable investments mediated the relationship between initial conditions and alliance performance. According to Judge and Dooley (2006), trustworthiness and contractual safeguards were negatively related to opportunistic behavior, which in turn was negatively related to alliance performance. Aulakh, Kotabe, and Sahay (1996) further found that relational norms and monitoring mechanism were determinants of trust and that higher levels of trust positively influenced alliance performance within cross-border partnerships.

In summary, we hypothesize that superior alliance performance is achieved in those alliances in which parties establish an alliance structure that enables them to improve progressively on initial formation conditions by developing relational and learning processes. Unsuccessful alliances instead are characterized by an alliance structure that impedes the initiation of post-formation processes, resulting in parties' unwillingness and inability to make necessary adaptations. Hence, we propose the following hypothesis:

H_1: The relationship between structural coherence and alliance performance is partially mediated by relational adaptability. That is:

a. Structural coherence relates positively to alliance performance,
b. Relational adaptability relates positively to alliance performance,
c. Structural coherence relates positively to relational adaptability.

Chapter 4 Cooperation and Competition Trade-Off Literature Review

In this chapter, we argue that firms forming and managing strategic alliances confront a cooperation and competition trade-off. This particular type of trade-off is characterized by two distinctive properties. First, due to resource scarcity, partner firms must decide how much effort to spend on cooperation (i.e., value-creation mechanisms) and how much effort to spend on competition (i.e., value-appropriation mechanisms).[18] Second, decision-making in an alliance context depicts a strong trade-off, which implies a negative association between alliance performance and the difference in individual firm performances. Departing from this conceptualization, we present the results of a review of alliance literature and conclude that researchers have produced partial and limited insights. Important reasons for inadequate theory development are that researchers have focused on different levels of analysis and used a variety of theoretical perspectives, conceptual definitions, and operational indicators to capture cooperation and competition. We also observe that the majority of performance research builds on the implicit but questionable assumptions that alliance performance and firm performance are either unrelated or positively associated. Addressing these knowledge gaps, we argue that a need exists for a testable theoretical model that incorporates the relationships among cooperation, competition, alliance performance, and firm performance.

We organize the chapter as follows. We present in Section 4.1 our conceptualization of a trade-off. In Section 4.2, we apply this conceptualization to the context of alliances and introduce the cooperation and competition trade-off. We use this latter conceptualization to assess theoretical perspectives (§4.3.) and empirical studies (§4.4). Finally, in Section 4.5, we discuss implications for theory development.

4.1 Trade-Offs

Management researchers introduced a variety of conceptual and operational trade-off definitions (see Box 4.1), which makes it difficult to find a coherent procedure to identify a trade-off decision-making situation (Berry & Lowery, 1990). Nonetheless, building on prior conceptual and empirical research, we contend that a trade-off is distinct from alternative views of decision-making under the conditions of two opposing forces, including puzzle, dilemma, and paradox (Poole & Van de Ven, 1989; De Wit & Meyer, 2004). As depicted in Figure 4.1, a puzzle represents a problem with one optimal solution. Puzzles can be complex and difficult to analyze, but there is always one best way of solving them. In contrast, a dilemma is a problem situation with only two possible solutions, neither of which is logically the best. Dilemmas confront problem solvers with difficult either–or choices, each with its own advantages and disadvantages, but neither clearly superior to the other. Trade-offs and paradoxes represent problem situations in which there are many possible solutions.

[18] We distinguish among value-creation mechanisms (i.e., cooperation), value-appropriation mechanisms (i.e., competition), created value (i.e., alliance performance), and appropriated value (firm performance).

Box 4.1 Trade-Offs and Management Research

The notion of trade-offs permeates management research. However, researchers used different conceptual and operational definitions. Some researchers viewed trade-offs as a tension between resource categories under conditions of scarcity. That is, a decision maker needs to allocate scarce resources to particular activities, knowing that a suboptimal resource allocation may have detrimental consequences. For instance, researchers examined government budget allocations and proposed and tested trade-offs with regard to defence and welfare spending (Pryor, 1968; Russett, 1969) and controllable and uncontrollable government expenditures (Kamlet & Mowery, 1987). In addition, management researchers examined trade-offs involving a firm's positioning strategies (Porter, 1996), value creation and value appropriation capabilities (Mizik & Jacobson, 2002), static and dynamic efficiency (Ghemawat & Costa, 1993), and the relationship between exploration and exploitation strategies (Benner & Tushman, 2003; He & Wong, 2004). Other researchers examined consequences of the decision-making and viewed trade-offs as a tension between outcome variables. For example, researchers investigated trade-offs between financial and marketing performance (Furrer, Alexandre, & Sudharshan, 2007), dimensions of manufacturing performance (Swink & Zsidisin, 2006), and a firm's profitability and market share (Armstrong & Green, 2007).

Implications for this Study

This fragmentation of views about what a trade-off is, has several implications for this study:

- A need exists for a coherent conceptualization of a trade-off. This conceptualization should recognize that (1) resource scarcity forces firms to allocate resources, and (2) resource allocation decisions may differentially affect various performance objectives (i.e., outcome variables).
- We can use this typology of trade-offs and apply it to the context of strategic alliances, enabling us to better understand the relationships among cooperation, competition, alliance performance, and firm performance.

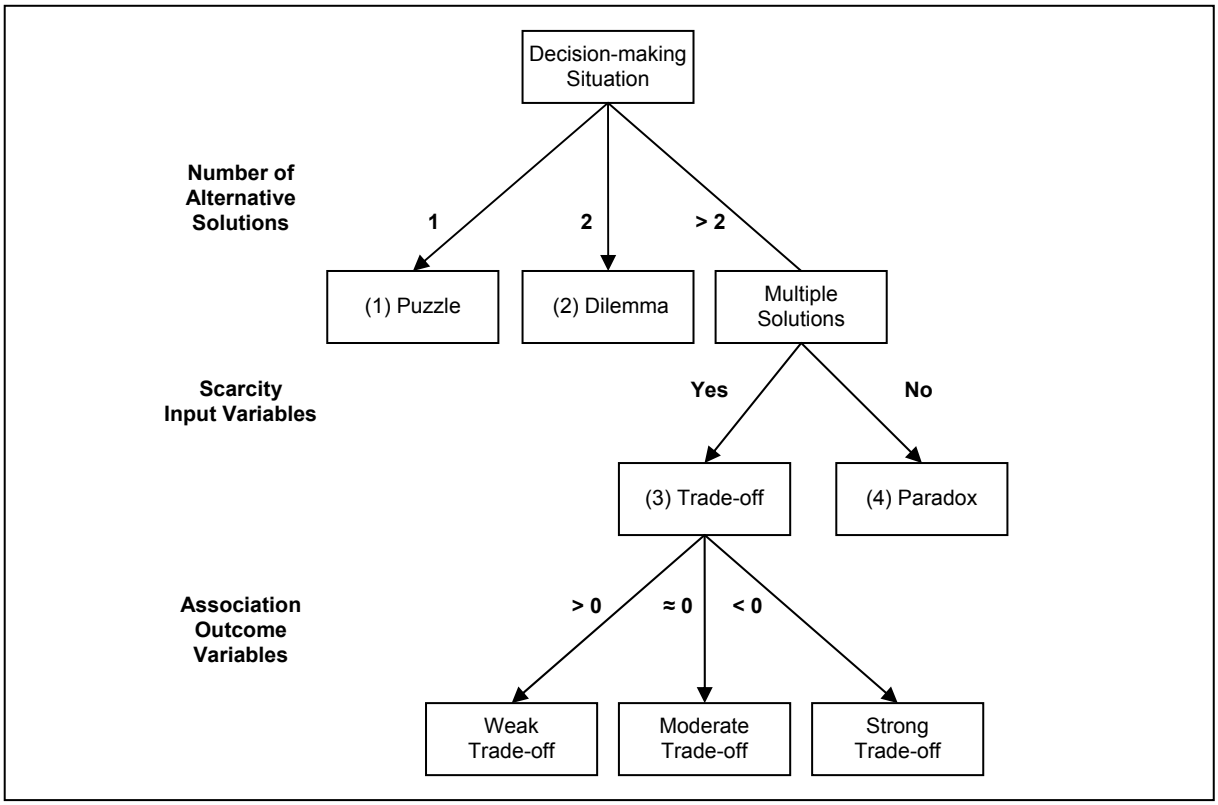
A paradox is a problem situation in which two seemingly contradictory, or even mutually exclusive, forces appear to be true at the same time (De Wit et al., 2004). A problem that is a paradox has no real solution. Rather, resolving a paradox requires decisions that aim to achieve one of many possible creative reconciliations of the two opposing forces, as there is no logical way to integrate the two opposites into an internally consistent understanding (Poole et al., 1989). A decision maker seeks a temporary solution to cope with the paradox, without arriving at a definitive solution. Thus, the solution to a problem situation occurs through creative reconciliation and thinking out of the box rather than seeking a balance between two opposing forces, as is the case in a trade-off situation (De Wit et al., 2004). To better understand the distinction between the three trade-off types, we first elaborate on (1) decision-making under resource scarcity and (2) decision-making consequences. See Table 4.1 for an overview of trade-off properties.

Condition 1: Decision-Making under Conditions of Scarcity

Firms make decisions on the allocation of resources while these resources are scarce. The choice to designate resources to a particular activity (i.e., resource category) affects the amount of resources allocated to another activity, such that resource allocation to one activity comes at the expense of the other. Resource categories may refer to financial expenditures (Berry et al., 1990), transaction-specific investments (Swink et al., 2006), or resources needed to implement specific strategies (Furrer et al., 2007). For instance, Boyer and Lewis (2002) examined plant managers' choices with regard to investments in competitive priorities and found that a focus on costs as a competitive strategy negatively relates to flexibility, whereas a focus on delivery negatively affects quality and flexibility. Scarcity across resources implies

that a firm cannot attain multiple goals at the same time and must consider opportunity costs when making decisions. Resources may have alternative uses, and allocation decisions affect their value-creation potential. For example, due to resource scarcity, a manufacturing firm cannot maximize production quality and production efficiency simultaneously (Swink et al., 2006). Production managers need to consider this trade-off and decide on the production strategy that will result in a balance between quality and production efficiency. In summary, resource limitations force a firm to make decisions with respect to the objectives it wants to achieve.

Figure 4.1 Four Views of Decision-Making Situations



Condition 2: Decision-Making Consequences

Decision-making under conditions of resource scarcity suggests that the solution a firm adopts can have different consequences. That is, the direction and magnitude of the relationship between one resource category and an objective (A or B) differs from the relationship with another resource category and an objective (A or B). For instance, Furrer, Alexandre, and Sudharshan (2007) found that strategies to achieve superior marketing performance or superior financial performance vary depending on a firm's resource configuration. Within a buyer–supplier setting, Swink and Zsidisin (2006) found empirical support for a performance trade-off hypothesis; their empirical results indicated that various levels of focused commitment strategies had different impacts on multiple manufacturing performance dimensions, including quality and profitability. Mizik and Jacobson (2002) found that if firms operate in stable technology markets and make a shift toward value appropriation at the expense of value creation, it negatively affects their stock market return. In contrast, in

markets that are more dynamic, a shift between value creation and appropriation positively affects stock market returns. These empirical studies illustrated that the relationship between traded-off resource categories and outcome variables can vary in magnitude and direction. More specifically, contingent on the relationship between the trade-off solution (i.e., a balance between two resource categories) and objectives, we propose three different types of trade-offs: (1) weak, (2) moderate, and (3) strong.

We define a weak trade-off as a problem situation in which a decision maker confronts a necessity to seek a balance between expenditures with respect to two resource categories, but directing efforts to maximize the level of one outcome variable does not inhibit the achievement of the other objective. If a firm allocates resources to achieve a maximum performance level with regard to one particular objective, another performance objective can still be achieved, though not to its full extent. For instance, Furrer, Alexandre, and Sudharshan (2007) found that firms adopting a generalist strategy, in contrast to more focused strategies, are more likely to achieve higher levels of marketing performance and financial performance. Thus, though resource scarcity forces firms to allocate resources across activities, they can achieve multiple objectives simultaneously, because the weak trade-off type is characterized by a positive relationship between two outcome variables.

Table 4.1 Trade-Off Properties and Types

Conditions	Description	Empirical Illustrations
Decision-making - Resource Scarcity	The choice of resource level for one category affects the amount of resources allocated to another category, such that allocation in one category comes at expense of the other.	▪ Choices between budgetary expenditures (Berry et al., 1990) ▪ Choices between focus on value-creation capability or value-appropriation capability (Mizik et al., 2002) ▪ Choices between resource configurations (Furrer et al., 2007) ▪ Choices between competitive priorities (Boyer & Lewis, 2002)
Decision-making - Consequences	The impact of one resource category on outcome variable A or B is different from the impact of another resource category on outcome variable A or B.	▪ Focused commitment strategy has a different impact on various supplier performance dimensions (Swink et al., 2006) ▪ Distinct resource configurations have different impacts on financial and marketing performance (Furrer et al., 2007)
Trade-off type		
Weak:	A positive relationship between two outcome variables A and B.	▪ Positive relationship between a firm's financial and marketing performance (Furrer et al., 2007)
Moderate:	No relationship between two outcome variables A and B.	▪ No significant correlations between outcome variables, such as costs and profitability (Swink et al., 2006)
Strong:	A negative relationship between two outcome variables A and B.	▪ Negative associations between market share and profitability (Armstrong et al., 2007) and cost efficiency and flexibility (Boyer et al., 2002)

In contrast to a weak trade-off, we define a moderate trade-off as a problem situation in which two outcome variables are unrelated. Resource allocation decisions differentially affect multiple outcome variables, but the outcome variables themselves are independent. For instance, Swink and Zsidisin (2006) found that the level of a focused commitment strategy with suppliers relates in a curvilinear fashion to operational outcomes such as cost performance, quality, and profitability. However, empirical results also indicated that several outcome pairs, such as cost performance and delivery, cost performance and profitability, and

profitability and delivery, were not significantly associated. These findings indicate that when firms allocate resources to achieve a particular objective, those decisions do not necessarily affect, positively or negatively, the extent to which a firm achieves another objective. That is, a firm can direct its efforts toward maximizing the level for one outcome variable, but the consequences with respect to the level of another outcome variable cannot be ex-ante predicted.

We define the strong trade-off type as a problem situation in which firms are confronted with not only resource allocation decisions under conditions of scarcity but also with the notion that maximizing the level of one outcome variable relates inversely to the outcome level of another variable. That is, two outcome variables are negatively associated. Boyer and Lewis (2002) found that plant managers were incapable of improving cost efficiency without incurring negative consequences with respect to flexibility. The empirical results also indicated negative associations between other outcome variables, such as flexibility and delivery reliability and quality and delivery reliability. Armstrong and Green (2007) conducted a review of empirical studies examining the consequences of firms pursuing competitor-oriented strategies and noted that firms that increase profitability also experience a decrease in market share. Hence, a strong trade-off type implies that if a firm aims to maximize the level of one particular objective, it should simultaneously anticipate an adverse effect on the level of another objective.

4.2 Cooperation and Competition Trade-Off: Conceptualization

We use this trade-off typology to develop a specific type of trade-off, namely, cooperation and competition in an alliance context. Building on the trade-off properties (i.e., decision-making under conditions of resource scarcity and decision-making consequences), we argue that decision-making in an alliance represents a strong type of trade-off. Firms involved in an alliance must make resource allocation decisions with respect to their cooperative and competitive efforts, in which they seek a balance, because the extent to which parties achieve their individual objectives (i.e., appropriate value) depends on the degree to which they succeed in jointly creating value in the first place. Moreover, we postulate that a negative association exists between alliance performance and the difference between individual firm performances.[19]

Before we present our conceptualization of the cooperation and competition trade-off, we briefly elaborate on our assumptions about human nature (see §3.3) with respect to resolving trade-off problems. First, we assume that managers act out of self-interest, which implies that if confronted with a decision, they will seek a solution that fits with their individual objectives. Second, we assume that managers aim to maximize outcomes, such that if they confront a decision and must consider multiple objectives, they hope to maximize each single

[19] Recall that we formulate our hypotheses at the alliance level (see §1.5). Hence, we do not aim at explaining individual firm performance but rather focus on the relationship between partner firm's individual performances.

objective. However, resource scarcity will force them to make resource allocation decisions. Third, managers have the freedom to choose and allocate resources without being constrained by external pressures. Building on these three assumptions, we propose our conceptualization of the cooperation and competition trade-off.

Condition 1: Decision-Making under Condition of Scarcity

Alliances involve a series of decisions by parties with regard to how much effort they should spend on cooperation and how much they should spend on competition (Jap, 2001a). The main goal of a party involved in an alliance is to achieve its individual objectives, because from a firm perspective, an alliance is a valuable option as long as it yields superior value compared with alternate organizational forms (Madhok et al., 1998). However, to achieve individual objectives, the partner firms must cooperate and interactively aim for collective objectives (Das et al., 2000b). Firms engage in an alliance to expand the size of their joint benefits and give each party a share of an incrementally greater joint outcome that they could not have generated alone (Jap, 1999). Due to opportunity costs (i.e., the cost of passing up the next best choice when making a decision), parties cannot invest infinitely in an alliance. Increasing expenditures in either cooperation or competition makes alternative organizational forms more attractive. Consequently, when confronted with resource scarcity, parties need to balance between their efforts directed at cooperation and those directed at competition.

Cooperation between parties engaged in an alliance means that the parties attempt to implement value-creating conditions and processes (Das et al., 2003). It therefore reflects decisions that have resulted in efficient alliance structures (Williamson, 1985) and effective alliance management (Ireland et al., 2002), because they have minimized transaction costs and maximized value (Madhok, 2001; Madhok et al., 1998). For instance, parties may decide on compensation structures that provide strong incentives for each party to cooperate (Contractor et al., 2000), develop alliance structures and processes that enable reciprocal learning (Lubatkin et al., 2001), and allocate resources to develop trustworthiness among the partners (Ariño et al., 2001; Ring et al., 1994). However, parties engaged in an alliance cannot direct their efforts solely toward cooperation (i.e., behave altruistically), because they must consider their individual objectives as well (Larsson et al., 1998). Whereas cooperation represents parties' efforts with regard to value-creation mechanisms, competition depicts their efforts to secure value appropriation. Value appropriation refers their efforts to extract value from the alliance (if necessary, at the expense of the partner firm). A party thus may use its bargaining power to negotiate more profits, use a learning advantage to appropriate newly created knowledge (Lane et al., 2001), or exploit a vulnerable partner by behaving opportunistically (Wathne et al., 2000). From a firm perspective, directing efforts toward value appropriation mechanisms is rational, because an alliance is desirable as long as its value outweighs that of alternative organizational forms (Madhok et al., 1998). However, if parties solely focus on achieving their individual objectives, the rationale behind the alliance would diminish quickly, because the parties stop putting efforts into value creation conditions and processes (Jap, 2001a). In Box 4.2, we present an illustration of this trade-off.

Box 4.2 Illustration of a Trade-Off between Cooperation and Competition

We use a dyadic level conceptualization of cooperation and competition, such that cooperation captures a party's efforts to collaborate, and competition captures its efforts to secure individual interests. We define **mutual cooperation** at the dyadic level as the combination of parties' efforts for value creation and define **competition imbalance** as the difference between each firm's efforts spent on value appropriation. We postulate that mutual cooperation and competition imbalance require simultaneous consideration to produce an exhaustive theoretical portrayal. The matrix below illustrates this point. Given three levels of efforts spent on cooperation or competition by each firm, each quadrant shows the amount of mutual cooperation and the competition imbalance at the dyadic level. The unshaded quadrants depict dyads characterized by various levels of mutual cooperation and competition imbalance, and the shaded quadrants depict dyads with an absence of competition imbalance. Above the diagonal, competition imbalance favors firm A; below the diagonal, it favors firm B. Although equal levels of competition characterize the dyads in the shaded quadrants, different levels of mutual cooperation distinguish them. For instance, quadrants 1 and 9 on the shaded diagonal are competition balanced, but the dyad in quadrant 1 is characterized by a higher level of cooperation. As illustrated in quadrant 5 and 7, each dyad is characterized by a similar amount of cooperation; however, with respect to competition imbalance, they differ. In quadrant 5, firms A and B have balanced their cooperative and competitive efforts; in quadrant 7, firm A has allocated resources to cooperation, while firm B has allocated its resources to competition.

Firm A
(Cooperation, Competition)

Firm B
(Cooperation, Competition)

(1) Firm A (6, 0) Firm B (6, 0) Mutual cooperation: 12 Competition imbalance: 0	**(2)** Firm A (3, 3) Firm B (6, 0) Mutual cooperation: 9 Competition imbalance: 3	**(3)** Firm A (0, 6) Firm B (6, 0) Mutual cooperation: 6 Competition imbalance: 6
(4) Firm A (6, 0) Firm B (3, 3) Mutual cooperation: 9 Competition imbalance: 3	**(5)** Firm A (3, 3) Firm B (3, 3) Mutual cooperation: 6 Competition imbalance: 0	**(6)** Firm A (0, 6) Firm B (3, 3) Mutual cooperation: 3 Competition imbalance: 3
(7) Firm A (6, 0) Firm B (0, 6) Mutual cooperation: 6 Competition imbalance: 6	**(8)** Firm A (3, 3) Firm B (0, 6) Mutual cooperation: 3 Competition imbalance: 3	**(9)** Firm A (0, 6) Firm B (0, 6) Mutual cooperation: 0 Competition imbalance: 0

Implications for this Study

This illustration highlights three important points:

- Cooperation and competition must be considered at the dyadic level by taking into account each firm's efforts toward cooperation and competition.
- As the alliance unfolds, parties may shift between cooperative and competitive efforts, which directly affect mutual cooperation and competition imbalance at the dyadic level.
- Configurations (i.e., trade-off solutions) may influence alliance development and alliance performance differently.

Sources: Casciaro & Piskorski (2005); Ouchi (1980); Parkhe (1993a)

Condition 2: Decision-Making Consequences

With respect to the trade-off types (i.e., weak, moderate, and strong), we argue that the cooperation and competition represents a strong type. At the dyadic level, cooperation and competition inversely affect two outcome variables: alliance performance and firm performance imbalance. Moreover, in an alliance context, alliance performance and firm performance imbalance are negatively associated. We present our arguments in support of these claims next.

Firm performance is a function of alliance performance and a firm's share of alliance performance.[20] In Section 1.1, we defined alliance performance as the degree of accomplishment of both parties' intentional and emergent objectives. Firm performance thus refers to the degree to which a party has achieved its objectives through the alliance. For instance, two parties may have formed an alliance to generate profits, and when successful, each party receives a share of these joint profits. Depending on the level of alliance performance and a firm's claim on this alliance performance, firms may achieve different levels of performance. The difference between their performance levels is what we refer to as "firm performance imbalance." The level of firm performance imbalance is high if one party appropriates more benefits (e.g., profits) from the alliance than its counterpart, whereas if two parties obtain an equal amount of benefits, the level of firm performance imbalance is zero.

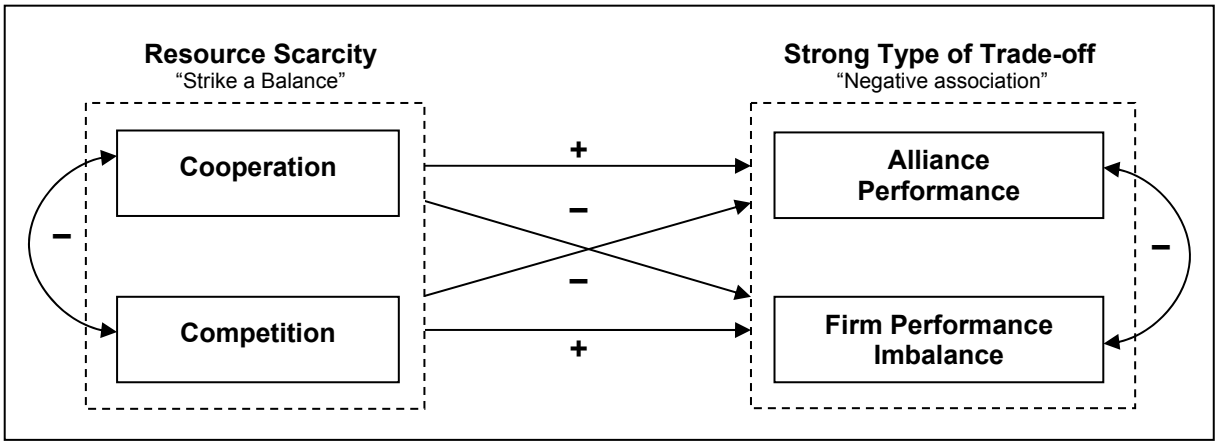
Cooperation between partners relates positively to alliance performance but negatively to firm performance imbalance. Alliance performance is positively influenced by cooperation, because parties focus their efforts on developing value-creation conditions and processes (Das et al., 2003; Dyer et al., 1998). For instance, partner firms may contribute complementary resources (Das et al., 2000b), agree to make nonrecoverable investments (Madhok et al., 1998), initiate reciprocal learning processes (Cummings et al., 2003; Lubatkin et al., 2001), or initiate activities that contribute to a high-quality relationship (Ariño et al., 1998). In addition, cooperation between partners reduces the likelihood of differences in their performances. When parties combine their efforts to facilitate cooperation, they are less concerned with alternative efforts to increase value appropriation. This lack of competition does not imply that the parties do not appropriate value but rather that each party receives equitable benefits through the alliance. That is, mutual cooperation reduces the likelihood that one party appropriates substantially more value at the expense of its counterpart.

In contrast, competition between two parties negatively influences alliance performance and positively influences the level of firm performance imbalance. When parties engage in competition, they expend efforts to maximize their individual performance. For instance, a party may allocate resources to exploit a power advantage (Lax et al., 1986), develop activities to exploit its absorptive capacity and act on a learning advantage (Hamel, 1991), or engage in opportunistic behavior to extract additional benefits (Wathne et al., 2000). When parties direct their efforts toward value-appropriation mechanisms, the resulting alliance environment prompts them to allocate insufficient resources to value-creation conditions and processes (Jap, 1999). As a consequence, they undermine the long-term value creation of the alliance, and when one party successfully exploits the opportunity to appropriate value at the expense of its counterpart, the imbalance between firms' performance levels results.

[20] We only focus on common benefits. That is, alliance performance refers to jointly created value at the dyadic level, whereas firm performance pertains to a firm's share of this created value. As a consequence, when we refer to firm performance, we do not include other types of benefits a firm could derive from the relationship, such as stock market returns or net spill-over effects (i.e., private benefits).

The strong cooperation and competition trade-off suggests that the relationship between alliance performance and firm performance imbalance must be negative. Two arguments support this assertion. First, a party can increase firm performance by increasing its share of alliance performance, namely, shifting its efforts toward competition and increasing its claim on alliance performance. For instance, a party, whether ex-ante or ex-post, might use its bargaining power to (re)negotiate additional benefits (Lax et al., 1986). Regardless of the decisions by the counterpart with respect to cooperation and competition, this shift toward competitive efforts reduces the level of cooperation and creates a competition imbalance (e.g., in Box 4.2, movement from quadrant 5 to quadrant 6). Consequently, the combined investments in value-creation conditions and processes decreases, which negatively affects alliance performance. However, when a party exploits a value-appropriation mechanism to its advantage, it likely increases its performance level, at the expense of the performance of its counterpart. Hence, a party's shift in effort from cooperation to competition negatively affects alliance performance but positively affects firm performance imbalance.

Figure 4.2 Cooperation and Competition Trade-Off: A Conceptualization



Second, a party can increase its performance by redirecting effort toward cooperation and increasing alliance performance. Regardless of the decisions by a counterpart in terms of cooperation and competition, a shift toward cooperation by one partner increases combined investment in value-creation mechanisms, though it also creates a competition imbalance (e.g., in Box 4.2, from quadrant 5 to quadrant 2). Through this shift toward cooperation, alliance performance likely increases, which, given each firm's share of that alliance performance, should lead to an increase in firm performance. However, consistent with the proposed trade-off logic, greater efforts spent on cooperation come at the expense of efforts for competition. Therefore, the party places less emphasis on securing individual benefits, so its counterpart may appropriate a relatively larger share. From the individual firm perspective, this behavior is rational as long as the increase in alliance performance outweighs any possible loss due to a relatively smaller share of benefits. In an alliance context, the trade-off between cooperation and competition is best depicted as a strong trade-off (see Figure 4.2).

In summary, our conceptualization of the cooperation and competition trade-off is determined by two properties. First, in conditions of resource scarcity, parties make decisions about how much effort to spend on cooperation and how much on competition. Second, the combination of parties' cooperation and competition decisions adversely affects alliance performance and firm performance imbalance. That is, we argue that a negative association between alliance performance and firm performance imbalance exists, suggesting a strong trade-off type. In the next two sections, we use our conceptualization of the cooperation and competition trade-off to review theoretical perspectives and empirical alliance research, on which basis we develop guidelines for theory development.

4.3 Cooperation and Competition Trade-Off: Theoretical Perspectives

Researchers have examined cooperation and competition in an alliance context using a variety of theoretical perspectives, including transaction cost economics (Gulati et al., 1998; Parkhe, 1993a), game theory (Gulati et al., 1994; Parkhe, 1993a; Song et al., 2002; Zeng et al., 2003), the resource-based view (Barney et al., 2001; Eisenhardt et al., 1996), equity theory (Adams, 1965; Scheer et al., 2003), organizational justice theory (Johnson et al., 2002; Kumar et al., 1995b; Luo, 2005), power perspective (Blankenburg Holm et al., 1999; Pfeffer et al., 1978), the learning perspective (Hamel, 1991; Holmqvist, 2003; Larsson et al., 1998; Lubatkin et al., 2001), and behavioral perspectives (Aulakh et al., 1996; Cullen et al., 2000; Ganesan, 1994; Kauser et al., 2004; Uzzi, 1996).[21] To assess the extent to which each theoretical perspective has contributed to a better understanding of the relationships among cooperation, competition, alliance performance, and firm performance, we examine the extent to which each theoretical perspective fits with our conceptualization of the cooperation and competition trade-off. We conclude that the power, learning, and behavioral perspectives provide relevant and complementary insights, but the other theoretical perspectives provide only supportive explanations or hamper our understanding due to their conceptual limitations. See Table 4.2 for an overview.

Alliance researchers who drew on transaction cost economics (TCE) argued that an alignment between the governance form and transaction characteristics should lead to efficient exchanges between firms (Williamson, 1975). Within the context of alliances, cooperation refers to one firm's decision to establish a governance form that minimizes its transaction costs (i.e., value appropriation), and an efficient governance form curbs ex-ante and ex-post exchange hazards, such as adverse selection and moral hazard (Williamson, 1985). Although TCE researchers produced valuable findings with respect to the rationales for alliance formation (Chen et al., 2003; Gulati et al., 1998; Pisano, 1989), for our conceptualization of the cooperation and competition trade-off, TCE logic contains several limitations. First, researchers drawing on TCE primarily focused on governance form decisions (David et al., 2004) rather than providing explanations for superior alliance performance (Sampson, 2004b).

[21] In Appendix 1, we present a brief review—characteristics and critiques—of each theoretical perspective.

That is, TCE theorists' focus on non-recoverable investments and their ability to reduce transaction costs failed to recognize the potential value generated by these investments (Madhok et al., 1998; Weitz et al., 1995). Second, researchers using TCE logic approached cooperation decisions from only one side of a dyadic relationship. That is, if two firms agree to establish a particular governance form, the chosen governance form is not necessarily efficient with respect to all parties involved (Weitz et al., 1995; De Wulf et al., 2001). Third, in terms of competitive factors, researchers assumed that firms behave opportunistically rather than including opportunism as a variable (Ghoshal et al., 1996). Thus, TCE explanations have limited explanatory power when it comes to the cooperation and competition trade-off.

Table 4.2 Cooperation and Competition: Theoretical Perspectives

	Cooperation & Competition	Focus	Points of Interest
Transaction Cost Economics	- Value appropriation by cost minimization	- Governance form - Efficiency	Limited explanatory power, due to focus on transaction costs, one-sided firm perspective, and assumption of opportunism
Game Theory	- Cooperation - Defection	- Strategic decision-making - Optimal strategy	Limited explanatory power, due to dilemma perspective, pay-off structure ex-ante known, and assumption of hyper-rationality
Resource-Based View	- Value creation by joint resource alignment	- Resource configurations - Competitive advantage	Moderate explanatory power, due to focus on value creation, but no explanations with respect to value appropriation
Equity Theory	- Equity - Inequity	- Decision-making - Exchange relationship	Supportive explanations, due to focus on firm behavior, but no explanations provided with respect to mechanisms
Organizational Justice Theory	- Distributive justice - Procedural justice	- Decision-making - Exchange relationship	Supportive explanations, due to focus on firm behavior, but no explanations provided with respect to mechanisms
Power Perspective	- Mutual dependence - Power imbalance	- Bargaining power	Substantial explanatory power, due to explanations with respect to consequences of value creation and appropriation mechanism
Learning Perspective	- Knowledge creation - Knowledge acquisition	- Learning	Substantial explanatory power, due to explanations with respect to consequences of value creation and appropriation mechanism
Behavioral Perspective	- Quality relationship - Opportunistic behavior	- Relational norms	Substantial explanatory power, due to explanations with respect to consequences of value creation and appropriation mechanism

Game theory researchers argued instead that the pay-off structure determines parties' decision-making process. Within an alliance setting, different pay-off structures may stimulate either ex-post cooperation or competition between partner firms (Zeng et al., 2003). Zeng and Chen (2003) argued that structural and motivational changes in an alliance's pay-off structure directly affect parties' inclination to cooperate. Researchers drawing on game theory contributed valuable insights into pay-off structures, learning, and cooperation (see e.g., Gulati et al., 1994; Parkhe, 1993a; Zeng, 2003), but for our conceptualization of the cooperation and competition trade-off, the theory has several limitations. First, game theorists adopted a dilemma approach toward cooperation and competition, such that parties decide either to cooperate or to defect (i.e., compete) rather than seeking a balance between cooperative and competitive forces. Second, they assumed that a pay-off structure is ex-ante known by the partner firms (Zeng et al., 2003), which suggests that parties have complete

information about future benefits and conflicts with our view that alliances are dynamic entities surrounded by uncertainty. Third, game theorists assumed that managers are hyper-rational (Sebenius, 1992); in this study, we assume that managers are subject to bounded rationality. Thus, the explicit focus on decision-making and the limitations make game theoretic approaches inadequate to explain the cooperation and competition trade-off.

Alliance researchers using the resource-based view (RBV) argued that resource alignment between two parties enables them to achieve superior alliance performance (Das et al., 2000b); in this sense, RBV theorists considered alliances a strategy used to access the other firm's resources to achieve otherwise unavailable competitive advantages and values (Eisenhardt et al., 1996). When a firm does not possess the entire bundle of resources and capabilities it needs, markets cannot bundle the required resources, and alternatives to attain resources are too costly, the firm engages in an alliance (Madhok et al., 1998). The RBV offers important insight compared with theories such as TCE or industrial organization economics (Combs et al., 1999; Das et al., 2000b; Dyer et al., 1998) by focusing on analyses of the specific resources possessed by a firm. Yet again though, for our conceptualization of the cooperation and competition trade-off, the RBV contains a major limitation. Previous RBV theorists did not provide any explanations with respect to value appropriation (Alvarez et al., 2001; Coff, 1999) and focused instead on the relationship between parties' resource configurations and value creation, with the implicit assumption that the party with the valuable and scarce resources appropriates synergetic benefits (Blodgett, 1991b). To address this concern, researchers used the bargaining power perspective to understand value appropriation (Coff, 1999; Dyer et al., 1998). Although alliance researchers drawing on the RBV produced relevant insights into alliance formation and performance (see e.g., Combs et al., 1999; Eisenhardt et al., 1996; Lambe et al., 2002), with respect to the cooperation and competition trade-off, RBV explanations have only moderate explanatory power.

Researchers using equity theory (Adams, 1965) or organizational justice theory (Deutsch, 1985; Greenberg, 1987) argued that parties' perceptions of cooperation and competition—that is, (in)equity, (in)justice, or (un)fairness—affect the partners' behavior. First, equity theory argued that partner firms become unmotivated if they perceive their inputs to be greater than the outputs (Ariño et al., 1998; Scheer et al., 2003). Scheer, Kumar, and Steenkamp (2003) found that Dutch automobile dealers reacted adversely to positive and negative inequities in their relationships with their automobile suppliers. Second, organizational justice theory focused on distributive and procedural justice, with the argument that unfairness in the division of benefits and decision-making influences partner firms' behavior (Johnson et al., 2002; Kumar et al., 1995b). Luo (2005) found that alliance profitability is higher at high levels of shared perceptions of procedural justice, particularly higher than that prompted by asymmetrical perceptions of procedural justice. Nonetheless, with respect to our conceptualization of the cooperation and competition trade-off, these theoretical perspectives possess several limitations, the most prominent of which is their focus on perceptions (i.e., assessments) of partner firm behavior rather than on value creation and appropriation

mechanisms. That is, their explanations centered on partner firm behavior in response to (in)equity (see e.g., Ariño et al., 1998) rather than on alliance performance consequences (see Luo, 2005 for an exception). Alliance researchers drawing on the equity theory and organizational justice theory produced relevant insights with respect to alliance development (see e.g., Husted & Folger, 2004; Johnson et al., 2002), but when it comes to the cooperation and competition trade-off, their explanations offered only supportive explanatory power.

In contrast, three theoretical perspectives actually may contribute to a better understanding of our conceptualization of the cooperation and competition trade-off. Proponents of the power perspective, the learning perspective, and the behavioral perspective commonly viewed cooperation and competition as properties of the relationship between two parties rather than as attributes of each individual firm. Proponents of the power perspective considered power a relational characteristic, advocates of the learning perspective argued interorganizational learning is a dyadic property, and researchers drawing on the behavioral perspective posited that partner firm interactions develop into relational patterns of behavior. As a complement to this shared emphasis, each perspective presented distinct value creation and appropriation mechanisms.[22]

Advocates of the power perspective argued that bargaining power functions as a cooperative and competitive mechanism within alliances (Blodgett, 1991b; Doz et al., 1998; Lax et al., 1986). That is, the nature of the power relationship enables parties to implement value creation and value appropriation conditions and processes (Pfeffer et al., 1978). If parties are mutually dependent (i.e., equal level of bargaining power), the power relationship provides strong incentives for each partner to contribute actively to the achievement of the other's objectives (Emerson, 1962; Pfeffer et al., 1978). However, if one party has a bargaining power advantage, it can extract additional value from the alliance at the expense of its counterpart (Blodgett, 1991b). Initially, parties use bargaining power during the alliance formation stage to negotiate about alliance design and contractual provisions (Blodgett, 1991a; Blodgett, 1991b). In addition, during the post-formation stage, parties may renegotiate these initial contractual agreements in response to shifts in their bargaining power caused by external changes or learning (Inkpen et al., 1997). Proponents of the power perspective thus put forward several insightful explanations for the cooperation and competition trade-off, though these explanations are constrained to the use of bargaining power.

Alliance researchers used the learning perspective to clarify the relationship between cooperation and competition (Hamel, 1991; Inkpen et al., 1995; Kumar & Nti, 1998). According to advocates of the learning perspective, parties should balance their knowledge creation and knowledge appropriation efforts (Larsson et al., 1998). If parties have an equal opportunity to assess and acquire knowledge through the alliance, cooperation results (Lubatkin et al., 2001), which enables those parties to achieve their performance objectives. In

[22] In Chapter 5, we discuss the power, learning, and behavioral perspectives in depth.

contrast, if parties have an unequal opportunity to learn, a learning race may be ignited (Hamel, 1991), which hampers superior alliance performance. In summary, advocates of the learning perspective developed insightful explanations with respect to the cooperation and competition trade-off, but these explanations were limited to interorganizational learning.

Proponents of a behavioral perspective argued that partner interactions constitute a mechanism that, on the one hand, contributes to a cooperative working climate but, on the other hand, can create a competitive climate (Ariño et al., 1998; Aulakh et al., 1996; Cullen et al., 2000; Ganesan, 1994; Kauser et al., 2004). Parties can direct their efforts toward building a high-quality relationship (Ariño et al., 2001) or engage in repetitive patterns of opportunistic behavior (Wathne et al., 2000). Specifically, parties might build cooperative relational norms, which develop trust and thus make parties act in a manner consistent with their partner's interests (Ring et al., 1994). However, relational norms also could develop into behavioral guidelines that stimulate competitive behaviors. For instance, opportunistic behavior enables a firm to extract additional value from the alliance by purposefully misleading its partner firm. Opportunistic behavior differs from bargaining power and knowledge absorption, because the party intentionally deceives its partner to extract benefits. A high-quality relationship increases the likelihood of mutual knowledge creation and attenuates conflicts, which may result from parties' efforts to exploit or prevent exploitation in response to a bargaining power imbalance. In summary, proponents of the behavioral perspective offered insightful explanations for the cooperation and competition trade-off. However, these explanations are constrained to partner firm behaviors.

To conclude, alliance researchers used a variety of theoretical perspectives to provide a better understanding of cooperation and competition within an alliance context. However, the majority of these theoretical perspectives suffered limitations that inhibit current understanding. Hence, we conclude that a theoretical gap exists in the alliance literature, centered on the persistent lack of a coherent theoretical model. However, proponents of three theoretical perspectives—power, learning, and behavioral—put forward explanations that appear promising with respect to theory development. More specifically, the three perspectives enable us to theorize about the cooperation and competition trade-off while addressing issues pertaining to various value creation and appropriation mechanisms (i.e., bargaining power, learning, and relational norms).

4.4 Cooperation and Competition Trade-off: Empirical Studies

To the best of our knowledge, no empirical alliance study explicitly has examined the cooperation and competition trade-off. Specifically, no study examined simultaneously the relationship between cooperation and competition, the impact of cooperation and competition on alliance performance and firm performance (imbalance), and the relationship between alliance performance and firm performance (imbalance). To provide a better understanding of these relationships, we present the results of a review of studies that empirically tested theoretical models that focused on particular aspects of the cooperation and competition trade-

off. That is, we discuss studies that incorporated (1) cooperative factors, competitive factors, alliance performance, and firm performance; (2) cooperative factors, competitive factors, and alliance performance; and (3) cooperative factors, competitive factors, and firm performance.

Empirical Studies: Alliance Performance and Firm Performance

Two alliance studies presented empirical findings that contribute to a better understanding of the cooperation and competition trade-off (i.e., Child et al., 2003; Yan et al., 2001). However, the results of these studies are difficult to compare, because the researchers drew on different theoretical insights and used different definitions and dimensions to refer to alliance performance and firm performance. More important, neither study had an objective to conceptualize or test the cooperation and competition trade-off.

Study 1: Yan and Gray (2001)

Drawing on the power and behavioral perspectives, Yan and Gray (2001) tested a model of management control with a sample of 90 U.S.–China manufacturing joint ventures. The results indicated that relative bargaining power influences management control and that the level of operational control exercised by one partner over the alliance has a positive impact on the extent to which this partner achieves its strategic objectives. In addition, the findings indicated that the quality of the interpartner working relationship relates positively to the achievement of strategic objectives for both partners. Yan and Gray (2001) concluded that these empirical findings suggest competitive and cooperative dynamics occur simultaneously within alliances.

If confronted with the conceptualization of the cooperation and competition trade-off, the findings provide only a partial explanation. First, though their model incorporated factors representing cooperation (e.g., relational quality) and competition (e.g., management control), the relationships were not part of the study's empirical test, and their correlation matrix provided inconclusive support for a trade-off between cooperative and competitive factors. For instance, Yan and Gray (2001) reported a significant negative correlation between "perception of consensus" and dominant structural control ($r = -.268$, $p < .05$), which suggests that relational quality and management control trade off. However, they also reported a positive and significant correlation between "perception of consensus" and strategic control ($r = .229$, $p < .05$). These positive and negative associations provide, at best, partial insights, because these factors capture different outcomes of decision-making processes. Second, the empirical tests of the relationships among cooperation, competition, alliance performance, and firm performance deviated from the conceptualization. Whereas we argue that these relationships should be examined simultaneously, Yan and Gray (2001) examined them in isolation. For instance, they found through path analysis that dominant operational control (i.e., competition) positively affects the dominant firm's performance; they used regression analysis, to find support for their hypothesis that the quality of the relationship (i.e., cooperation) positively influences alliance performance. Third, Yan and Gray (2001) did not explicitly examine the relationship between alliance performance and each firm's individual

performance. We examine their correlation matrix, which reported a negative, insignificant correlation (r = -.179, p > .05) between alliance performance and the difference between each firm's performance. Although the direction of the correlation supports our assertion with respect to a strong trade-off, its lack of significance actually implies a moderate trade-off. Yan and Gray's (2001) findings thus provide partial support for the conceptualization of the cooperation and competition trade-off.

Study 2: Child and Yan (2003)

In another study of 67 international joint ventures between Chinese firms and foreign firms, Child and Yan (2003) examined the relationships among management control, resource contributions, alliance performance (i.e., economic system performance), and firm performance (i.e., party's goal achievement). Their empirical results indicated that partners' combined experience with alliances and the quality of resource provisions positively affect joint venture performance, whereas dominant foreign control negatively relates to alliance performance. In addition, the results indicated that dominant control by the foreign partner negatively affects the firm performance of the local partner (i.e., Chinese firm), and dominant control does not affect foreign firm performance. With regard to the conceptualization of the cooperation and competition trade-off, two findings are particularly relevant. First, though the statistical tests incorporated factors representing cooperation and competition, the study's objective was to examine the relationships between these factors. Therefore, the findings indicated that cooperative factors, such as partners' combined experience or high-quality resources, positively relate to alliance performance, whereas relative foreign control (i.e., competition) relates negatively to it. However, we cannot achieve an in-depth understanding of the relationship between cooperative and competitive factors through the reported findings, because Child and Yan (2003) did not report these correlations. Second, Child and Yan (2003) examined each partner firm's individual performance and joint venture performance. Their correlation matrix showed positive correlations among Chinese parent goals, foreign parent goals, and joint venture performance, which suggest that higher levels of alliance performance benefit all partners involved in an alliance. However, Child and Yan (2003) did not report any comparisons of the partner firms, so we cannot draw any conclusions about the type of trade-off. The results thus partially support the conceptualization of the cooperation and competition trade-off.

Although neither Yan and Gray's (2001) nor Child and Yan's (2003) study explicitly conceptualized or tested the cooperation and competition trade-off, the empirical findings revealed some important insights. The findings contributed to a better understanding of the relationship between cooperative and competitive factors, though a limited one. The empirical results indicated that cooperation and competition affect both alliance performance and firm performance, albeit differently. Finally, the empirical findings with respect to the type of trade-off were inconclusive and therefore warrant further investigation.

Table 4.3 Cooperation and Competition: Empirical Studies

Articles	Perspective	Cp[a]	Cm	AP	FP	Points of Interest
Child & Yan, 2003	Control Behavioral	x	x	x	x	Dominant control negatively influences alliance performance and firm performance, whereas joint experience and high quality resourcing relate positively. Firm and alliance performance are positively associated
Yan & Gray, 2001	Power Behavioral	x	x	x	x	Imbalanced control positively influences relative firm performance; consensus positively influences alliance performance. Alliance and relative firm performance are negatively but not significantly correlated
Bucklin & Sengupta, 1993	Power Behavioral	x	x	x		Empirical results indicate that power imbalance, managerial imbalance, and conflict relate negatively to perceived effectiveness, whereas pay-off and partner fit are positively related
Demirbag & Mirza, 2000	Behavioral	x	x	x		Cooperation (e.g., trust and commitment) is positively related to joint venture performance, but conflicts (e.g., division of benefits and control) are negatively related
Jap & Anderson, 2003	Behavioral	x	x	x		Empirical results indicate that the relationship between goal congruence, trust, and bilateral investments and alliance performance is moderated by the level of ex-post opportunism
Judge & Dooley, 2006	Behavioral	x	x	x		Opportunism negatively relates to alliance outcomes; trustworthiness and contractual safeguards negatively affect opportunistic behavior
Luo, 2005	Behavioral	x	x	x		Alliance performance is positively affected by shared procedural justice, and shared procedural justice is more important than asymmetrical perceived procedural justice is
Ramaseshan & Loo, 1998	Power Behavioral	x	x	x		A good relationship positively influences alliance effectiveness; power imbalance and dysfunctional conflicts are negatively related
Tiessen & Linton, 2000	Behavioral	x	x	x		Cooperation positively influences alliance performance, but competition is not significantly related. Results also indicate a negative association between cooperation and competition
Blankenburg Holm, Eriksson, & Johanson, 1999	Dependence	x		x		Empirical results indicate a positive relationship between mutual dependence and alliance performance (i.e., value creation)
Dhanaraj & Beamish, 2004	Learning Behavioral	x		x		A positive relationship exists between relational embeddedness and knowledge transfer; explicit knowledge transfer positively relates to alliance performance
Lane & Lubatkin, 1998	Learning	x		x		Positive relationships exist between relative absorptive capacity and alliance learning performance
Lane, Salk, & Lyles, 2001	Learning Behavioral	x		x		Trust positively influences a JV's financial and strategic performance; the JV's relative absorptive capacity relates positively to learning
Luo, 2002	Behavioral	x		x		A positive relationship between trust and performance is moderated by risk sharing, market uncertainty, interdependence, and commitment
Buchanan, 1992	Dependence	x	x		x	Dependence symmetry positively relates to a firm's financial performance objectives, as does dependence asymmetry
Chen, 2004	Learning Behavioral	x	x		x	A firm's absorptive capacity and partner interaction (e.g., trust) positively influence a firm's learning performance
Cummings & Teng, 2003	Learning	x	x		x	Knowledge and norm distance negatively influence knowledge transfer, whereas knowledge transfer activities are positively related
Lavie, 2007	Dependence	x	x		x	Complementary network resources foster a firm's market performance, but relative bargaining constrains a firm's appropriation capacity
Lusch & Brown, 1996	Dependence	x	x		x	Bilateral dependence positively influences normative contracting, which in turn affects firm performance positively. Firm performance is positively impacted by an alliance with a weaker partner
Malhotra, Gosain, & El Sawy, 2005	Learning	x			x	Mutually managing absorptive capacity positively influences a firm's learning and operational performance
Kale, Singh, & Perlmutter, 2000	Behavioral Learning	x			x	Relational capital positively relates to a firm's learning performance and also protects against unwanted knowledge transfer
Kotabe, Martin, & Domoto, 2003	Behavioral Learning	x			x	Relational assets positively moderate the relationship between higher-level technology transfer and a supplier's operational performance
Simonin, 1997	Learning Behavioral	x			x	Collaborative know-how (selection, negotiation, management, and termination) relates positively to a firm's tangible and intangible benefits
Cool & Henderson, 1998	Dependence		x		x	The dependence of a seller on a buyer or supplier negatively influences the seller's profitability (weak/moderate effects)
Hamel, 1991	Learning		x		x	Empirical results indicate that firms are differently adept at interpartner learning and that learning asymmetries alter relative bargaining power
Miles, Preece, & Baetz, 1999	Dependence		x		x	Being dependent on a larger partner firm hampers SME's to realize their financial performance objectives
Parkhe, 1993.	Behavioral		x		x	Opportunistic behavior by a partner firm negatively influences a focal firm's performance
Simonin, 1999	Learning		x		x	A firm's learning capacity and collaborative know-how positively moderate the relationship between knowledge ambiguity and learning

[a] Cp = Cooperation; Cm = Competition; AP = Alliance Performance; FP = Firm Performance.

Empirical Studies: Alliance Performance

Several alliance researchers examined the relationships among cooperation, competition, and alliance performance. These studies did not attempt to conceptualize or test a cooperation and competition trade-off, but the empirical findings provided, in some instances, indirect support for the conceptualization (see e.g., Bucklin et al., 1993; Demirbag et al., 2000; Jap et al., 2003; Luo, 2005; Ramaseshan & Loo, 1998; Tiessen et al., 2000). Drawing on power and behavioral perspectives, studies within the marketing channel context produced evidence regarding the trade-off between cooperation and competition and supported a positive relationship between cooperation and alliance performance, as well as a negative relationship between competition and alliance performance. Bucklin and Sengupta (1993) found that a power imbalance (i.e., competition) between partners could be reduced through interfirm cooperation at the formation stage, in which context cooperation referred to issues such as formalizing exit barriers, agreeing on exclusivity, agreeing about financial incentives, and making transaction-specific investments. In addition, empirical results indicated that power imbalances, managerial imbalances, and conflict related negatively to alliance effectiveness, whereas anticipated positive pay-off and partner fit had positive impacts on alliance effectiveness. Similar results with regard to alliance performance appeared in Ramaseshan and Loo (1998), who focused on the quality of the working relationship (positive impact), dysfunctional conflicts (negative impact), and power imbalances (negative impact). Unfortunately, these authors did not report a correlation matrix, so we cannot draw any conclusions about the relationship between cooperative and competitive factors.

Other alliance studies focused on behavioral aspects of the relationship. For instance, Jap and Anderson (2003) reported negative significant correlations between opportunism and bilateral idiosyncratic investments, goal congruence, and trust, which suggests a trade-off between cooperation and competition. The findings also indicated that the relationship between trust (i.e., cooperation) and alliance performance is stronger for lower levels of ex-post opportunism compared with higher levels (i.e., competition). Tiessen and Linton (2000) found that interfirm cooperation positively affects joint venture performance. Although they discovered a strong negative correlation between cooperation and competition, suggesting a trade-off, competition had no statistically significant impact on joint venture performance. Empirical studies provided support for the assertion that cooperation and competition relate negatively; cooperation positively and competition negatively relates to alliance performance.

To the best of our knowledge, no alliance study explicitly investigated the relationship between competition and alliance performance in isolation; however substantial research examined the relationship between cooperative factors and alliance performance (for reviews, see Gulati, 1998; Inkpen, 2001; Olk, 2002; Robson et al., 2002). Although it is beyond the scope of this study to review such alliance literature, we think it useful to discuss a few exemplary studies. For instance, drawing on the power perspective, Blankenburg, Holm, Eriksson, and Johanson (1999) found a positive relationship between the mutual dependence between partner firms and value creation within a supplier business network setting. Drawing

on the behavioral and learning perspectives, Dhanaraj, Lyles, Steensma, and Tihani (2004) revealed support for their hypothesis that the positive impact of relational embeddedness on alliance performance is mediated by the degree of knowledge transfer between partners. Lane, Salk, and Lyles (2001) produced empirical evidence that trust positively influences a joint venture's (JV) financial and strategic performance, and relative absorptive capacity positively influences a JV's learning performance. Empirical work showed that mutual dependence (see e.g., Blankenburg Holm et al., 1999; Ganesan, 1994), a good working relationship (see e.g., Ariño et al., 1998; Aulakh et al., 1996; Luo, 2002b; Zaheer et al., 1998), and mutual knowledge and information exchange (see e.g., Dyer et al., 2000; Inkpen et al., 1997; Lane et al., 1998; Simonin, 1999) positively relate to alliance performance.

Alliance researchers who have examined alliance performance acknowledged that firms engaged in an alliance need to divide their efforts between cooperation and competition. Moreover, they produced support for positive relationships between cooperative factors and alliance performance and reported negative relationships between competitive factors and alliance performance. However, these findings should be interpreted with caution, as hypotheses are built on an implicit and questionable assumption, namely, that efforts beneficial to the alliance are also beneficial to individual firms. That is, they assumed alliance performance and individual firm performance relate positively, which would suggest firms confront a moderate trade-off. This assumption conflicts with the proposition that firms participating in an alliance actually face a strong type of trade-off. Therefore, an important implication is that the direction of the relationship between alliance performance and firm performance should be hypothesized and tested, rather than simply assumed.

Empirical Studies: Firm Performance

A substantial subset of alliance research has focused on individual firm performance but neglected to examine the relationship between parties' performance. This approach deviates from our conceptualization, because researchers implicitly assumed that cooperative and competitive factors, which contribute to the focal firm's performance, also foster or impede alliance performance and the partner firm's performance. Nonetheless, these empirical studies contributed to a better understanding of the cooperation and competition trade-off.

Researchers drawing on a power perspective found that cooperation between partners positively relates to firm performance, whereas competitive factors impede it. Lusch and Brown (1996) examined the dependency structure between wholesalers and their major suppliers and found that bilateral dependence leads to normative contracting, which relates positively to wholesaler performance. In addition, empirical results indicated that supplier dependence has a positive indirect effect, through normative contracting, on the wholesaler's performance level. Buchanan (1992) found that high levels of interdependence between a buyer and supplier positively relate to the buyer's performance, though dependence on a supplier also positively affects buyer performance. One explanation for this finding indicates that the value generated by an externally acquired resource outweighs a possible cost related

to the supplier's dominant bargaining position. Finally, Lavie (2007) found that complementary network resources contribute to a focal firm's market performance, whereas the relative bargaining power of partners constrains a firm's appropriation capacity.

Researchers drawing on learning and behavioral perspectives also produced empirical support for the relationships among cooperation, competition, and firm performance. For instance, Chen (2004) found that a firm's absorptive capacity and partner interaction (e.g., trust) relate positively to a firm's learning performance. Cummings and Teng (2003) reported findings that indicate knowledge and norm distance between partners negatively influence firm performance, whereas transfer activities positively affect knowledge exchange. These empirical studies have demonstrated that parties direct their efforts toward cooperation and competition and that the examined factors have inverse relationships with firm performance.

A few studies examined the relationships among cooperation, competition, and firm performance in isolation. For instance, drawing on the power perspective, Miles, Preece, and Baetz (1999) found that if a small- to medium-sized enterprise (SME) depends on a larger counterpart, its financial performance decreases. Cool and Henderson (1998) found that the dependence of a seller on a buyer or supplier negatively influences the seller's financial performance. Using the learning perspective, Hamel (1991) indicated that firms may have different (i.e., unequal) abilities to appropriate learning benefits, and Parkhe (1993a) found that opportunistic behavior by a partner firm negatively relates to the focal firm's performance. These studies have demonstrated that value appropriation mechanisms positively relate to firm performance. Furthermore, other studies found that cooperative factors positively relate to firm performance. For instance, using a behavioral perspective, Kale, Singh, and Perlmutter (2000) found that relational capital influences a firm's learning performance and protects against unwanted knowledge spill-over. In a study on Japanese and U.S. automotive suppliers, Kotabe, Martin, and Domoto (2003) offered empirical support for the hypothesis that relational assets moderate the relationship between high-order technology transfer and a supplier's operational performance. Simonin (1999) found that a firm's learning capacity facilitates the transfer of tacit knowledge, and Malhotra, Gosain, and El Sawy (2005) showed that higher levels of mutual absorptive capacity positively influence a firm's learning and operational performance. We therefore conclude that substantial empirical support exists for the proposition that cooperative and competitive factors influence firm performance.

In summary, researchers who examined the relationships of cooperation, competition, and firm performance have produced indirect support for the conceptualization of the cooperation and competition trade-off. That is, they reported relationships between cooperative factors (i.e., positive), competitive factors (i.e., negative), and firm performance, but they built on the implicit assumption that individual firm performance and alliance performance are either unrelated or positively associated. This implicit assumption deviates from our assertion that parties confront a strong type of trade-off. Therefore, for further theory development and testing, we formulate the relationship between alliance and firm performance as a hypothesis.

4.5 Implications for Theory Development

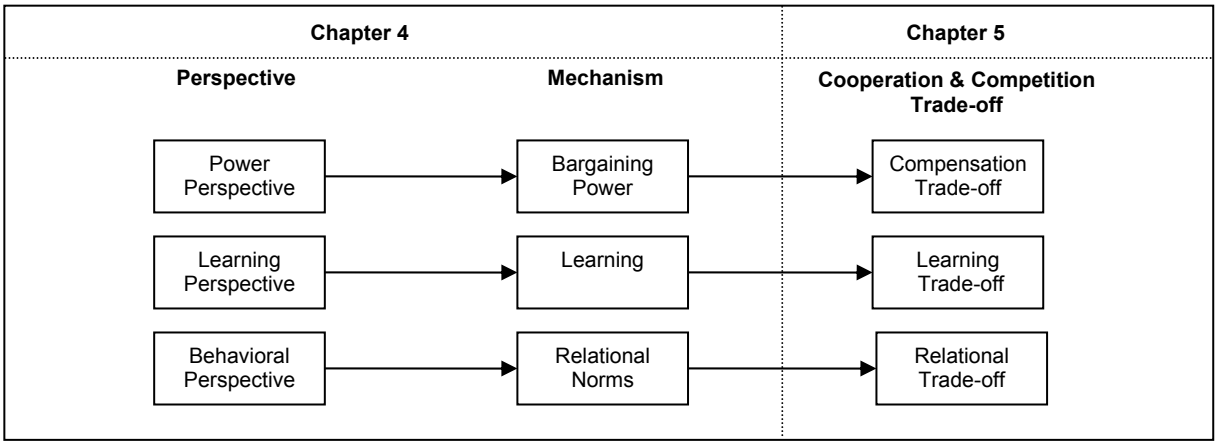
Although cooperative and competitive dynamics are tied inherently to strategic alliances (Evan, 1965; Litwak et al., 1962; Ouchi, 1980), theory development and empirical testing with respect to the cooperation and competition trade-off has been relatively scarce. When we consider the proposed conceptualization of a cooperation and competition trade-off, along with the theoretical perspectives and empirical studies available, we reach three conclusions.

First, the variety of theoretical perspectives and associated conceptual definitions have made a coherent conceptualization of cooperation and competition impossible. In addition, theoretical perspectives, such as TCE, game theory, and the RBV, possess conceptual limitations that hamper our understanding of the cooperation and competition trade-off. For instance, researchers drawing on TCE logic provided a better understanding of the conditions in which a firm will choose a particular type of governance form to organize an exchange relationship, but their explanations were constrained to the firm perspective. Using game theory, researchers produced a clearer picture of the relationship between pay-off structure and parties' decision-making, but with respect to cooperation and competition, this work built solely on a dilemma approach. Despite some limitations, the power, learning, and behavioral perspectives offer explanations that advance our understanding of the cooperation and competition trade-off. The three theoretical perspectives share the notion that parties make decisions with respect to the efforts they will spend on cooperation and competition. In addition, researchers have identified distinct value creation and appropriation mechanisms. Drawing on the power perspective, researchers addressed cooperation and competition through bargaining power; adherents of the learning perspective focused on learning; and proponents of the behavioral perspective focused on relational norms. However, the antecedents of these value creation and appropriation mechanisms remain unclear, as does their relationship with alliance performance and firm performance. We believe that the power, learning, and behavioral perspectives provide fruitful grounds for further theorizing on the cooperation and competition trade-off.

Furthermore, empirical research supported the explanations provided by the power, learning, and behavioral perspectives. As shown in Table 4.3, most empirical studies drew on one or more of the three theoretical perspectives to explain alliance and firm performance. For instance, researchers who examined learning in an alliance context drew on the learning and behavioral perspectives (see e.g., Chen, 2004; Kale et al., 2000; Kotabe et al., 2003), and other researchers drew on power and behavioral perspectives to examine management control in alliances (see e.g., Bucklin et al., 1993; Yan et al., 2001). In other words, empirical research substantiated our conclusion that the power, learning, and behavioral perspectives may function as appropriate building blocks for theory development. However, consistent with empirical findings (see e.g., Child et al., 2003; Luo, 2005), we also suggest that to understand the nature of the cooperation and competition trade-off, we may use equity theory and the resource-based view for theory development.

Third, the results of the literature review indicate that with only two exceptions (i.e., Child et al., 2003; Yan et al., 2001), empirical alliance research examined alliance and firm performance in isolation, assuming alliance decision-making represents a weak or moderate trade-off. That is, researchers implicitly assumed that benefits to the alliance also benefit, or at least do not damage, individual firm interests, and vice versa. However, as discussed in Section 4.2, a party's competitive efforts to increase individual performance may succeed or may negatively affect value creation. This implicit assumption, on which extant empirical alliance research builds, deviates from the conceptualization of the cooperation and competition trade-off. We postulate that to advance theory development with respect to alliance performance, the relationships among cooperation, competition, alliance performance and firm performance must be examined simultaneously. Thus, though existing conceptual (see e.g., Kumar & Nti, 1998; Larsson et al., 1998) and empirical (see e.g., Child et al., 2003; Demirbag et al., 2000; Yan et al., 2001) work certainly contains some limitations, prior research also has provided a strong foundation from which to develop a set of hypotheses.

Figure 4.3 Cooperation and Competition: From Conceptualization to Hypotheses



To address these conclusions—the need for a theoretical model with testable hypotheses—we note that in addition to existing insights, the conceptualization of the cooperation and competition trade-off provides guidance to advanced theory development (see Figure 4.3). Drawing on the power perspective, we argue that bargaining power constitutes a value creation and appropriation mechanism that results in a compensation trade-off. According to the learning perspective, learning depicts a value creation and appropriation mechanism that results in a learning trade-off; finally, our reading of the behavioral perspective leads us to argue that relational norms constitute a value creation and appropriation mechanism that results in a relational trade-off. In summary, each type of cooperation and competition trade-off advances understanding about alliance performance and responds to our conclusions with respect to the literature review. That is, the compensation, learning, and relational trade-offs (1) draw on our conceptualization of the cooperation and competition trade-off, (2) build off of a solid theoretical foundation, and (3) are empirically testable.

Chapter 5 Cooperation and Competition Trade-Off Theoretical Model

Building on the results of the literature review presented in Chapter 4, we develop in this chapter three types of cooperation and competition trade-offs: (1) the compensation trade-off, (2) the learning trade-off, and (3) the relational trade-off. First, we draw on the power perspective and argue that during the alliance formation stage, partners use bargaining power to resolve a compensation trade-off. To test this trade-off, we develop six hypotheses that relate compensation integrativeness, compensation imbalance, alliance performance, and firm performance imbalance. Second, drawing on the learning perspective, we argue that during the post-formation stage, firms must resolve the learning trade-off to achieve their performance objectives. To provide a test of this learning trade-off, we develop another set of six hypotheses entailing the relationships among absorption integrativeness, absorption imbalance, alliance performance, and firm performance imbalance. Third, drawing on the behavioral perspective, we argue that as the alliance unfolds, relational norms guide partner firm behavior toward cooperation and competition. To provide a test of what we call the relational trade-off, we introduce six hypotheses relating relational quality, opportunistic behavior, alliance performance, and firm performance imbalance.

With respect to each cooperation and competition trade-off, we discuss the theoretical foundation, elaborate on the sources and consequences of the value creation and appropriation mechanisms, and develop hypotheses. That is, in Section 5.1, we present the compensation trade-off. In Section 5.2, we introduce the learning trade-off, and in Section 5.3, we develop the relational trade-off. We conclude the chapter with conclusions in Section 5.4.

5.1 Hypothesis 2: The Compensation Trade-Off

In this section, we present a set of six hypotheses that together depict the first cooperation and competition trade-off, namely, the compensation trade-off. Drawing on the power perspective, we argue that during the alliance formation stage, firms must resolve the compensation trade-off to achieve individual performance objectives. We also argue that compensation integrativeness and compensation imbalance represent the outcomes of negotiation strategies with respect to parties' anticipated compensation. Consistent with cooperation and competition trade-off (see §4.2), we hypothesize that compensation integrativeness and compensation imbalance are inversely related to alliance performance and firm performance imbalance. However, before we introduce the hypotheses, we discuss the power perspective to recognize the causes and consequences of bargaining power in alliance negotiations.

The Power Perspective

Researchers drawing on the power perspective have concentrated their efforts on the causes and consequences of the relative dependence of actors on one another and argued that this relative dependence equals the inverse of the power relationship between actors (Blau, 1964; Cook & Emerson, 1978; Emerson, 1962; Pfeffer et al., 1978). That is, actor A has power over

actor B to the extent that actor B perceives itself as more dependent on actor A than actor A perceives it to be on actor B (Wolfe & McGinn, 2005). This view of power implies that actors, such as managers, departments, and firms, do not possess power but that power rather is a relational and perceptual phenomenon. For instance, Emerson (1962) contributed to the development of social exchange theory and argued that power cannot be examined in isolation but must be understood relative to the power of both parties. Introducing the resource dependence theory, Pfeffer and Salancik (1978) proposed that firms seek to reduce uncertainty and manage dependence on their external environment by purposefully increasing power over their relationships while reducing their own dependence. Advocates of bilateral deterrence theory argued that when two actors have equal power, higher levels of coercive capability reduce competitive behavior (Bacharach & Lawler, 1981; Lawler, Ford, & Blegen, 1988). Proponents of the bargaining power theory and negotiation analysis also argued that the relative power between actors influences their use of negotiation strategies (Kersten, 2001; Lax et al., 1986; Sebenius, 1992). These perspectives on power share two premises:

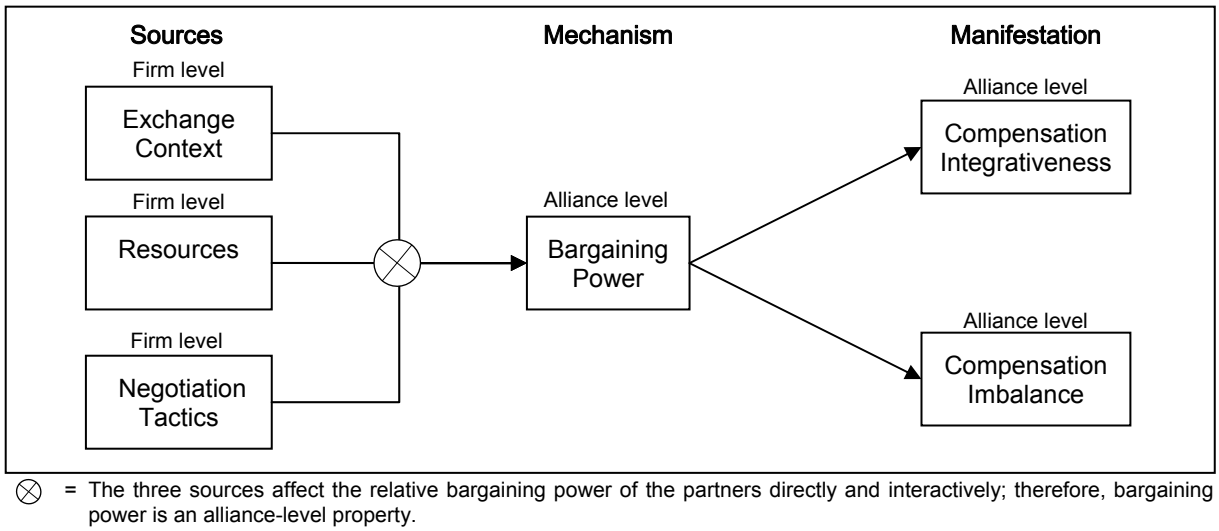
(1) When two actors, A and B, engage in a relationship, they establish a power relationship that influences the configuration and outcomes of an exchange relationship;
(2) If an actor A has power over an actor B, it likely uses this power to pursue its individual objectives, if necessary at the expense of actor B.

In this study, we apply these two premises to the alliance negotiation context. We postulate that when two parties form an alliance, they establish a power relationship, which directly affects the configuration and outcomes of the relationship through the actors' choice of negotiation strategies (Lax et al., 1986). That is, firms involved in an alliance negotiation use their bargaining power to pursue individual objectives (Blodgett, 1991b; Hamel, 1991). Through hostile negotiation strategies, firms may extract additional benefits or optimize their resource contribution relative to their counterparts. Thus, bargaining power functions as a value appropriation mechanism. However, as firms form alliances to achieve objectives that otherwise would be difficult or even impossible to achieve (e.g., too costly), they also need to contribute to the achievement of their counterparts' objectives. To address mutual interests, parties may also adopt conciliatory negotiation strategies that enable them to exploit a mixed-motive negotiation (Kersten, 2001). Mixed-motive negotiation refers to a situation in which a negotiation outcome between parties has "integrative" potential (Sebenius, 1992); thus, prior to the negotiation, no clear conception of possible outcomes exist, but definitive outcomes offer value to each party, beyond what each could have achieved individually (Sebenius, 1992). In turn, conditional on the nature of the power relationship, bargaining power may also function as an ex-ante value creation mechanism. To gain a better understanding of the role bargaining power plays during alliance negotiation, we elaborate on (1) the sources of bargaining power, (2) bargaining power as a value creation and value appropriation mechanism, and (3) manifestations of bargaining power use. Figure 5.1 provides a graphical representation.

Sources and Mechanism: Bargaining Power

Advocates of the power perspective argued that a party's bargaining power originates from three sources: (1) the exchange context, (2) resources, and (3) negotiation tactics (Kim, Pinkley, & Fragale, 2005; Lax et al., 1986; Pfeffer et al., 1978; Thompson, 1990). The first source of power refers to the availability of alternatives that a firm has to pursue its individual objectives (Yan et al., 1994). A firm's power relative to another party increases if the number of alternatives to attract desired resources increases (Pfeffer et al., 1978). For instance, a firm's relative power increases if that firm can carry out its threat to ally with another firm or develop a desired resource in house. In contrast, a firm is highly dependent on another when the potential partner possesses desired resources that the focal firm cannot easily obtain otherwise (Emerson, 1962). Market imperfections and the indivisibility of resources represent barriers to resource acquisition. Thus, a firm gains a bargaining power advantage when it has more alternatives available than its counterpart does to achieve individual objectives.

Figure 5.1 Power Perspective: Sources, Mechanism, and Manifestation



A second source of power originates from the possession or control of resources exchanged between partner firms (Blodgett, 1991b). That is, a firm gains a bargaining power advantage when it possesses or controls valuable resources that are needed by another firm (Pfeffer et al., 1978). According to the resource-based theory, valuable, rare, non-imitable, and non-substitutable resources are critical for achieving competitive advantage (Barney, 1991). Resources with these characteristics are often tacit and intangible in nature (Das et al., 2000b; Furrer, Sudharshan, & Thomas, 2001). Blodgett (1991b) argued that resources with a high degree of tacitness provide a party with a bargaining power advantage, because it is difficult for potential partners to determine ex-ante the value of those tacit resources. Thus, as the tacitness of the desired resources increases, a firm's relative bargaining power decreases. These first two sources of bargaining power build on the notion that firms are not self-sufficient entities (Heide, 1994; Pfeffer et al., 1978), and this lack of self-sufficiency creates power relationships with external parties (Emerson, 1962).

In contrast, the third source of bargaining power originates directly from negotiation tactics (Kim et al., 2005; Lax et al., 1986). A negotiator assesses the power relationship and decides to deploy negotiation tactics in an effort to change the power relationship to its advantage (Kim et al., 2005; Lawler, 1992). Basically, this change can occur through four tactics: (1) improve the quality of the counterpart's "best alternative to a negotiated agreement" (BATNA), (2) decrease the quality of the counterpart's BATNA, (3) decrease the valuation of the counterpart's contribution, or (4) increase the counterpart's valuation of the focal firm's contribution (Emerson, 1962; Kim et al., 2005; Pfeffer et al., 1978). That is, to shift relative bargaining power, a firm can decrease its dependence on its counterpart (i.e., 1 and 3) or increase its counterpart's dependence on it (i.e., 2 and 4). Parties can use a variety of negotiation instruments to achieve this objective (Lax et al., 1986). For example, through communication and persuasion, a negotiator may coerce the other party to accept a compensation structure that conflicts with its interests. A firm might also present information in such a manner that it looks like a win–win situation for all parties. Furthermore, a party may derive power because it possesses specialized knowledge or information that the other party does not. Identification with a charismatic person or a negotiator's skill in building good personal relationships may also function as influence tactics, as can advocacy of normative conformity (i.e., claiming that one's position is correct, legitimate, or principled).

Together, exchange context, resources, and negotiation tactics provide a party with a level of bargaining power relative to its counterpart, which it may use to negotiate a variety of topics, such as the scope, nature, and content of contractual provisions. We focus on partners' compensation, because the use of bargaining power directly affects each party's anticipated rewards and contributions, as formalized in an alliance contract (Blodgett, 1991b). That is, exercising bargaining power functions as a value creation and value appropriation mechanism that directs parties' efforts toward the use of conciliatory and hostile negotiation strategies (Lax et al., 1986). If used effectively, bargaining power enables parties to formalize a compensation structure characterized by a balance between individual and mutual interests. More specifically, building on the insights of the power perspective, we propose that:[23]

(1) An equal level of bargaining power between two parties increases parties' likelihood to use conciliatory negotiation strategies and decreases their likelihood to use hostile negotiation strategies, resulting in compensation integrativeness (i.e., cooperation);
(2) A bargaining power imbalance increases parties' likelihood to use hostile negotiation strategies and reduces their likelihood to use conciliatory negotiation strategies, resulting in compensation imbalance (i.e., competition).

Manifestation: Cooperation

Compensation integrativeness refers to the combination of parties' anticipated benefits as formalized in the alliance contract, regardless of whether parties' anticipated compensations are balanced or imbalanced (see §3.1). A high level of compensation integrativeness means

[23] To present a parsimonious framework, we neglect the distinction among potential power, perceived power, and power use. We assume that parties use a bargaining power advantage to pursue their individual objectives.

that firms have formalized a compensation structure that maximizes the value creation potential of the alliance. Compensation integrativeness is *Pareto* optimal if there does not exist some other feasible solution that would improve the utility of one or both parties while not hurting either party (Thompson, 1990). This type of negotiation outcome results when firms choose negotiation strategies that bargaining and negotiation literature characterize as conciliatory and integrative (see e.g., Lawler, 1992; Lax et al., 1986; Thompson, 1990).

A conciliatory negotiation strategy enables parties to develop win–win solutions, achieve value creation, and create synergies beyond what would have been possible alone (Jap, 1999; Lax et al., 1986; Pruitt & Lewis, 1975). When, during the alliance negotiation, parties adopt a problem-solving orientation, they likely identify similarities in their interests and develop common objectives (Ariño et al., 2004). Transparency between partners and the speed and reliability with which partners learn about each other's actions results in proposals and counterproposals, discussions about the workability of solutions, and efforts to uncover mutual interests (Olekalns et al., 1996; Parkhe, 1993a). To overcome potentially incompatible interests, parties seek settlements that are better for all parties involved (Lax et al., 1986). Compensation integrativeness requires flexibility among parties and a willingness to think outside the box to discover efficient compensation structures (Sebenius, 1992). Consistent with prior research on bargaining power and negotiations (see e.g., Kim et al., 2005; Lawler, 1992), we argue that parties are more likely to adopt conciliatory negotiation strategies than hostile negotiation strategies in conditions of equal bargaining power.

Equal bargaining power refers to a situation in which partner firms can exercise a similar amount of influence to achieve their individual objectives (Lax et al., 1986). Two arguments support the proposition that equal levels of bargaining power increase the use of conciliatory negotiation strategies (Lawler, 1992). First, according to power dependence theory (Emerson, 1962), a low level of equal bargaining power between firms (i.e., parties have few other options available) increases the opportunity costs of concluding the negotiation without an agreement. Withdrawal from the alliance negotiation or refusal to provide benefits increases the counterpart's opportunity costs of staying in the relationship by reducing the difference between the benefit obtained from within the alliance and the prospective benefit from an alternative. A low level of equal bargaining power also increases the stakes of reaching a reasonable and mutually beneficial conclusion with respect to an alliance's compensation structure (Lawler, 1992).

Second, drawing on bilateral deterrence theory,[24] a high level of equal bargaining power reduces tensions between parties, because a party's desire to engage in conflicts with its counterpart becomes attenuated out of fear of retaliation and attack (Kumar, Scheer, &

[24] Advocates of conflict spiral theory proposed an alternative explanation (Lawler, 1992). If the power capability of two parties increases, they are more tempted to use their power and therefore more likely to use competitive and hostile negotiation strategies. However, we do not use this theory, because empirical support for the hypothesis is weak (Lawler, Ford, & Blegen, 1988).

Steenkamp, 1995b). It is unlikely that one party will coerce its counterpart to accept a settlement that conflicts with this party's individual interests. As each party's bargaining power increases, retaliation becomes a greater threat for both partners, because each partner possesses sufficient power to damage the other party. When parties have equal yet substantial levels of bargaining power, exercising it likely results in a loss for both parties (Lawler, 1992). In summary, when the power relationship between two parties is balanced, the likelihood that parties use conciliatory negotiation strategies to accommodate each other's objectives increases, which in turn fosters compensation integrativeness.

Manifestation: Competition

A compensation imbalance refers to the asymmetry between each party's anticipated benefits as formalized in the alliance contract (see §3.1) and implies that the partners have formalized a compensation structure in which one party can expect to extract more benefits from the alliance relative to its counterpart. An imbalance in firms' reward/contribution ratio may occur when a party exploits a power advantage and seeks to maximize its individual gain at the expense of its partner (Olekalns et al., 1996). For instance, a party may receive an exceptionally large advance payment, negotiate a better transfer price, or obtain a higher valuation for its intangible resource contribution relative to its counterpart. This type of outcome results when firms choose negotiation strategies that bargaining and negotiation literature characterize as hostile and distributive (see e.g., Lawler, 1992; Lax et al., 1986).

Parties adopting a hostile negotiation strategy focus on securing their individual interests, appropriating value through the alliance, and sharing the pie (Jap, 2001a). This type of negotiation is characterized by reduced information exchange between partners, greater commitment to individual interests, and increased hostility toward each other (Lax et al., 1986). The exchange of information becomes crucial, because parties are concerned with maximizing the amount of information they receive while also minimizing the amount of information they give (Wolfe et al., 2005). The sole aim of parties is to direct efforts toward formalizing a compensation structure that enables them to appropriate future benefits. Consistent with prior research on bargaining and negotiation (Kim et al., 2005; Lawler, 1992), we postulate that parties are more likely to adopt hostile negotiation strategies in conditions of bargaining power imbalance.

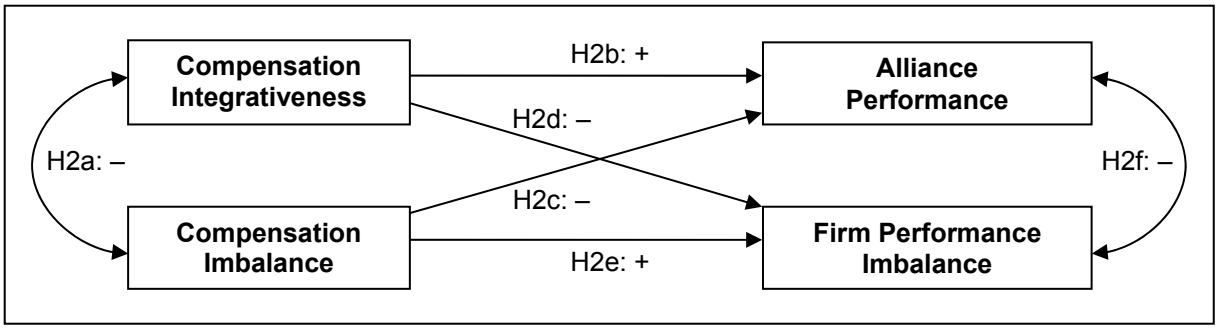
If bargaining power imbalance is present between firms, one party has relatively more power than its counterpart (Emerson, 1962; Pfeffer et al., 1978). Consistent with the power perspective's second premise, parties likely use this power advantage to secure their own performance objectives by claiming additional compensation, if necessary at the expense of its counterpart (Lawler, 1992). Consistent with bilateral deterrence theory (Lawler et al., 1988), we argue that as the power relationship becomes more imbalanced, the dominant party has fewer incentives to avoid conflict, because it knows the suppressed firm cannot retaliate easily. However, the suppressed party does not necessarily respond submissively, because it expects exploitation by the dominant firm. Drawing on power-distance theory (Mulder, 1977),

we argue that in an alliance context, the perceived power gap between two firms must be relatively small, because otherwise, firms would prematurely terminate the alliance negotiation. Moreover, if a suppressed firm perceives a small power gap, it will engage in preemptive competitive behavior (i.e., hostile negotiation strategies) in an attempt to reduce the gap (Kumar et al., 1995b). To the extent that a suppressed firm acts to reduce the gap, the dominant firm will attempt to maintain that same power gap. In summary, asymmetrical bargaining power between firms directs their efforts toward the use of hostile negotiation strategies, which in turn increase the likelihood of a compensation imbalance.

The Compensation Trade-Off

Drawing on the power perspective, the first cooperation and competition trade-off we introduce is the compensation trade-off. Consistent with the conceptualization (see §4.2), we hypothesize that compensation integrativeness positively relates to alliance performance and negatively relates to firm performance imbalances. In contrast, compensation imbalance should relate negatively to alliance performance but have a positive impact on firm performance imbalance.[25] As depicted in Figure 5.2, we also hypothesize that compensation integrativeness negatively associates with compensation imbalance and that alliance performance negatively associates with firm performance imbalance (i.e., Hypothesis 2f). Here, we do not elaborate on the latter relationship, because in Section 4.2, we already provided support for this relationship. Here, we discuss the five remaining hypotheses, 2a–e.

Figure 5.2 Hypothesis 2: Compensation Trade-Off



H2a: Compensation Integrativeness and Compensation Imbalance

We hypothesize that compensation integrativeness and compensation imbalance are negatively associated, which in turn implies that when firms formalize a compensation structure that is *Pareto* optimal (i.e., integrative), it is less likely that one firm can extract additional compensation at the expense of its counterpart. The reasons for this negative association are straightforward. To achieve a high level of compensation integrativeness efficiently and effectively, parties direct efforts, such as resources and time, toward deploying conciliatory negotiation strategies. Parties that create openness, build transparency, engage in mutual information exchange, and stimulate joint problem solving are more likely to achieve

[25] We focus on the relationships among the constructs, as defined previously: compensation integrativeness (§3.1), compensation imbalance (§3.1), alliance performance (§1.1), and firm performance imbalance (§4.2).

aligned interests and therefore optimal reward/contribution ratios for each partner. Moreover, parties' use of conciliatory negotiation strategies contributes to value creation beyond that which would have been impossible individually. Hence, because parties can anticipate benefits beyond their initial expectations, it is less likely that they will negotiate and formalize a compensation imbalance. In contrast, hostile negotiation strategies come at the expense of achieving a *Pareto* optimal solution and involve withholding information and distorting information to secure and protect individual interests (Kersten, 2001). The presence of a power imbalance may drive parties to use hostile negotiation strategies (Kim et al., 2005), and if one party succeeds in coercing its partner into accepting a disadvantageous deal, a compensation imbalance results. However, the definitive negotiated and formalized outcome likely is less efficient than it could have been if the parties had adopted conciliatory strategies and sought more optimal negotiation solutions. Hence, we hypothesize a negative association between compensation integrativeness and compensation imbalance.

H2b and H2c: Alliance Performance

Compensation integrativeness is expected to positively affect alliance performance, whereas compensation imbalance should negatively relate. Compensation integrativeness provides parties with strong incentives to make the alliance work, because each party anticipates benefits that outweigh investments (Parkhe, 1993a). A compensation structure that promises to fulfill the individual partner firms' objectives reduces the likelihood of ex-post exchange hazards, because short-term, self-interested behavior damages the possibility of long-term value creation. For instance, royalties reduce the probability of premature termination, because such residual profit sharing links payments to the actual performance of the alliance (Contractor et al., 2000). Compensation integrativeness also contributes to alliance stability, because a satisfactory incentive system guides parties' behavior toward reducing the negative consequences of destabilizing forces, such as goal conflicts (Hennart et al., 2005). Compensation integrativeness also promotes behavioral transparency and openness in an alliance (Parkhe, 1993a), and stable alliances are more likely to produce superior alliance performance levels than are unstable alliances (Yan et al., 1999).

A compensation imbalance negatively relates to alliance performance because it increases the likelihood of exchange hazards (Contractor et al., 2000), which undermines alliance performance. Compensation imbalance also provides parties with incentives to direct ex-post conduct toward achieving individual objectives. That is, the likelihood of opportunistic behavior increases, because a partner firm may perceive that it has not been sufficiently compensated for its efforts (Wathne et al., 2000). For instance, a lump-sum payment in exchange for expertise is subject to the risk of overpayment, as a result of the difficulties associated with knowledge valuation (Contractor, 2001). If the partner perceives overpayment, the danger of its subsequent shirking and free-riding behavior increases (Contractor et al., 2000), because it wants to increase its return on investment and has no guarantees that its counterpart will comply with contractual obligations. That is, the knowledge-supplying partner may withhold information, breach contractual clauses, or

threaten to seek for alternative strategies to achieve its objectives. However, the party that receives the advance payment anticipates such opportunistic behavior and therefore may engage in preemptive actions, such as shirking and free-riding. The presence of a compensation imbalance therefore increases the likelihood that parties do not fulfill their contractual obligations, which undermines alliance performance.

Although conceptual studies aimed to provide a better understanding of an alliance's compensation structure (see e.g., Aulakh, 2001; Contractor et al., 2000; Hennart et al., 2005), empirical research on the relationship between compensation structure and alliance performance remains relatively scarce (Contractor, 2005). One exception is Parkhe's (1993a) study, which found that a pay-off structure characterized by mutual cooperation resulted in higher levels of alliance performance than did pay-off structures characterized by unilateral defection and unilateral cooperation. In addition, Contractor and Ra (2000) concluded, on the basis of a simulation study, that firms that set up hybrid compensation structures reduced their ex-post risks, increased mutual commitment, and made the alliance more difficult to dissolve. These findings support the positive relationship between alliance performance and compensation integrativeness and its negative relationship with compensation imbalance.

H2d and H2e: Firm Performance Imbalance

We hypothesize that compensation integrativeness relates negatively to firm performance imbalance, whereas a compensation imbalance relates positively. A high level of compensation integrativeness attenuates firm performance imbalance, because parties formalize a compensation structure that enables each to achieve its performance objectives. An integrative negotiation outcome therefore implies that the parties have found a settlement that maximizes the perceived value creation potential of the alliance. In addition, neither party believes it can improve on its bargain without hindering its individual objectives, because demanding additional compensation would reduce the value creation potential of the alliance. For instance, parties may agree to use a combination of ex-ante sharing and residual sharing (Hennart et al., 2005), which provides them with strong incentives to fulfill their contractual obligations (Contractor et al., 2000). If parties comply with their contractual obligations, they should obtain their anticipated performance objectives. Therefore, we hypothesize that an alliance characterized by compensation integrativeness is less likely to produce differences in individual firm performances.

In contrast, compensation imbalance relates positively to firm performance imbalance, because a party that has exploited a bargaining power advantage and coerced its counterpart to comply with its demands is also more likely to achieve its individual objectives at the expense of its partner firm. When a party receives an advance payment, it may already have achieved its financial objectives, even before the alliance is operational. If parties fulfill their contractual obligations—contribute resources and divide benefits according to their initial agreement—any difference between their ex-ante reward/contribution ratios probably leads to a difference in the degree to which they achieve their performance objectives. Moreover, a

compensation imbalance increases the risk of opportunistic behavior, which destabilizes an alliance. Consequently, a firm may act on this opportunity and realize its goals at the expense of its counterpart. With respect to the relationships among compensation integrativeness, compensation imbalance, and firm performance imbalance, empirical alliance research is, to the best of our knowledge, absent.

When firms direct their alliance negotiation efforts toward establishing compensation structures that are integrative, both parties have much to gain, because this type of negotiation outcome increases alliance stability, which in turn leads to higher alliance performance. In addition, compensation integrativeness reduces the difference between individual firm performance levels. In contrast, if a compensation structure reflects an imbalance in the divisions of contribution and rewards, one party has too much to lose. For example, if a party demands a lump-sum payment or a higher royalty fee as additional compensation, it may undermine long-term value creation, which eventually means the parties appropriate less value than would have been possible. Although a compensation imbalance increases the likelihood that one party achieves its objectives, it also increases the likelihood of ex-post exchange hazards, which undermine long-term alliance performance. These predictions are consistent with the cooperation and competition trade-off; therefore, we hypothesize

H_2: During the alliance formation stage, partner firms are confronted with a compensation trade-off, in which:

a. Compensation integrativeness and compensation imbalance are negatively associated,
b. Compensation integrativeness relates positively to alliance performance,
c. Compensation imbalance relates negatively to alliance performance,
d. Compensation integrativeness relates negatively to firm performance imbalance,
e. Compensation imbalance relates positively to firm performance imbalance, and
f. Alliance performance and firm performance imbalance are negatively associated.

5.2 Hypothesis 3: The Learning Trade-Off

In this section, we present a set of six hypotheses that together represent the second cooperation and competition trade-off, namely, the learning trade-off. Drawing on the learning perspective, we argue that during the post-alliance formation stage, firms need to resolve the learning trade-off to achieve their performance objectives. We also postulate that absorption integrativeness and absorption imbalance, respectively, represent the cooperative and competitive manifestations of parties' use of integrative and distributive learning strategies. More specifically, consistent the cooperation and competition trade-off (see §4.2), we hypothesize about the relationships among absorption integrativeness, absorption imbalance, alliance performance, and firm performance imbalance. Before presenting the hypotheses, we elaborate the learning perspective.

Learning Perspective

Researchers have approached the relationship between learning and alliances from multiple perspectives, including firms' capability to manage alliances (Kale et al., 2002; Simonin, 1997), ability to stimulate knowledge transfer (Inkpen et al., 1998), capacity to create new knowledge (Holmqvist, 2003), and capability to acquire knowledge through the alliance (Hamel, 1991). The first two types of learning focus on conditions that facilitate the transfer of knowledge, whereas the latter two focus on parties' rationales for entering an alliance, that is, knowledge creation and acquisition. With respect to the cooperation and competition trade-off, we focus on knowledge creation and acquisition.

To achieve their performance objectives, partners must internalize, at least to a certain degree, newly created knowledge or knowledge possessed by the partners (Lubatkin et al., 2001). For instance, to launch a new product successfully, gain market share, and obtain profits, parties should first learn with and from one another. As a result of this view of learning, we consider knowledge creation and acquisition as relational phenomena (Holmqvist, 2003). That is, the extent to which parties can assess and absorb knowledge and information depends on the nature of their learning relationship with their partners (Lane et al., 1998; Lane et al., 2001; Larsson et al., 1998; Lubatkin et al., 2001; Muthusamy et al., 2005). More specifically, our view on learning builds on two premises:

(1) When two actors, A and B, engage in a relationship, they establish a learning relationship that influences the development and outcomes of the exchange relationship;
(2) If actor A relative to actor B has a learning advantage, it likely uses this learning advantage to pursue individual objectives, if necessary at the expense of actor B.

We apply these two premises to the context of alliances and suggest that when two parties are engaged in an alliance, they establish a learning relationship that directly influences the development and outcomes of the alliance (Doz, 1996). In alliances with multiple objectives, developing a learning relationship represents a prerequisite that facilitates knowledge exchange, because the achievement of individual performance objectives, whether financial, learning, or strategic, likely varies according to the degree of mutual learning.[26] Moreover, we argue that the learning between partners functions as a value creation and value appropriation mechanism. Because learning in alliances represents a mixed-motive situation, it has integrative potential (Lubatkin et al., 2001), which means that prior to their learning endeavors, parties have no clear conception of possible learning outcomes, but their joint learning enables them to create value beyond what they could have individually. As the alliance unfolds, parties learn about each other and about the problem at hand and therefore seek solutions that match their individual and collective interests. However, if confronted with

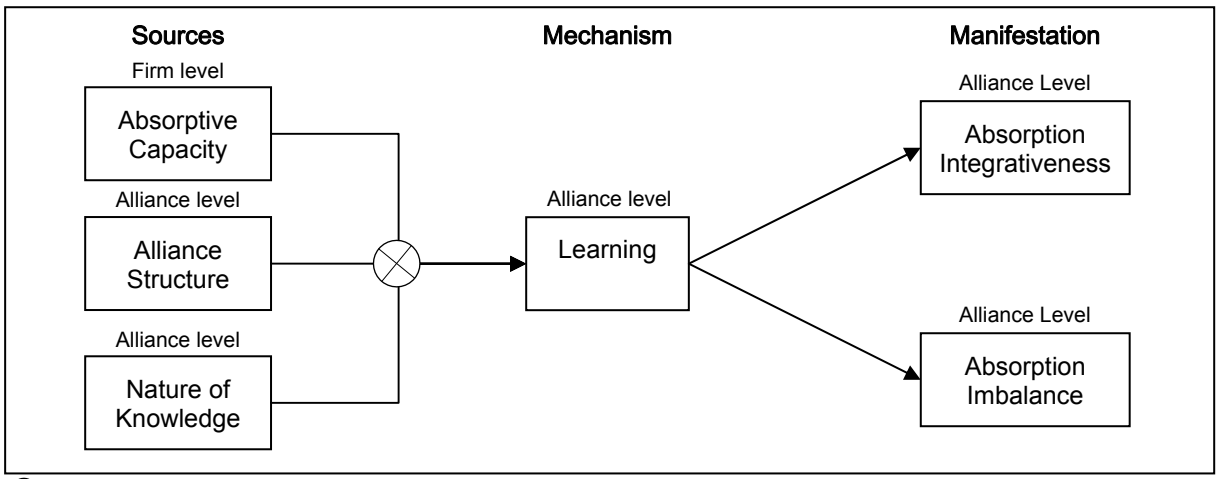
[26] Most researchers drawing on organizational learning literature focused on the relationship between parties' ability to appropriate knowledge through the alliance and the degree to which parties achieve their learning objectives (see e.g., Hamel, 1991; Kumar et al., 1998b; Larsson et al., 1998). In contrast, we argue that learning constitutes a value creation and appropriation mechanism that may affect, for example, financial and strategic objectives, in addition to learning objectives.

an opportunity, a party is likely to exploit its existing learning advantage to pursue its own performance objectives, if necessary at the expense of its counterpart (Larsson et al., 1998). To better understand the antecedents and consequences of learning in alliances, we elaborate on (1) the sources of learning, (2) learning as a value creation and value appropriation mechanism, and (3) manifestations of learning. Figure 5.3 depicts a graphical representation.

Sources and Mechanism: Learning

Building on alliance research that drew on the learning perspective, we identify three sources of partners' abilities to learn: (1) a party's absorptive capacity, (2) joint decisions with regard to alliance structure, and (3) the nature of the knowledge exchanged. First, building on the work of Cohen and Levinthal (1990), alliance researchers focused on a firm's absorptive capacity as a mechanism to obtain knowledge (Lane et al., 1998; Lane et al., 2001; Larsson et al., 1998). A firm's absorptive capacity refers to the set of organizational routines and processes that enable the firm to assess and acquire external knowledge (Van den Bosch, Volberda, & de Boer, 1999; Zahra et al., 2002). It results from a prolonged process of investments and knowledge accumulation within the firm (Mowery et al., 1996; Zahra et al., 2002), which makes it a characteristic of a firm, shaped over many years in an incremental way (Dierickx & Cool, 1989). Absorptive capacity also pertains to firm characteristics, such as the motivational orientation toward learning, resource allocation, quality of human assets, organizational culture, and incentive structure (Chen, 2004; Dyer et al., 1998; Inkpen et al., 1998; Lane et al., 2001). This view of absorptive capacity relates to Hamel's (1991) concepts of receptivity and transparency, or a firm's ability to both absorb and provide knowledge through an alliance.

Figure 5.3 Learning Perspective: Sources, Mechanism, and Manifestation



Second, a firm's ability to assess and absorb knowledge may originate from the partners' alliance structure decisions. An alliance structure may hamper or reinforce parties' exposure to knowledge made available through the relationship (Oxley et al., 2004). For example, a structure that stimulates partner interaction, increases transparency, and enhances openness

contributes to the parties' ability to engage in interorganizational learning (Doz, 1996; Hamel, 1991). However, parties can also purposefully design alliance activities to reduce each party's potential to assess and absorb knowledge (Grant et al., 2004), perhaps to prevent unwanted acquisition of knowledge by competitors (Khanna, 1998; Oxley et al., 2004), reduce the need for knowledge transfer and acquisition (Zeng et al., 2002), or divide specialized tasks (Doz, 1996). For instance, if two firms form a marketing and distribution alliance, they may be more successful if they exchange market know-how, but they also might decide to specialize certain distribution activities to prevent any involuntarily knowledge transfers. The aim of this type of decision is to maintain the possibility of knowledge exchange, which is necessary to achieve individual objectives, while also controlling knowledge flows to protect proprietary know-how and avoid unintended leakage (Doz, 1996; Zeng et al., 2002).

Third, the nature of the knowledge exchanged affects each party's ability to assess and acquire knowledge (Simonin, 1999). As the ambiguity of knowledge increases, it becomes more difficult for another firm to absorb it (Kotabe et al., 2003). The level of knowledge ambiguity differs for explicit and tacit knowledge (Kogut & Zander, 1992), because explicit knowledge is easily codifiable and can be absorbed without loss of integrity (Nonaka & Takeuchi, 1995). Examples of explicit or codified knowledge include checklists, blueprints, and operation manuals. In contrast, tacit knowledge involves knowledge that is sticky, complex, and difficult to codify, such as market, managerial, or technological know-how. Tacit knowledge is more resistant to appropriation both within and across firms (Szulanski, 1996), because its acquisition requires the active involvement of the providing party. Empirical alliance studies produced support for the inhibiting nature of knowledge ambiguity on interorganizational learning (Chen, 2004; Kotabe et al., 2003; Simonin, 1999). Simonin (1999) found that knowledge ambiguity related negatively to knowledge transfer and was caused by factors such as tacitness (negative), complexity (positive), and organizational distance (positive). If the knowledge exchanged in an alliance is more tacit in nature, the firms' potential to assess and assimilate knowledge becomes hampered, especially if the partners do not take additional measures to facilitate its transfer.

Together, firms' absorptive capacity, the alliance structure, and the nature of knowledge exchanged constitute the sources of partners' abilities to assess and acquire knowledge. That is, a party's potential to learn through the relationship depends on its counterpart. Even though parties may jointly design an alliance structure and agree to exchange various types of knowledge, learning remains relative and distinct for each alliance (Dyer et al., 1998; Lane et al., 1998), because firms likely have developed different absorptive capacities (Kumar & Nti, 1998). A different opportunity to learn may affect parties' choice of ex-post learning strategies, so that learning potential probably functions as a mechanism that directs parties' efforts toward the use of integrative and distributive learning strategies (Larsson et al., 1998).

In turn, learning strategies affect parties' ability to assess and acquire knowledge through the alliance.[27] Building on these insights, we propose that

(1) A perceived equal opportunity to learn increases parties' likelihood to use integrative learning strategies and decreases their likelihood to use distributive learning strategies, which results in a higher level of absorption integrativeness;
(2) A perceived imbalance in opportunity to learn increases parties' likelihood to use distributive learning strategies and reduces their likelihood to use integrative learning strategies, which results in a higher level of absorption imbalance.

Manifestation: Cooperation

Absorption integrativeness refers to the combination of each party's ability to assess and acquire the knowledge it is exposed to through the alliance, regardless of whether their abilities are balanced or imbalanced (see §3.2). A high level of absorption integrativeness implies that all parties have little difficulty assessing the value and relevance of new knowledge (Inkpen et al., 1998) or assimilating this knowledge into their existing knowledge stores (Inkpen, 2000). Absorption integrativeness also reinforces joint information processing, which allows parties to evaluate each other's competencies, strengths, and weaknesses. Furthermore, information exchange facilitates the integration of new knowledge within a firm's existing knowledge base, which in turn contributes to future joint knowledge creation (Lubatkin et al., 2001). Moreover, absorption integrativeness implies that parties can overcome learning barriers (Larsson et al., 1998) and embrace transparency and receptivity (Hamel, 1991). We argue that the use of integrative learning strategies represents an efficient and effective course of action to achieve absorption integrativeness (Larsson et al., 1998).

Integrative learning strategies enable parties to create and exchange knowledge throughout the relationship (Larsson et al., 1998). Thus, integrative learning might be viewed as the collective creation and acquisition of knowledge among partners, which extends beyond that which would have been possible individually and would not have occurred without interactive learning synergies (Larsson et al., 1998). By associating collaborative and reciprocal learning, integrative learning causes parties to behave cooperatively and resolve problems jointly to enable their knowledge creation and exchange (Lubatkin et al., 2001). In turn, it implies that parties are transparent, possess a willingness and ability to share knowledge, and are receptive to absorbing knowledge (Hamel, 1991). Parties that adopt integrative learning strategies work closely together to facilitate the transfer of not only explicit knowledge but also context-specific embedded knowledge (Larsson et al., 1998). We argue that partners likely adopt integrative learning strategies if they perceive an equal opportunity to learn.

With an equal opportunity to learn, both partners have a similar possibility of assessing and acquiring knowledge and information through the alliance. Two arguments support this

[27] We are aware that more fine-grained typologies interorganizational learning strategies exist (Larsson et al., 1998). However, for our purpose, namely, conceptualizing and testing the learning trade-off, the distinction between integrative and distributive learning strategies is sufficiently fine-grained to develop hypotheses.

proposition. First, drawing on absorptive capacity literature, we argue that an equal opportunity to learn reinforces the likelihood of knowledge and information exchange between partners (Kumar & Nti, 1998), which in turn contributes to alliance stability and allows parties to discover their mutual interests. Mutual awareness about interests steers the alliance toward its objectives (Doz, 1996) and also reduces tensions and creates commitment, because a party experiences less desire to engage in conflicts that could damage long-term value creation (i.e., shadow of future). Therefore, if parties perceive that they have equal opportunities to learn, they are more likely to adopt integrative learning strategies. Furthermore, drawing on insights pertaining to reciprocal learning in alliances (Lubatkin et al., 2001), we argue that a perceived equal opportunity to learn reinforces the use of integrative learning strategies. Reciprocal learning increases the likelihood of knowledge creation, and because all parties are equally involved in the new knowledge creation, strong incentives to continue learning exist. Moreover, without reciprocal learning, parties likely have difficulty achieving their performance objectives (Holmqvist, 2003). For example, if parties want to introduce a new product, they must first exchange knowledge, such as product specifications, to attain success in their new product development and launch. Thus, a commonality of interests, which increases parties' likelihood to use integrative learning strategies, which itself leads to absorption integrativeness, grows strongest when the partners perceive equal opportunities with respect to learning in the alliance.

Manifestation: Competition

Absorption imbalance refers to an asymmetry between parties' ability to assess and acquire knowledge they are exposed to through the alliance (see §3.2). A high level of absorption imbalance implies that one party possesses a learning advantage relative to its counterpart. That is, a party with a learning advantage can assess and absorb knowledge in the alliance faster than its counterpart (Hamel, 1991). Absorption imbalance contributes to information asymmetries between the partners and hampers their ability to evaluate each other's interests and competencies. Furthermore, an absorption imbalance enables a party to integrate knowledge into its existing knowledge base while its counterpart has difficulties learning. The presence of an absorption imbalance suggests that parties have established learning barriers, which provides one party with a learning advantage.

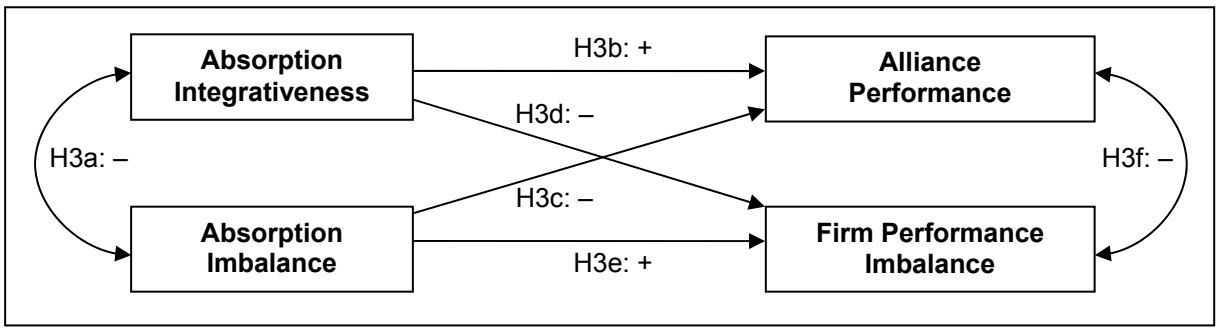
If parties perceive an unequal opportunity to learn, they are more likely to adopt distributive learning strategies, which means they focus on securing their individual interests, protecting their proprietary knowledge, appropriating learning benefits, and sharing the pie (Hamel, 1991). Distributive learning (i.e., competitive oriented) is characterized by reduced information exchanges between the partners, increased commitment to individual interests, and increased hostility toward the partner (Larsson et al., 1998). Therefore, it also implies parties are not willing or able to share knowledge; instead, they attempt to extract a maximal amount of knowledge from the relationship. That is, the sole aim of parties is to extract knowledge and information from the alliance, which enables them to achieve their individual performance objectives.

A perceived difference in parties' opportunity to learn suggests that one party can exploit its learning advantage. Drawing on learning race literature, we argue that when confronted with a situation of differential learning, parties likely use distributive learning strategies (Hamel, 1991; Larsson et al., 1998). A party with a learning advantage has fewer incentives to avoid conflicts with its counterpart, because it knows that its partner cannot retaliate by increasing its learning pace. However, the party with the learning disadvantage does not necessarily react submissively, because it may expect exploitation by the faster learner and therefore engages in preemptive competitive behavior (Larsson et al., 1998). For example, it could try to slow down the partner by maintaining critical information and protecting valuable knowledge, which would prompt a competitive learning strategy. To the extent that a slow learner acts to reduce a learning gap, the fast learner tries to maintain the gap. However, in an alliance context, the perceived learning gap between two firms should be relatively small; otherwise, firms would terminate the relationship prematurely (Khanna et al., 1998). If a suppressed firm perceives a small learning gap, it will engage in preemptive competitive behavior to reduce the gap. In summary, a perceived difference in partners' ability to learn directs their efforts toward the use of distributive learning strategies, which increase the likelihood of an absorption imbalance.

The Learning Trade-Off

Drawing on the learning perspective, the second cooperation and competition trade-off we propose is the learning trade-off. Consistent with the conceptualization (see §4.2), we hypothesize that absorption integrativeness relates positively to alliance performance and negatively to firm performance imbalance. In contrast, we hypothesize that absorption imbalance relates negatively to alliance performance but positively to firm performance imbalance.[28] As we show in Figure 5.4, we also hypothesize that absorption integrativeness and absorption imbalance are negatively associated. We do not elaborate on Hypothesis 3f, which pertains to the negative association between alliance performance and firm performance imbalance, because we have discussed it elsewhere (see §4.2). However, we discuss the five remaining relationships, Hypotheses 3a–e.

Figure 5.4 Hypothesis 3: Learning Trade-Off



[28] We focus on the relationships among the constructs, as defined previously: absorption integrativeness (§3.2), absorption asymmetry (§3.2), alliance performance (§1.2), and firm performance imbalance (§4.2)

H3a: Absorption Integrativeness and Absorption Imbalance

We hypothesize that absorption integrativeness and absorption imbalance are negatively associated. Absorption integrativeness refers to a situation in which parties engaged in an alliance are equally able to assess and acquire knowledge and information. In this condition, it is less likely that one firm can develop a learning advantage at the expense of its counterpart. The reasons for the negative association are straightforward: To achieve a high level of absorption integrativeness, parties may direct their efforts, such as resources and time, toward the deployment of integrative learning strategies. Integrative learning strategies enable them to maximize transparency and receptivity, fostering the creation and transfer of knowledge and information between them. As a consequence, parties become more aware of their mutual interests and envision alternative value creation opportunities. Hence, using integrative learning strategies contributes to future joint value creation. Because parties likely anticipate additional benefits, they probably do not develop an absorption imbalance.

In contrast, a focus on distributive learning strategies comes at the expense of absorption integrativeness. With distributive learning strategies, parties protect their knowledge and information from unwanted transfer and attempt to gain desired knowledge and information. It is individually rational for parties to pursue distributive learning strategies, because possessing a learning advantage enables them to pursue performance objectives actively. If one party succeeds in creating a learning advantage, perhaps because of its superior absorptive capacity, an absorption imbalance may result. However, the level of absorption integrativeness may be lower than it would have been if the parties adopted integrative learning strategies. That is, integrative and distributive learning strategies are interdependent, and as such, competitive efforts to win at the expense of others can detract and disturb any efforts to produce a better joint outcome (Larsson et al., 1998). Ariño and De la Torre (1998) examined a North American–French alliance and found support for this delicate balance. After initial mutual collaboration, the joint venture became imbalanced when one partner started to compete more, forcing its counterpart to become more reluctant about providing further access to its knowledge. Building on these insights, we hypothesize a negative association between absorption integrativeness and absorption imbalance.

H3b and H3c: Alliance Performance

Absorption integrativeness should positively affect alliance performance, but absorption imbalance likely relates negatively to it. Absorption integrativeness provides parties with strong incentives to make the alliance work, because reciprocal learning enables them to achieve their performance objectives. Absorption integrativeness reduces the likelihood that parties engage in short-term, self-interested behavior. For instance, opportunistic behavior declines, because parties with similar learning paces remain aware of each other's competencies and interests (Hamel, 1991) and confident that each party is committed to the alliance, at least until both parties finish learning (Khanna et al., 1998). Absorption integrativeness also contributes to the detection of unwanted transfers of know-how, so parties can immediate retaliate by assimilating protected know-how themselves. In addition,

absorption integrativeness reduces the likelihood of inertia, because it enables parties to learn in an effective and efficient manner, which increases their ability and willingness to make necessary adjustments to the ongoing relationship (Doz, 1996). In other words, absorption integrativeness offers mutual awareness, stability, and adaptability in the relationship, which induce superior alliance performance. Absorption imbalance negatively influences alliance performance, because in learning races, a party pursues a maximum share of knowledge while protecting its own assets (Kale et al., 2000). When individually rational firms enter an alliance with unequal opportunities associated with assessing and acquiring knowledge and do not take measures to balance each party's learning ability, the party with a learning advantage appropriates knowledge faster (Kumar & Nti, 1998). That is, this party can process the information necessary to recognize and assimilate the knowledge it gains. Moreover, this party may withhold information critical to the other party to exploit its learning advantage, which hampers joint value creation. The presence of information-processing barriers between the partners invites them to behave opportunistically, and this type of behavior destabilizes an alliance. Consequently, we predict a negative relationship between absorption imbalance and alliance performance.

Empirical research has supported the Hypotheses 3b and 3c, stating that absorption integrativeness positively influences alliance performance (Beamish et al., 2003; Dhanaraj, Lyles, Steensma, & Tihanyi, 2004; Inkpen et al., 1995; Lane et al., 2001) and that absorption imbalance negatively influences alliance performance (see e.g., Ariño et al., 1998; Hamel, 1991; Inkpen et al., 2006). For instance, Lane, Salk, and Lyles (2001) found that understanding and assimilating a partner's knowledge has a positive impact on the creation of learning benefits. Beamish and Berdrow (2003) revealed that knowledge transfer and acquisition processes related positively to joint learning. Hamel (1991) examined nine international strategic alliances and found that firms engaged in a relationship were not equally able of acquiring knowledge and that the presence of an imbalance destabilized the relationship. These findings were also supported by a case study conducted by Ariño and De la Torre (1998), who discovered that alliance performance declined when one of the partners adopted a competitive learning strategy. Finally, Inkpen and Pien (2006) found in another case study that alliance performance was positively influenced by the transfer of tacit knowledge, whereas differential learning inhibited the achievement of learning objectives.

H3d and H3e: Firm Performance Imbalance

We hypothesize that absorption integrativeness relates negatively to firm performance imbalance, whereas absorption imbalance relates positively. Absorption integrativeness provides parties with strong incentives to make the alliance work, and though it is rational for a party to pursue individual objectives, absorption integrativeness implies that the parties have established a learning relationship that fosters mutual learning. That is, neither party believes it can act on its learning advantage without hurting joint value creation and, therefore, its long-term individual objectives. When parties align their absorptive capacities through alliance design, they experience strong incentives to collaborate, because their mutual

learning enables the parties to achieve their performance goals. Consequently, we hypothesize that an alliance characterized by absorption integrativeness is less likely to produce differences in individual firm performance. In contrast, an absorption imbalance should positively influence firm performance imbalance. Because firms have differential learning paces, one firm should internalize knowledge more easily and quickly than its partner does. Hamel (1991) found that firms behaving as good partners, with high transparency and collaborative intent (i.e., learning disadvantage), tended to be exploited by partners with a learning advantage that engaged in lower transparency and more competitive intent. An absorption imbalance creates information-processing barriers, likely to be exploited by the faster learning party to pursue its own objectives. One-sided knowledge transfer enables a party to steer alliance activities toward its individual goals. A firm appropriating particular technological know-how may use it to optimize its resource contribution and increase its return on investment. In contrast, insufficient knowledge transfer to the slower learning partner impedes its ability to achieve its individual objectives, because it lacks the information to direct alliance activities to benefit its interests. In addition, a firm with a learning advantage may become insensitive to the interests of the firm with a learning disadvantage, perhaps blaming or denigrating the latter for its inability to capitalize on alliance-generated knowledge. Therefore, we hypothesize a positive relationship between absorption imbalance and firm performance imbalance.

In summary, when partner firms direct efforts toward achieving absorption integrativeness, both parties have much to gain through increased alliance stability and commitment, which leads to improved alliance performance. In addition, these cooperative efforts reduce differences in individual firm performance. In contrast, if an alliance is characterized by an absorption imbalance, parties have much to loose. An absorption imbalance increases the likelihood that one party achieves its objectives, but it also reinforces ex-post exchange hazards, which undermine long-term value creation. These predictions are consistent with the conceptualization of a cooperation and competition trade-off; therefore, we hypothesize:

H_3: During the post-alliance formation stage, partner firms are confronted with the learning trade-off, such that:

a. Absorption integrativeness and absorption imbalance are negatively associated,
b. A higher level of absorption integrativeness relates positively to alliance performance,
c. A higher level of absorption imbalance relates negatively to alliance performance,
d. A higher level of absorption integrativeness relates negatively to firm performance imbalance,
e. A higher level of absorption imbalance relates positively to firm performance imbalance, and
f. Alliance performance and firm performance imbalance are negatively associated.

5.3 Hypothesis 4: The Relational Trade-Off

In this section, we present a set of six hypotheses that together depict the third type of cooperation and competition trade-off, namely, the relational trade-off. Drawing on the behavioral perspective, we argue that during the post-alliance formation stage, firms need to resolve the relational trade-off to achieve their individual performance objectives. We also argue that relational quality and opportunistic behavior, respectively, represent the manifestations of cooperative- and competitive-oriented relational norms. We hypothesize about the relationships among relational quality, opportunistic behavior, alliance performance, and firm performance imbalance. Before we introduce the relational trade-off, we elaborate on the behavioral perspective to define the causes and consequences of relational norms.

The Behavioral Perspective

Researchers drawing on the behavioral perspective in an alliance context focused on the causes and consequences of partner firm interactions (Aulakh et al., 1996; Cullen et al., 2000; Kauser et al., 2004; Uzzi, 1996). Alliances evolve through an accumulation of behaviors that create a set of social relations between the parties (Granovetter, 1985). That is, interactions are not individual firm behaviors but rather continuous patterns of behavioral responses between parties. To understand partner firm behavior, existing research adopted different perspectives. For instance, Gouldner (1960) introduced the notion of relational norms and argued that the norm of reciprocity is the basis of stable relationships. The reciprocity norm states that an actor should help those whose actions have benefited it and also respond in kind to those whose actions are damaging its interests. MacNeil (1980) argued that alliances involve exchanges between two parties that cannot be completely specified a priori by formal contract; therefore, formal governance mechanisms must be complemented by relational governance mechanisms. Other advocates of the behavioral perspective have examined topics pertaining to partner firm behavior, such as trust and commitment (Aulakh et al., 1996; Cullen et al., 2000), opportunistic behavior (Jap et al., 2003; Judge et al., 2006; Parkhe, 1993a), and procedural and distributive justice (Kumar et al., 1995a; Luo, 2005). Although these studies focused on distinct behavioral aspects of a relationship, they shared the conception that firm behavior in an exchange relationship is a relational phenomenon. Building on this insight, we contend that:

(1) When two actors engage in a relationship, they build relational norms, which influence the development and outcomes of an exchange relationship;
(2) Relational norms guide actors' behavior toward cooperation and competition.

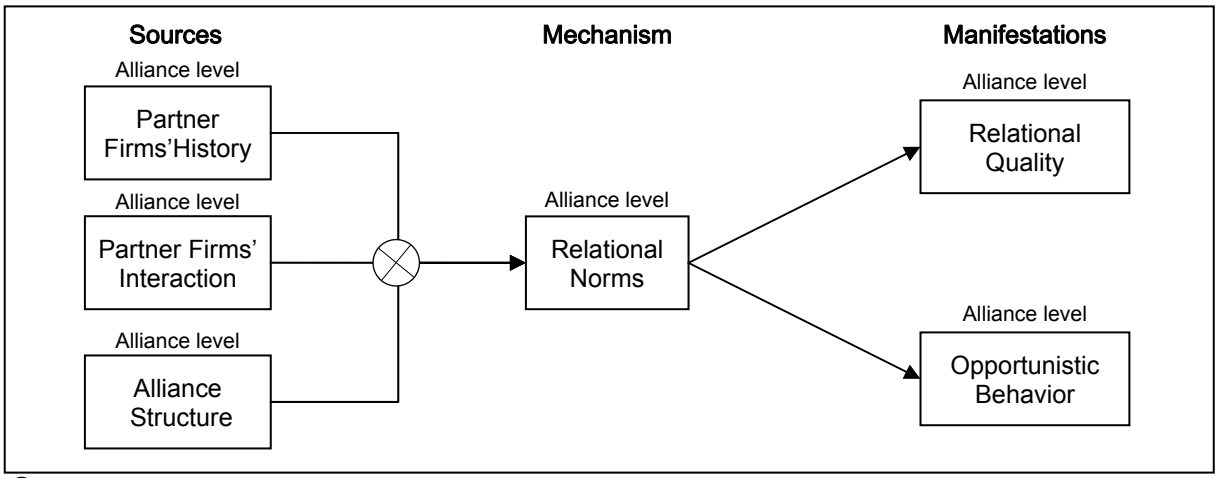
We apply these two premises to alliances to suggest that when two parties engage in an alliance, their behavioral interaction pattern directly influences the alliance's development and outcomes. More specifically, we postulate that parties develop relational norms that guide their behavior as the alliance unfolds (Gouldner, 1960). Relational norms represent expectations about behavior that partner firms share (Heide & John, 1992), related to implicit guidelines such as flexibility, solidarity, information exchange, and continuity expectations (Kumar et al., 1995a). Flexibility facilitates adaptation to unforeseen contingencies, solidarity

promotes joint problem solving, and information sharing facilitates both problem solving and adaptation (Poppo et al., 2002). Although parties can build relationships with long-term orientations, characterized by cooperative behavior or parties, they may also develop an interaction pattern with a short-term focus characterized by competitive behavior. Therefore, because relational norms can be either cooperative or competitive oriented, they function as ex-post value creation and value appropriation mechanisms. To comprehend the causes and consequences of relational norms (see Figure 5.5), we discuss three topics: (1) the sources of relational norms, (2) relational norms as value creation and value appropriation mechanisms, and (3) manifestations of relational norms.

Sources and Mechanism: Relational Norms

Proponents of the behavioral perspective have argued that relational norms emerge from three sources: (1) partner firms' history with each other, (2) current partner firms' interaction, and (3) decisions about alliance structures (Berthon et al., 2003; Gouldner, 1960). The first source for relational norm building, the partner firms' history, refers to their prior collaborations. Researchers have shown that prior relationships increase the likelihood that a firm engages in a new alliance with the same partner (Gulati, 1995a). By engaging in multiple alliances over time, these partners develop a set of routines that provide guidelines for how partners should interact. By developing a form of mutual understanding, partners smooth their interaction patterns and help mitigate any coordination, conflict resolution, or information processing problems (Zollo et al., 2002), which enhances the quality of the relationship. Past relationships thus function as a social signal about a party's future intentions and reduce the likelihood of exchange hazards. Hence, partner firms' history functions as source of relational norm development in an existing alliance.

Figure 5.5 Behavioral Perspective: Sources, Mechanism, and Manifestation



⊗ = The three sources affect the development of relational norms between the partners directly and interactively, which implies that relational norms are an alliance-level property.

A second source of relational norms originates from partner firm interactions as they form and manage the alliance. Whereas past interactions in previous collaborations indicate current firm behavior, current firm interactions directly affect the development of relational norms.

Advocates of the behavioral perspective have argued that repeated partner interactions and the social content embedded in those interactions enables partners to build relational norms (Gouldner, 1960). For instance, parties develop cooperative relational norms if they become aware that the immediate gain from competitive behavior does not outweigh the profits of collaboration (Parkhe, 1993a), such as when the possible loss of future gains that may result from violating the agreement does not exceed the future gains from cooperation. Whereas broken promises (i.e., not fulfilling contractual obligations) decrease the likelihood of future cooperative behavior, kept promises increase cooperative behavior. In other words, partner firm interactions directly affect the development of relational norms.

Alliance researchers also have argued and demonstrated that an alliance structure directly influences the development of relational norms (Brouthers et al., 2006; Fryxell et al., 2002; Heide & John, 1992). From a behavioral perspective, the aim of an alliance structure is to stimulate cooperative relational norms and curb competitive relational norms. If coordination costs to curb the likelihood of opportunistic behavior are high, parties choose governance modes that reduce these costs (Gulati et al., 1998). Furthermore, parties may agree to install monitoring mechanisms to hinder the development of competitive relational norms (Lubatkin et al., 2001; Wathne et al., 2000) and design compensation structures that provide incentives for parties to build cooperative relational norms (Contractor et al., 2000).

Together, partner firms' history, current partner firm behavior, and alliance structure directly and interactively affect the development of relational norms. Whereas past and current behaviors represent strong informal signals about how parties should behave, an alliance structure constitutes a formal mechanism that directs partner firm behavior. Consistent with the behavioral perspective's first and second premise, we argue that relational norms guide parties' behavior in an ongoing relationship and function as a value creation and appropriation mechanism. More specifically, we propose that:

(1) Cooperative relational norms guide parties' behavior toward building relational quality;
(2) Competitive relational norms guide parties' behavior toward opportunistic behavior.

Manifestation: Cooperation

Relational quality is the extent to which partner firms feel comfortable, are willing to rely on trust in dealings with each other, and are committed to the relationship (see §3.2). A high level of relational quality implies that partner firms' interactions are directed toward long-term value creation and willingness to sacrifice short-term gains (Ariño et al., 2001). This type of cooperative behavior implies trust, commitment, and continuity expectations (Gulati et al., 1994; Krishnan et al., 2006; Ring et al., 1994). The presence of relational quality also contributes to value creation, because it enables transaction cost savings, allows for capability improvement, and increases flexibility (Gulati, 1995b; Luo, 2002b). Moreover, relational quality operates as a self-enforcing safeguard that is a more effective, less costly alternative to either contracts or vertical integration (Hill, 1990; Poppo et al., 2002).

The presence of cooperative relational norms, which pertain to firm behaviors that focus on flexibility, information sharing, continuity, and solidarity, positively influences the development of relational quality. As cooperative norms evolve, the threat of misunderstanding, cultural clashes, and other conflicts, which might initially have been present as a result of the differences in the partners' institutional values or routines, become mitigated or resolved (Lubatkin et al., 2001). For example, continuity expectations refer to the mutual recognition that the relationship will continue in the future. As partners develop this norm, they achieve a level of satisfaction with the alliance and are less likely to look for alternative partners (Dwyer et al., 1987). Continuity expectations thus extend the time horizon for mutual benefits and prompt partners to refuse short-term gains in the interest of the long-term viability of the relationship, which contributes to a high-quality relationship (Aulakh et al., 1996). The norm of flexibility creates a stock of goodwill that also positively affects the quality of the relationship. Timely information sharing in an alliance similarly fosters a high-quality relationship because communication helps resolve conflicts and disputes and aligns perceptions and expectations (Morgan et al., 1994). For instance, in an empirical study on cross-border market partnerships, Aulakh, Kotabe, and Sahay (1996) found that bilateral norms of continuity expectations, flexibility, and information exchange led to higher levels of trust. Thus, cooperative relational norms, which enable parties to balance their interests, contribute to the development of high-quality relationships.

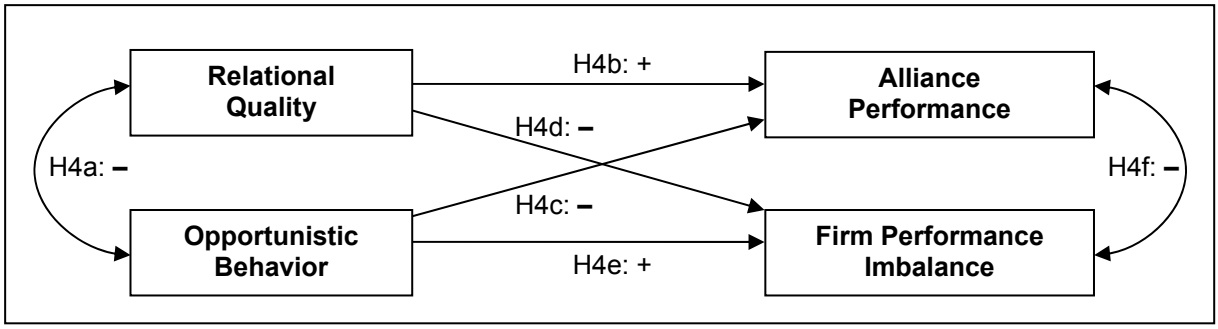
Manifestation: Competition

In contrast with relational quality, opportunistic behavior refers to a party's response that takes the form of an intention to increase its benefits from the relationship in ways that are explicitly or implicitly prohibited (see §3.2). Deceitful and other types of damaging behavior, such as lying, stealing, and cheating, represent examples of opportunistic behavior (Williamson, 1985). The aim of opportunistic behavior is to extract benefits from the alliance, though it differs from exercising bargaining power and acting on a learning advantage: It purposefully attempts to deceive the other partner, while simultaneously protecting and securing individual objectives (Parkhe, 1993a; Wathne et al., 2000). Parties are more likely to behave opportunistically if they develop competitive relational norms (Ariño et al., 1998), or implicit guidelines that guide behavior toward fulfilling individual interests. For instance, opportunistic behavior occurs if parties develop interaction patterns characterized by an unwillingness to adapt the ongoing relationship, a lack of solidarity, and a disinclination to share information. Imagine two parties working together on a new product development project, for which knowledge sharing is essential. At the start of the alliance, the parties trust each other and frequently engage in joint problem solving. That is, they develop cooperative relational norms that promote trust, respect, and commitment. However, one party, perhaps because of some external developments, becomes reluctant to share valuable information, and its counterpart responds with its own reluctance. If this pattern repeats over time, competitive conduct becomes the norm, and these competitive norms stimulate a greater focus on short-term gains. Consequently, the presence of competitive relational norms likely reinforces a negative behavior spiral between the parties, as manifested by opportunistic behavior.

The Relational Trade-Off

Drawing on the behavioral perspective, we present the relational trade-off. In contrast with the compensation trade-off but similar to the learning trade-off, parties confront the relational trade-off during the post-alliance formation stage. Consistent with the conceptualization of the cooperation and competition trade-off, we argue that relational quality positively relates to alliance performance and negatively relates to firm performance imbalance. Opportunistic behavior negatively relates to alliance performance but has a positive impact on firm performance imbalance.[29] As portrayed in Figure 5.6, we hypothesize that, respectively, relational quality and opportunistic behavior and alliance performance and firm performance imbalance are negatively associated. We present Hypotheses 4a–e but not Hypothesis 4f, because we have already discussed this relationship (see §4.2).

Figure 5.6 Hypothesis 4: Relational Trade-Off



H4a: Relational Quality and Opportunistic Behavior

We hypothesize that relational quality and opportunistic behavior are negatively associated. Relational quality means that parties demonstrate their willingness to contribute to the achievement of each other's objectives, whereas opportunistic behavior implies parties' actions indicate they aim to achieve individual objectives, if necessary, deceitfully and at the expense of the partner firm (Das et al., 1998). When the quality of the relationship is high, a firm does not need to fear its partner, because the relational norms signal that all partners are willing to maintain and continue the relationship (Ganesan, 1994). When trust and commitment characterize an alliance, a party also does not need to fear opportunistic behavior (McEvily, Perrone, & Zaheer, 2003), because it can depend on its counterpart to refrain from this type of deceitful behavior (Ariño et al., 1998).

A high-quality relationship signals to parties that neither is likely to engage in opportunistic behavior to achieve its individual objectives, knowing that this conduct would damage long-term value creation. As trust, commitment, and mutual respect grow, the motivation for opportunistic behavior declines (Aulakh et al., 1996). Empirical research produced support for the hypothesis of a negative association between relational quality and opportunism (Carson et al., 2006; Gundlach et al., 1995; Wu, Sinkovics, Cavusgil, & Roath, 2007). Gundlach

[29] We focus on the relationships among the constructs, as defined previously: relational quality (§3.2), opportunistic behavior (§3.2), alliance performance (§1.1), and firm performance imbalance (§4.2).

(1995) found that opportunistic behavior related inversely to commitment, and in a study on manufacturer–distributor relationships, Wu, Sinkovics, Cavusgil, and Roath (2007) indicated that trust was the only effective way to curtail distributor opportunism.

H4b and H4c: Alliance Performance

We hypothesize that relational quality positively affects alliance performance, but opportunistic behavior negatively affects it. An alliance with high levels of relational quality consists of trust, commitment, and the absence of conflicts (Ariño et al., 2001; Kauser et al., 2004), so parties have confidence in the reliability and integrity of their partners (Morgan et al., 1994). Drawing on the behavioral perspective, alliance researchers have pointed to the multiple advantages of a good relationship. A high-quality relationship between the partners facilitates the effective functioning of the alliance on a day-to-day basis and accelerates actions that may be essential for responding to changes in the competitive and economic environment (Ariño et al., 2001). It further enables organizations to gather high-quality information about their partners, which creates mutual awareness (Larson, 1992; Uzzi, 1996). By reducing contracting costs caused by information asymmetries, quality functions as a complement to formal governance mechanisms (Ariño et al., 2001). Finally, relational quality encourages collaboration beyond the narrow scope of the agreement and provides a strong signal that parties are willing to invest further in the relationship, which contributes positively to the achievement of superior alliance performance (Krishnan et al., 2006).

Opportunistic behavior inhibits the achievement of superior alliance performance for two main reasons. First, it suggests that parties are willing to sacrifice long-term value creation for short-term gains. Whereas relational quality promotes individual goals through a mutual concern about long-term benefits (Aulakh et al., 1996; Heide, 1994), opportunistic behavior accomplishes individual goals through deceitful behavior. For instance, a party might withhold critical information from its counterpart, impeding the latter partner's ability to conduct its required operational activities. Opportunistic behavior also impedes the effective functioning of an ongoing alliance and hampers actions that may be essential for responding to changes in the competitive and economic environment (Wathne et al., 2000). It not only prevents parties from developing a mutual understanding, but also increases the contracting costs associated with information asymmetries. Furthermore, opportunistic behavior encourages partners to circumvent contractual provisions, which reduces flexibility, and provides strong signals that parties are unwilling to continue the relationship. Hence, opportunistic behavior constitutes a critical and persistent source of tension between the partners, destabilizing the alliance and thereby hampering alliance performance.

Second, the presence of tensions as a result of opportunistic behavior requires parties to install and use additional coordination mechanisms to make the relationship work (Zaheer et al., 1998). Such coordination mechanisms generally involve unforeseen expenditures, required to curb opportunistic behavior, that were not part of the initial alliance agreement (Gulati et al., 1998; Lubatkin et al., 2001). These coordination mechanisms, such as conflict resolution and

monitoring mechanisms, are costly and direct parties' attention away from long-term value creation. Moreover, installing additional coordination mechanisms undermines the exchange relationship (John, 1984), simply because these resources could have been deployed more productively for other purposes (Wathne et al., 2000). Furthermore, opportunistic behavior may force parties to renegotiate their initial contractual provisions (e.g., compensation), which could negatively affect the value creation potential of the alliance. A primary consequence of persistent opportunistic behavior is that the partner firms burden the alliance's administration with structurally and procedurally complex safeguards, which result in additional and, more important, unforeseen expenditures. Hence, we hypothesize that the presence of opportunistic behavior negatively affects alliance performance.

Empirical research has supported Hypothesis 4b, finding a positive relationship between relational quality and alliance performance (Ding, 1997; Inkpen & Birkinshaw, 1994; Kauser et al., 2004; Lane et al., 2001; Luo, 2002b; Zaheer et al., 1998). Kauser and Shaw (2004) investigated behavioral and structural factors of the success of international strategic alliances and found that high levels of commitment, trust, and communication related positively to alliance success (i.e., business performance and satisfaction), while the presence of conflict impeded good performance. Inkpen and Birkenshaw (1994) also found that the quality of the exchange relationship was an important factor in the parent's assessment of joint venture performance; factors such as trust, cooperation, communication, integration, and openness directly or indirectly affected joint venture performance. With respect to Hypothesis 4c, other researchers focused on opportunistic behavior and found that such behavior inhibited alliance performance (Ariño et al., 1998; Dahlstrom et al., 1999; Deeds & Hill, 1999; Judge et al., 2006). Dahlstrom and Nygaard (1999) revealed that in franchiser–franchisee exchange relationships, the presence of opportunistic behavior increased transaction costs, such as bargaining and monitoring costs. Judge and Dooley (2006) examined alliances in the U.S. healthcare industry and found that opportunistic behavior negatively related to alliance performance. In summary, theoretical and empirical work has supported the hypotheses that relational quality relates positively to alliance performance, and opportunistic behavior inhibits alliance performance.

H4d and H4e: Firm Performance Imbalance

The presence of relational quality should reduce the likelihood of firm performance imbalance, whereas opportunistic behavior should increase that likelihood. When the quality of the relationship is high, a firm does not need to fear its partner, because the relational norms signal that all partners are willing to maintain and continue the relationship (Ganesan, 1994). If parties adopt a long-term relationship orientation, they are prepared to make short-term sacrifices to realize long-term benefits (Dwyer et al., 1987). That is, because a high-quality relationship exists, parties lack incentives to pursue their individual performance objectives at the expense of their counterparts. Hence, we hypothesize that relational quality relates negatively to firm performance imbalance. However, the presence of opportunistic behavior positively affects firm performance imbalance. When parties behave

opportunistically (i.e., deceitfully) and pursue individual performance objectives at the expense of long-term value creation, one partner likely will succeed in achieving its short-term objectives at the expense of its counterpart. For example, that party may be able to exploit new external circumstances (Wathne et al., 2000), more easily shirk or free-ride due to the tacit nature of its resource contribution, and behave opportunistically without being detected due to the lack of monitoring mechanisms (Dahlstrom et al., 1999). Support from an empirical study of alliances indicated that a respondent's perception of opportunistic behavior by its partner related negatively to the firm's performance within the relationship (i.e., goal attainment and spill-over effects) (Parkhe 1993a). Hence, the presence of opportunistic behavior increases the likelihood of a firm performance imbalance.

To summarize, when partner firms direct efforts toward building cooperative relational norms, they also work to establish a high-quality relationship. Consequently, parties have much to gain, in that relational quality encourages them to go beyond the narrow scope of the agreement and overcome obstacles and barriers that may hamper alliance performance. In contrast, when parties develop competitive relational norms and engage in opportunistic behavior, they have much to lose. Opportunistic behavior destabilizes the alliance and forces the parties to make unforeseen expenditures, which reduce the value creation potential of the alliance. Although parties may receive short-term benefits, their behavior reduces the likelihood of superior alliance performance. These insights are consistent with the conceptualization of the cooperation and competition trade-off, and hence, we hypothesize:

H_4: During the post-alliance formation stage, partner firms are confronted with the relational trade-off, such that:

a. Relational quality and opportunistic behavior are negatively associated,
b. Relational quality relates positively to alliance performance,
c. Opportunistic behavior relates negatively to alliance performance,
d. Relational quality relates negatively to firm performance imbalance,
e. Opportunistic behavior relates positively to firm performance imbalance, and
f. Alliance performance and firm performance imbalance are negatively associated.

5.4 Conclusions

Building on the conceptualization of a cooperation and competition trade-off, we have presented three types of cooperation and competition trade-offs in this chapter: (1) the compensation trade-off, (2) the learning trade-off, and (3) the relational trade-off. With respect to each, we discussed the value creation and value appropriation mechanism, sources of the mechanism, and manifestations of cooperation and competition. Subsequently, we presented three sets of six hypotheses, each of which represents a particular cooperation and competition trade-off. To conclude and clarify the differences among them, we compare the compensation, learning, and relational trade-offs; in Table 5.1, we offer a summary.

Drawing on the power, learning, and behavioral perspectives, we have identified three value creation and appropriation mechanisms: (1) bargaining power, (2) learning, and (3) relational norms. First, we argued that during the formation stage, the power relationship established between firms functions as a value creation and appropriation mechanism that directly affects parties' decisions with respect to negotiation strategies. In conditions of equal levels of bargaining power, parties opt for conciliatory negotiation strategies, resulting in contract integrativeness. However, with a bargaining power imbalance, parties likely choose hostile negotiation strategies, resulting in compensation imbalance. Second, we argued that during the post-formation stage, learning potential functions as a value creation and appropriation mechanism that affects parties' choice of learning strategy. With equal opportunities to learn, parties adopt integrative learning strategies that result in absorption integrativeness. However, with an imbalance, parties are more likely to choose distributive learning strategies, resulting in absorption imbalance. Third, we argued that during the post-formation stage, relational norms function as a value creation and value appropriation mechanism. Cooperative relational norms direct partner behavior toward building a high-quality relationship, whereas competitive relational norms guide those behaviors toward acting opportunistically. Although the power, learning, and relational perspectives focus on different phenomena, they commonly provide explanations for value creation and value appropriation in alliances.

Table 5.1 Three Cooperation and Competition Trade-Offs

	Compensation Trade-Off	**Learning Trade-Off**	**Relational Trade-Off**
Perspective	Power perspective	Learning perspective	Behavioral perspective
Focus	Formation stage, negotiation and formalization	Post-formation stage, learning potential	Post-formation stage, partner interactions
Mechanism	Bargaining power	Learning	Relational norms
Sources	Exchange context Resources Negotiation tactics	Absorptive capacity Alliance structure Nature of knowledge	Partner firms' history Partner firms' current behavior Alliance structure
Cooperation	Compensation integrativeness	Absorption integrativeness	Relational quality
Competition	Compensation Imbalance	Absorption imbalance	Opportunistic behavior
Hypotheses	**H2a:** Compensation integrativeness and compensation imbalance are negatively associated.	**H3a:** Absorption integrativeness and absorption imbalance are negatively associated.	**H4a:** Relational quality and opportunistic behavior are negatively associated.
	H2b and h2c: Compensation integrativeness relates positively to alliance performance, whereas compensation imbalance relates negatively to alliance performance.	**H3b and h3c:** Absorption integrativeness relates positively to alliance performance, whereas absorption imbalance relates negatively to alliance performance.	**H4b and h4c:** Relational quality relates positively to alliance performance, whereas opportunistic behavior relates negatively to alliance performance.
	H2d and h2e: Compensation integrativeness relates negatively to firm performance imbalance, whereas compensation imbalance relates positively.	**H3d and h3e:** Absorption integrativeness relates negatively to firm performance imbalance, whereas absorption imbalance relates positively.	**H4d and h4e:** Relational quality relates negatively to firm performance imbalance, whereas opportunistic behavior relates positively.
	H2f: Alliance performance and firm performance imbalance are negatively associated.	**H3f:** Alliance performance and firm performance imbalance are negatively associated.	**H4f:** Alliance performance and firm performance imbalance are negatively associated.

The three value creation and appropriation mechanisms also possess different characteristics. For example, bargaining power comes into play during the alliance formation stage, as parties negotiate about the alliance's compensation structure, whereas learning and relational norms become critical after the alliance has formed. In addition, the use of bargaining power pertains to parties' formalized compensation, which suggests that rewards and contributions are ex-ante specifiable. For instance, profits, intellectual property, and brand names can be valued and specified in a contract. In contrast, learning pertains to knowledge, which is difficult to specify, value, or formalize ex-ante. Only as the alliance unfolds does it become clear whether parties can assess and acquire knowledge through the relationship and how such learning affects alliance performance and firm performance. As the alliance develops, parties also build relational norms that guide their behavior toward either cooperation or competition. A high-quality relationship may cause parties to decide to invest more resources, but they also may engage in free-riding and shirking behavior to extract additional benefits. Whereas bargaining power is critical during alliance formation, learning and relational norms become important during the post-formation stage, in different ways; that is, relational norms pertain to partner firms' behavior, and learning relates to parties' potential to absorb knowledge.

Finally, despite these differences, each cooperation and competition trade-off shares a fundamental logic. Consistent with the conceptualization of the cooperation and competition trade-off, we postulate that value creation and appropriation mechanisms manifest themselves as cooperation and competition at the alliance level. In turn, we hypothesize that cooperation and competition directly influence alliance performance and firm performance through the relationship; we also expect a negative association between alliance performance (i.e., created value) and firm performance imbalance (i.e., difference in appropriated value). In the next chapter, we present the methodology we have used to test the hypotheses.

Chapter 6 Methodology

In this chapter, we present the methodology. Specifically, we collected data by administering Web-based questionnaires across a sample of alliance managers responsible for a contractual alliance. Because this type of cross-sectional alliance research poses specific challenges (Kumar et al., 1993; Parkhe, 1993b), the research design reflects a trade-off between methodological rigor and feasibility. On the one hand, the choices with respect to methods and techniques attempt to reduce the likelihood of biases and errors, such as common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and non-response bias (Armstrong & Overton, 1977); on the other hand, the decisions aimed at facilitating data collection and analysis. To inform our decisions and to increase methodological rigor and secure the feasibility of the empirical study, we followed available guidelines with respect to the survey and questionnaire design (Bagozzi, 1994; Dillman, 2000; Furrer & Sudharshan, 2001).

In Section 6.1, we elaborate on the procedure used for the pretest and discuss several precautions taken to increase the validity and response rate of the empirical study. In Section 6.2, we describe the data collection procedure and elaborate on several measures used to reduce sampling biases and errors. In Section 6.3, we provide arguments for why we use aggregate measures and, subsequently, introduce operational definitions of the main constructs. In Section 6.4, we explain why we decided to test Hypothesis 1 with partial least squares estimation and Hypotheses 2–4 with covariance analysis. We conclude with a summary of the research design decisions in Section 6.5.

6.1 Pretest

We conducted a pretest of the questionnaire and survey design for four reasons. First, we used the pretest to examine the face validity of the proposed theoretical models. Second, the pretest enabled us to assess the questionnaire design's quality and the face and content validity of the operational definitions. Third, we conducted the pretest to assess the psychometric properties of the measures and scales. Fourth, we used the pretest to explore the ease with which we could collect data from alliance managers.

Before conducting a cross-sectional empirical study, it is important to assess the face validity of the theoretical model to reduce any concerns about omitted variable bias (Bagozzi, 1994). Omitted variable bias occurs when an important antecedent of a dependent variable does not appear in the theoretical model. To reduce these concerns, we conducted a thorough review of the literature and conducted interviews (Dillman, 2000). We used a preliminary version of the theoretical model to conduct a series of semi-structured interviews with 25 managers responsible for contractual alliances (see Appendix 3).[30] Initial interviews (i.e., 4) served to probe and test ideas, and subsequent interviews focused on research questions 1 and 2. That is, we conducted 12 interviews to comprehend the relationship between alliance structure and

[30] We acknowledge Sander Degens, Marcel aan den Boom, and Emiel van Alphen for their research assistance.

alliance processes and nine interviews to explore the trade-off between cooperation and competition within alliances. The empirical results supported the proposed theoretical model, but also suggested some minor adjustments, such as refining the argumentation, incorporating new insights, and adding control variables.

To assess the quality of the questionnaire design and the face and content validity of the operational definitions, we conducted eight additional interviews with alliance managers. Results indicated that the draft questionnaire could be interpreted equivocally; therefore, several questions needed to be modified, as managers perceived them as unclear. To address these issues, we first simplified the questionnaire structure by grouping questions into three sections: (1) alliance formation and negotiation, (2) alliance operations and alliance performance, and (3) general questions. We added and clarified the introductory texts before each section and the individual question. We also used different colors for each section to separate the sections visually. To address issues with operational definitions, we added framing questions before the questions of interest (Dillman, 2000). That is, for each set of related questions, we first asked questions to activate an informant's memory. For instance, resource complementarity appears first, so the formative indicators ask about the type and amount of specific resources contributed by each partner (e.g., financial resources and human resources), followed by a set of reflective questions used for hypotheses testing. Finally, informants indicated that the information required was very sensitive in nature. Therefore, we decided to modify and eliminate items identified as being too sensitive.

We conducted another pretest to assess the psychometric properties of the measures and scales. We distributed the final questionnaire to 12 alliance managers and then contacted each manager by telephone to obtain feedback about questionnaire quality and response time. The informants indicated that the questionnaire was clear, to the point, and easy to respond to and that it took them no more than 25 minutes to complete. Hence, no substantial modifications were deemed necessary to the questionnaire design and operational definitions. Preliminary construct validity assessments revealed no concerns with regard to proceeding with data collection. The data from these 12 informants were incorporated into the main sample.

Finally, the pretests showed that alliance managers are difficult to identify within a firm, because their job titles and the definition of what an alliance is vary across firms. In addition, some informants indicated that the recent upsurge in alliance research has lead to fatigue in complying with requests to participate in research projects. Consequently, we anticipated that data collection would be inhibited by informants' disinclination to participate. To overcome this data collection barrier, we developed a twofold strategy for data collection.

6.2 Data Collection

We decided to collect data by administering Web-based questionnaires across a sample frame of alliance managers responsible for a contractual alliance. More specifically, we approached alliance managers in the form of six benchmark studies and a large sample survey (i.e., cross-

sectional) across firms, industries, and countries. This twofold data collection procedure may raise concerns with respect to methodological rigor. Therefore, we elaborate on the precautions we took to reduce concerns with respect to (1) sampling strategy, (2) data collection procedure, (3) one-sided key informants, and (4) missing values.

Sampling Strategy

The sampling strategy is best described as a non-probability sampling strategy, which combines convenience with judgment sampling and may prompt concerns about coverage and sampling error (Bagozzi, 1994). Coverage error results if every unit in the survey population lacks a known, non-zero chance of being included in the sample, and sampling error occurs when researchers collect data from only a subset, rather than all, of the members of the sample frame (Dillman, 2000). Convenience sampling means that members of the sample frame are easy to identify and approach, whereas judgment sampling implies that the researcher uses his or her judgment to select or deselect potential informants from the sample frame. The use of the non-probability sampling strategy means that the data may be subject to coverage and sampling errors, because not all potential informants had an equal opportunity to participate in the research project. That is, for various reasons, including e-mail delivery failure, informants who were no longer employed by the firm, and outdated public sources, the data may be biased with respect to this type of error.

To reduce concerns about the convenience sampling strategy, we decided to focus on particular industries and countries. Previous alliance studies have shown that (contractual) alliances are prolific in particular industries. Thus, we focused on the ICT (Duysters et al., 1999; Hagedoorn & Duysters, 2002; Hagedoorn et al., 1994), pharmaceutical and biotechnology (Mitsuhashi, 2003; Hagedoorn, & Van Kranenburg, 2003; Hagedoorn et al 2006; Powell, Koput, & SmithDoerr, 1996; Silverman & Baum, 2002), manufacturing and production (Hennart, Kim, & Zeng, 1998; Yan et al., 2001), and service (Sampson, 2004b) sectors. To increase the likelihood that an informant had the opportunity to participate in the project, we conducted extensive searches across public sources to construct a list of potential firms. We also actively approached firms to obtain the information about potential respondents. Second, we focused on two geographical areas, Europe and the United States. Research indicated that a country's market and industry characteristics influence firms' use of alliances (De Man, 2005; Steensma, Marino, & Weaver, 2000; Scheer et al., 2003). De Man (2005) found that U.S.-based firms applied more alliance management techniques than European firms. The convenience sampling strategy has two important implications. First, we must control for industry and country effects (see §6.3). Second, the findings should be considered conservative, because the data may contain some "noise." However, the sampling strategy enables us to test the validity of the hypotheses across contexts (Bacharach, 1989).

To reduce concerns about contaminated data further, we ensured that the only those contractual alliances assessed by informants were consistent with the scope of the research (see §1.5). Hence, we asked informants to read four screening questions carefully before

participating in the project. The first screening question asked them to select a contractual alliance in which no equity was involved. This question aimed to decrease the likelihood that other types of alliances, such as JVs, licenses, or franchises, appeared in the final data set. The second question pertained to partner firm objectives and asked informants to select an alliance with multiple objectives. With the third question, we asked them to select an alliance with a long-term orientation and thereby attempted to steer them away from transactional-based relationships (Dwyer et al., 1987). Finally, to reduce cognitive strains (Podsakoff et al., 2003), we asked informants to select an operational alliance for which the alliance contract had been signed within the past five years. Together, the four screening questions should result in the exclusion of informants who cannot provide the requested information.

The sampling strategy also may raise concerns about non-response bias; therefore, we took several ex-ante precautions to reduce this likelihood (Miller & Smith, 1983). With respect to data collection, we sent prenotification e-mails, offered to provide more details, guaranteed confidentiality and anonymity, sent reminders, and conducted a telephone follow-up procedure. We designed a questionnaire that was easily accessible and understandable by potential informants, as confirmed by the pretest (see §6.1). For instance, we kept introductions short, and questions appealed to informants' expertise about the alliance. We clearly described the type of alliance under investigation, which should stimulate qualified informants to respond and dissuade inappropriate informants from participating. These ex-ante measures should reduce the likelihood of non-response error. However, in contrast to coverage and sampling error, it is possible to diagnose the presence of non-response bias. Therefore, we conducted two ex-post statistical tests: (1) a comparison of early and late respondents (Armstrong et al., 1977) and (2) a comparison of respondents and non-respondents (Miller et al., 1983). We present these results in Section 7.2.

Data Collection Procedure

We used a twofold data collection strategy: (1) benchmarking and (2) public sources. First, we approached multinational firms with the aid of the *Association of Strategic Alliance Professionals* (ASAP).[31] At its annual 2005 conference, ASAP allowed us to approach a small number of firms, and six firms responded positively. For each firm, we identified a champion who agreed to support the research project. The champions were closely involved in one or more alliances and occupied a key position within the firm. The contact persons agreed to approach potential informants, which provided assessments of several alliances per firm. To stimulate participation, we offered a benchmark report. Overall, firms participating in the benchmark study identified 43 informants, 27 of whom returned a questionnaire after two reminder e-mails (response rate = 62.8%).

In addition to the benchmark procedure, we constructed a sample frame using public sources, such as company Web sites, branch associations, and rankings of firms published in business

[31] A global association designed to create and disseminate alliance know-how among practitioners, consultants, and academics. Support was provided by enabling conference attendance and announcements on their Web site.

magazines. We carefully examined the initial sample frame and eliminated any double entries, firms with incomplete contact details, and or companies in the wrong industry. The final sample frame consisted of 1,108 informants with complete information, including the informant's first name, surname, company name, e-mail address, and telephone number. We approached these informants through a Web survey procedure that consisted of five consecutive phases (see Dillman, 2000; Furrer & Sudharshan, 2001). First, we sent potential informants a prenotification e-mail introducing the project, which should positively influence informants' inclination to participate in the research project (Dillman, 2000). Second, we sent a second e-mail in which we elaborated on the project aims, discussed the need for the informant's expertise, emphasized the benefits (i.e., results), and attached a link to the Web site containing the online questionnaire (if requested, informants received a hard-copy questionnaire through regular mail). Emphasizing an informant's expertise creates a positive attitude toward the research project, and promising a report with the results provides an extra stimulus to participate (Dillman, 2000). Third, the follow-up procedure consisted of two reminder e-mails (i.e., phases 3 and 4) and a follow-up telephone call (i.e., phase 5). The telephone call not only increased response rates, but also enabled us to collect additional data about non-respondents (see §7.2). In summary, of the 1,108 informants approached, 150 participated in the survey (response rate = 13.5%).

Although the data collection procedure was carefully planned and executed, three factors caused the response rates to be lower than initially expected. First, building on the insights gained through the pretest, we anticipated that firms participating in the benchmark study would have assessed more alliances on average. However, time constraints and the lack of champion support led to lower response rates in some firms. Second, a negative side effect of using a Web-based questionnaire is that some e-mails could not be delivered to potential informants. In some instances, we received notification that the e-mail was simply undeliverable; in other situations, the informant notified us that he or she switched jobs, or the firm communicated that the informant was not longer employed. Third, despite efforts to reduce the appearance of asking for sensitive information, follow-up telephone calls revealed that several informants felt that their participation to the project would require them to disclose sensitive information. Consequently, these informants declined participation. The two-stage data collection procedure resulted in 177 returned questionnaires. However, the net sample consists of 151 cases, as we needed to eliminate responses provided by one-sided key informants or that were missing too many values.

One-Sided Key Informants

Consistent with previous alliance research (Heide et al., 1990; Heide & Miner, 1992; Lambe et al., 2002; Parkhe, 1993a; Saxton, 1997), we decided to use one-sided key informants (Campbell, 1955),[32] which means that we collected data from one side of the dyadic relationship: the focal firm (Van Bruggen, Kacker, & Nieuwlaat, 2005; Yan et al., 2001).

[32] We use the term "informants" instead of respondents, because informants provide information about structural relationships, whereas respondents provide assessments of social-psychological information (Seidler, 1974).

Within each focal firm, we approached one person and asked him or her to provide the requested information (Kumar et al., 1993). The use of one-sided key informants in alliance research has several advantages, including increased response rates, fewer resources, and relatively faster and easier data collection (Seidler, 1974). However, one-sided key informants also may produce erroneous data as a result of selection and perceptual biases (Kumar et al., 1993). For instance, an informant may not be qualified to report on the alliance under investigation, because he or she is not knowledgeable about every aspect. To reduce concerns about response biases due to the use of one-sided key informants, we examined whether the key informant was knowledgeable about (1) the alliance under investigation and (2) the partner firm.

First, we added a question to assess the informant's knowledge about the alliance (Geringer, 1998; Jap, 1999; Jap et al., 2003; Lambe et al., 2002). The question was measured with a seven-point Likert scale, with a cut-off value of 3, such that a lower score indicates the informant has less than the required knowledge about the alliance. Post-hoc analyses showed that only 3 informants did not meet this key informant criterion; they were eliminated from further analysis. The average score across the net sample is 6.3, which is sufficient according to past alliance research, which reported scores of 5.6 (Jap, 1999; Jap et al., 2003) and 6.5 (Lambe et al., 2002). Hence, this finding provides support for the assumption that the informants used for data analysis are knowledgeable about the selected alliances.

Second, response biases may arise when one-sided reports are used to evaluate aspects of a dyadic relationship (Menon, Bickart, Sudman, & Blair, 1995). The use of proxy reports suggests that the researcher assumes the informant is knowledgeable about the partner firm (Buchanan, 1992). Particularly in alliances, this assumption might be questioned, because partner firms could have hidden agendas, withhold critical information, or perceive critical events differently (see e.g., Ariño et al., 1998). Despite these concerns, past empirical studies showed that focal firm and partner firm responses tend to be positively and significantly correlated (Berthon et al., 2003; Cullen et al., 1995; Fryxell et al., 2002: Heide & John, 1992). For instance, Heide and John (1992) found significant correlations between buyer and supplier responses, ranging from .26 to .64 ($p < .05$), and Fryxell, Dooley, and Vryza (2002) found correlations as high as .77 and .84 ($p < .05$) in performance assessments reported by joint venture general managers and parent firm representatives.

Researchers also showed that if discussion and participation within the relationship increases, the likelihood that the findings obtained through self-reports and proxy reports are representative also increases (Menon et al., 1995). To address concerns about whether a key informant was qualified to report on its partner firm, we added a question evaluating the frequency of contact between the informant and the counterpart (Menon et al., 1995). The item was measured on a seven-point Likert scale, and a score lower than 3 would indicate the informant has less than moderate contact with the partner firm. Post-hoc analysis showed that only 5 informants reported a score below 3; we excluded them from the analysis. The average

score ($\bar{x}$ = 6.17, SD = 1.13) indicates that the sample informants have frequent interactions with partners. Therefore, we conclude that the remaining informants are knowledgeable about their partner firms and qualified to respond to the questions on their counterpart's behalf.

Missing Value Analysis

Missing data results from multiple causes, such as data entry errors, refusal by an informant to provide data, or data loss. The impact of missing data is detrimental not only because of its potential (hidden) biases but also as a result of its practical impact on the sample size available for data analysis. Although we could use only data from completed questionnaires, this approach is undesirable because of the substantial loss of information it causes (Little & Rubin, 1987). Hence, the alternative preferred procedure identifies the missing data pattern and then determines an appropriate imputation technique (Lemieux & McAlister, 2005).

We conducted a missing value analysis and found that 18 cases contained more than 10% missing values. We decided to exclude these informants from further data analysis. Several alliance managers provided contact details to receive the study's results, so we were able to conduct follow-up contacts, from which we determined that managers had concerns about the sensitivity of the requested information, were not knowledgeable about specific questions, or thought that the questionnaire was too long. We decided to use the SPSS (version 15) "Expectation Maximization" (EM) algorithm to impute missing data in the predictor and criterion variables (Little et al., 1987), as tests showed that the missing data pattern depicted a missing at random situation. That is, no underlying process lends biases to the observed data, which makes it acceptable to apply a remedy to complete the missing data. To check the equivalence of the sample with imputed values (n = 151) against the sample with completed questionnaires (n = 138), we conducted t-tests for the equivalence of means with respect to each manifest indicator. The results of these tests were non-significant, which suggests no significant difference between the two groups. Hence, we conclude that the data pose limited concerns for artifactual biases, which we may have created by imputing missing values.

Summary

Overall, we approached 1,151 informants through a dual data collection strategy (see Table 6.1 for the response analysis). Together, the benchmark strategy (27) and the survey procedure (150) resulted in 177 returned questionnaires. Imposing key informant and proxy report criteria reduced the sample size to 169. We also decided to exclude 18 informants from further data analysis because of the substantial amount of missing data (i.e., > 10%) and used an EM logarithm to impute missing data with respect to the other cases. The net sample for the data analysis therefore consists of 151 cases, indicating a modest response rate of 13.1%.

When compared with past alliance research using a cross-sectional survey design to obtain data, a net sample of 151 cases is relatively good. For instance, previous alliance studies using cross-sectional data reported sample sizes of 34 equity and 45 contractual alliances (Ariño, 2003), 75 alliances (Glaister & Buckley, 1998b), 137 alliances (Chen, 2004), 138 JVs

(Dhanaraj, Lyles, Steensma, Tihanyi, 2004), 114 international alliances (Kauser et al., 2004), 145 alliances (Lambe et al., 2002), 78 IJVs (Lane et al., 2001), and 98 alliances (Saxton, 1997). Nonetheless, as the net sample size is moderate, we are somewhat limited in the choice of data analysis techniques (see §6.4) and the use of control variables (see §8.1 and §9.1).

Table 6.1 Response Analysis

	Benchmark	Survey	Total
Sample Frame	43	1108	1151
Non-response			
- unknown reason	0	816	910
- undeliverable	0	106	106
- reason provided	16	36	52
	16	958	1068
Questionnaires returned	27 (62.8%)	150 (13.5%)	177 (14.4%)
Key informant criterion (<3)	0	3	3
Proxy report criterion (<3)	0	5	5
Missing value (> 10%)	0	18	18
Net sample	27(62.8%)	131 (11.8%)	151 (13.1 %)

6.3 Operational Definitions

We designed the questionnaire to obtain focal firm and partner firm data (see Appendix 4), but we formulated the hypotheses at the alliance level (see §1.5). Therefore, we need to transform firm-level scores into alliance-level scores. Although aggregated measures are commonly used in alliance research (Van Bruggen et al., 2005; Gundlach et al., 1995; Kumar, Scheer, & Steenkamp, 1998; Ross, Anderson, & Weitz, 1997; Yan et al., 2001), their use is not without concern (Edwards, 2001a; Peter, Churchill, & Brown, 1993). Thus, before we present the operational definitions, we present a procedure we developed aimed at reducing the risk of construct validity problems associated with aggregate measures.

Aggregate Measures

The use of aggregate measures to test hypotheses has fueled a heated debate among scholars (Edwards, 1993, 1995, 2001a; Edwards & Parry, 1993; Lord, 1958; Peter et al., 1993; Tisak & Smith, 1994b, 1994a; Zuckerman, Gagne, Nafshi, Knee, & Kieffer, 2002). Aggregate measures surfaced under different labels within management research, such as difference (Edwards, 2001a), disconfirmation (Peter et al., 1993), discrepancy (Smith & Tisak, 1993), fit (Drazin et al., 1985), and congruence (Edwards, 1993) scores. The gist of the conversation focused on the conditions in which various types of conceptualizations and data analysis techniques are appropriate (Edwards, 2001a; Spreng & Page, 2003).

On the one hand, scholars advocated the use of disaggregated scores if the research objective is to develop an in-depth understanding of the relationships between two individual components and a dependent variable (Edwards et al., 1993). On the other hand, researchers argued that aggregate scores could be considered an appropriate alternative if a holistic

approach is adopted (Donovan & Hafsteinsson, 2006; Tisak et al., 1994b). The aim thus is to examine a more complex theoretical model that extends beyond the disaggregated relationship between components and a dependent variable. Hypotheses 1–4 pertain to a set of relationships between variables, which together provide an explanation at the alliance level. That is, the aim of this study is not to understand relationships between various firm-level variables but to provide explanations about alliance performance at the alliance level (see Chapter 1). Within the context of this study, the use of aggregate measures is appropriate. Next, we discuss (1) why we used a subjective approach with respect to data collection, (2) why we use a difference score approach with respect to data analysis, and (3) how we compute the aggregate measures.

Data Collection: Subjective Approach

With respect to data collection and aggregate measures, a subjective approach implies that two components (i.e., focal firm and partner firm indicators) get measured separately, but a comparison between the two components is made by the same informant (Kristof-Brown, Zimmerman, & Johnson, 2005). If we contrast the subjective approach with a direct approach, in which an informant makes a direct comparison between two components (Peter et al., 1993), the subjective approach has several advantages. First, it reduces concerns about response biases, because it does not assume that an informant is capable of comparing and aggregating two components into a single score (Kristof-Brown et al., 2005). Because mentally comparing two components may invoke cognitive processes other than the simple comparisons presumed, the provided score should not be considered a proxy for the conception that the difference score is intended to capture (Edwards, 2001a). Second, because the subjective approach does not produce mentally aggregated data, a researcher gains an understanding of the exact nature of the relationship between the two components. Though the direct approach reduces questionnaire length (i.e., fewer questions), an understanding of the relationship between the components may be more critical.

Compared with an objective approach, which is similar to the subjective approach except that information is collected from multiple informants (Kristof-Brown et al., 2005), the subjective approach has one major advantage: sample size. For alliance research, collecting data on two sides of the relationship is difficult. Only a few empirical studies of buyer–supplier relationships adopted the objective approach (Anderson et al., 1990; Ganesan, 1994), but they suffered from relatively small sample sizes. To ease data collection, researchers often used one focal buyer and multiple suppliers (see e.g., Buchanan, 1992). The observation that dyadic data collection is a cumbersome endeavor also is supported by the findings we obtained during the pretest interviews. For instance, alliance managers reported a disinclination to approach their partner with a request to participate in a research project. An objective approach has a significant advantage, in that artifactual biases, such as a consistency bias, are absent because the research uses different sources (Kristof-Brown et al., 2005). We argue that these concerns do not outweigh the benefits of a relatively larger sample size.

Data Analysis: Aggregate Measures

With regard to the data analysis, several alternative techniques are available if data are collected on each component. Researchers can use each component independently in the data analysis. For instance, polynominal regression avoids collapsing two components into a single score that captures the differences (Edwards et al., 1993). Instead, each component and its associated higher-order terms are included as predictors. Because the two components and the dependent variable are all included separately, relationships can be depicted on three-dimensional surface plots (Kim & Hsieh, 2003). The use of polynominal regression thus overcomes issues pertaining to conceptual ambiguity, discarded information, insensitivity to the source of differences, and overly restrictive constraints (Edwards et al., 1993). The results also often depict more complicated relationships than are determinable with alternative approaches, in which researchers have used aggregates scores (Edwards, 2001a).

Nonetheless, we decided to use aggregate scores rather than individual components for two reasons. First, though aggregated scores have been called conceptually ambiguous, because they can confound the effects of their component variables (Peter et al., 1993), we argue that the aggregate measures used in this research actually present meaningful conceptualizations (Tisak et al., 1994b). That is, the use of aggregate measures is consistent with the nature of the hypotheses they test (Donovan et al., 2006). The hypotheses focus on performance in an alliance context, and the independent variables involve alliance-level constructs. It is precisely the discrepancy or congruence between the partner firms, not simply each partner firms' score, in which we are interested. Therefore, as it is not the objective to examine fine-grained the relationships between firm-level variables, we adopt an alliance-level approach.

Second, though polynominal regression might overcome some conceptual and methodological criticism of aggregate scores, this estimation imposes constraints on the data that require larger sample sizes. When testing the hypotheses with polynominal regression, large samples are needed to provide adequate statistical power because the analyses include both interaction and higher-order effects (Edwards, 2001a). Despite the one-sided data collection procedure, the sample size here is well below the sample sizes used by Edwards (1993, p. 1584) to demonstrate the use of polynominal regression (i.e., ranging from 617 to 625). In summary, for conceptual and methodological considerations, the use of aggregate measures is acceptable and appropriate in this study.

Aggregate Measures: Computation

Multiple computation techniques can calculate aggregate scores, including summated, algebraic difference, absolute difference, squared difference, residual-difference scores, and profile similarity index (for an overview, see Edwards, 2001a; Zuckerman et al., 2002). Consistent with the hypotheses, we use two types of aggregate measures. The first is a summated score, obtained by summing a focal firm and partner firm indicator. Summated scores can be used without substantial problems, as previous alliance research used this type of measures for dependence (see e.g., Van Bruggen et al., 2005; Kumar, Scheer & Steenkamp,

1998) and alliance performance (see e.g., Yan et al., 2001). For example, when they examined the relationship between interdependence and punitive capability in marketing channel relationships, Kumar, Scheer, and Steenkamp (1998) computed total dependence as the sum of dealer and supplier dependence scores.

The second type of aggregated measure we use is an absolute difference score. A difference score involves subtracting one measure from another to create a measure of a distinct construct (Peter et al., 1993). Because the focus is on the magnitude, rather than the directionality, of the difference, we compute the difference score by taking the absolute value of the difference (Casciaro et al., 2005; Edwards, 2001a). This approach previously has been used in alliance research to explain consequences of the differences between partner firms (Van Bruggen et al., 2005; Child et al., 2003; Child et al., 1999; Mjoen et al., 1997; Ramaseshan et al., 1998). For instance, Van Bruggen, Kacker, and Nieuwlaat (2005) computed relative distributor and customer dependence as the absolute value of the difference between the distributor and customer dependence scores and thereby examined the moderating impact of relative dependence on the relationship between a distributor's channel performance and customers' perception of relational quality. In contrast to a summated score, a difference score raises concerns about construct validity (Edwards, 2001a).

We took several ex-ante precautions to reduce concerns about possible biases resulting from the use of difference scores (Peter et al., 1993; Smith et al., 1993). We asked pretest informants whether they could provide the requested information about their partner firms. The interview results indicated that the informants did not experience any problems (see §6.1). To ease cognitive strains, we designed a questionnaire that enabled informants to contrast the focal firm's scores with partner firm scores visually (Parasuraman, Zeithaml, & Berry, 1994). In each section of the questionnaire, we emphasized that informants should discriminate between the focal firm and the partner firm in their responses.

We also decided to conduct two ex-post assessments to determine whether using aggregate measures is appropriate: examination of the construct validity of the (1) firm-level constructs (i.e., components) and (2) difference scores (i.e., aggregate measure). First, with regard to the individual components, we examine convergent validity, discriminant validity, and reliability, because components should meet conventional construct validity standards (Peter et al., 1993). With respect to the difference score measures, we examine reliability and discriminant validity; to proceed with hypotheses testing, we must assess whether the components are conceptually and empirically distinct from the aggregate construct (Edwards, 2001a). More specifically, we examine difference score reliability according to the procedure presented by Peter, Churchill and Brown (1993 p. 655), which demands that difference score reliability achieves a score greater than .700 (see Box 6.1). We assess discriminant validity by examining the correlations between firm-level variables and the aggregate construct (i.e., difference score), according to which high correlations indicate poor discriminant validity (Peter et al., 1993). We present the results of the analyses in Section 7.4.

Box 6.1 Difference Score Reliability

A difference score is usually less reliable than its component scores and, therefore, it is important to assess difference score reliability. The reliability of a difference score requires a value greater than .700. The formula depicted below enables computation of difference score reliability:

$$r_{Difference} = \frac{\sigma_1^2 r_{11} + \sigma_2^2 r_{22} - 2r_{12}\,\sigma_1\sigma_2}{\sigma_1^2 + \sigma_2^2 - 2r_{12}\,\sigma_1\sigma_2}$$

σ_1^2 = variance component 1
σ_2^2 = variance component 2
r_{11} = reliability component 1
r_{22} = reliability component 2
r_{12} = correlation between component 1 and component 2

Source: Peter et al. (1993)

Operational Definitions

The primary objective of the operationalization phase is to develop measures and scales that represent the constructs under investigation. To achieve this objective, we follow guidelines in the literature (Boyd, Gove, & Hitt, 2005; Peter, 1981). First, we examine previous alliance research and identified constructs with similar operational definitions. We only adopt measures and scales that demonstrated sufficient psychometric properties and, where necessary, adapt them to the context of the study. Second, we use multi-item measures and scales to reduce concerns about measurement error (Bagozzi et al., 1991). Third, we scrutinize each item and ensure that questions were unambiguously and clearly formulated (Dillman, 2000). Fourth, we use mirror-image indicators to ease the informant's assessment of the focal firm's and partner firm's constructs (Kumar, Scheer, & Steenkamp, 1998). Fifth, we use the guidelines for appropriately employing formative and reflective measures (see Box 6.2). We present the operational definitions next (see Appendix 4 for the questionnaire).

Alliance Performance and Firm Performance Imbalance

Although performance measures, such as financial indicators (Jap, 1999), patent indices (Sampson, 2004b), and termination (Park et al., 1996), can be used to measure alliance performance, it is difficult to track the benefits of alliances objectively (Gulati, 1998; Kumar et al., 1993). For instance, corporate reports, which are publicly available, may not reflect the benefits of an alliance, and alliances may dissolve because parties either achieved their objectives or did not. In addition, many alliances hope to accomplish multiple objectives, and different measures capture long-term effects differently. Therefore, we decided to measure the performance of each alliance with perception indicators, which is not uncommon in alliance performance research (Anderson, 1990; Ariño, 2003; Geringer et al., 1991; Saxton, 1997). Although subjective measures may raise concerns about cognitive biases (Olk, 2002), the usage of one key informant (Campbell, 1955; Kumar et al., 1993), and construct validity issues (Ariño, 2003; López-Navarro et al., 2002), we argue that this subjective approach enables us to capture alliance performance adequately. To reduce these concerns, we took several precautions, as discussed in Sections 6.1 and 6.2.

Consistent with the conceptualization of alliance performance (see §1.1), we operationalize it as the degree to which both parties achieve their objectives, whether intentional or emergent. Firm performance imbalance is operationalized as the absolute difference between the degree to which the parties achieved their objectives. More specifically, we use focal firm and partner indicators to compute the two aggregate dependent variables at the alliance level. We capture performance through four indicators: two reflective indicators capturing the achievement of emergent objectives; one reflective indicator capturing the achievement of intentional objectives; and an aggregate indicator, computed as the average score of five formative indicators that capture the achievement of intentional objectives. After assessing the construct validity of the firm-level measures (see §7.4), we use the four indicators to compute alliance performance and firm performance imbalance.

We focus on three performance dimensions—financial, learning, and strategic—identified as the main rationales for entering alliances (Child et al., 2003; Ding, 1997; Kale et al., 2002; Kogut, 1988b). As discussed, we measure the first dimension (financial) with two reflective indicators (i.e., 7-point Likert scale) that refer to the extent to which each partner previously "has been satisfied with the financial benefits it attained through the alliance" and "has viewed the alliance as a profitable investment." In addition, a third indicator is a product term of two items that capture the importance of a partner's financial objectives and the achievement of its financial objectives (Blankenburg Holm et al., 1999; Ding, 1997; Jap, 1999). Furthermore, we measure the importance and achievement of the five formative indicators pertaining to objectives as "revenues," "decrease in investments," "profits," "improving operating efficiency," and "return on investment" (Anderson, 1990; Büchel et al., 2001; Jap et al., 2003; Lambe et al., 2002). We use the average score across product terms for the data analysis. The aggregate measures for the data analysis are computed with the procedure described previously and labeled financial performance and financial performance imbalance.

The learning performance dimension is operationalized with three items pertaining to the extent to which a partner previously "has been satisfied with the knowledge it gained through the alliance" and "has learned important new knowledge through the alliance," as well as the product term between two indicators that assess the importance of learning objectives and the achievement of learning objectives (Beamish et al., 2003; Kale et al., 2000; Simonin, 1999). Furthermore, five formative learning indicators are operationalized according to the importance and achievement of the following objectives: "knowledge of production processes," "marketing know-how," "managerial techniques," "technological know-how," and "product development know-how" (Büchel et al., 2001; Lane et al., 1998; Lane et al., 2001; Steensma & Lyles, 2000) and used to compute a fourth indicator (firm-level). That is, we use the average score across the product terms for the data analysis. The aggregate measures for data analysis are computed according to the procedure described previously and labeled learning performance and learning performance imbalance.

Finally, the third dimension, strategic performance, is measured with three items capturing the extent to which a partner "has gained a strategic advantage over its competitors" and "has been satisfied with the strategic benefits it attained through the alliance," as well as a product term of two items assessing the importance and achievement of strategic benefits (Child et al., 2003; Kauser et al., 2004; Parkhe, 1993a). Again, we include five formative items to examine the importance and achievement of objectives pertaining to "new business opportunities," "increase in market share," "enhancing reputation," "enhancing competitive position," and "risk reduction" (Anderson, 1990; Aulakh et al., 1996; Büchel et al., 2001; Jap, 2001b). We use the average score across product terms for the data analysis (firm-level). The aggregate measures are computed with the procedure described previously and labeled strategic performance and strategic performance imbalance.

Box 6.2 Formative and Reflective Measurement

Construct validity pertains to the degree of correspondence between constructs and their measures and is a necessary condition for theory development and testing. Observed measures can be treated as reflective or formative, and their misspecification can lead to inaccurate conclusions about the structural relationships between constructs. A measurement model with reflective indicators means changes in the underlying construct should cause changes in the indicators. In contrast, a formative measurement model indicates that changes in the measures should cause changes in the latent variable. This difference in the direction of causality between indicators and constructs has several consequences. First, reflective measures are expected to be intercorrelated, which renders an internal consistency perspective appropriate, whereas no reason for interitem correlations exists with formative measures. Second, dropping an indicator from a reflective measurement model does not alter the meaning of the latent construct, whereas dropping an item could alter the meaning of the latent construct in a formative model. Third, measurement error is considered at the item level with respect to reflective measurement models but at the construct level for formative ones. The difference between using reflective and formative indicators has several Implications. First, proper specification of the measurement model is necessary before researchers can assign meaning to any analysis of the structural model. Second, operational definitions should be scrutinized in terms of their nature to prevent misspecification. For instance, a researcher should consider the direction of causality between constructs and indicators, the interchangeability of indicators, covariation among the indicators, and the nomological net to make a specification decision. Third, with respect to hypotheses testing, some estimation techniques that enable the use of latent variables are more appropriate for formative measurement models than are others.

Sources: Bagozzi (1994); Bollen & Lennox (1991); Diamantopoulos (1999); Diamantopoulos & Winklhofer (2001); Edwards & Bagozzi (2000); Fornell & Bookstein (1982); Jarvis, MacKenzie, & Podsakoff (2003)

Implications for this Study

The difference between using reflective and formative indicators has four implications for this study:

1. We used formative indicators as framing questions. To activate an informants' memory with respect to a topic, we first asked formative questions, followed by the reflective questions that we used for the data analysis (see §6.1).
2. We used reflective indicators to measure firm-level constructs, which renders an internal consistency approach appropriate. Consequently, the first-order constructs are reflective in nature and should be assessed on their construct validity accordingly (see §6.4).
3. With respect to the second-order constructs, the first, structural coherence represents a formative latent variable, whereas the second, relational adaptability represents a reflective latent variable. Therefore, different criteria apply to assess construct validity (see §6.4).
4. With respect to hypotheses testing (see §6.4), Hypothesis 1 represents a hierarchical component model, appropriately tested with partial least squares estimation. In contrast, Hypotheses 2–4 are more suited to testing with covariance analysis

Partner Fit

Partner fit is the compatibility of the partners at the alliance formation stage (Douma et al., 2000), measured by four 7-point Likert scale items. We use previous alliance research on partner fit to develop the items (Bucklin et al., 1993; Harrigan, 1988; Jap et al., 2003; Kale et al., 2000; Lane et al., 2001; Saxton, 1997). Specifically, partner fit entails the extent to which "the management styles and philosophies of the partners were compatible," "the organizational cultures were compatible," "the goals of the partners within the alliance were aligned," and "the partner firm's operations were compatible."

Resource Complementarity

Resource complementarity is the extent to which combining partner firms' resources at the alliance formation stage may result in synergetic outcomes (Jap, 1999; Lambe et al., 2002; Sarkar, et al., 2001). It is measured by four 7-point Likert scale items: the extent to which "the partners used each other's resources to attain goals beyond individual reach," "both partners had complementary strengths that were beneficial to one another," "resources brought into the alliance by each party were very valuable to the alliance," and "both partners provided resources that enabled them to achieve mutual objectives."

Compensation Integrativeness and Compensation Imbalance

Compensation integrativeness is measured as the sum of each party's satisfaction with its anticipated compensation through the alliance, whereas compensation imbalance is the absolute difference between parties' satisfaction with their anticipated compensation. We compute these alliance-level scores with focal firm and partner firm scores. Thus, a party's satisfaction is measured by seven 7-point Likert scale items, which we develop by creating an item pool based on bargaining, negotiation, and compensation literature (Blodgett, 1991b; Contractor et al., 2000; Hennart et al., 2005; Lax et al., 1986; Mendi, 2005; Thompson, 1990). We discussed these newly developed items with alliance managers to ensure their face and content validity. The definitive questions asked about an informant's perceptions, while thinking of the contractual clauses, of the extent to which "the total expenditures to the alliance were below the company's initial expectations," "it [the company] was satisfied with the degree to which the alliance enabled it to recover its investments," "it was satisfied with the benefits it would obtain through the alliance," "it was satisfied with the valuation of its total contribution to the alliance," "the sum of benefits was above the company's original expectations," and "it was pleased with the gains it would receive through the alliance."

Shared Decision-Making and Decision-Making Imbalance

Shared decision-making is the sum of the extent to which each party acquired formal authority over alliance activities, whereas decision-making imbalance is the absolute difference between each party's formal authority obtained over alliance activities. We compute these alliance level scores with focal firm and partner firm scores and we use previous alliance research to develop these items (Child et al., 2003; Glaister et al., 2003; Johnson et al., 1996; Steensma & Lyles, 2000; Subramani et al., 2003). That is, decision-

making uses two 7-point Likert scale items and is measured by the extent to which a partner "acquired control over overall decision-making within this alliance" and "could exercise substantial influence on decision to be made within this alliance."

Total Non-Recoverable Investments and Non-Recoverable Investment Imbalance

The aggregate measure total non-recoverable investments equals the sum of each party's specialized expenditures committed to the alliance, whereas non-recoverable investment imbalance is operationalized with the absolute difference between their commitments. We compute these alliance-level scores with focal firm and partner firm scores, such that commitment to make non-recoverable investments is measured by three 7-point Likert scale items. Previous operational definitions pertaining to "relationship specific investments" (Berthon et al., 2003; Subramaniam & Venkatraman, 2001), "bilateral idiosyncratic investments" (Jap, 2001b; Jap et al., 2003), and "transaction specific investments" (Buvik et al., 2002; Ganesan, 1994) guide the development of these items, and the questions ask about an informant's perception of the extent to which a partner during the alliance formation stage "agreed to invest a great deal into this specific alliance," "agreed to make investments tailored to this alliance," and "agreed to make substantial unique investments in this alliance."

Structural Coherence

Structural coherence represents a second-order construct that consists of eight formative first-order constructs: partner fit, resource complementarity, compensation integrativeness, compensation imbalance, shared decision-making, decision-making imbalance, total non-recoverable investments, and non-recoverable investment imbalance. Together, the eight first-order constructs capture the extent to which the initial alliance structure constitutes a coherent constellation of mutually supportive structural safeguards.

Absorption Integrativeness and Absorption Asymmetry

Absorption integrativeness is measured as the sum of each party's ability to assess and acquire knowledge through the alliance, whereas absorption imbalance is the absolute difference between each party's capacity to assess and acquire knowledge. We compute the alliance-level scores with focal firm and partner firm scores. Specifically, a party's capacity to assess and acquire knowledge is measured by six 7-point Likert scale items based on interviews and prior definitions (Chen, 2004; Dyer et al., 1998; Hamel, 1991; Kumar & Nti, 1998; Lane et al., 1998; Lane et al., 2001). Each partner's ability to assess and acquire knowledge during the post-formation stage is measured by the extent to which "a party could decide on the usefulness of knowledge made available through the alliance," "a party could assess the extent to which new knowledge was valuable," "a party could determine whether new knowledge from the alliance was of high quality," "a party saw the connection between knowledge acquired via the alliance and known knowledge," "new knowledge from the alliance was easily integrated into the existing knowledge base," and "knowledge made available through the alliance matched the existing knowledge base."

Learning Capabilities

Learning capabilities refer to the extent to which the partners have developed routines that support knowledge and information exchange in the alliance. We use past alliance research (Doz, 1996; Dyer et al., 1998; Simonin, 1999) to develop three reflective 7-point Likert scale items: since the signing of the alliance contract, the relationship has been characterized by "the development of routines that have enabled mutual learning," "the implementation of procedures that have enabled mutual learning," and "policies that facilitate mutual learning."

Relational Quality

Relational quality is operationalized as the manifestation of cooperative partner firm interactions, indicated by trust, commitment, and respect (Ariño et al., 2001). We use previous alliance research on relational quality to develop the items (Aulakh et al., 1996; Cullen et al., 2000; Kale et al., 2000; Zaheer et al., 1995) and therefore capture it with three questions: since the signing of the alliance contract, the relationship has been characterized by "mutual trust between the partners," "mutual respect between the partners," and "mutual commitment between the partners."

Opportunistic Behavior

Opportunistic behavior is difficult to measure directly because informants tend to offer socially desirable responses (Wathne et al., 2000). Therefore, we introduce a management costs variable as a proxy for opportunistic behavior, as opportunistic behavior forces parties to make unforeseen coordination expenditures (Dahlstrom et al., 1999; Wathne et al., 2000). Although an increase in ex-post coordination costs may shift a negative behavioral spiral toward a positive one (Ariño et al., 1998), installing costly monitoring mechanisms burdens the alliance. Hence, in line with prior alliance research (Dekker, 2004; Parkhe, 1993a) we operationalize management costs as the extent to which parties spent additional resources on: "assuring that both partners have fulfilled their contractual obligations," "monitoring both partner firms' behavior," and "coordinating the alliance."

Relational Adaptability

Relational adaptability represents a second-order construct that consists of five reflective first-order constructs: absorption integrativeness, absorption imbalance, learning capabilities, relational quality, and opportunistic behavior. Together, the first-order constructs capture the extent to which the partners were willing and able to make modifications to the ongoing relationship without changing the initial alliance structure.

Control Variables

Although we sought to develop a parsimonious model of alliance performance, we also wanted to control for factors identified in existing alliance research as influential for alliance performance. We therefore distinguish among (1) environmental conditions, (2) firm factors, and (3) alliance properties. First, alliance researchers argued that environmental conditions influence alliance performance (Jap, 1999; Koza et al., 1998; Lee et al., 2006). Therefore, we control for the extent to which the alliance was surrounded by environmental uncertainty

(0 = no uncertainty, 1 = uncertainty). In addition, we include a dummy variable to capture the degree to which the alliance had been affected by changes in the partners firm's strategies (0 = no impact, 1 = impact). We expect that environmental uncertainty and shifts in partner firm's strategy will destabilize an alliance, which will negatively influence alliance performance (Ganesan, 1994; Meschi, 2005).

Firm factors, or the characteristics of each partner firm, exist independent of the alliance. We control for whether informants perceived their partners as competitors (0 = no competitors, 1 = competitors), because alliance researchers argued that an alliance between competitors is subject to additional tensions that negatively affect alliance performance (Bengtsson et al., 2000; Park et al., 1997). We also control for various firm differences, including industry, firm size, and experience with alliances. We use two open-ended questions to capture each party's industry and create a dummy variable (0 = dissimilar industry, 1 = similar industry). We use two dichotomous control variables for firm size (0 = dissimilar revenues, 1 = similar revenues) and parties' experience with alliances (0 = unequal experience, 1 = equal experience). We expect negative relationships with alliance performance; previous alliance research showed that differences between firms with respect to size, industry, and experience negatively affect alliance performance (Dussauge et al., 2000; Hennart, 1988; Lambe et al., 2002; Miles et al., 1999; Park et al., 1997). We also ask informants to indicate whether the partners had joined in an alliance prior to the one selected (0 = no previous relationships, 1 = previous relationships), because the presence of previous relationship eases the formation and management of a new alliance (Gulati, 1995a; Zollo et al., 2002).

Because we collected data across countries and industries, we must control for country and industry effects. We ask informants to provide us with the country in which their firm (or business unit) operated, and for data analysis purposes, we create a dummy variable (0 = outside Europe, 1 = European country). We also ask informants to provide their firm's main industry and create three dummy variables that we use to control for operations in the ICT industry (0 = other industries, 1 = ICT industry), service industry (0 = other industries, 1 = service industry), and pharmaceutical and biotechnology industry (0 = other industries, 1 = pharmaceutical and biotechnology industry).

Alliance properties refer to the characteristics of a particular exchange relationship. We control for whether the alliance scope was international or domestic by including a dummy variable (0 = domestic, 1 = cross-border). According to existing research, cross-border alliances are subject to lower levels of alliance performance (Reuer & Ariño, 2002). We also control for whether parties fulfilled their contractual obligations (0 = not fulfilled, 1= fulfilled), because we expect that fulfilling contractual obligations positively relates to alliance performance. Older alliances are more likely to experience higher performance levels, so we control for the duration of the alliance, measured in years (Lambe et al., 2002). Previous research suggested that the number of alliance activities adversely affects performance, so we control for alliance complexity (Reuer & Zollo, 2005), measured

according to six possible activities: research and development, purchasing, production, marketing and sales, and distribution. Informants indicated which activities were part of the alliance, and we create a dummy variable such that fewer than three alliance activities depict low complexity (0) and three and more activities indicate high complexity (1). Finally, the scope of the alliance compensation structure is measured by nine compensation mechanisms: sharing of profits, sharing of revenues, royalties, transfer-pricing, lump-sum fee, buy-back of manufactured products, sharing of intellectual property, retaining own revenue and profit, and cost sharing (Aulakh, 2001; Contractor et al., 2000; Hennart et al., 2005). Informants indicated which mechanisms were part of compensation structure; we use a simple count measure to capture the scope (1 = low, 9 = high). We expect a positive relationship, as hybrid compensation fosters alliance performance (Contractor et al., 2000; Mendi, 2005).

6.4 Data Analysis

We use structural equation modeling to test the hypotheses, though we employ a different technique to test Hypothesis 1 than that we use for testing Hypotheses 2–4. Hypothesis 1 testing relies on a causal modeling technique called partial least squares (PLS) regression, whereas that for Hypotheses 2–4 involves covariance analysis (CVA).

Partial Least Squares and Covariance Analysis

Structural modeling techniques, such as PLS and CVA, provide researchers with an advantage when it comes to (Chin, 1998; Fornell et al., 1982) (1) modeling relationships among multiple independent and dependent variables, (2) using unobservable latent variables, (3) modeling measurement errors for observed variables, (4) simultaneously examining a measurement and a structural model, and (5) statistically testing a priori the substantive theoretical and measurement assumptions with empirical data. Such techniques add a degree of precision to theorizing, as they require clear conceptualizations, operational definitions, and functional relationships (Bagozzi, 1981). They also permit a more complete representation of complex theories and are flexible with regard to the interplay between theory and data (Chin, 1998).

Here, we explain why PLS is an appropriate technique to test Hypothesis 1, whereas CVA is more suited to testing Hypotheses 2–4 (see Box 6.3). First, CVA aims to test theory, whereas PLS is oriented more toward theory development and predictive applications (Barclay et al., 1995). CVA techniques estimate model parameters to reproduce the covariance matrix of the measures and incorporate overall goodness-of-fit measures to determine how well the hypothesized model fits the data. In contrast, PLS tries to explain variance and is primarily intended for a causal-predictive analysis in situations of high complexity but low theoretical information (Chin, 1998). Thus, PLS is recommended for research models that focus on theory building and in this sense can be viewed as a precursor of CVA with a focus on confirmatory analysis (Barclay et al., 1995). In this study, predictive power is more critical with regard to Hypothesis 1, but parameter precision is required for Hypotheses 2–4, meaning we require CVA for the latter testing but need PLS to test Hypothesis 1.

Box 6.3 Two Types of Structural Equation Modeling

Partial least squares (PLS) is a causal modeling approach that at its core constitutes an iterative combination of principal components analysis that relates measures to constructs and path analysis that permits the construction of a system of constructs (Löhmoller, 1988; Wold, 1982). Hypothesizing regarding relationships between measures and constructs and between constructs and other constructs must be guided by theory (i.e., a priori specified). To estimate parameters representing path and measurement relationships, researchers use ordinary least squares (OLS). Hence, OLS assumptions regarding uncorrelated errors in regression carry over to the PLS context. In contrast with covariance analysis, PLS does not assume multivariate normality, and the consideration of the underlying distribution of the data becomes an issue when testing the statistical significance of the parameters (Barclay, Thompson, & Higgins, 1995). Therefore, PLS is appropriate in settings with small sample sizes and complex causal models (Chin, 1998). **Covariance analysis** (CVA) is a causal modeling approach that gained popularity with the LISREL program, developed by Jöreskog (1973). Typically using a maximum likelihood (ML) function, CVA-based modeling attempts to minimize the difference between the sample covariances and those predicted by the theoretical model (Chin, 1998). The parameters estimated by this procedure attempt to reproduce the covariance matrix of the observed measures, with the underlying assumptions that observed variables follow a specific multivariate distribution (i.e., normality) and that observations are independent of one another. Because of these properties, CVA is most appropriate in settings with large sample sizes and parsimonious theoretical models.

Despite these differences, the decision to use CVA or PLS is neither arbitrary nor straightforward. Both estimation techniques apply to the same class of models—structural equations with unobservable variables and measurement error—but they have different objectives and structures (Chin, 1998; Fornell & Bookstein, 1982; Fornell & Cha, 1994). More specifically:

- CVA is more appropriate with theory testing, whereas PLS is more appropriate for theory development.
- CVA offers statistical precision in the context of stringent assumptions, whereas PLS trades parameter efficiency for prediction accuracy, simplicity, and fewer assumptions.
- CVA attempts to account for observed covariances, whereas PLS aims to explain the variances of variables, whether observed or unobserved.
- CVA combines variance and measurement errors into a single estimate and adjusts for attenuation, whereas PLS separates out “irrelevant” variance from the structural portion of the model.
- CVA requires relatively large samples for accurate estimation and relatively few variables; PLS is applicable to small samples in estimation and appears to converge quickly even for large models with many variables and constructs.

Second, PLS has been developed to handle a combination of formative and reflective multi-item measures (Wold, 1982; Tenenhaus, Vinzi, Chatelin, & Lauro, 2005) and provides an appropriate technique for estimating second-order models (Löhmoller, 1988; Wold, 1982). Hypothesis 1 represents a hierarchical component model (i.e., second-order constructs), and the structural model with respect to Hypothesis 1 contains a formative and a reflective second-order construct. This type of model is best estimated and tested with PLS estimation (Chin & Gopal, 1995). Because Hypotheses 2–4 represent partially recursive models with only first-order factors, they are better suited to CVA testing (Kline, 1998). Third, CVA is poorly suited to deal with small data sets and complex theoretical models, whereas PLS makes minimal demands on sample size and thus is especially appropriate for testing complex theoretical models with relatively smaller samples (Chin, 1998). The complexity of Hypothesis 1 and the sample size demands PLS testing. In contrast, CVA functions better for Hypotheses 2–4, because the theoretical model is parsimonious, and they meet CVA sample size requirements. In summary, with regard to Hypothesis 1, PLS is the most appropriate technique, whereas for Hypotheses 2–4, CVA is more appropriate.

Hypothesis 1

The statistical model we used to test Hypothesis 1 is a hierarchical component model (Löhmoller, 1988; Wold, 1982) with a combination of one formative (structural coherence) and one reflective (relational adaptability) second-order construct. Each second-order factor represents a superordinate construct that connects the first-order predictors with other constructs in the model (Edwards, 2001b; Jarvis et al., 2003). The proposed hierarchical component model can be estimated following the procedure suggested by Hulland (1999): (1) assess the measurement model and (2) test the structural model. We used SmartPLS 2.0 to conduct the PLS analysis (Ringle, Wende, & Will, 2005).

Measurement Model

We assess the adequacy of hierarchical component model by examining the construct validity of the first-order factors and the second-order constructs. All first-order constructs in the model represent multi-item measures with reflective indicators. In accordance with PLS guidelines (Barclay et al., 1995; Chin, 1998; Hulland, 1999), we assess construct validity by examining individual item reliability, internal consistency, and discriminant validity before we conclude sufficient psychometric properties exist.[33]

We assess individual item reliability by examining the loadings of the measures on their respective first-order constructs (Hulland, 1999). Loadings above .707 are desired to accept the indicators, because they indicate more shared variance between the construct and its measures than error variance (Barclay et al., 1995). Because loadings are correlations, more than 50% of the variance in the observed variable must be due to the construct. We accept item loadings greater than .600, as some constructs were newly developed or adapted to the context of this study (Chin, 1998).

To examine the internal consistency of each first-order construct, we use the internal consistency measure developed by Fornell and Larcker (1981), which is similar to Cronbach's alpha, except that Cronbach's alpha is based on the a priori presumption that each indicator of a construct contributes equally. Fornell and Larcker (1981) argued that their measure is superior to Cronbach's alpha because it uses the loadings estimated within the causal model. The interpretation of the value obtained is similar, and we adopt the guidelines offered by Nunnally (1978), namely, that a construct achieves sufficient reliability when the measure's value is greater than .700 (Hulland, 1999).

To complete the assessment of the first-order constructs, we assess discriminant validity, which indicates the extent to which a construct differs from other constructs (Barclay et al., 1995). In a PLS analysis, one criterion for concluding adequate discriminant validity is that a construct should share more variance with its measures than it shares with other constructs in a model. Fornell and Larcker (1981) suggested using the square root of the average variance

[33] PLS terminology deviates from CVA terminology with respect to construct validity. For instance, PLS loadings are called "individual item reliability" and scale reliability is often referred to as "internal consistency."

extracted; to confirm sufficient discriminant validity, the value should be greater than the correlations between the latent constructs. Another criterion states that no indicator should load more highly on another construct than it does on the intended construct (Hulland, 1999).

The proposed hierarchical component model contains two second-order constructs: (1) structural coherence and (2) relational adaptability. Structural coherence is a second-order construct with formative first-order constructs, whereas relational adaptability represents a second-order construct with reflective first-order constructs. To assess second-order constructs, we must view the first-order constructs as indicators of the second-order construct, which means that the first-order constructs should possess sufficient psychometric properties themselves (Bollen et al., 1991; Jarvis et al., 2003).

The second-order construct structural coherence consists of eight formative first-order constructs: compensation integrativeness, compensation imbalance, shared decision-making, decision-making imbalance, total non-recoverable investments, non-recoverable investment imbalance, partner fit, and resource complementarity. Because we use formative indicators, we must be explicit about the conceptual scope of the latent variable (Diamantopoulos et al., 2001; Jarvis et al., 2003). In Section 3.1, we conceptualized structural coherence and explained its conceptual boundaries. In addition to these conceptual considerations, we use statistical tests to evaluate the formative first-order constructs (Diamantopoulos et al., 2001). To assess the psychometric properties of a second-order model, we use the weights produced by the PLS estimation (Chin et al., 1995), which can be interpreted as regression coefficients, suggesting we can examine the direction, magnitude, and significance of the regression coefficient (Chin, 1998). The nature of a formative measurement model renders an internal consistency perspective inappropriate to determine the reliability of the indicators (Bollen et al., 1991). Therefore, we adopt an alternative procedure to validate the second-order construct (Diamantopoulos et al., 2001). Previous alliance research supported the hypothesis that interdependency between parties positively influences alliance formation conditions (Pfeffer et al., 1978). Therefore, we expect that a total dependence measure (i.e., the sum of focal firm and partner firm dependency) should correlate positively with structural coherence.

The other second-order construct, relational adaptability, consists of five reflective first-order constructs indicators: relational quality, opportunistic behavior, absorption integrativeness, absorption imbalance, and learning capabilities. Because relational adaptability consists of reflective indicators, we examine individual item reliability (i.e., loadings) to assess the convergent validity. The loadings should be higher than the cut-off value of .600, because relational adaptability is a newly developed construct (Chin, 1998).

Structural Model

Hypothesis 1 represents a mediation model. To confirm mediation, Baron and Kenny (Baron et al., 1986 p. 1177) require three conditions. First, when regressing the dependent variable on an independent variable, the estimated path coefficient should be significant. Second, when

mediating variables enter the model, the direct path coefficient between independent and dependent variables should decrease in size and preferably become insignificant. Third, both path coefficients between the independent variable and the mediating variable and between the mediating variable and the dependent variable should be significant. Although Baron and Kenny's procedure was developed for use with OLS, we use it with PLS estimation, which overcomes an important critique, namely, that measurement error in the mediating variables creates parameter estimation biases (Shaver, 2005). The PLS estimation enables us to use multiple-item variables for the main constructs, including the mediation variables, which in turn reduces concerns about the impact of measurement error.

We also conduct three assessments to recognize the mediation effect: (1) R^2 change, (2) Sobel test, and (3) multicollinearity diagnostics. First, when estimating a structural model with PLS, we do not attempt to minimize residual item covariance, so there is no summary statistic to measure the overall fit of the models (Chin, 1998). Because PLS works to minimize error in all endogenous constructs, we used the R^2 values for the dependent variables and the sign and significance of path coefficients to assess the degree to which this objective was accomplished (Hulland, 1999). The R^2 should be higher than 10% to enable a meaningful interpretation (Falk & Miller, 1992). We also examine the R^2 change (Lambe et al., 2002) by comparing a baseline model that includes only control variables with a model that features structural coherence. Subsequently, we compare this second model with a third model that also integrates the relational adaptability construct. An assessment of the R^2 changes (e.g., magnitude, significance) enables us to understand the mediation effect better. Second, another critique of Baron and Kenny's (1996) procedure applies to PLS estimation (i.e., SmartPLS 2.0). The procedure conducts no statistical test of the size and magnitude of the indirect effect. To overcome this critique, Baron and Kenny (1986) recommended a Sobel test; we reanalyze the structural model with a SPSS macro especially developed to generate estimates for indirect effects (Preacher & Hayes, 2004). The Sobel mediation test estimates the effect and significance of direct and indirect relationships with a bootstrapping procedure (1000 bootstrap runs). Because the SPSS macro requires single scores as input, we use the latent scores produced by PLS. An advantage of the SPSS macro, compared with other programs that offer a Sobel test, is that it enables us to enter control variables. Third, in any type of mediation model, a correlation should exist between an independent and a mediation variable, and once both variables are included in the statistical test, multicollinearity is present. We use collinearity diagnostics to examine the impact of multicollinearity. First, we use the variance inflation factor, which should be below the cut-off value of 3 (Cohen, 1988). Second, we examine the condition index, which should be below the cut-off value of 30 (Cohen, 1988).

Additional Issues

We address five additional issues that apply to all PLS models: (1) sample size, (2) control variables, (3) estimation second-order model, (4) bootstrapping, and (5) OLS assumptions. First, PLS makes minimal demands on sample size (Chin, 1998), because it contains few assumptions about the data distribution. The minimum sample size required equals ten times

the number of indicators for the most complex formative construct or the largest number of antecedent constructs leading to an endogenous construct as predictors in an OLS regression (Barclay et al., 1995). In the proposed model, the second-order structural coherence construct is affected by eight formative first-order constructs, which suggests a minimal sample size of 80 cases. The net sample consists of 151 respondents, well beyond the cut-off value. Second, most control variables (e.g., environmental uncertainty and alliance complexity) represent dummy variables. Although PLS estimation is a latent variable technique, it can handle such manifest variables. To estimate the PLS model with manifest variables, irrespective of whether the variable was measured with a nominal or interval scale, a latent variable with one indicator should be created (Wold, 1982).

Third, to enable estimation of a hierarchical component model with PLS, we adopt the "repeated indicator approach" (Löhmoller, 1988; Wold, 1982). This "reuse" of indicators means that we load the indicators of the first-order constructs on each respective first-order construct and its associated second-order construct. This procedure enables PLS to estimate the measurement and structural model simultaneously, but the reuse of indicators has not impact on parameter estimations (Wold, 1982).

Fourth, to examine the significance of the measurement and structural model parameter estimations, we use a bootstrapping method with replacement and 1000 draws of the original sample (Chin, 1998; Hulland, 1999). To confirm sufficient psychometric properties of the parameter estimations, individual item reliability (i.e., loadings) and path coefficients should be significant ($p < .05$).

Fifth and finally, with respect to estimation of the structural model, PLS uses OLS estimation (Wold, 1982), so we consider whether the OLS assumptions are violated by assessing the univariate normality of the indicators with kurtosis and skewness statistics. In addition, we examine homoscedasticity and conduct a residual analysis for each PLS estimation by inspecting scatterplots (i.e., standardized predictors against standardized residuals) and a normal probability graphs (Cohen, 1988). In Section 8.1, we present the results.

Hypotheses 2–4

The statistical models representing Hypotheses 2–4 consist of two independent, first-order constructs with direct relationships to two dependent, first-order constructs. The relationships between the two independent variables and the two dependent variables are specified as correlates. By not hypothesizing a direct effect between the two endogenous variables, but by adding a correlate between the errors of the endogenous variables we can consider the structural model partially recursive (Kline, 1998 p. 106), which eases data analysis.. As we have argued, CVA is an appropriate technique to estimate this type of model and we use Amos 7.0, a software package with maximum likelihood estimation, to test the hypotheses (Arbuckle, 1997). To examine the results, we assess the (1) goodness-of-fit indices, (2) measurement model, and (3) structural model (Fornell et al., 1981).

Goodness-of-Fit

To assess the significance and explanatory power of the overall model, we must consider both measurement and theory (Fornell et al., 1981). Researchers have proposed a variety of goodness-of-fit measures to examine the correspondence between the actual or observed input covariance/correlation matrixes and the predicted model (Kline, 1998). If a proposed model achieves acceptable fit, regardless of the criteria applied, the test has simply confirmed that model is acceptable, not that it is absolutely correct (Hair, Anderson, Tatham, & Black, 1998). We use six goodness-of-fit measures: (1) chi-square ratio, (2) normed chi-square ratio, (3) standardized root mean residual (SRMR), (4) goodness-of-fit index (GFI), (5) normed fit index (NFI), and (6) comparative fit index (CFI).

The chi-square statistic compares the goodness of fit between the covariance matrix for the observed data and that derived from a theoretically specified model (Fornell et al., 1981). To provide a satisfactory representation of the data, the model's chi-square must be non-significant. Specifically, if the probability of obtaining a chi-square greater than the observed chi-square is less than .10, the hypothesized model is rejected (Fornell et al., 1981). If the probability is greater than the critical value, the research may conclude that the data fit the hypothesized structure. The second statistic, the normed chi-square (Joreskog, 1969), adjusts the chi-square for the degrees of freedom to assess the extent to which the theoretical model fits with the observed data. Models with a normed chi-square value of less than 2.0 or 3.0 possess acceptable goodness of fit (Carmines & McIver, 1981). For the third measure (Browne & Cudeck, 1993), a SRMR value below .050 indicates a good fit, whereas a score below .080 indicates an acceptable model fit. Finally, we report a set of three goodness-of-fit measures: GFI (Jöreskog & Sorebom, 1989), NFI (Bentler & Bonnet, 1980), and CFI (Bentler, 1990). With respect to GFI and NFI, the statistic must be higher than .900; for CFI, it should be greater than .950. Only at these levels can we conclude acceptable fit between the data and the model and proceed to interpreting the measurement and structural model.

Measurement Model

Before interpreting the structural model, we must conclude that the measurement model has a satisfactory level of psychometric properties (Fornell et al., 1981), which we do by examining the error variances, correlations, factor loadings, and standard errors (Bagozzi & Yi, 1988). Negative error variances should be absent, as should those not significantly different from 0. Correlations cannot be greater than 1 or too close to 1, factor loadings cannot be too small (<.500) or too large (>.950), and standard errors should not be too large (Bagozzi et al., 1991; Bagozzi et al., 1988). In addition, convergent validity exists if the average variance extracted (AVE) with respect to a latent variable is greater than .500 (Fornell et al., 1981). For reliability assessments using Cronbach's alpha, the reliability values should be greater than .700 (Nunnally, 1978). As we noted previously, in CVA, adequate discriminant validity requires that a construct should share more variance with its own measures than with other constructs in a model, the AVE square root is greater than the correlations between the latent constructs, and no indicator loads higher on another construct than on the intended one

(Bollen et al., 1991 Fornell and Larcker 1981). We also use a chi-square difference test to compare a baseline model with a more restricted model in which the correlation between the two constructs under examination is constrained to equal 1.0 (Jöreskog, 1971). A significantly higher chi-square in the latter indicates a non-perfect correlation, in support of discriminant validity (Bagozzi & Phillips, 1982).

Structural Model

The primary objective of a study that uses CVA is to support the specified path model, so the measurements become essentially subservient to this aim. Assessing the structural model involves examining the direction, magnitude, and significance of the path coefficients (Bagozzi, 1981; Fornell et al., 1981). As we interpret standardized paths, the parameter estimates should be significant and at least .20 (ideally greater than .30) to be considered meaningful. In addition, we examine the R^2 of the endogenous variables, which should be higher than 10% to enable meaningful interpretation (Falk et al., 1992).

Additional Issues

We must address three additional issues: (1) sample size, (2) model identification, and (3) multivariate normality. First, CVA analysis requires large samples to reduce the likelihood of instable statistical results (Fornell et al., 1981). We follow recommendations in CVA literature (see e.g., Kline, 1998) and adopt a 10:1 ratio. For each parameter in the statistical model, we need 10 subjects (i.e., cases). Second, we must identify measurement and structural model (McDonald & Ho, 2002) to make it mathematically possible to derive unique estimates of each parameter (Kline, 1998). Pragmatically, this identification means that the number of observations (i.e., variances and covariances among observed variables) is greater than the number of parameters to be estimated. With respect to the Hypotheses 2–4, this condition holds, so we can conclude that the models are identified. Third, CVA estimation assumes the data are characterized by univariate and multivariate normality (McDonald et al., 2002). We evaluate univariate normality with kurtosis and skewness statistics; the values should be less than 3.0 (Cohen, 1988). We assess multivariate normality with Mardi's coefficient (Mardia, 1970, 1975), but even if we violated the assumption of multivariate normality, the problems would be relatively minimal, because we used a maximum likelihood estimation (Byrne, 2001; West, Finch, & Curran, 1995), which results in a robust chi-square statistic, measures of model fit (i.e., CFI), and robust standard errors. These results appear in Section 9.1.

6.5 Summary

Table 6.2 presents a summary of the decisions with respect to the research design. First, we described our pretests to assess the face validity of Hypotheses 1–4, the quality of the questionnaire design, and the quality of operational definitions, as well as to determine alliance managers' willingness to participate in the research project. Second, we discussed the advantages and concerns associated with the data collection procedure. Using a twofold data collection strategy, we administered Web-based surveys to alliance managers through a benchmark and a survey. To reduce the likelihood of data contamination, we applied both a

key-informant criterion and a proxy report criterion and conducted missing value analysis. Third, we discussed the advantages and potential disadvantages of aggregate measures, and then elaborated on the precautions we took to increase the construct validity of the firm- and alliance-level constructs. Fourth, we explained why we used PLS analysis to test Hypothesis 1 but CVA to test Hypotheses 2–4. In addition, we addressed the issues typical for each structural equation modeling technique. In summary, we pose that the research design represents a balance between methodological rigor and feasibility.

Table 6.2 Research Design Decisions

	Focus	Procedure	References
Pretest	- Hypotheses 1 to 4 - Questionnaire design - Operational definitions - Feasibility	Assess face validity of preliminary models. Assess the questionnaire design's quality and face and content validity of operational definitions. Assess willingness of alliance managers to participate in research project.	Bagozzi, 1994; Dillman, 2000
Data Collection			
Informants	- Selection criteria	State objective and criteria to participate in research project: contractual alliance, multiple objectives, established no longer than 5 years ago.	Bagozzi, 1994; Dillman, 2000
	- Key informant criterion	One 7-point Likert scale items capturing informant's knowledge about alliance. If score is lower than 3, the informant is excluded	Kumar et al., 1993; Lambe et al., 2002
	- Proxy report criterion	One 7-point Likert scale item capturing frequency of contact between partners. If score is lower than 3, the informant is excluded	Menon & Varadarajan, 1995
Missing Value Analysis	- Listwise deletion - Sensitivity analysis - Imputation	Cases with more than 10% missing values are excluded. Assess nature of missing data and impute missing data with EM logarithm with external predictor (SPSS 15.0)	Lemieux & McAlister, 2005; Little & Rubin, 1987
Operational Definitions			
Firm-level constructs	- Reliability - Convergent validity - Discriminant validity	Assess Cronbach's alpha for each construct. Value should be larger than .700. Conduct exploratory factor analysis and assess components, loadings (>.600) and cross-loadings (< .400)	Bagozzi et al., 1991; Nunnally, 1978; Peter, 1981
Aggregate measures	- Summated scores - Difference scores	The summated score is the summation of the focal firm and partner firm. The difference score is the absolute difference between focal firm and partner firm. Examine reliability, convergent, and discriminant validity of components and difference score measures	Edwards, 1993; Peter, 1981; Ross et al., 1997
Hypothesis 1			
PLS	Hierarchical component model	Estimate a second-order model with SmartPLS 2.0. Significance of parameter estimations is assessed through bootstrapping procedure	Löhmoller, 1988; Ringle et al., 2005; Wold, 1982
Measurement Model	First-order constructs - Reliability - Convergent validity - Discriminant validity	Assess internal consistency. Value should be above .700. Assess item loadings on their respective first-order constructs. Values should above .707. Assess average variance extracted (AVE). The square root of the AVE should be higher than pair-wise correlations	Barclay et al., 1995; Chin, 1998; Fornell & Larcker, 1981; Hulland, 1999
	Second-order construct (formative) - Loadings (weights) - External validity	Assess construct validity of each first-order constructs. Asses collinearity among indicators, weights (i.e., regressions coefficients), and correlations with "total interdependence" and second-order factor.	Chin & Gopal, 1995; Diamantopoulos et al., 2001, Diamantopoulos, 1999; Jarvis et al., 2003
	Second-order construct (reflective) - Convergent validity	Assess construct validity of each first-order constructs. Assess loadings and reliability.	Chin, 1998
Structural Model	Structural paths	Assess regressions coefficients (standardized) on magnitude, direction and significance	Chin, 1998; Hulland, 1999
Mediation	- Baron and Kenny (1986) - R2 change - Sobel test - Multi-collinearity	Apply Baron and Kenny's (1986) procedure, complemented with an assessment of the R2 change, a Sobel test of the indirect effects, and an assessment of impact of multi-collinearity.	Preacher & Hayes, 2004; Baron & Kenny, 1986; Shaver, 2005

Table 6.2 Research Design Decisions (Continued)

	Focus	Procedure	References
Hypotheses 2–4			
CVA	Partially recursive model	Estimate measurement and structural model with AMOS 7.0 (maximum likelihood).	Arbuckle, 1997; Kline, 1998
Measurement Model	First-order constructs - Reliability - Convergent validity - Discriminant validity	Assess reliability (i.e., Cronbach's alpha) for each construct. Value should be above .700. Assess item loadings on their respective first-order constructs; values should above .700. Assess average variance extracted; square root should be higher than the correlations between the first-order constructs	Bagozzi, 1981; Fornell & Larcker, 1981
Overall Fit	Goodness-of-fit	Assess goodness-of-fit indices: chi-square, normed chi-square, SRMR, CFI, NFI, and GFI	see Kline, 1998 for an overview
Structural Model	Structural paths	Assess regression coefficients on magnitude, direction and significance. Standardized coefficients should have value above .2 and ideally above .3 to enable meaningful interpretation	Bagozzi, 1981; Fornell & Larcker, 1981; Bollen & Lennox, 1991

Before, we proceed to the empirical results pertaining to Hypothesis 1 (Chapter 8) and Hypotheses 2–4 (Chapter 9), we must conduct several tests to assess the quality of the data. In Chapter 7, we provide a detailed description of sample characteristics, as well as the results with respect to non-response analysis and common method bias. Subsequently, we also report the results of our assessment with respect to the use of difference scores.

Chapter 7 Data Analysis: Quality Assessment

Chapter 7 functions as a bridge between the preceding Chapters 2 through 6, in which we presented the hypotheses and elaborated on the research design, and Chapters 8 and 9, in which we present the results of the empirical research.[34] In this chapter, we discuss the results of four assessments that we conducted to evaluate the quality of our data. First, we examined sample descriptives and thereby concluded that our data correspond with the research scope. Second, we assessed non-response bias and common method bias, which can affect parameter estimations negatively. The results indicated limited concerns. Third, to facilitate hypotheses testing, we transformed firm-level scores into alliance-level scores. However, this procedure is not without concerns, so we evaluated its appropriateness and found no serious problems. Together, the results of these assessments suggest that we have collected a valid sample, that the data pose limited non-response bias and common method bias concerns, and that our firm- and alliance-level assessments possess the desired psychometric properties. Hence, the quality of our data is good, and we can proceed with hypotheses testing.

We organize this chapter as follows. In Section 7.1, we present a summary of sample descriptives. In Section 7.2, we provide the results of a non-response analysis, and in Section 7.3, we describe the findings of the diagnosis of common method bias. Subsequently, in Section 7.4, we present the results of the assessments pertaining to the construct validity at the firm level and the computation of aggregate measures. We end the chapter with some conclusions in Section 7.5.

7.1 Sample Descriptives

In this section, we provide a background understanding of the sample (see Table 7.1). In our sample of 151 cases, the average alliance foundation date is June 2001, which means that that an "average" alliance has been in operation for four years. Ninety-nine of the contractual alliances were formed by parties established in two different countries (66%), and 52 alliances were characterized by informants as domestic alliances (34%). With respect to functional focus, marketing and sales (107) and research and development (61) represented the most often indicated areas, whereas distribution (44), production (26), and purchasing (16) were less frequently listed. Informants used a variety of instruments to organize the alliance's compensation structure; for example, 64 respondents answered that each party retained its own revenues and profits. Informants also indicated that they used compensation instruments, such as cost sharing (53), revenue sharing (43), intellectual property sharing (40), and profit sharing (36). Royalties (29), lump-sum fees (27), transfer pricing (27), and buy-back of products (5) were less often used by partner firms as compensation instruments.

Consistent with the data collection procedure (see §6.2), two geographical areas dominated the sample. Specifically, 78 informants answered that their firm was established in the

[34] Readers interested in the results are advised to skip Chapter 7 and immediately continue reading in Chapters 8 and 9; this chapter primarily deals with necessary technicalities.

European continent (52%), 51 stated that their firm operated from North America (34%), and 22 informants mentioned other regions, such as Australia and South America (14%). With respect to industry, 43 informants indicated that their firm operated in the information, communication, and technology sector (29%); the other listed industries included services (13%), pharmaceutical and biotechnology (9%), consumer products (9%), production and manufacturing (8%), logistics, transport, and airlines (7%), telecommunications (6%), and other industries (19%). On average, an informant's firm employed 11,573 people.

Table 7.1 Sample Descriptives

Alliance	Foundation Year	2001	(average alliance)		
	International orientation	52	Domestic alliances		
		99	Cross-border alliances		
	Functional focus	107	Marketing and sales	26	Production
		61	Research and development	16	Purchasing
		44	Distribution		
	Compensation structure	64	Own revenue and profit	29	Royalties
		53	Cost sharing	27	Lump-sum fee
		43	Sharing of revenues	27	Transfer-pricing
		40	Sharing of IP	5	Buy-back of products
		36	Sharing of profits		
Firm	Firm Size of focal firm	11, 573	employees (average firm)		
	Home country of focal firm	78	Europe		
		51	US / Canada / Mexico		
		9	China / India / Australia		
		13	Other countries		
	Industry of focal firm	43	ICT	12	Production / manufacturing
		20	Services (financial / consulting)	11	Logistics / transport / airlines
		14	Pharmaceutical / bio-technology	9	Telecommunication
		13	Consumer products	29	Other industries
Informant	Job experience	5.05	years (average informant)		
	Alliance involvement	3.24	years (average informant)		
	Job Title	48	Top management team	17	Marketing / purchase
		28	Alliance manager	24	Management (general)
		17	Business development	10	Other
		11	VP alliances		

Note: *n* = 151.

We also asked informants to provide us with their job titles. The content analysis revealed that the job titles of 56 informants explicitly referred to alliances, such as alliance manager, partnership manager, or vice president–alliances. In addition, 48 respondents were part of the top management team of their firm, with job titles such as CEO, CFO, director, or managing director, and 47 reported titles related to purchasing and marketing activities or management in general. On average, informants had been employed in their current jobs for 5.05 years and involved in the alliance for an average of 3.24 years. These averages support the observation that the informants were qualified to participate in the research project (see §6.2).

Together, these descriptives support our conclusion that we have gathered a sample that corresponds with the scope of the research (see §1.5). An alliance in our sample is organized by a contract without equity involvement, is characterized by multiple objectives and the use

of various compensation instruments, and has been operational long enough to enable parties to achieve their performance objectives. In addition, firms operate from different countries and within different industries. Targeted informants are knowledgeable about their firms, have been involved in the alliance for a substantial amount of time, and occupy a top managerial or alliance-related position. However, though the sample demographics meet our requirements, we still must assess non-response bias (see §7.2) and common method bias (see §7.3) to determine the degree to which the data may be contaminated.

7.2 Non-response Bias

The presence of non-response bias affects parameter estimations negatively (i.e., hypothesis testing), as its presence suggests that within a sample, one group of informants is disproportionately represented compared with the broader population. Non-response error occurs when a proper sampling unit is not included in a sample (Dillman, 2000). For instance, this type of error might occur if informants are difficult to locate due to incorrect e-mail addresses or when informants refuse to participate in the research project. To reduce concerns about non-response error, we took ex-ante precautions with respect to the data collection and questionnaire design (see §6.2). We also present the results of two assessments we conducted to examine the degree to which the data may be subject to non-response bias.

Ex-post Diagnosis: Early and Late Respondents

Following the guidelines of Armstrong and Overton (1977), we compared early and late respondents. This extrapolation method is based on the concept that respondents who respond late are similar to non-respondents. We classified informants as late responders if they participated in the research project only after the final e-mail reminder or follow-up telephone call. We compared the two groups with respect to all individual questionnaire items. Our analysis revealed no significant differences between the two groups except for two indicators: the degree to which a partner firm "has been satisfied with the knowledge it gained through the alliance ($\bar{x}$ = 4.98 versus $\bar{x}$ = 5.42, $p < .05$) and the degree to which a partner firm "gained a strategic advantage over its competitors" ($\bar{x}$ = 4.82 versus $\bar{x}$ = 5.41, $p < .05$). Together, these findings suggested limited concerns about non-response bias.

Table 7.2 Non-response Analysis

	Early Respondents[a]		Late Respondents			Respondents[b]		Non-Respondents		
	Mean	**SD[c]**	**Mean**	**SD**	**t-value**	**Mean**	**SD**	**Mean**	**SD**	**t-value**
Alliance foundation	2001.18	5.14	2002.15	3.42	-1.331	2000.62	4.46	2000.47	5.74	-1.067
Financial performance	4.63	1.75	4.68	1.46	.007	4.49	1.69	4.85	1.20	1.425
Learning performance	4.85	1.35	4.87	1.50	-.083	4.54	1.67	4.76	1.03	.699
Strategic performance	5.41	1.15	5.28	1.32	.666	**4.01**	**1.69**	**4.88**	**1.28**	**3.596**
Years involvement	3.15	2.17	3.36	2.72	-.495	5.05	5.3	6.11	5.30	1.182
Firm size	15,355	34,782	6,878	15,483	1.853	11,573	28,101	24,490	52,164	1.373

[a] Early Respondents: n = 83; Late Respondents: n = 68.
[b] Respondents: n = 151 ; Non-respondents: n = 32.
[c] SD = standard devation

Ex-post Diagnosis: Respondents and Non-respondents

To better understand the impact of non-response bias and as a follow-up to the early versus late respondent assessment, we conducted another ex-post statistical test to evaluate the presence of non-response bias. We compared the informants in the net sample with a group of non-respondents (Miller et al., 1983) by collecting data among non-respondents through a follow-up telephone call in which we asked them about six questionnaire items. Initially, we used this opportunity to ask alliance managers to participate in the research project (see §6.2). However, if an informant declined to participate, we immediately asked him or her to provide answers to six questions; 32 alliance managers complied with our request. To increase the validity of our assessment, we captured firm, alliance, and informant characteristics by asking questions about the alliance's foundation year, the degree to which the focal firm achieved its financial, learning, and strategic objectives, firm size measured as the number of full-time employees, and the number of years the informant has been involved in the alliance. We conducted t-tests to assess whether differences between respondents and non-respondents existed (see Table 7.2). We used the net samples of 151 informants and 32 non-responding informants to conduct the analysis. The findings indicated limited concerns of non-response bias. With respect to the six questions, the null hypothesis that the means are equal could not be rejected, which suggested that respondents and non-respondents did not significantly differ. One exception pertained to strategic performance ($\bar{x}$ = 4.01 versus $\bar{x}$ = 4.88, $p < .05$), for which non-respondents reported higher levels of strategic performance than did respondents. We cannot think of any reason for this difference, so we conclude the risk of non-response bias still is limited. The two tests together point in the same direction; therefore, we concluded that no serious concerns for a non-response bias were present in the data.

7.3 Common Method Bias

Common method biases refer to variance attributable to the measurement method rather than the construct of interest (Bagozzi, Li, & Phillips, 1991). Its presence poses a problem, because it constitutes one of the main sources of measurement error. Common method biases have various sources, originating from common rater effects, item characteristics effects, item context effects, and measurement context effects (Podsakoff et al., 2003). For instance, common rater effects refer to any artifactual covariance between the predictor and the criterion variable that result because the informant providing the measure of these variables is the same. Informants may be inclined to maintain a consistent line of response or provide responses that present the person in a favorable light (i.e., social desirability bias). To address common method bias ex-ante, we followed the guidelines available in the literature for questionnaire design (Lindell & Whitney, 2001; Podsakoff et al., 2003). Furthermore, we also conducted three statistical tests to assess the presence of common method bias in our data.

We set out to design a questionnaire aiming at reducing the risk of common method bias. That is, we developed a questionnaire with psychological separation of independent and dependent variables, introductory texts, framing questions, and visual aids (Podsakoff et al., 2003). Furthermore, because miscomprehension is a primary source of biases (Podsakoff et al.,

2003), we aimed at reducing ambiguity by avoiding double-barreled questions, vague concepts, and complex syntax. Although we decided to use similar scale endpoints (1–7), we employed various scale labels, including "not important–very important," "not at all–to a large extent," and "strongly disagree–strongly agree". Consequently, the questionnaire design reduces the risk of common method bias, as it eliminates the saliency of any contextually provided retrieval cues, reduces the informant's motivation and ability to use previous answers, and makes previous responses less salient, available, or relevant.

Noting the cross-sectional nature of our research, we conduct three ex-post statistical tests to diagnose the impact of common method bias. First, we conducted *Harman's one-factor* test (Harman, 1965; Podsakoff et al., 2003), which consists of loading all observed variables into an exploratory factor analysis and examining the unrotated factor solution to determine the number of factors that are necessary to account for the variance in the variables. Common method bias exists if a single factor emerges from the factor analysis or one general factor accounts for the majority of the covariance among the measure. When we conducted the one-factor test, we found limited concerns about common method bias, as 17 components (eigenvalues > 1) emerged that explained 72.87% of the variance. Although the first component explains 20.60%, which is relatively high, its factor loadings possess positive and negative signs, indicating limited concerns for common method bias.

As Harman's one-factor test is not without concerns due to its "diagnostic" nature (Podsakoff et al., 2003), we decided to further examine common method bias, through means of covariance analysis (CVA). That is, we examined the presence of common method bias only with respect to Hypotheses 2–4 and conducted two statistical tests, which avoid the need to identify and measure the specific factor responsible for the method effects while comparing two models. With respect to the first CVA test, we compared two models. In a first model, we loaded all relevant indicators onto one latent "common method bias" factor (CMB). The second model corresponds to the a priori specified hypothesis and we loaded the indicators onto their respective latent constructs. A relatively poor goodness-of-fit index related to the first CMB model compared with the full model supports the absence of common method bias. With respect to the compensation trade-off (Hypothesis 2), the CVA produced a Chi-square of 122.014 (d.f. = 71, $p < .05$), a confirmatory fit index (CFI) of .950, and a standardized root mean residual (SRMR) of .057, with financial performance and financial performance imbalance as the dependent variables. In contrast, the CMB model with all indicators loading on one CMB factor resulted in a Chi-square of 568.178 (d.f. = 77), a CFI of .521, and a SRMR of .063, implying limited concerns for common method bias. Other results pertaining to Hypotheses 3 and 4 also suggest limited concerns, in that the CMB models consistently have lower goodness-of-fit indices than the theoretical specified models.

With respect to the second CVA test, we also examined common method bias with a procedure that controls for the effects of an unmeasured latent method factor (Podsakoff et al., 2003). In the first model, all indicators load on their respective latent constructs, whereas in

the second model, all relevant indicators also load on a latent CMB factor. If the results are not due to method effects, adding a CMB factor to an a priori specified model cannot significantly improve the fit compared with a model that contains only the main latent variables. Furthermore, the factor loadings must continue to be significant in the method and the specified model (Podsakoff et al., 2003). We conducted this test for each cooperation and competition trade-off, using the three performance dimensions. For instance, in testing Hypothesis 2 (compensation trade-off) with financial performance and financial performance imbalance as the dependent variables, the CVA produced the following statistics from the model with the CMB factor included: Chi-square of 82.692 (d.f. = 57, $p < .05$), CFI of .975, and SRMR of .056. These indices suggest some concern for common method bias, because the fit indices improve compared with the a priori model. However, the sign, magnitude, and direction of the parameter estimations did not change substantially, and all factor loadings remained significant. Therefore, the influence of common method bias appears limited. These findings are illustrative for all other models pertaining to Hypotheses 2–4.

Our assessment of the three common method bias tests indicates that though the data pose some concerns with respect to common method bias, it is not likely that such bias substantially affects the parameter estimations. The results further indicate that the informants differentiated among the variables and that the results obtained through the data analysis are indicative of the true relationships among those variables. As an important implication, we may test our models (i.e., Hypotheses 1–4) without controlling for common method bias.

7.4 Aggregate Measures

To avoid a mixture of the levels of analysis, which can create biases in the parameter estimations, we decided to formulate Hypotheses 1–4 at the alliance level. But to collect the data, we designed a questionnaire that captured information at the firm level (i.e., focal and partner firm). Consequently, to enable hypotheses testing, we must transform the firm-level scores into alliance-level scores (see §6.3). We therefore used raw data to compute the summated scores and absolute difference scores, but the use of aggregate measures is not without concerns. Researchers have raised various questions about the construct validity of difference scores (Edwards, 2001a; Peter et al., 1993). Extant literature has demanded that before using difference scores, researchers must examine the construct validity of both the firm-level constructs (i.e., components) and the difference scores (i.e., aggregate measure); drawing on these requirements, we developed a procedure to assess the appropriateness of using difference scores (see §6.3).

Construct Validity: Firm-level Constructs

To assess the construct validity of the firm-level constructs, we distinguished between independent and dependent variables. First, we used exploratory factor analysis (EFA) with Oblimin rotation to examine the convergent and discriminant validity of four firm-level variables: compensation, decision-making, non-recoverable investments, and absorption (see Table 7.3). Second, we used confirmatory factor analysis (CFA, AMOS 7.0) to assess the

convergent and discriminant validity of the three dependent variables: financial, learning, and strategic performance. We examined the reliability of each independent and dependent variable with Cronbach's alpha.

Independent Variables

With respect to the focal firm, the compensation variable (i.e., satisfaction with anticipated benefits) was captured with five indicators that provided factor loadings of -.862, -.891, -.867, -.779, and -.730 (see Table 7.3). Preliminary analysis indicated the need to eliminate two items whose loadings fell below the cut-off value of .700 and that cross-loaded with other components. Decision-making (i.e., obtained decision-making rights) was measured with two items with loadings of .951 and .739, indicating acceptable convergent validity. We captured the non-recoverable investments variable (i.e., commitment to make tailored expenditures) with three indicators. The factor loadings were sufficient, with values of .818, .858, and .889. Absorption (i.e., ability to assess and acquire knowledge) was measured with six indicators, but the preliminary factor analysis indicated that one item loaded poorly. Consequently, we removed this item from further analysis. The remaining five items indicated loadings of .794, .855, .853, .836, and .796, in support of good convergent validity.

With respect to discriminant validity, we examined the eigenvalue and the percentage of variance explained. We extracted four components with an eigenvalue above the critical value of 1 (after rotation). The eigenvalues ranged from 2.42 to 4.62, and the explained variance ranged from 5.58% to 36.24%. Finally, we used Cronbach's alpha to assess the variables' internal consistency; the results indicated acceptable reliabilities with values of .885 (compensation), .727 (decision-making), .842 (non-recoverable investments), and .890 (absorption). Therefore, the four extracted components of the focal firm variables possessed the desired convergent and discriminant validity and high reliabilities.

With respect to the partner firm variables, we found a similar data structure (Table 7.3). The variable compensation was initially measured by seven indicators, but we removed two items with loadings below the cut-off value of .700. The remaining five indicators attained desirable loadings of .866, .895, .835, .864, and .742. The two items that captured decision-making possess loadings of .861 and .868, indicating good convergent validity. We captured the non-recoverable investments variable with three indicators, and the factor loadings were good (.876, .840, and .810). Absorption was operationalized with six indicators, but because the analysis revealed that one item loaded poorly, we removed it from further analysis. The remaining five items achieved loadings of .718, .814, .755, .765, and .761, which suggest good convergent validity.

We examined discriminant validity with the eigenvalue statistic and the percentage of variance explained. Four components were extracted with eigenvalues above the cut-off value of 1 (after rotation), ranging from 2.67 to 4.74. The explained variance ranged from 7.18% to 40.12%, which suggests discriminant validity. Finally, reliability was acceptable with values

of .901 (compensation), .782 (decision-making), .839 (non-recoverable investments), and .850 (absorption). In summary, the partner firm variables possessed good convergent and discriminant validity, and the desired reliability.

Table 7.3 Exploratory Factor Analysis: Independent Variables, Firm-level

		Focal Firm		Partner Firm	
Firm-level Constructs	**Items (short version)**	**Loadings (EV / % of Var.)**	*α*	**Loadings (EV / % of Var.)**	*α*
Compensation	C_1 Satisfied with total contribution	-.862	.885	.866	.901
	C_2 Satisfied with obtained benefits	-.891		.895	
	C_3 Satisfaction with resource valuation	-.867		.835	
	C_4 Pleased with gains	-.779		.864	
	C_5 Recover investments	-.730		.742	
		(4.624 / 13.23%)		(4.744 / 40.12%)	
	(C_6 Sum of benefits above expectations)				
	(C_7 Total expenditures below expectations)				
Decision-making	DM_1 Control overall decision-making	.954	.727	.861	.782
	DM_2 Substantial influence on decision-making	.739		.868	
		(2.419 / 5.58%)		(2.663 / 7.18%)	
Non-recoverable investments	TI_1 Invest great deal in this specific alliance	.818	.842	.876	.839
	TI_2 Make investments tailored to alliance	.858		.840	
	TI_3 Make substantial unique investments	.889		.810	
		(3.047 / 17.75%)		(3.468 / 11.87%)	
Absorption	A_1 Decide on usefulness of knowledge	.794	.890	.718	.850
	A_2 Saw connections between knowledge	.855		.814	
	A_3 Asses valuable of knowledge	.853		.755	
	A_4 Determine quality of knowledge	.836		.765	
	A_5 Easily integrate new knowledge	.796		.761	
		(4.195 / 36.24%)		(3.952 / 13.17%)	
	(A_6 Match existing knowledge base)				

Notes: *n* = 151. Items between parentheses were not used for further data analysis. Oblimin rotation (cross-loadings < .3); EV = eigenvalue (after rotation); % of Var. = % of explained variance; *α* = Cronbach's alpha.

Dependent Variables

Consistent with the operational definition of performance (see §6.3), we used three performance dimensions to test the hypotheses: financial, learning, and strategic. We have argued that each performance dimension is conceptually distinct from the others, but we also must assess the degree to which the performance dimensions are empirically distinct before we can proceed with the computation of aggregate measures. To assess convergent and discriminant validity, we used CVA and conducted a confirmatory factor analysis (CFA) using AMOS 7.0. The advantage of CFA over EFA is that this technique enabled us to assess the relationships (at indicator level) between the performance dimensions explicitly. Finally, we used Cronbach's alpha to assess reliability. Before we present our findings, we briefly discuss the goodness-of-fit indices.

Each performance model possessed acceptable fit with the data (see Table 7.4). The normed Chi-square statistics, with the exception of model FF2 (i.e., focal firm learning), are above the critical value of 3.0 (Carmines et al., 1981), and all other goodness-of-fit indices suggest good fit between the measurement models and the data. For instance, the goodness-of-fit index (GFI) and normed fit index (NFI) values ranged from .918 (model PF3) to .984 (model FF2), above the cut-off value of .900 (Bentler et al., 1980). The CFI statistics were higher than the critical value of .950, with one exception (i.e., model PF3; CFI = .922). Furthermore, the

SRMR values were below the cut-off value of .500 (Browne et al., 1993), again with the exception of model PF3 (SRMR = .052). Despite minor concerns with respect to model PF3, we may conclude that the data fit with the specified models. Hence, we can proceed with an examination of the measurement models.

We captured financial performance with four indicators, and the findings indicated that standardized loadings ranged between .919 and .601 for the focal firm and between .965 and .646 for the partner firm. Learning performance and strategic performance were measured with four indicators, and the loadings ranged from .553 to .845 (focal) and from .486 to 877 (partner firm). All indicators loaded significantly on their intended latent constructs (z-values > 5.449, $p < .05$). With the exception of one indicator (i.e., AP_3 learning objectives), the findings indicated good convergent validity (Bagozzi et al., 1988). We decided to retain AP_3 because its reliability was good, and it enabled us to maintain consistency. Reliability of the three performance dimensions was high, with Cronbach's alphas of .853 (financial, focal firm) .864 (financial, partner firm), .827 (learning, focal firm), .768 (learning, partner firm), .811 (strategic, focal firm), and .879 (strategic, partner firm). We therefore concluded that the three performance dimensions have convergent validity and reliability.

Table 7.4 Confirmatory Factor Analysis: Dependent Variables, Firm-level

		Focal Firm				Partner Firm			
	Items (short version)	**Loadings**			*α*	**Loadings**			*α*
		Model FF1				**Model PF1**			
			s.e.	***z*-value**			**s.e.**	***z*-value**	
Financial	AP_1 Profitable	.919			.853	.965			.864
	AP_2 Financial Benefits	.811	.077	11.815		.777	.065	11.909	
	AP_3 Financial objectives	.744	.447	10.542		.735	.462	10.945	
	AP_4 Financial goals	.601	.659	7.935		.646	.573	9.090	
	χ^2 (d.f.)	9.100	(2, p < 05)			14.801	(2, p < .05)		
	Normed χ^2	4.550				7.400			
	GFI	.970				.953			
	NFI	.969				.954			
	CFI	.975				.959			
	SRMR	.039				.048			
		Model FF2				**Model PF1**			
Learning	AP_1 Knowledge learned	.842			.827	.803			.768
	AP_2 Learning benefits	.830	.122	10.339		.819	.146	8.007	
	AP_3 Learning objectives	.553	.846	6.699		.486	.913	5.449	
	AP_4 Learning goals	.733	.991	9.283		.576	1.068	6.472	
	χ^2 (d.f.)	5.405	(2, p > .05)			6.245	(2, p < .05)		
	Normed χ^2	2.702				3.123			
	GFI	.984				.980			
	NFI	.977				.963			
	CFI	.985				.974			
	SRMR	.027				.042			
		Model FF3				**Model PF1**			
Strategic	AP_1 Strategic advantage	.845			.842	.777			.879
	AP_2 Strategic benefits	.732	.104	8.447		.877	.098	11.030	
	AP_3 Strategic objectives	.649	.730	7.574		.712	.735	8.853	
	AP_4 Strategic goals	.651	.866	7.592		.836	.846	10.598	
	χ^2 (d.f.)	9.344	(2, p < .05)			27.965	(2, p < .05)		
	Normed χ^2	4.672				13.983			
	GFI	.970				.919			
	NFI	.954				.918			
	CFI	.963				.922			
	SRMR	.041				.052			

Notes: n = 151. FF = focal firm; PF = partner firm; s.e. = standard error; α = Cronbach's alpha.

To examine discriminant validity, we compared a baseline model without constraints with a model in which we constrained the covariance between two constructs (i.e., two performance dimensions) to a value of 1.0 (see §6.4). The findings indicated discriminant validity between the performance dimensions, because the baseline models fit better with the data than did the constrained models (i.e., Chi-square difference test). For instance, with respect to focal firm performance, the basic financial knowledge model ($\Delta \chi^2 = 12.226$, $p < .05$) and basic financial strategic model ($\Delta \chi^2 = 41.792$, $p < .05$) possessed significantly better fit than did the parallel constrained model. The knowledge strategic model also possessed better fit, though only at a 10% probability level ($\Delta \chi^2 = 2.783$, $p < .10$). With respect to the partner firm, the basic financial knowledge model ($\Delta \chi^2 = 18.767$, $p < .05$) and the basic financial strategic model ($\Delta \chi^2 = 82.009$, $p < .05$) possessed significantly better fit than did the constrained model, though the knowledge strategic model did not ($\Delta \chi^2 = 0.33$, $p > .05$). Together, these findings suggest that respondents discriminated financial performance from learning and strategic performance, but some concerns may exist with respect to the discriminant validity between learning and strategic performance. Despite these minor concerns, we contend that the firm-level variables possess sufficient psychometric properties to proceed with the computation of aggregate measures. In addition, the risk of bias in the parameter estimations declined, because we test the hypotheses with only one performance dimension at a time.

Construct Validity: Difference Score Measures

The results of the EFA and CFA indicated that the variables, captured at the firm-level, possess the desired psychometric properties. Consequently, we can proceed with the computation of the aggregate scores, which we computed as described in the procedures in Section 6.3. Briefly, we first calculated an aggregated score using the sum of the focal and partner firm scores, then computed an absolute difference score by taking the absolute value of the sum of the difference between the valid focal firm and partner firm indicators. To overcome concerns pertaining to the use of difference scores (Edwards, 2001a), such as discriminant validity and reliability, we conducted three assessments to examine: (1) correlations between the firm-level variables, (2) correlations between the firm-level variables and the difference score measures, and (3) difference score reliability (Peter et al., 1993).

Consistent with the operational definitions presented in Section 6.3, we used the firm-level variables of compensation, decision-making, non-recoverable investments, and absorption to compute four difference score measures: compensation imbalance, decision-making imbalance, non-recoverable investment imbalance, and absorption imbalance. The pairwise correlations between the firm-level variables were moderate (see Table 7.5). Compensation–firm and compensation–partner ($r = .560$, $p < .05$), decision-making–firm and decision-making–partner ($r = .560$, $p < .05$), non-recoverable investments–firm and non-recoverable investments–partner ($r = .630$, $p < .05$), and absorption–firm and absorption–partner ($r = .541$, $p < .05$) were all positively and significantly associated. These moderate correlations suggest discriminant validity between the components, because correlations greater than .700 indicate poor discriminant validity (Ping, 2004).

Table 7.5 Correlations and Difference Score Reliability: Independent Measures

	Construct	1	2	3	4	5	6	7	8	9	10	11	12
1	Compensation – firm												
2	Compensation – partner	.560***											
3	**Difference score**	-.343***	-.282***	**.758**									
4	Investments – firm	.198*	.468***	-.022									
5	Investments – partner	.236**	.409***	-.199*	.630***								
6	**Difference score**	-.138	-.082	.319***	.107	-.218*	**.569**						
7	Decision-making – firm	.224**	.370***	-.001	.553***	.471***	.019						
8	Decision-making – partner	.145	.335***	-.131	.482***	.455***	-.041	.560***					
9	**Difference score**	-.210*	-.050	.249*	-.065	-.274**	.343***	-.031	.101	**.381**			
10	Absorption – firm	.431***	.365***	-.240**	.191*	.217**	-.035	.154	.121	-.139			
11	Absorption – partner	.211**	.422***	-.083	.319***	.367***	-.014	.276**	.288***	-.054	.541***		
12	**Difference score**	-.305***	-.089	.331***	-.047	-.191*	.195*	-.117	-.103	.250**	-.217**	-.314***	**.726**
	Mean	4.943	5.119	.654	4.661	4.233	.932	4.467	4.620	.801	5.012	4.906	.850
	Standard deviation	1.096	1.041	.859	1.445	1.482	1.026	1.452	1.452	1.162	1.251	1.087	.859

Notes: n = 151. Computation based on raw data with valid items. The diagonal shows the difference score reliability.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Table 7.5 also reports the correlations between the firm-level variables and their respective difference score measures. The correlations ranged from -.343 (i.e., compensation–firm and compensation imbalance) to .107 (i.e., non-recoverable investment–firm and non-recoverable investment imbalance), which supports discriminant validity. In Table 7.5, we report the difference score reliabilities on the diagonal of the correlation matrix.[35] These reliabilities with respect to compensation, absorption, and non-recoverable investments were moderate (i.e., .758, .726, and .569), whereas the difference score reliability with respect to decision-making imbalance was .381, well below the critical value of .700 (Nunnally, 1978). One explanation for this low reliability could note that we captured decision-making with only two items, which renders an internal consistency perspective inappropriate (Peterson, 1994). We decided to eliminate decision-making imbalance from further hypotheses testing.

Table 7.6 Correlations and Difference Score Reliability: Dependent Measures

	Construct	1	2	3	4	5	6	7	8	9
1	Financial – firm									
2	Financial – partner	.608***								
3	Financial performance imbalance	.146	-.050	**.644**						
4	Learning – firm	.357***	.235**	-.040						
5	Learning – partner	.236**	.366***	-.005	.538***					
6	Learning performance imbalance	.133	.107	.298***	-.024	.016	**.572**			
7	Strategic – firm	.517***	.286***	.139	.572***	.437***	.119			
8	Strategic – partner	.373***	.592***	.046	.444***	.643***	.012	.556***		
9	Strategic performance imbalance	-.041	-.180*	.539***	-.188*	-.225**	.470***	.010	-.264**	**.662**
	Mean	14.825	14.459	3.872	14.215	13.875	4.404	17.896	16.740	4.181
	Standard deviation	5.446	6.076	3.802	5.509	4.908	3.479	5.202	5.817	3.823

Notes: n = 151. Computation based on raw data with valid items. The diagonal shows the difference score reliability.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

[35] See Section 6.3 for the procedure to calculate the difference score reliability.

In Table 7.6, we report pairwise correlations between firm-level components and the computed difference score measures. Correlations between the firm-level components of less than .700 indicate discriminant validity (Ping, 2004). All correlations were below this cut-off value, with values of .608 (financial), .538 (learning), and .556 (strategic). In addition, the correlations between the firm-level components and the difference score measures were low, ranging from -.264 to .146, which suggests discriminant validity. Finally, the difference score reliabilities were moderate: .644 (financial performance imbalance), .572 (learning performance imbalance), and .662 (strategic performance imbalance). Hence, we conclude that the psychometric properties are sufficient to proceed with the data analysis.

7.5 Conclusions

In this chapter, we assessed the quality of the sample and prepared the data for analysis. We examined sample descriptives, including alliance characteristics (e.g., alliance objective, compensation structure), firm characteristics (e.g., country, industry), and informant characteristics (i.e., job title, working experience), and concluded that the data fit with the scope of the research. In addition, we conducted a non-response analysis and a common method bias analysis. The results of multiple statistical tests indicated limited concerns for such biases and errors. Finally, we prepared the data for analysis by examining the construct validity of firm-level variables and assessing the appropriateness of using difference scores. In general, the results indicated acceptable psychometric properties, with some minor issues. We removed decision-making imbalance from further analysis, because it possessed poor difference score reliability. In summary, these results suggest it is appropriate to proceed with the data analysis. In Chapter 8, we present the empirical findings with respect to Hypothesis 1, and in Chapter 9, we present the empirical findings with respect to Hypotheses 2–4.

Chapter 8 Structure, Process, and Alliance Performance Empirical Findings

In this chapter, we present the empirical results with respect to Hypothesis 1, which states that the relationship between structural coherence and alliance performance is partially mediated by relational adaptability. Structural coherence refers to the degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards, whereas relational adaptability pertains to parties' willingness and ability to make modifications to an ongoing relationship. Drawing on the structure and process perspectives, we have argued that incorporating structural coherence and relational adaptability into one theoretical model increases its explanatory power with respect to alliance performance, because the alignment of structure and process explanations more completely describes the complexity of alliances than either the structure or the process perspective alone. We used partial least squares (PLS) analysis to test Hypothesis 1. Within our sample of contractual alliances, we found a direct relationship between structural coherence and financial performance. In addition, with respect to learning performance, the results indicate an indirect relationship mediated by relational adaptability; with respect to strategic performance, our results provide support for a partially mediated relationship. In other words, theoretical explanations are constrained to specific performance dimensions, providing strong support for a reconciliation of the structure and process perspectives.

We organize this chapter as follows. In Section 8.1, we elaborate on model specification issues, such as control variables and outliers. In Section 8.2, we present the results of the PLS analysis of Hypothesis 1. We end the chapter in Section 8.3 with conclusions.

8.1 Model Specification

The statistical model we used to test Hypothesis 1 is a hierarchical component model (Löhmoller, 1988; Wold, 1982) with a combination of one formative (i.e., structural coherence) and one reflective (i.e., relational adaptability) second-order construct. Each second-order factor represents a superordinate construct that connects first-order predictors with other constructs in the model (Edwards, 2001b; Jarvis et al., 2003). We used SmartPLS 2.0 to conduct the PLS analysis (Ringle et al., 2005), because PLS is an appropriate technique to test this type of model (see §6.4). Furthermore, consistent with the operational definition of alliance performance (see §6.3), we estimated three models using financial, learning, and strategic performance as the dependent variables. That is, we tested three separate measurement and structural models; the cross-sectional nature of the empirical research inhibits more complex models that specify relationships among the alliance performance dimensions.[36] Before we present the empirical findings, we elaborate on three model specification issues that apply to all three statistical models: (1) control variables, (2) ordinary least squares assumptions, and (3) outliers.

[36] In Section 10.2, we elaborate on the relationships among financial, learning, and strategic performance.

The objective of the research is to build a parsimonious theoretical model while controlling for exogenous and endogenous factors to the alliance. However, due to the moderate sample size (i.e., 151), it was inappropriate to incorporate all control variables simultaneously into the PLS analysis (see §6.3). To deal with this restriction, we used three criteria to select control variables. First, based on preliminary PLS analysis, we decided to include only controls that revealed a significant relationship with relational adaptability or one of the performance dimensions. Results indicate that the controls associated with competitors, international status, alliance complexity, and the fulfillment of contractual obligations have significant relationships ($p < .05$). Second, when two variables are highly correlated, they can be considered substitutes. We found five pairwise correlations with values higher than .200: environmental uncertainty and alliance duration ($r = .215$, $p < .05$), past relationships between partner firms and similar experience *(*$r = .224$, $p < .05$), partner firms as competitors and operating in a similar industry ($r = .244$, $p < .05$), partner firms operating in the ICT sector and an international alliance ($r = .209$, $p < .05$), and partner firms operating in the ICT sector and operating in a similar industry ($r = .266$, $p, < .05$). Nonetheless, due to these moderate associations, we concluded that substitution is not an appropriate alternative. Finally, from a theoretical perspective, the controls should together capture environmental, interfirm, and alliance characteristics. Therefore, we decided to include environmental uncertainty, partner firms' prior experience with alliances, and alliance duration as additional control variables.[37]

To estimate the parameter coefficient with respect to the structural model, PLS estimation uses ordinary least squares (OLS) regression (Wold, 1982). With respect to each model, we examined whether OLS assumptions were violated by considering the univariate normality of the indicators. The results indicate no kurtosis or skewness concerns. We also examined homoscedasticity, and the results indicate limited concerns, in that the largest to smallest conditional variance is smaller than 10 (Cohen, 1988). Finally, we conducted a residual analysis and inspected a scatterplot (i.e., standardized predictors vs. standardized residuals) and a normal probability graph. The results indicate no serious concerns with respect to each model. Hence, it is appropriate to interpret the result produced by PLS analysis.

Due to the moderate sample size, outliers may have a substantial impact on parameter estimation (Cohen, 1988) and should be discarded. To examine the possible presence of outliers, we inspected scatter diagrams of the relationships among the main constructs. Inspection of the scatterplots indicates that four cases qualified as outliers, an indication supported by an assessment of Cook's distance, because the four cases achieved scores between .400 and .500. Although Cook's distance is considered unusually large if it exceeds 1.0 (Cohen, 1988), we decided to eliminate these four cases for two reasons. First, inspection of the Cook's distance measure revealed that they had exceptional large scores compared with the other cases' scores. Second, additional PLS analysis showed that these cases substantially affected parameter estimations. Hence, we reduced the net sample from 151 to 147.

[37] We excluded the following controls: changes in partner's strategy, firm size similarity, industry similarity, previous relationships, focal firms' industry, focal firm's country, and scope of the compensation structure.

8.2 Hypothesis 1: The Mediation Hypothesis

Hypothesis 1 states that the relationship between structural coherence and alliance performance is mediated by relational adaptability. We have argued that to achieve superior alliance performance, partner firms must design an alliance structure that consists of mutually supportive structural safeguards. Yet as the alliance unfolds, partner firms must invest time and resources to build relational adaptability, which fosters their willingness and ability to make modifications to an ongoing relationship. Our multidimensional approach to alliance performance provided us with an opportunity to test Hypothesis 1 with different dependent variables: financial, learning, and strategic performance. In contrast to ex-ante expectations, the empirical findings indicate that structural coherence and relational adaptability differentially relate to the three performance dimensions. More specifically, the relationship between structural coherence and alliance performance is not (i.e., financial), is fully (i.e., learning), or is partially (i.e., strategic) mediated by relational adaptability. Next, we present our results, consistent with the procedure described in Section 6.4: (1) measurement model, (2) structural model, and (3) additional analysis to assess mediation effect.

Measurement Models

An examination of a PLS measurement model is required to assess the psychometric properties of the constructs (Barclay et al., 1995; Chin, 1998; Hulland, 1999). Therefore, we evaluated the construct validity by examining individual item reliability, internal consistency, and discriminant validity. An examination of the three measurement models indicated that the findings across the models are similar. Therefore, instead of discussing each measurement model separately, we present the results together in three tables (Tables 8.1–8.3) and only discuss our findings with respect to financial performance. Consistent with the procedure described in Section 6.4, we distinguish between first-order and second-order constructs.

Measurement Model: First-Order Constructs

In Table 8.1, we report the results with respect to the seven first-order constructs forming structural coherence.[38] We measured compensation integrativeness, or the degree to which firms formalized a compensation structure that maximizes the value creation potential of an alliance, with five indicators. The PLS analysis produced significant and high loadings; the smallest loading of .744 is well beyond the critical value of .707 (Chin, 1998). Compensation imbalance, or the asymmetry between each party's anticipated benefits as formalized in the alliance contract, was operationalized with five items, and loadings range from .761 to .836, which indicates acceptable convergent validity. The construct of shared decision-making, or both parties' formalized formal authority over alliance activities, was measured by two indicators, and again, the loadings are sufficiently high (i.e., .898 and .896). We captured total non-recoverable investments, or both parties' formalized commitment to make specialized, tailored, and difficult to redeploy expenditures, with three indicators. The loadings are above

[38] We operationalized structural coherence with eight formative first-order constructs (see §6.3). However, decision-making imbalance possessed poor difference score reliability and was therefore excluded (see §7.4).

.863, which indicates good convergent validity. Non-recoverable investment imbalance, or the asymmetry between parties' commitment to make tailored expenditures, was captured with three indicators with significant loadings above .777. Partner fit, the extent to which interfirm characteristics are compatible, and resource complementarity, the extent to which the joint use of distinct sets of resources yields a higher total return than the sum of returns earned if each set were used independently, both possesses good convergent validity. Factor loadings are significant and above .721. One item pertaining to partner fit was eliminated, as it loaded poorly. The first-order constructs' reliabilities are acceptable, with composite reliabilities ranging from .927 to .845 and Cronbach's alphas ranging from .900 to 724, well beyond the cut-off value of .700 (Nunnally, 1978).

Table 8.1 PLS Measurement Model: Structural Coherence

	Financial Performance			Learning Performance			Strategic Performance				
	β	**L.**	***t***	***β***	**L.**	***t***	***β***	**L.**	***t***	**CR.**	***α***
Structural Coherence											
Compensation Integrativeness	.478		14.481	.450		13.964	.470		14.352	.927	.900
CI_1: (C_{1f} + C_{1p})		.743	13.149		.742	13.068		.742	12.770		
CI_2: (C_{2f} + C_{2p})		.888	41.419		.889	40.745		.889	43.779		
CI_3: (C_{3f} + C_{3p})		.898	43.636		.898	45.304		.898	47.037		
CI_4: (C_{4f} + C_{4p})		.855	27.242		.856	27.802		.855	27.875		
CI_5: (C_{5f} + C_{5p})		.840	29.164		.840	29.140		.841	29.786		
Compensation Imbalance	-.212		4.555	-.222		4.485	-.210		4.564	.887	.840
CI_1: √(abs(C_{1f} - C_{1p}))		.777	16.730		.777	16.826.		.776	17.985		
CI_2: √(abs(C_{2f} - C_{2p}))		.761	13.265		.761	13.759		.761	13.374		
CI_3: √(abs(C_{3f} - C_{3p}))		.836	20.426		.836	21.672		.836	22.458		
CI_4: √(abs(C_{4f} - C_{4p}))		.768	11.780		.769	13.186		.768	12.484		
CI_5: √(abs(C_{5f} – C_{5p}))		.761	14.363		.761	15.839		.761	14.795		
Shared Decision-making	.124		6.730	.131		6.213	.126		6.367	.892	.757
SDM_1: (DM_{1f} + DM_{1p})		.898	34.974		.898	35.131		.898	37.767		
SDM_2: (DM_{2f} + DM_{2p})		.896	25.778		.896	24.482		.896	26.146		
Total N. Investments	.222		9.819	.228		9.073	.224		9.624	.910	.852
TNI_1: (NI_{1f} + NI_{1p})		.867	25.694		.867	26.369		.867	27.052		
TNI_2: (NI_{2f} + NI_{2p})		.863	24.880		.862	25.746		.863	24.201		
TNI_3: (NI_{3f} + NI_{3p})		.905	53.878		.906	50.983		.905	50.560		
N. Investment Imbalance	-.066		1.895	-.056		1.641	-.056		1.703	.845	.724
NII_1: √(abs(NI_{1f} – NI_{1p}))		.813	4.207		.811	4.013		.814	4.200		
NII_2: √(abs(NI_{2f} – NI_{2p}))		.777	3.567		.779	3.692		.779	3.535		
NII_3: √(abs(NI_{3f} – NI_{3p}))		.818	3.893		.818	4.182		.814	3.942		
Partner Fit	.183		6.554	.197		7.292	.185		6.407	.880	.795
PF_1		.895	23.505		.895	36.698		.895	25.967		
PF_2		.903	25.310		.904	39.909		.905	25.084		
PF_3		.721	10.710		.718	11.290		.720	11.501		
Resource Complementarity	.251		7.682	.261		7.464	.261		8.375	.888	.831
RC_1		.789	12.777		.789	13.064		.789	13.287		
RC_2		.754	15.135		.755	14.890		.756	16.156		
RC_3		.856	22.852		.857	21.088		.856	22.877		
RC_4		.856	26.935		.856	28.817		.856	25.874		

Notes: n = 147. Structural coherence is a formative second-order construct, so β is interpreted as a regression coefficient. B = standardized regression coefficient; L. = loading (individual item reliability); t = t-value (bootstrapping 1000 samples); CR. = composite reliability; α = Cronbach's alpha. The procedure used to compute aggregate measures is described in Section 6.3.

In Table 8.2, we present the results of the PLS measurement models with respect to relational adaptability. We measured absorption integrativeness, or the combination of both parties' abilities to assess and acquire knowledge, with five indicators, which all possess desirable factor loadings (i.e., .858, .877, .881, .686, and .814). Although one loading is below the cut-off value of .707, it is acceptable with PLS estimation because the other four loadings are well above the critical value (Chin, 1998). The variable absorption imbalance, or the asymmetry between each party's ability to assess and acquire knowledge, was measured with five indicators. The individual item reliabilities are sufficient, ranging from .661 to .740. Two loadings are below the cut-off value of .707, but again, these values are acceptable because the other three loadings are sufficiently high. The variable relational quality, which indicates the extent to which partner firms feel comfortable, are willing to rely on trust in dealing with another, and are committed to the relationship, possesses acceptable convergent validity, and all three items have loadings above .828. We captured learning capabilities, or the extent to which the partner firms have created a regular and repeatable pattern of routines that support knowledge and information transfer, with three indicators whose high loadings are .818, .906, and .864. The reliability of the latent variables is acceptable, with composite reliability scores ranging from .915 to .898 and Cronbach's alphas ranging from .882 to .748.

Table 8.2 PLS Measurement Model: Relational Adaptability

	Financial Performance			Learning Performance			Strategic Performance				
	β	**L.**	***t***	***β***	**L.**	***t***	***β***	**L.**	***t***	**CR.**	***α***
Relational Adaptability											
Absorption Effectiveness	.836		27.500	.842		29.581	.840		28.314	.915	.882
AE_1: (A_{1f} + $A_{1\,p}$)		.858	34.846		.858	35.574		.858	34.354		
AE_2: (A_{2f} + $A_{2\,p}$)		.877	36.996		.877	37.655		.877	38.277		
AE_3: (A_{3f} + $A_{3\,p}$)		.881	43.591		.881	40.310		.881	41.266		
AE_4: (A_{4f} + $A_{4\,p}$)		.686	8.883		.687	9.165		.686	8.663		
AE_5: (A_{5f} + $A_{5\,p}$)		.814	23.238		.814	22.998		.814	22.954		
	-.616		8.525	-.609		8.216	-.610		7.799	.830	.748
Absorption Imbalance		.740	17.345		.741	16.029		.740	16.152		
AI_1: $\sqrt{(abs(A_{1\,firm} - A_{1p}))}$		.661	8.480		.660	8.324		.661	8.083		
AI_2: $\sqrt{(abs(A_{2\,firm} - A_{2p}))}$		.722	12.618		.721	12.326		.722	11.660		
AI_3: $\sqrt{(abs(A_{3\,firm} - A_{3p}))}$		.676	8.833		.674	8.372		.676	8.571		
AI_4: $\sqrt{(abs(A_{4\,firm} - A_{4p}))}$		.712	12.195		.713	12.566		.712	11.685		
Relational Quality	.674		11.903	.673		11.638	.674		11.662	.907	.846
RQ_1		.912	50.131		.912	47.452		.912	49.297		
RQ_2		.880	27.298		.880	27.783		.880	29.261		
RQ_3		.828	18.100		.828	16.268		.828	17.063		
Learning Capability	.693		14.114	.692		13.785	.692		13.824	.898	.828
LC_1		.818	23.220		.819	22.452		.818	22.572		
LC_2		.906	40.839		.906	39.493		.906	38.419		
LC_3		.864	34.389		.864	32.881		.864	31.680		

Notes: n = 147. Relational adaptability is a reflective second-order construct, so β is interpreted as a factor loading. β = standardized regression coefficient; L. = loading (individual item reliability); t = t-value (bootstrapping 1000 samples); CR. = composite reliability; α = Cronbach's alpha. The procedure used to compute aggregate measures is described in Section 6.3.

The dependent variable, financial performance, reveals good psychometric properties (see Table 8.3). The variable was measured by four indicators that possess loadings of .915, .840, .822, and .738. Learning performance was also captured with four indicators with acceptable loadings of .885, .846, .699, and .789. Strategic performance possesses convergent validity; its loadings are .847, .807, .750, and .828. In addition, the reliability of the three performance dimensions is high, with composite reliabilities of .899 (financial performance), .876 (learning performance), and .883 (strategic performance). In summary, each performance dimension possesses sufficient convergent validity and reliability.

Table 8.3 PLS Measurement Model: Alliance Performance

	Financial Performance				Learning Performance				Strategic Performance			
	L.	*t*	CR.	*α*	L.	*t*	CR.	*α*	L.	*t*	CR.	*α*
Alliance Performance			.899	.851			.876	.801			.883	.823
AP_1	.915	54.546			.885	37.601			.847	35.471		
AP_2	.840	22.789			.846	34.809			.807	23.780		
AP_3	.822	25.181			.699	13.508			.750	13.912		
AP_4	.738	12.485			.789	19.315			.828	27.171		

Notes: n =147; L. = loading (i.e., individual item reliability); t = t-value (bootstrapping 1000 samples); CR. = composite reliability; α = Cronbach's alpha.

We assessed the discriminant validity by comparing the square root of the average variance extracted (AVE) with the correlations between the first-order constructs (see §6.4). Discriminant validity exists, because the AVE is higher than any of the first-order correlations (Fornell et al., 1981). With respect to the three models, the results suggest acceptable discriminant validity (see Table 8.4). The highest correlation between the independent variables and between the independent variables and financial, learning, or strategic performance occurs between shared decision-making and total non-recoverable investments (r = .626, p < .05). In contrast, the AVE scores range from .703 (absorption imbalance) to .897 (shared decision-making), higher than the any of the correlations between the first-order constructs, including financial, learning, and strategic performance. In summary, in addition to convergent validity and reliability, the first-order constructs possess discriminant validity.

The pairwise correlations between the three performance dimensions are moderate to high (see Table 8.4). Financial performance and learning performance correlate moderately (r = .392, p < .05), and the correlations between financial performance and strategic performance (r = .520, p < .05) and learning performance and strategic performance (r = .720, p < .05) are relatively high. These findings suggest concerns for discriminant validity. To overcome the problems associated with a lack of discriminant validity (e.g., estimation biases), we decided to estimate separate models (see §8.1). This procedure is appropriate, in that each performance dimension possesses acceptable convergent validity and reliability. In addition, subsequent analysis revealed criterion validity, because the independent factors and control variables differently associate with each performance dimension.

Table 8.4 Descriptives and Correlations: First-Order Constructs

	Construct	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Compensation Integrativeness	***.847***													
2	Compensation Imbalance	-.324***	***.781***												
3	Shared Decision-making	.321***	-.036	***.897***											
4	Total Non-recoverable Investments	.408***	-.114	.626***	***.878***										
5	Non-recoverable Investment Imbalance	-.123	.301**	.007	-.062	***.803***									
6	Partner Fit	.283**	-.183*	.101	.177*	-.152	***.844***								
7	Resource Complementarity	.445***	-.155*	.394***	.400***	.034	.198*	***.815***							
8	Absorption Integrativeness	.441***	-.164	.254***	.342***	-.030	.301***	.332***	***.826***						
9	Absorption Imbalance	-. 248**	.354***	-.137	-.127	.189*	-.240**	-.106	-.329***	***.703***					
10	Relational Quality	.399***	-.287***	.135	.159	-.235**	.482***	.232**	.363***	-.291**	***.815***				
11	Learning Capabilities	.320***	-.229**	.422***	.472***	-.165*	.348***	.175*	.403***	-.279**	.355***	***.863***			
12	Financial Performance	.412***	-.051	.141	.280**	-.106	.280***	.252**	.206**	-.163*	.338***	.303***	***.831***		
13	Learning Performance	.303***	-.189*	.207**	.229***	-.083	.393***	.298***	.520***	-.298***	.484***	.449***	.392***	***.799***	
14	Strategic Performance	.485***	-.166*	.180**	.255***	-.071	.301***	.360***	.508***	-.268***	.476***	.476***	.520***	.720***	***.809***
	Mean	10.072	0.627	9.109	8.844	0.912	4.344	5.629	9.928	0.856	5.337	4.292	29.539	28.043	35.048
	Standard Deviation	1.873	0.812	2.545	2.668	1.026	1.472	1.056	2.042	0.856	1.244	1.340	10.027	9.153	9.192

Notes: n = 147. Computations are based on raw data with valid items (i.e., average). The diagonal shows the square root of the AVE for each construct. With respect to the independent variables, we only report AVE scores with respect to the financial performance model. The results are similar to the learning and strategic performance models, so our interpretation does not change across the three measurement models.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Measurement Model: Second-Order Constructs

The proposed hierarchical component model contains two second-order constructs: (1) structural coherence and (2) relational adaptability. Structural coherence is a second-order construct with seven formative first-order constructs, whereas relational adaptability represents a second-order construct with five reflective first-order constructs. To assess the construct validity of the second-order constructs, we must view the first-order constructs as indicators of the second-order construct. Therefore, the first-order constructs should possess sufficient psychometric properties themselves (Bollen et al., 1991; Jarvis et al., 2003), which exists in our study (see the previous section). Because the PLS measurement model estimations with respect to financial performance, learning performance, and strategic performance are similar to one another (see Tables 8.1 and 8.2), we do not discuss these results extensively but report results pertaining to the financial performance model only.

To assess the psychometric properties of the second-order structural coherence factor, we examined the weights produced by PLS estimation (see Table 8.1).[39] Structural coherence was captured with formative first-order factors, so the weights produced by PLS should be

[39] The moderate correlations between the formative first-order construct (see Table 8.4) may raise concerns with respect to multicollinearity (Diamantopoulos & Winklhofer, 2001). To examine the impact of multicollinearity, we regressed structural coherence and financial performance directly on the seven formative first-order constructs. The results indicated no concerns.

interpreted as standardized regression coefficients (Chin, 1998). We defined structural coherence as the degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards (Dussauge et al., 1995; Miller, 1986). Compensation integrativeness positively and significantly relates to structural coherence (β = .478, p < .05, t = 14.481), whereas compensation imbalance negatively and significantly relates to it (β = -.212, p < .05, t = 4.555). Shared decision-making positively and significantly contributes to the second-order construct (β = .124, p < .05, t = 6.730), and total non-recoverable investments positively and significantly relates to structural coherence (β = .222, p < .05, t = 9.819). Partner fit and resource complementarity positively and significantly relate to structural coherence (β = .183, p < .05, t = 6.554 and β = .251, p < .05, t = 7.682). Finally, non-recoverable investment imbalance relates negatively to structural coherence (β = -.066), though it is not significant (p > .05, t = 1.895). Together, these findings support the observation that structural coherence possesses good construct validity.

In addition, consistent with the procedure described in Section 6.4, we examined the relationship between structural coherence and a measure that is not part of the theoretical model: total interdependence. Total dependence was captured as the average of four items pertaining to the focal firm's and the partner firm's dependence on each other (e.g., resource need, availability of alternatives). Drawing on a resource dependence perspective (Pfeffer et al., 1978), we hypothesized a positive relationship between structural coherence and total interdependence. The findings indicate a positive correlation of .287 (p < .05), in support of the construct validity of structural coherence.

Relational adaptability refers to the parties' willingness and ability to make modifications to the ongoing relationship, without changing the initial alliance structure (Aulakh et al., 2002; Doz, 1996; Hallen et al., 1991). Relational adaptability was captured with five reflective first-order constructs; therefore, the weights produced by PLS estimation must be interpreted as factor loadings (Chin, 1998). The findings indicate that absorption integrativeness positively and significantly loads on relational adaptability (β = .836, p < .05, t = 27.500), whereas absorption asymmetry negatively loads on the second-order construct (β = -.616, p < .05, t = 8.525). The first-order relational quality and learning capability factors positively and significantly loaded on relational adaptability (β = .674, p < .05, t = 11.903, and β = .693, p < .05, 14.114). The reliability of relational adaptability is acceptable, with a composite reliability score of .692. The initial model also contained the first-order opportunistic behavior factor (see §6.3). Although the four indicators that capture this variable possessed good psychometric properties, we decided to remove it from further data analysis, because opportunistic behavior loaded poorly on relational adaptability (β < .400, p < .05), well below the cut-off value of .707 (Chin, 1998). To conclude, the first- and second-order measurement models possess good psychometric properties, and therefore, we can proceed with an interpretation of the structural models.

Structural Model: Financial Performance

Hypothesis 1 states that relational adaptability partially mediates the relationship between structural coherence and alliance performance. With respect to financial performance, the findings indicate that firms designing an alliance with an initial structure that consists of mutually supportive structural safeguards experience a higher level of financial performance; however, we find no support for a positive association between relational adaptability and financial performance. Therefore, we must reject Hypothesis 1. Together, these findings suggest that structural coherence reduces the risk of exchange hazards, which enables parties to focus on fulfilling their contractual obligations. The findings provide support for the structural perspective's main proposition that an adequate alliance structure reduces the risk of exchange hazards, which fosters alliance performance. We adopt a three-step procedure to examine the results: (1) examination of the pairwise correlations, (2) examination of the structural model, and (3) additional analyses to better understand the mediation effect.

Correlation Matrix

Table 8.5 reports the pairwise correlations between the second-order constructs of structural coherence, relational adaptability, and financial performance and the control variables. The results indicate that structural coherence and financial performance are positively and significantly associated (r = .489, p < .05), and structural coherence positively and significantly associates with relational adaptability (r = .625, p < .05). In turn, relational adaptability positively and significantly relates to financial performance (r = .406, p < .05). With respect to the control variables, alliance complexity relates positively and significantly to structural coherence (r = .205, p < .05) and financial performance (r = .168, p < .05), as does fulfillment of contractual obligations (r = .205, p < .05, and r = .304, p < .05). Finally, relational adaptability relates negatively and significantly to several control variables, including competitors (r = -.199, p < .05) and international alliance (r = -.189, p < .05). These findings provide tentative support for Hypothesis 1. However, additional PLS analysis and subsequent tests to assess the mediation effect are required to ensure a thorough test.

Table 8.5 Hypothesis 1: Correlations Financial Performance Model

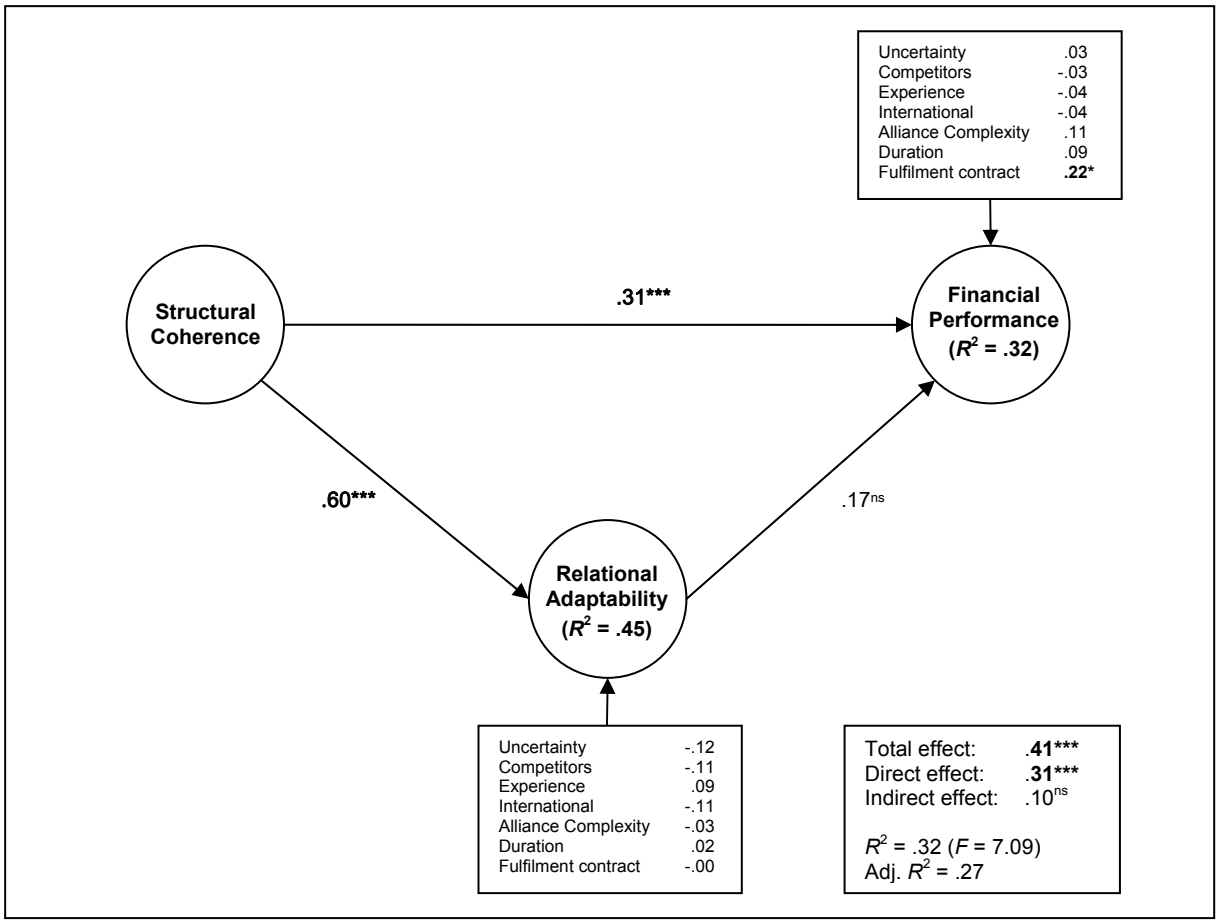
	Construct	1	2	3	4	5	6	7	8	9
1	Structural Coherence									
2	Relational Adaptability	.625***								
3	Financial Performance	.489***	.406***							
4	Environmental Uncertainty	-.013	-.147	-.027						
5	Competitors	-.104	-.199*	-.040	.137					
6	Experience with Alliances	.043	.126	.036	-.015	-.064				
7	International Alliance	-.101	-.189*	-.112	.113	.045	-.020			
8	Alliance Complexity	.205**	.080	.168*	-.016	.092	.112	.107		
9	Alliance Duration	.050	.020	.109	.215**	.130	.096	.033	-.062	
10	Fulfillment contractual obligations	.202**	.143	.304***	-.187*	.140	.064	-.108	.010	.021

Notes: n = 147, Computation is based on latent variable scores produced by PLS estimation. We conducted PLS analysis using standardized scores. Therefore, we do not report descriptives (i.e., $\bar{x}$ = 0 and SD = 1).
* p ≤ .05; ** p ≤ .01; *** p ≤ .001.

Structural Model

With respect to financial performance, the empirical findings provide no support for Hypothesis 1 (see Figure 8.1). Results instead indicate that structural coherence positively and directly relates to financial performance (β = .308, p < .05, t = 2.584)[40] and positively and significantly relates to relational adaptability (β = .604, p < .05, t = 8.770). In contrast to the pairwise correlation, in the full model, relational adaptability is not significantly related to financial performance (β = .166, p > .05, t = 1.416), which suggests that structural coherence eliminates the positive impact of relational adaptability. The R^2 of financial performance is .318, whereas the R^2 of relational adaptability is .445, which indicates substantial explanatory power (Falk et al., 1992). Together, these findings suggest that relational adaptability does not mediate the relationship between structural coherence and financial performance.

Figure 8.1 Results Hypothesis 1: Financial Performance



Notes: n =147.
ns not significant; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

With respect to the control variables, only fulfillment of contractual obligations positively and significantly relates to financial performance (β = .223, p < .05, t = 2.755). The other six controls—uncertainty (β = .033, p > .05, t = .490), competitors (β = -.035, p > .05, t = .451), experience (β = -.036, p > .05, t = .476), international (β = -.043, p > .05, t = .577), alliance

[40] We report t-values, resulting from the bootstrapping procedure (see §6.4).

complexity (β = .107, p > .05, t = 1.515), and duration (β = .094, p > .05, t = 1.412)—are not significantly related. We also control for relational adaptability, but the findings indicate no significant relationships: uncertainty (β = -.116, p > .05, t = 1.774), competitors (β = -.109, p > .05, t = 1.580), experience (β = .091 p > .05, t = 1.474), international (β = -.105, p > .05, t = 1.608), alliance complexity (β = -.033, p > .05, t = .580), duration (β = .022, p > .05, t = .386), and fulfillment of contractual obligations (β = -.003, p > .05, t = .046). These findings suggest that fulfillment of contractual obligations is also a driver of financial performance.

Additional Tests

Because testing for a mediation effect is not without its own concerns (Baron et al., 1986; Shaver, 2005), we conducted three additional analyses of Hypothesis 1: (1) R^2 change, (2) Sobel test, and (3) multicollinearity diagnostics (see §6.4). First, we examined the change in R^2 when we complemented a baseline model with only control variables (see Table 8.6, model 1), with structural coherence (model 2), and with relational adaptability (model 3). The baseline model with control variables has two significant relationships: alliance complexity (β = .198, p < .05) and fulfillment of contractual obligations (β = .313, p < .05). Together, the control variables explain .157 of the variance (adj. R^2 = .114). In model 2, we added structural coherence as an explanatory variable. The direct effect of the alliance complexity control variable thereafter becomes insignificant (β = .102, p > .05), whereas fulfillment of contractual obligations remains significantly related (β = .222, p < .05). Structural coherence positively and significantly affects financial performance (β = .408, p < .05). By adding structural coherence, we increase the explained variance from .157 to .303, which is a significant change (ΔF = 28.855, p <.05). In addition to structural coherence and the control variables, we added relational adaptability as explanatory variable in model 3. The findings indicate that the direct effect on financial performance is not significant (β = .166, p > .05), but structural coherence relates positively (β = .308, p < .05). The increase in explained variance (.015) is insignificant (ΔF = 3.080, p > .05). However, fulfillment of contractual obligations remains positively and significantly related to financial performance (β = .223, p < .05). These findings support our initial observation that relational adaptability does not mediate the relationship between structural coherence and financial performance.

The Sobel test and multicollinearity assessment also support the initial findings. Consistent with the procedure described in Section 6.4, we conducted a Sobel test with respect to the magnitude and significance of the indirect effect while incorporating the control variables (Preacher et al., 2004). The findings support our interpretation of the results achieved through PLS estimation. The indirect effect from structural coherence through relational adaptability is insignificant, with an effect of .100 (bias-corrected confidence interval: -.022–.273). Finally, because we estimate a mediation model, we must examine the impact of multicollinearity (Baron et al., 1986). The collinearity diagnosis shows no severe problems, because the largest variance inflation factor is well below the critical value of 3 (1.800), and the condition index score is 2.407, well below the cut-off value of 30 (Hair et al., 1998).

Table 8.6 Hypothesis 1: R^2 Change Financial Performance

	Model 1		Model 2		Model 3	
Control Variables	***β***	**s.e.**	***β***	**s.e.**	***β***	**s.e.**
Uncertainty	.035	(.082)	.014	(.075)	.033	(.076)
Competitors	-.120	(.081)	-.051	(.075)	-.033	(.075)
Experience	-.027	(.079)	-.020	(.072)	-.036	(.072)
International	-.103	(.079)	-.061	(.073)	-.043	(.073)
Alliance complexity	**.198***	(.080)	.102	(.075)	.107	(.074)
Duration	.129	(.081)	.098	(.074)	.094	(.074)
Fulfillment contract	**.313*****	(.081)	**.222****	(.076)	**.223****	(.075)
Structural Coherence			**.408*****	(.076)	**.308****	(.095)
Relational Adaptability					.166	(.095)
R^2	**.157*****		**.303*****		**.318*****	
Adj. R^2	.114		.262		.273	
Δ R^2			**.146*****		.015	
F	3.694		7.487		7.098	
Δ *F*			28.855		3.080	

Notes: n = 147. β = standardized coefficients; s.e. = standard error.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Conclusions

With respect to financial performance, two findings are noteworthy. First, the relationship between structural coherence and financial performance is not mediated by relational adaptability, and therefore, we must reject Hypothesis 1. More specifically, within our sample of contractual alliances, firms that designed an initial alliance structure with mutually supportive structural safeguards also experienced higher levels of financial performance. In addition, the findings indicate that firms that established an alliance characterized by structural coherence were better able to build relational adaptability. However, with respect to ex-post conduct, partner firms benefited more from fulfilling contractual obligations than from investing time and resources to build relational adaptability. Together, the findings provide support for the structural perspective's main proposition that an adequate alliance structure reduces the risk of exchange hazards, which in turn foster financial performance.

Second, partner firms have different options available for designing and managing an alliance. In particular, compensation integrativeness, total non-recoverable investments, and resource complementarity constitute relatively important structural safeguards. In contrast, compensation imbalance contributes negatively to an alliance's structural coherence, and though the impact of shared decision-making and partner fit is positive, it is relatively moderate. The impact of non-recoverable investment imbalance on structural coherence is negligible. Furthermore, the findings suggest that absorption integrativeness, relational quality, and learning capabilities improve relational adaptability, whereas absorption imbalance hampers parties' willingness and ability to make necessary adaptations. Thus, parties may pursue different trajectories to develop relational adaptability. Nonetheless, the findings suggest that to achieve superior financial performance, firms generally should direct their attention to the alliance formation stage, because ex-post investments in relational adaptability may not contribute effectively to the realization of long-term financial benefits.

Structural Model: Learning Performance

With respect to learning performance, firms building alliances with relational adaptability experience higher levels of learning performance; however, the findings also indicate that parties can achieve their learning objectives without necessarily falling back on the alliance structure (i.e., no direct relationship). Therefore, we must reject Hypothesis 1. These findings further suggest that partner firms that developed a willingness and ability to overcome inertial forces are more likely to realize their learning objectives than are alliances without relational adaptability. We find support for a positive association between structural coherence and relational adaptability, which suggests that alliance design functions as an imprint for post-formation processes. Together, these findings support the process perspectives' main proposition that to realize objectives, partner firms should develop ex-post relational and learning process to reduce the impact of inertia. Next, we discuss the findings in depth.

Correlation Matrix

Table 8.7 reports the correlations between the second-order structural coherence, relational adaptability, and learning performance constructs and the control variables. Structural coherence and learning performance are positively and significantly associated ($r = .481$, $p < .05$), and structural coherence positively and significantly associates with relational adaptability ($r = .625$, $p < .05$). Relational adaptability positively and significantly relates to learning performance ($r = .708$, $p < .05$). Of the control variables, alliance complexity relates positively and significantly to structural coherence ($r = .205$, $p < .05$), as well as to fulfillment of contractual obligations ($r = .205$, $p < .05$). Finally, learning performance relates negatively and significantly to the control variables competitors ($r = -.266$, $p < .05$) and international ($r = -.212$, $p < .05$). These findings provide tentative support for Hypothesis 1. However, additional PLS analysis and subsequent tests must assess the mediation effect.

Table 8.7 Hypothesis 1: Correlations Learning Performance Model

	Construct	1	2	3	4	5	6	7	8	9
1	Structural Coherence									
2	Relational Adaptability	.625***								
3	Learning Performance	.481***	.708***							
4	Environmental Uncertainty	-.012	-.147	-.098						
5	Competitors	-.103	-.199*	-.266**	.137					
6	Experience with Alliances	.039	.126	.025	-.015	-.064				
7	International Alliance	-.098	-.190*	-.212**	.113	.045	-.020			
8	Alliance Complexity	.205**	.079	.106	-.016	.092	.112	.107		
9	Alliance Duration	.046	.021	.074	.215**	.130	.096	.033	-.062	
10	Fulfillment contractual obligations	.197**	.143	.009	-.187*	.140	.064	-.108	.010	.021

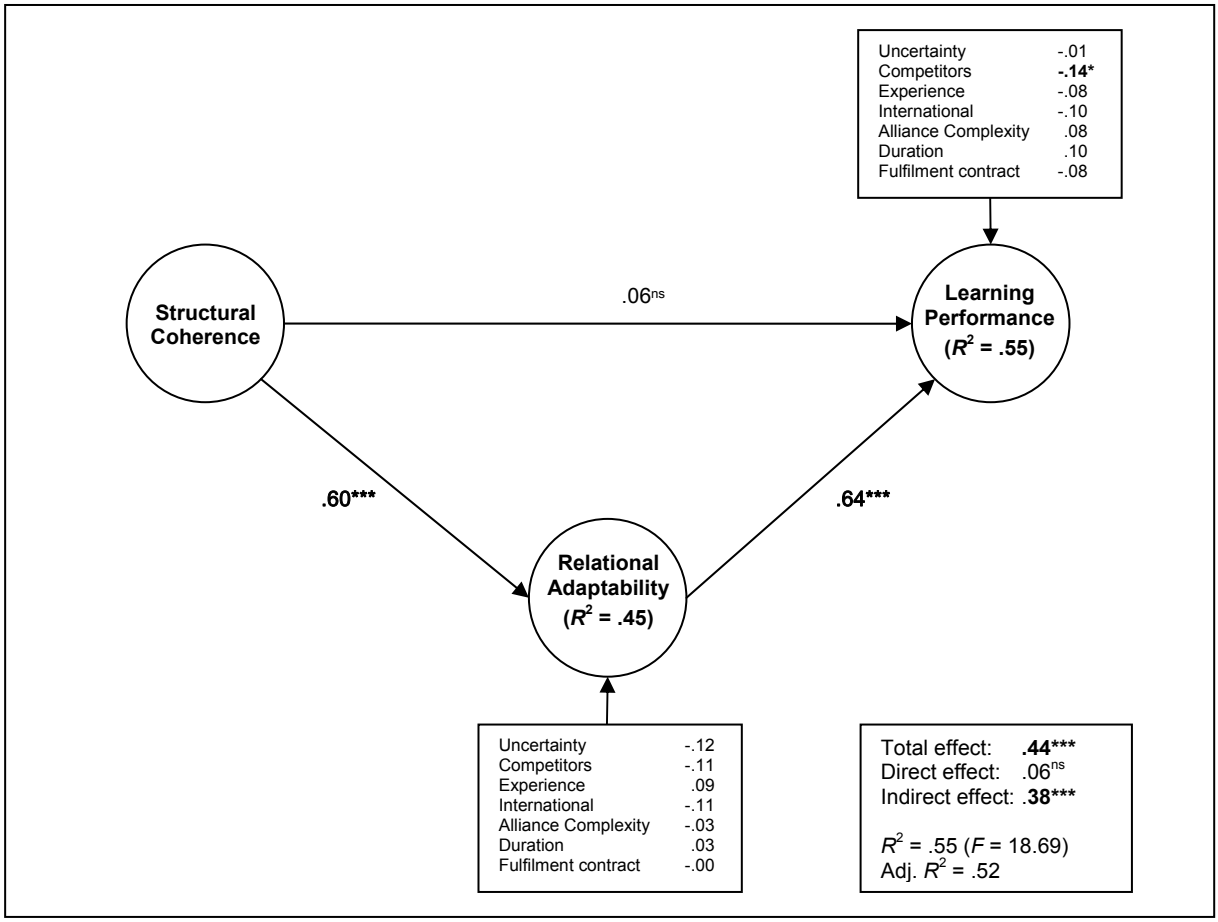
Notes: $n = 147$. Computation is based on latent variable scores produced by PLS estimation. We conducted PLS analysis using standardized scores. Therefore, we do not report descriptives (i.e., $\bar{x} = 0$ and SD = 1).
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Structural Model

With respect to learning performance, the empirical findings provide no support for Hypothesis 1 (see Figure 8.2). Whereas we find no support for mediation with respect to

financial performance, with respect to learning performance, the findings indicate that relational adaptability fully mediates the relationship between structural coherence and learning performance. That is, in contrast to the pairwise correlation, the results indicate that in the full model, structural coherence is not significantly related to learning performance (β = .057, p > .05, t = .695), but structural coherence is positively and significantly related to relational adaptability (β = .604, p < .05, t = 9.026). Relational adaptability also positively and significantly relates to learning performance (β = .637, p < .05, t = 7.872). The R^2 of learning performance is .551, whereas that of relational adaptability is .445, suggesting substantial explanatory power (Falk et al., 1992). The findings indicate that to achieve learning objectives, parties must allocate resources to develop relational adaptability.

Figure 8.2 Results Hypothesis 1: Learning Performance



Notes: n =147.
ns not significant; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

With respect to the control variables, the fact that partner firms are competitors negatively and significantly associates with learning performance (β = -.141, p < .05, t = 2.202). The other six controls—uncertainty (β = -.009, p > .05, t = .150), experience (β = -.083, p > .05, t = 1.352), international (β = -.101, p > .05, t = 1.777), alliance complexity (β = .084, p > .05, t = 1.463), duration (β = .096, p > .05, t = 1.633), and fulfillment of contractual obligations (β = -.084, p > .05, t = 1.273)—have no significant impact. We also control for relational adaptability, but the findings indicate no significant relationships: uncertainty (β = -.117,

$p > .05$, $t = 1.763$), competitors ($\beta = -.110$, $p > .05$, $t = 1.623$), experience ($\beta = .093$, $p > .05$, $t = 1.536$), international ($\beta = -.107$, $p > .05$, $t = 1.598$), alliance complexity ($\beta = -.034$, $p > .05$, $t = .590$), duration ($\beta = .21$, $p > .26$, $t = .461$), and fulfillment of contractual obligations ($\beta = .089$, $p > .05$, $t = -.000$). In summary, when competing partner firms engage in an alliance with learning objectives, developing relational adaptability is insufficient to overcome the perils associated with competitor-based alliances (Brandenberger et al., 1996).

Additional Tests

We conducted additional tests, supporting the finding of full mediation. We examined the change in R^2 when we complemented a baseline model with control variables (Table 8.8, model 4), with structural coherence (model 5), and with relational adaptability (model 6). The baseline model reveals three significant relationships: partner firms being competitors ($\beta = -.285$, $p < .05$), international alliance ($\beta = -.214$, $p < .05$), and alliance complexity ($\beta = .166$, $p < .05$). These controls explain .155 of the variance (adj. $R^2 = .112$). In model 5, we added structural coherence as an explanatory variable; it positively and significantly affects learning performance ($\beta = .442$, $p < .05$). The direct effect of the control variables international ($\beta = -.169$, $p > .05$) and alliance complexity ($\beta = .062$, $p > .05$) becomes insignificant, but the control competitors remains negatively and significantly related ($\beta = -.211$, $p < .05$). The explained variance increases significantly from .155 to .326 ($\Delta F = 8.351$, $p < .05$). With respect to model 6, in which we add relational adaptability, the findings indicate that the direct effect on learning performance of relational adaptability is significant ($\beta = .637$, $p < .05$), whereas the effect of structural coherence becomes insignificant ($\beta = .057$, $p < .05$). The increase in explained variance (.225) is substantial and significant ($\Delta F = 68.665$, $p < .05$).

Table 8.8 Hypothesis 1: R^2 Change Learning Performance

	Model 4		Model 5		Model 6	
Control Variables	***β***	**s.e.**	***β***	**s.e.**	***β***	**s.e.**
Uncertainty	-.061	(.083)	-.084	(.074)	-.009	(.061)
Competitors	**-.285*** **	(.081)	**-.211****	(.074)	**-.141***	(.061)
Experience	-.031	(.079)	-.023	(.071)	-.082	(.059)
International	**-.214****	(.079)	-.169	(.072)	-.101	(.059)
Alliance complexity	**.166***	(.080)	.062	(.074)	.084	(.060)
Duration	.144	(.081)	.112	(.073)	.096	(.060)
Fulfillment contract	.011	(.081)	-.084	(.075)	-.084	(.061)
Structural Coherence			**.442*** **	(.074)	.057	(.077)
Relational Adaptability					**.637*** **	(.077)
R^2	**.155*** **		**.326*** **		**.551*** **	
Adj. *R^2*	.112		.287		.522	
Δ *R^2*			**.155*** **		**.225*** **	
F	3.633		8.351		18.693	
Δ *F*			35.135		68.665	

Notes: $n = 147$. β = standardized coefficients; s.e. = standard error.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

To assess the magnitude and significance of the indirect effect, we also conducted a Sobel test (Baron et al., 1986). The findings support our interpretation of the results we achieved through PLS estimation, in that the indirect effect from structural coherence through relational adaptability to learning performance is significant, with a magnitude of .385 (bias-corrected confidence interval: .253–.549). Finally, the multicollinearity diagnosis shows no severe problems. The largest variance inflation factor is well below the cut-off value of 3 (1.807), and the condition index score is below the cut-off value of 30 (2.407). Together, these findings support the initial finding that relational adaptability mediates the relationship between structural coherence and learning performance.

Conclusions

With respect to learning performance, two findings are particularly noteworthy. First, the empirical findings indicate that relational adaptability fosters learning performance. Within our sample of contractual alliances, parties achieve higher levels of learning performance if they are willing and able to make adaptations to the ongoing relationship, without necessarily resorting to changes in the initial alliance structure. Relational adaptability overcomes inertial forces, and therefore, parties are better able to respond adequately to internal and external forces that may destabilize the alliance. These findings also suggest that to achieve higher levels of learning performance, firms in an ongoing relationship should direct their efforts toward developing post-formation processes, because these ex-post investments are critical to realizing learning objectives. If partner firms are competitors, their relationship negatively affects the realization of their learning objectives, even if they have developed relational adaptability. Together, these findings imply that we must reject Hypothesis 1; in contrast to our expectations (i.e., partial mediation), we find support for full mediation.

Second, the findings do not suggest that structural coherence is not important. Although structural coherence does not directly affect learning performance, it functions as an architecture that enables parties to build highly flexible relationships. If partner firms design an alliance with a high level of structural coherence, it positively contributes to their relational adaptability. Compared with financial performance, initial alliance design is important, yet for a different reason: Rather than directly affecting learning performance, structural coherence fosters the development of post-formation processes. However, structural coherence is not sufficient, and other factors, that are not part of this research, may influence relational adaptability. Together, these findings provide support for the process perspective's main proposition that partner firms should develop post-formation processes, which enable them to reduce the negative consequences of inertial forces for learning performance.

Structural Model: Strategic Performance

With respect to strategic performance, we find support for Hypothesis 1. The results suggest that for our sample of contractual alliances partner, firms that design their relationship with a high level of structural coherence also experience a high level of strategic performance. In contrast, firms that build alliances with relational adaptability appear to experience a high

level of strategic performance. The findings suggest that structural coherence functions as an architecture that supports the development of post-formation processes. Thus, partner firms that can reduce the risk of exchange hazards and have developed a willingness and ability to overcome inertial forces likely realize their strategic objectives. Together, these findings suggest that we need to reconcile explanations pertaining to the structure and process perspectives to understand strategic performance.

Correlation Matrix

Table 8.9 reports the pairwise correlations between the second-order constructs of structural coherence, relational adaptability, and strategic performance and the control variables. The results indicate that structural coherence and strategic performance are positively and significantly associated (r = .559, p < .05), and structural coherence positively and significantly associates with relational adaptability (r = .624, p < .05). Relational adaptability positively and significantly relates to strategic performance (r = .625, p < .05). Of the control variables, alliance complexity relates positively and significantly to structural coherence (r = .203, p < .05), as does fulfillment of contractual obligations (r = .199, p < .05). Relational adaptability relates negatively and significantly to competitors (r = -.199, p < .05) and international alliance (r = -.189, p < .05). Finally, competitors associates negatively (r = -.183, p < .05) and fulfillment of contractual obligations relates positively (r = .192, p < .05) to strategic performance. These findings provide tentative support for Hypothesis 1. However, we require additional PLS analysis and tests to assess the mediation effects thoroughly.

Table 8.9 Hypothesis 1: Correlations Strategic Performance Model

	Construct	1	2	3	4	5	6	7	8	9
1	Structural Coherence									
2	Relational Adaptability	.624***								
3	Strategic Performance	.559***	.625***							
4	Environmental Uncertainty	-.012	-.147	-.081						
5	Competitors	-.104	-.199*	-.183*	.137					
6	Experience with Alliances	.040	.126	.058	-.015	-.064				
7	International Alliance	-.098	-.189*	-.125	.113	.045	-.020			
8	Alliance Complexity	.203**	.079	.154	-.016	.092	.112	.107		
9	Alliance Duration	.049	.021	.049	.215**	.130	.096	.033	-.062	
10	Fulfillment contractual obligations	.199**	.144	.192*	-.187*	.140	.064	-.108	.010	.021

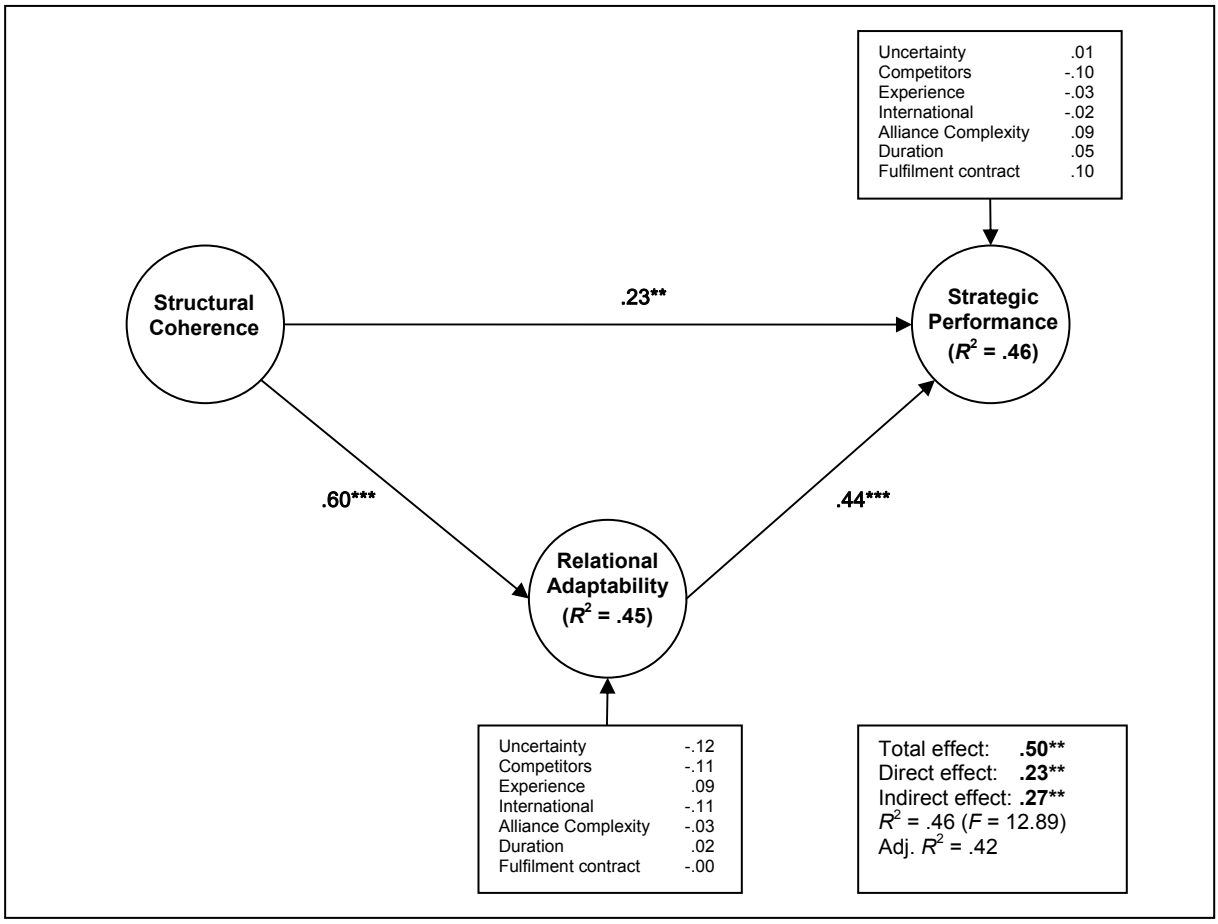
Notes: n = 147. Computation is based on latent variable scores produced by PLS estimation. We conducted PLS analysis using standardized scores. Therefore, we do not report descriptives (i.e., $\bar{x}$ = 0 and SD = 1).
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Structural Model

With respect to strategic performance, the empirical findings support for Hypothesis 1 (see Figure 8.3) and suggest that relational adaptability partially mediates the relationship between structural coherence and strategic performance. Specifically, structural coherence positively and directly relates to financial performance (β = .234, p < .05, t = 2.286) and positively and significantly relates to relational adaptability (β = .603, p < .05, t = 8.609). Moreover, relational adaptability is significantly related to strategic performance (β = .439, p > .05,

t = 4.440). The R^2 of strategic performance is .458, and that of relational adaptability is .445, which suggests substantial explanatory power (Falk et al., 1992). Thus, to realize strategic objectives, partner firms must focus on both alliance structure and post-formation processes.

Figure 8.3 Results Hypothesis 1: Strategic Performance



Notes: n =147.
ns not significant; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

With respect to the control variables, uncertainty (β = .012, p > .05, t = .170), competitors (β = -.102, p > .05, t = 1.423), experience (β = -.034, p > .05, t = .512), international (β = -.017, p > .05, t = .268), alliance complexity (β = .088, p > .05, t = 1.424), duration (β = .047, p > .05, t = .963), and fulfillment of contractual obligations (β = .098, p > .05, t = .963) are not significantly related. When we control for relational adaptability, the findings indicate no significant relationships: uncertainty (β = -.117, p > .05, t = 1.818), competitors (β = -.109, p > .05, t = 1.532), experience (β = .092, p > .05, t = 1.430), international (β = -.108, p > .05, t = 1.598), alliance complexity (β = -.033, p > .05, t = .579), duration (β = . 021, p > .05, t = .401), and fulfillment of contractual obligations (β = .-.001, p < .05, t = .011). Thus, within our sample of contractual alliances, adequate alliance design complemented by relational adaptability reduces the impact of other exogenous and endogenous factors.

Additional Tests

We examined the change in R^2 when we complemented a baseline model with only control variables (Table 8.10, model 7), with structural coherence (model 8), and with relational adaptability (model 9). The baseline model with control variables has three significant relationships with strategic performance: competitors (β = -.235, p < .05), alliance complexity (β = .191, p < .05), and fulfillment of contractual obligations (β = .207, p < .05). Together, these control variables explain .132 of the variance (adj. R^2 = .088). In model 7, which adds structural coherence as an explanatory variable, structural coherence positively and significantly influences financial performance (β = .499, p < .05), and explained variance increases significantly from .132 to .351 (Δ F = 46.479, p < .05). The direct effect of the control variables alliance complexity (β = .074, p > .05) and fulfillment of contractual obligations (β = .097, p > .05) become insignificant, whereas competitors remains negatively and significantly related (β = -.150, p < .05). In model 9, we add relational adaptability as an explanatory variable. The direct effect on strategic performance of relational adaptability is positive and significant (β = .439, p < .05); the direct effect of structural coherence decreases but remains positive and significant (β = .234,). The increase in explained variance (.107) is substantial and significant (Δ F = 27.069, p < .05). We also conducted a Sobel test with respect to the magnitude and significance of the indirect effect while incorporating the control variables (Preacher et al., 2004). The findings support the results achieved through PLS estimation; the indirect effect through relational adaptability is significant, with a coefficient of .265 (bias-corrected confidence interval: .125–.418). The collinearity diagnosis reveals no severe problems. The largest variance inflation factor is below the cut-off value of 3 (1.801), and the condition index score, with a value of 2.403, is below the cut-off value of 30 as well (Cohen, 1988). These analyses support the result that relational adaptability mediates, though only partially, the relationship between structural coherence and strategic performance.

Table 8.10 Hypothesis 1: R^2 Change Strategic Performance

	Model 7		Model 8		Model 9	
Control Variables	***β***	**s.e.**	***β***	**s.e.**	***β***	**s.e.**
Uncertainty	-.014	(.084)	-.040	(.073)	-.040	(.067)
Competitors	**-.235****	(.082)	**-.150***	(.072)	-.150	(.067)
Experience	-.003	(.079)	.007	(.070)	.007	(.065)
International	-.114	(.081)	-.064	(.070)	-.064	(.065)
Alliance complexity	**.191***	(.080)	.074	(.072)	.074	(.066)
Duration	.094	(.082)	.057	(.072)	.057	(.066)
Fulfillment contract	**.207***	(.082)	.097	(.073)	.097	(.067)
Structural Coherence			**.499*****	(.073)	**.234****	(.084)
Relational Adaptability					**.439*****	(.084)
R^2	**.132*****		**.351*****		**.458*****	
Adj. R^2	.088		.313		.422	
Δ R^2			**.219*****		**.107*****	
F	3.021		9.318		12.885	
Δ F			46.479		27.069	

Notes: n = 147. β = standardized coefficients; s.e. = standard error.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Conclusions

With respect to strategic performance, two findings are particularly noteworthy. First, the empirical findings indicate that both structural coherence and relational adaptability foster strategic performance. That is, within our sample of contractual alliances, higher levels of strategic performance result if parties are willing and able to make adaptations to their ongoing relationship and have designed an alliance with mutual supportive structural safeguards. These findings suggest that partner firms need to balance their efforts between designing an adequate alliance structure and developing post-formation processes, because both are critical to realizing their strategic objectives. In addition, structural coherence functions as an architecture that enables parties to build a highly flexible relationship. Restated, relational adaptability fully mediates the relationship between structural coherence and strategic performance, in full support of Hypothesis 1.

Second, the findings are quite different with respect to each performance dimension. For financial performance, we find that structural coherence is critical to realize objectives; for learning performance, the findings suggest relational adaptability is important; and with respect to strategic performance, the results indicate that a combination of structural coherence and relational adaptability best supports performance objectives. Taken together, these findings imply that, consistent with the theoretical model, a reconciliation of the structure and process perspectives increases explanatory power.

8.3 Conclusions

In this chapter, we have presented the empirical results with respect to Hypothesis 1, which states that the relationship between structural coherence and alliance performance is partially mediated by relational adaptability. Drawing on the structure and process perspectives, we have argued that incorporating structural coherence and relational adaptability into one theoretical model increases the explanatory power with respect to alliance performance, because the alignment of structure and process explanations more completely describes the complexity of alliances than either perspective alone. We used PLS analysis to test Hypothesis 1, and the empirical findings provide substantial support for the reconciliation of the structure and process perspectives. Building on our findings, we next elaborate on four conclusions with respect to (1) the control variables, (2) designing and managing alliances, (3) performance dimensions, and (4) the structure and process perspectives.

First, with respect to the control variables, we find that adequate alliance design and management can overcome most problems associated with various environmental (i.e., uncertainty), interfirm (i.e., competitors), and alliance (i.e., international) characteristics. For instance, focusing on environmental dynamics, we hypothesized that environmental uncertainty negatively affects alliance performance (Jap, 1999; Lee et al., 2006), yet the findings indicate that environmental uncertainty is not negatively associated with alliance performance. Consistent with prior alliance research, the findings also suggest that alliances between competitors (Bengtsson et al., 2000; Park et al., 1997) and international alliances

(Barkema et al., 1997; Reuer & Ariño, 2002) are subject to additional tensions and ex-post problems. Yet the impact of destabilizing interfirm characteristics declines once we add structural coherence and relational adaptability to the model; thus, it appears firms can largely overcome the problems associated with competitors (except with respect to learning performance) and international partners. Furthermore, the findings indicate that prior experience with alliances has no impact on alliance performance, consistent with research by Zollo, Reuer, and Singh (2002). However, in contrast to their findings, the results also indicate that previous experience with a partner does not foster alliance performance. With respect to alliance characteristics, the results indicate that only fulfillment of contractual obligations has a positive effect on financial performance, which implies that alliance contracts function as an important coordination and enforcement mechanism.

Second, consistent with our expectations, the findings suggest that partner firms have different options available for designing and managing their alliances. More specifically, with respect to the second-order structural coherence construct, which entails the degree to which an initial alliance structure constitutes a constellation of mutually supportive structural safeguards, we find that compensation integrativeness, resource complementarity, and total non-recoverable investments constitute three important structural safeguards, whereas partner fit and shared decision-making are relatively less important. Compensation imbalance also undermines an alliance's structural coherence, and the impact of non-recoverable investment imbalance is negligible. With respect to relational adaptability, the results indicate that absorption integrativeness, relational quality, and learning capabilities foster relational adaptability, whereas absorption imbalance inhibits parties' willingness and ability to make modifications. Surprisingly, we needed to eliminate opportunistic behavior from the model, because the results indicated it did not relate to relational adaptability. Nonetheless, together, the findings suggest that firms have multiple instruments available to them to design and manage their relationships efficiency and effectively.

Third, the mediating effect of relational adaptability between structural coherence and alliance performance is conditional on the performance dimension considered (see Table 8.11). That is, we fail to find support for Hypothesis 1 with respect to financial performance. The initial positive association between structural coherence and financial performance remained positive and significant when we added relational adaptability as a mediating variable, and the absence of a significant indirect effect between relational adaptability and financial performance was supported by additional tests. Similarly, we must reject Hypothesis 1 when we focus on learning performance. An initial positive correlation between structural coherence and learning performance became insignificant when we added relational adaptability as a mediating variable. Structural coherence positively related to relational adaptability, and in turn, relational adaptability positively and significantly related to learning performance. In contrast, the empirical findings provide strong support for Hypothesis 1 with respect to strategic performance. An initial significant and positive association between structural coherence and strategic performance decreased in magnitude but remained

significant when we controlled for relational adaptability. Structural coherence positively related to relational adaptability, which itself positively affected strategic performance. Together, these findings have important theoretical and managerial implications. Namely, theoretical explanations put forward by advocates of the structure and process perspectives remain constrained to specific performance dimensions. From a managerial perspective, depending on the alliance objectives, partner firms should allocate their resources differently. We elaborate on these theoretical and managerial implications in Chapter 10.

Table 8.11 Hypothesis 1: Summary of the Results

Model	1 IV→D	2 IV→ M	3a M→D	3b IV→D	4 Sobel test	Implication
Financial Performance SC→ RA → FP	Yes	Yes	No	Yes	No	No mediation **Reject H1**
Learning Performance SC→ RA → LP	Yes	Yes	Yes	No	Yes	Full mediation **Reject H1**
Strategic Performance SC→ RA → SP	Yes	Yes	Yes	Yes	Yes	Partial mediation **Support H1**

Notes: SC = structural coherence; RA = relational adaptability; FP = financial performance; LP = learning performance; SP = strategic performance. The procedure to assess partial mediation is based on Baron and Kenny's (1986) guidelines: (1) Significant relationship between independent and dependent variable; (2) Significant relationship between independent and mediation variable; (3a) Significant relationship between mediation and dependent variable; (3b) The effect of the independent on the dependent variable should become smaller but remain significant compared with condition 1 when controlling for the mediator to conclude partial mediation; and (4) Sobel test indicates the significance and magnitude of the indirect effect.

Fourth, combining the results of our empirical study, we derive an important theoretical contribution. A comprehensive explanation of alliance performance depends on a reconciliation of the structure and process perspectives. Alliance researchers drawing on a structure perspective argued that decisions with respect to alliance structure directly determine alliance performance (Hennart, 1988; Williamson, 1985). Consistent with this logic, we find that as the level of structural coherence increases, the risk of exchange hazards diminishes, and the likelihood of superior alliance performance increases. Proponents of the process perspective argued that post-formation processes are critical to achieve superior alliance performance (Doz, 1996; Ring et al., 1994; De Rond et al., 2004; Salk, 2005; Zajac et al., 1993). Building on this logic, we discover that alliance processes are critical drivers of alliance performance and view alliances as purposeful entities that can learn and adapt to changing circumstances to improve their performance. Adaptability is critical to superior alliance performance, because this ex-post flexibility can overcome the limitations and inertial forces associated with an alliance structure. The results thereby provide substantial support for both perspectives: Superior financial performance associates with alliance structure, superior learning performance relies on post-formation processes, and superior strategic performance requires both alliance structure and post-formation processes. Moreover, the findings suggest that researchers who have examined alliance performance by drawing on either the structure or the process perspectives may have produced limited and biased explanations. In Chapter 10, we elaborate on the theoretical and managerial implications of these findings.

Chapter 9 Cooperation and Competition Trade-Off Empirical Findings

This chapter presents empirical results with respect to Hypotheses 2–4, which represent three cooperation and competition trade-offs: compensation, learning, and relational We have argued that during the alliance formation stage, partners use bargaining power to resolve a compensation trade-off (Hypothesis 2). To test this trade-off, we developed six hypotheses that relate compensation integrativeness, compensation imbalance, alliance performance, and firm performance imbalance. In addition, we postulated that during the post-formation stage, firms must resolve the learning trade-off to achieve their objectives. To test Hypothesis 3, we developed another set of six hypotheses entailing the relationships among absorption integrativeness, absorption imbalance, alliance performance, and firm performance imbalance. Finally, we argued that relational norms guide parties' behavior toward cooperation and competition. To test what we call the relational trade-off (Hypothesis 4), we introduced six hypotheses relating relational quality, opportunistic behavior, alliance performance, and firm performance imbalance. The empirical findings provide partial support for the compensation and learning trade-off but not for the relational trade-off. Unexpectedly, the findings also indicate that the impact of a trade-off solution is conditional on the performance dimension considered.

We organize this chapter as follows. In Section 9.1, we elaborate on model specification issues, such as control variables and outliers. In Section 9.2, we present the results with respect to the compensation trade-off (Hypothesis 2). In Section 9.3, we discuss the findings with respect to the learning trade-off (Hypothesis 3), and in Section 9.4, we present the results with respect to the relational trade-off (Hypothesis 4). We end the chapter with conclusions in Section 9.5.

9.1 Model Specification

The statistical models representing Hypotheses 2–4 consist of two independent, latent constructs with direct relationships to two dependent, latent constructs. In addition, the relationships between the two independent variables and the two dependent variables are specified as correlates. By not hypothesizing a directional effect between the two dependent variables, we can consider the structural model as partially recursive (Kline, 1998). As we have argued previously, covariance analysis (CVA) is an appropriate technique to estimate this type of model (see §6.4). We used Amos 7.0, a software package with maximum likelihood (ML) estimation, to test the hypotheses (Arbuckle, 1997). Furthermore, consistent with the operational definition of performance (see §6.3), we distinguished among financial, learning, and strategic performance dimensions. Consequently, with respect to each cooperation and competition trade-off, we estimated three statistical models, resulting in nine tests overall. Before presenting our findings, we elaborate on three model specification issues as they apply to all nine tests: (1) sample size, (2) outliers, and (3) CVA assumptions.

First, due to the moderate sample size (i.e., 151 cases), we decided to reduce the number of indicators per latent variable to obtain a minimum ratio of more than ten cases per indicator (see §6.4). To achieve this objective, we eliminated indicators with the lowest standardized loadings on their intended constructs while maintaining a minimum threshold of three indicators per latent variable. Consequently, alliance performance and firm performance imbalance were captured with three indicators (originally four), and compensation integrativeness, compensation imbalance, absorption integrativeness, and absorption imbalance were each captured with four indicators (originally five). We did not reduce the number of indicators of relational quality and opportunistic behavior, which originally were captured with three indicators. Sample size limitations forced us to omit control variables from the CVA; we estimated the nine models without controlling for environmental, interfirm, or alliance characteristics. Thus, the findings should be interpreted with caution.[41]

Second, due to the moderate sample size, outliers could have a substantial impact on the parameter estimation. To examine the possible presence of outliers, we inspected scatter diagrams of the relationships between the indicators. In addition, we conducted residual analysis with respect to each estimated model and used Mahalobnis's distance to identify outliers. We decided to eliminate seven cases with exceptional high Mahalobnis scores (>45), resulting in a usable sample consisting of 144 cases. To better understand the impact of this sample size reduction, we also tested Hypotheses 2–4 with the subsamples. More specifically, we conducted a test of each statistical model with a sample in which we only removed outliers pertaining to the model examined. In general, these findings were consistent with the results presented next, suggesting that are findings are relatively robust.

Third, consistent with the procedure described in Section 6.4, we assessed univariate descriptives, normality assumptions, error loadings, and error variances (Bagozzi et al., 1988). The findings indicated limited concerns. With respect to all exogenous and endogenous indicators, kurtosis and skewness values were below the critical threshold (Cohen, 1988), which reduced concerns about violating the univariate normality assumption. With respect to violating the multivariate normality assumption, an assessment of Mardia's coefficient for each estimated model raised some concerns (> 20), but we reduced the impact of possible biases by using ML estimation (Byrne, 2001; West et al., 1995), which resulted in robust Chi-square estimates, goodness-of-fit indices, and standard errors (see §6.4). With respect to the nine models, no negative error variances were found, and the error variances significantly differed from zero, which indicated appropriate models with only two exceptions. Despite these minor concerns, we decided that we could proceed with hypotheses testing.

[41] The findings with respect to construct validity and hypotheses testing do not deviate or conflict with the results we found with respect to Hypothesis 1, suggesting that it is appropriate to interpret our findings.

9.2 Hypothesis 2: The Compensation Trade-Off

Drawing on the power perspective (Blau, 1964; Cook et al., 1978; Emerson, 1962; Pfeffer et al., 1978), we argued that firms confront a compensation trade-off during the alliance formation stage (see §5.1). We hypothesized that compensation integrativeness and compensation imbalance affect parties' ability to realize and appropriate value through the relationship. We defined compensation integrativeness as the combination of parties' anticipated benefits, agreed on in an alliance contract, regardless of whether the anticipated compensations are balanced or imbalanced. A high level of compensation integrativeness means firms have formalized a compensation structure that maximizes the value creation potential of the alliance. A compensation imbalance refers to the asymmetry between each party's anticipated benefits; in accordance with the contractual provisions, one party can expect to extract more rewards than its counterpart. As hypothesized, the empirical findings indicate that firms are confronted with a trade-off between compensation integrativeness and compensation imbalance. However, in contrast to our expectations, the trade-off solution adopted by firms differently associates with financial, learning, and strategic performance.

We present the results according to the three-stage procedure described in Section 6.4. First, we elaborate on the goodness-of-fit indices to evaluate the degree to which the data fit the theoretical models. Second, we report findings with respect to the measurement models. Third, we present the results pertaining to the structural model.[42] We conclude this section with a brief discussion of the findings.

Goodness of Fit

To assess the significance and explanatory power of a statistical model, we must consider both measurement and theory (Fornell et al., 1981). Researchers have proposed a variety of goodness-of-fit measures to examine the correspondence between the actual or observed input covariance/correlation matrixes and the predicted model (Kline, 1998). In Table 9.3, we report the results with respect to the goodness-of-fit indices used in this dissertation (see §6.4). An evaluation of model 1 (i.e., financial) using the Chi-square statistic indicates that the data fit poorly fit, because the Chi-square statistic is significant (χ^2 = 122.014, d.f. = 71, $p < .05$). However, the Chi-square statistic often suggests a rejection of models. Another statistic of how well the data fit is the normed Chi-square, for which a value of less than 3.0 indicates desired fit (Carmines et al., 1981). As the value of this statistic is 1.719, it suggests good fit between the data and the model. An examination of other goodness-of-fit indices also indicates the acceptable fit between the model 1 and the data. For instance, values of .891 (GFI), .891 (NFI), and .950 (CFI) indicate moderate fit (Bentler, 1990; Bentler et al., 1980; Jöreskog et al., 1989). Furthermore, the SRMR is acceptable with a value of .057 (Browne et al., 1993). Together, these findings provide sufficient support to proceed with an assessment of the measurement and structural models.

[42] We discuss the results of the goodness-of-fit tests, measurement model, and structural model in depth with respect to the compensation trade-off. However, for the sake of parsimony, we present only the key-findings with respect to the learning trade-off (see §9.2) and the relational trade-off (see §9.3).

For the performance dimensions, both learning and strategic, we found further support to continue with data analysis. To assess the fit of model 2 (i.e., learning), we examined the goodness-of-fit indices, which suggested a moderate fit between the theoretical model and the data (see Table 9.3). The Chi-square statistic again is significant (χ^2 = 123.152 d.f. = 71, p <.05), suggesting poor fit, but the normed Chi-square value indicates a good fit with a value of 1.735, well below the cut-off value of 3.0. Other indices provide support for a moderate fit; the values pertaining to the GFI (.889), NFI (.880), CFI (.944), and SRMR (.066) are just below their critical values. With respect to strategic performance (see Table 9.3, model 3), the goodness-of-fit indices indicate a good fit between the theoretical model and the data. Although we obtained an insignificant Chi-square of 99.332 (d.f. = 71), the normed Chi-square with a value of 1.399 is good, and the other indices support a good fit between data and the specified model, with values of .914 (GFI), .905 (NFI), and .970 (CFI). The value of the SRMR is .052, also indicating good fit. In summary, the goodness-of-fit indices provide sufficient support to proceed with an assessment of the measurement and structural models.

Measurement Models

Before interpreting the structural model, we must conclude that the measurement model possesses a satisfactory level of psychometric properties (Fornell et al., 1981) by examining the error variances, correlations, factor loadings, and standard errors (Bagozzi et al., 1988). Table 9.1 reports the factor loadings, standard errors, and z-statistics with respect to models 1 (i.e., financial), 2 (i.e., learning), and 3 (i.e., strategic). With respect to the exogenous variables, compensation integrativeness and compensation imbalance, the results indicate good convergent validity across the three models. With respect to model 1, the standardized factor loadings pertaining to compensation integrativeness are high, with values between .909 and .800, and compensation imbalance, captured with four indicators, reveals acceptable loadings with values between .825 and .681. All indicators load significantly on their intended latent constructs (i.e., z-values > 7.126, p < .05). With respect to model 2, we found similar results for compensation integrativeness and compensation imbalance. All indicators load significantly on the latent constructs (z-values > 7.101, p < .05), and the factor loadings range from .685 to .913. Finally, for model 3, the results also indicate acceptable convergent validity with significant loadings ranging from .684 to .915 (z-values > 7.091, p < .05).

The convergent validity of the dependent variables is good. Financial performance was operationalized with three indicators that capture the degree to which partner firms achieved their financial objectives, and the standardized loadings are acceptable with values of .949, .781, and .636. Financial performance imbalance, or the difference between the degree to which partner firms achieved their individual objectives, also was operationalized with three indicators. The loadings of .790, .795, and .574 indicate convergent validity. Learning performance possesses convergent validity, with factor loadings of .848, .810, and .666, and learning performance imbalance has loadings of .684, .782, and .521 (z-values > 4.882, p < .05). Strategic performance, captured with three indicators, has sufficiently high loadings with values of .794, .878, and .733. Strategic performance imbalance was operationalized

with three indicators, and loadings are acceptable with values of .559, .752, and .635. All indicators load significantly on the latent constructs (z-values > 4.884, $p < .05$). Although some concerns may exist with respect to factor loadings below .600, we decided to retain these indicators, as additional analysis (see Chapter 8) indicate the measures possess construct validity and all latent variables have sufficiently high reliabilities and discriminant validity.

Table 9.1 CVA Measurement Model: Compensation Trade-Off

	Model 1 Financial			Model 2 Learning			Model 3 Strategic		
Compensation Integrativeness	**L.**	**s.e.**	***z*-value**	**L.**	**s.e.**	***z*-value**	**L.**	**s.e.**	***z*-value**
CI_1: ($C_{1\ firm}$ + $C_{1\ partner}$)	.876			.880			.876		
CI_2: ($C_{2\ firm}$ + $C_{2\ partner}$)	.909	.069	15.128	.913	.068	15.350	.915	.068	15.347
CI_3: ($C_{3\ firm}$ + $C_{3\ partner}$)	.835	.073	13.037	.833	.073	13.057	.830	.073	12.933
CI_4: ($C_{4\ firm}$ + $C_{4\ partner}$)	.800	.082	12.086	.792	.082	11.951	.795	.082	12.003
Compensation Asymmetry									
CA_1: √(abs($C_{1\ firm}$ - $C_{1\ partner}$))	.681			.685			.688		
CA_2: √(abs($C_{2\ firm}$ - $C_{2\ partner}$))	.825	.152	8.176	.832	.154	8.909	.829	.152	8.141
CA_3: √(abs($C_{3\ firm}$ - $C_{3\ partner}$))	.763	.147	7.767	.752	.146	7.639	.757	.146	7.704
CA_4: √(abs($C_{4\ firm}$ - $C_{4\ partner}$))	.687	.146	7.126	.687	.146	7.101	.684	.145	7.091
Alliance Performance									
AP_1	.949			.848			.794		
AP_2	.781	.084	9,787	.810	.136	8.909	.878	.115	9.971
AP_3	.636	.099	7.890	.666	.157	7.753	.733	.136	8.837
Firm Performance Imbalance									
FPI_1	.790			.684			.559		
FPI_2	.795	.132	7.563	.782	.229	5.220	.752	.255	4.931
FPI_3	.574	.042	6.150	.521	.061	4.882	.635	.078	4.884

Notes: n = 144. Standardized coefficients; s.e. = standard error; L. = factor loading; Coefficients of leading indicator were set to 1.0 to establish the scale for the construct. See Chapter 7 for details of the computation of the aggregate measures.

Table 9.2 reports the Cronbach's alphas of each latent variable. Reliability values are good, with most scores above the cut-off value of .700 (Nunnally, 1978). The reliability scores are as follows: .913 (compensation integrativeness), .826 (compensation imbalance), .815 (financial performance), .709 (financial performance imbalance), .794 (learning performance), .650 (learning performance imbalance), .831 (strategic performance), and .611 (strategic performance imbalance). Although two reliability scores are not particularly high, we decided to maintain them because their convergent and discriminant validity is good.

We assessed discriminant validity by comparing the square root of the average variance extracted (AVE) with the correlations between the constructs (Fornell et al., 1981). The AVE should be higher than the correlations between the latent constructs (see §6.4). For model 1, the AVE values are .856 (compensation integrativeness), .742 (compensation imbalance), .799 (financial performance), and .727 (financial performance imbalance), higher than any of the pairwise correlations reported in Table 9.2 (-.380 < r < .480). We obtained similar results with respect to models 2 and 3; the AVE values of .606 (learning performance), .502 (learning performance imbalance), .804 (strategic performance), and .631 (strategic performance imbalance) are higher than the correlations between the constructs used in model 2 (-.380 < r < .355) or model 3 (-.380 < r < .472). To examine discriminant validity further, we

also compared a baseline model without constraints to a model in which we constrained the covariance between two constructs to a value of 1.0 (see §6.4). The findings indicated discriminant validity between the main constructs, as the baseline models fit the data better than did the constrained models (i.e., Chi-square difference test).[43] Together, the results indicated that the latent variables possess convergent validity, reliability, and discriminant validity. Hence, we can proceed with an investigation of the structural models.

Table 9.2 Hypotheses 2–4: Descriptive Statistics and Correlations

	Construct	1	2	3	4	5	6	7	8	9	10	11	12
1	Compensation integrativeness	***.913***											
2	Compensation imbalance	-.380***	***826***										
3	Absorption integrativeness	.486***	-.162	***.896***									
4	Absorption imbalance	-.247**	.297***	-.341***	***.688***								
5	Relational quality	.394***	-.318***	.374***	-.129	***.864***							
6	Opportunistic behavior	.038	-.028	.112	-.036	.041	***.661***						
7	Financial performance	.467***	-.109	.242*	-.060	.419***	.075	***.815***					
8	Financial performance imbalance	-.147	.480***	-.026	.238**	-.270**	.046	-.071	***.709***				
9	Learning performance	.366***	-.170*	.566***	-.234**	.553***	.046	.318***	-.058	***.794***			
10	Learning performance imbalance	-.172*	.270**	-.050	.317***	-.149	.094	.000	.444***	-.186*	***.650***		
11	Strategic performance	.472***	-.186*	.447***	-.122	.615***	.091	.563***	-.105	.605***	-.118	***.831***	
12	Strategic performance imbalance	-.189*	.298***	-.110	.317***	-.170*	.035	-.053	.570***	-.182*	.542***	-.216**	***.611***
	Mean	10.238	.4470	9.953	.566	5.317	4.306	23.263	1.0842	21.689	1.179	26.236	1.184
	Standard Deviation	1.943	.519	2.173	.482	1.300	1.320	8.878	.897	7.902	.863	8.365	.816

Notes: n = 144. Computations based on raw data with valid items (i.e., average). The diagonal shows the Cronbach's alpha.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Structural Model

Correlation Matrix

Table 9.2 reports the means, standard deviations, and correlations among the latent variables used for Hypotheses 2–4. With respect to Hypothesis 2, the results indicate that compensation integrativeness and compensation imbalance are negatively and significantly associated (r = -.380, $p < .05$). In addition, compensation integrativeness positively and significantly relates to financial performance (r = .467, $p < .05$), learning performance (r = .366, $p < .05$), and strategic performance (r = .472, $p < .05$), though it negatively and significantly relates to learning performance imbalance (r = -.172, $p < .05$) and strategic performance imbalance (r = -.189, $p < .05$). However, compensation integrativeness is not significantly related to financial performance imbalance (r = -.147, $p > .05$). Compensation imbalance positively and significantly relates to financial performance imbalance (r = .480, $p < .05$), learning performance imbalance (r = .270, $p < .05$), and strategic performance imbalance (r = .298, $p < .05$). We found significant and negative associations between compensation imbalance and learning performance (r = -.170, $p < .05$) and strategic performance (r = -.186, $p < .05$), though not with financial performance (r = -.109, $p > .05$). Together, these pairwise correlations provide tentative support for the compensation trade-off. However, to gain a better understanding of the hypothesized relationships (i.e., Hypotheses 2a–2f), we next present findings obtained through estimations of the structural models.

[43] We decided not to report the results, as we estimated and examined 18 models.

Model 1: Financial

The estimates produced through ML estimation for model 1 provide no support for Hypothesis 2[44] (see Table 9.3). The association between compensation integrativeness and compensation imbalance is significant and negative (r = -.417, p < .05), in support of Hypothesis 2a, and the results also provide support for Hypotheses 2b and 2e, because compensation integrativeness positively and significantly relates to financial performance (β = .515, p < .05), and compensation imbalance positively and significantly relates to financial performance imbalance (β = .624, p < .05). However, the findings provide no significant support for the hypothesized negative relationships between compensation integrativeness and financial performance imbalance (β = .099, p > .05) or compensation imbalance and financial performance (β = .119, p > .05). In addition, financial performance and financial performance imbalance are not significantly associated (r = -.115, p > .05). Hence, we must reject Hypotheses 2c, 2d, and 2f. For financial performance, the R^2 is .228, and for financial performance imbalance, it is .348, which suggests moderate explanatory power (Falk et al., 1992). Together, these findings indicate that an alliance's initial compensation structure functions as a value creation and appropriation mechanism, directly influencing the achievement of financial outcomes. However, the findings provide no support for the cooperation and competition trade-off, in that financial performance and financial performance imbalance are not significantly related.

Model 2: Learning

With respect to model 2 (i.e., learning), we found partial support for Hypothesis 2 (see Table 9.3). An assessment of the estimates indicates that the covariance between compensation integrativeness and compensation imbalance is significant and negative (r = -.415, p < .05), in support of Hypothesis 2a. The results also support Hypotheses 2b and 2e, because compensation integrativeness positively and significantly relates to learning performance (β = .404, p < .05), and compensation imbalance positively and significantly relates to learning performance imbalance (β = .275, p < .05). In addition, learning performance and learning performance imbalance are negatively and significantly related (r = -205, p < .10), in support of Hypothesis 2f. However, the findings provide no significant support for the hypothesized negative relationships between compensation integrativeness and learning performance imbalance (β = -.068, p > .05) or compensation imbalance and learning performance (β = -.030, p > .05). Thus, we reject Hypotheses 2c and 2d. The R^2 for learning performance is .179; that for firm performance balance is .089, which suggests limited explanatory power (Falk et al., 1992). Thus, according to the findings, an alliance's initial compensation structure does not function as an important value creation and appropriation mechanism with respect to learning outcomes.

[44] We hypothesized that compensation integrativeness and compensation imbalance are negatively associated (H2a), compensation integrativeness positively relates to alliance performance (H2b), compensation imbalance negatively relates to alliance performance (H2c), compensation integrativeness negatively relates to firm performance imbalance (H2d), compensation imbalance positively relates to firm performance imbalance (H2e), and alliance performance and firm performance imbalance are negatively associated (H2f).

Table 9.3 The Compensation Trade-Off (H_2): CVA Structural Model

	Model 1 Financial			Model 2 Learning			Model 3 Strategic		
	β	**s.e.**	***z*-value**	***β***	**s.e.**	***z*-value**	***β***	**s.e.**	***z*-value**
H2a: CI ←→ CA (-)	**-.417*** **	.087	-.3804	**-.415*** **	.088	-.3.799	**-.416*** **	.088	-3.802
H2b: CI → AP (+)	**.515*** **	.139	5.382	**.404*** **	.091	3.918	**.519*** **	.105	5.048
H2c: CA → AP (-)	.119	.616	1.224	-.030	.397	-.292	-.018	.434	-.182
H2d: CI → FPI (-)	.099	.030	1.012	-.068	.027	-.608	-.162	.024	-1.440
H2e: CA → FPI (+)	**.624*** **	.166	4.973	**.275***	.130	2.237	**.324** **	.118	2.826
H2f: AP ←→ FPI (-)	-.115	.120	-1.041	**-.205**†**	.074	-1.776	**-.289** **	.074	-2.278
Squared Multiple Correlation									
Alliance Performance	.228			.179			.262		
Firm Performance Imbalance	.348			.089			.175		
χ^2 **(d.f.)**	122.014 (71) $p < .05$			123.152 (71) $p < .05$			99.332 (71) $p < .05$		
Normed χ^2	1.719			1.735			1.399		
GFI	.891			.889			.914		
NFI	.891			.880			.905		
CFI	.950			.944			.970		
SRMR	.057			.066			.052		

Notes: n = 144. Standardized coefficients; β = beta coefficient; s.e. = standard error; CI = compensation integrativeness; CA = compensation asymmetry; AP = alliance performance; FPI = firm performance imbalance.
† ≤ .10; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Model 3: Strategic

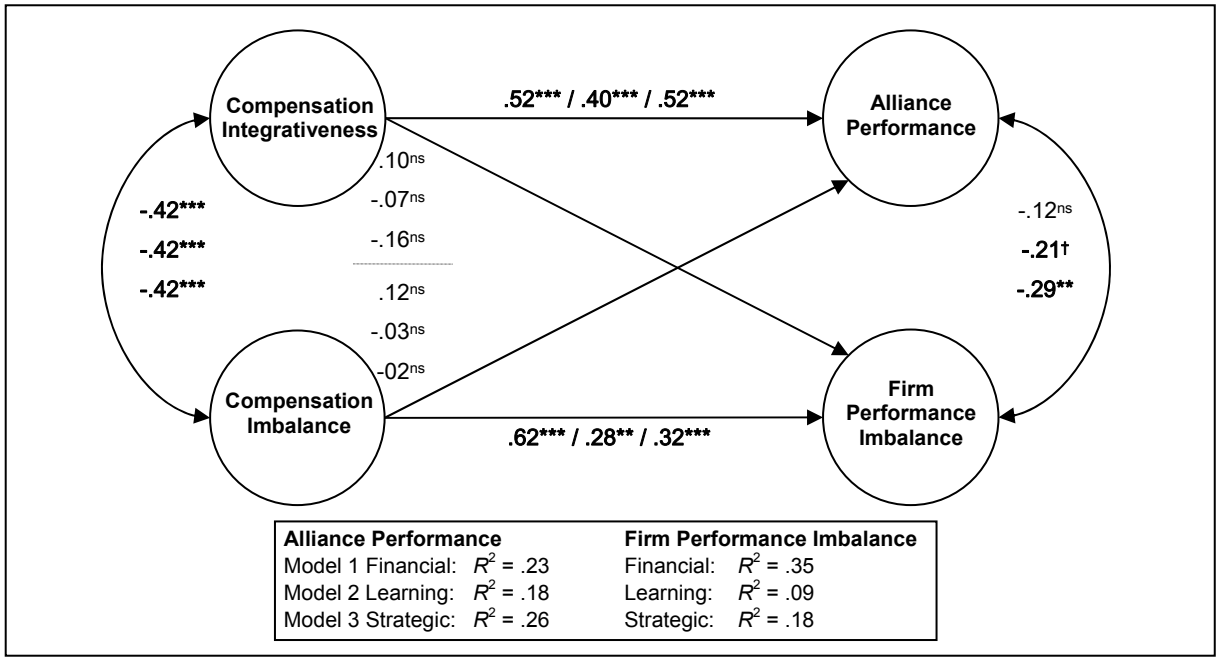
The model 3 results of the ML estimation provide partial support for Hypothesis 2 (see Table 9.3). As predicted in Hypothesis 2a, the association between compensation integrativeness and compensation imbalance is significant and negative (r = -.416, $p < .05$), and as anticipated in Hypotheses 2b and 2e, compensation integrativeness positively and significantly relates to strategic performance (β = .519, $p < .05$), and compensation imbalance positively and significantly relates to strategic performance imbalance (β = .324, $p < .05$). In addition, strategic performance and strategic performance imbalance are negatively and significantly related (r = -.289, $p < .05$), in support of Hypothesis 2f. However, the findings provide no support for the hypothesized negative relationships between compensation integrativeness and strategic performance imbalance (β = -.162, $p > .05$) or compensation imbalance and strategic performance (β = -.018, $p > .05$), leading us to reject Hypotheses 2c and 2d. The R^2 for strategic performance is .262, and the R^2 for strategic performance balance is .175, which suggests moderate explanatory power. Compared with model 1 (i.e., financial), these findings indicate that the initial compensation structure functions as a critical value creation and appropriation mechanism that directly influences partner firms' achievement of strategic performance. However, in contrast to the financial model, we found support for a strong trade-off, such that when firms can realize a high level of strategic performance, the alliance is characterized by smaller differences between individual strategic outcomes.

Conclusions

Figure 9.1 graphically represents a summary of the findings with respect to Hypothesis 2, the compensation trade-off. One important finding pertains to the negative relationship we found between compensation integrativeness and compensation imbalance. Firms confront a trade-off between cooperation and competition during the alliance formation stage. Within our

sample of contractual alliances, firms adopted different trade-off solutions, ranging from a compensation structure characterized by a high value creation potential to one characterized by an asymmetrical distribution of anticipated rewards. Thus, firms that seek a mutually beneficial trade-off solution are less likely to increase their share of anticipated rewards at the expense of their counterparts, and an alliance's compensation structure functions as an important value creation and appropriation mechanism.

Figure 9.1 Results Hypothesis 2: The Compensation Trade-Off



Notes: *n* = 144. Financial / learning / strategic; Endogenous variables correlation is estimated by correlation among error terms.
ns not significant; † p ≤ .10; * p ≤ .05; ** p ≤ .01; *** p ≤ .001.

Another surprising finding pertains to the magnitude of the effect of compensation integrativeness and compensation imbalance on the dependent variables, which is conditional on the performance dimension. When we compare the findings from the financial, learning, and strategic models, we observe the following: Compensation integrativeness has a relatively strong influence on financial and strategic performance, but its impact on learning performance is moderate. Therefore, compensation integrativeness appears to function as a value creation mechanism, except with respect to learning outcomes. Furthermore, compensation imbalance seems to have a relatively strong influence on financial performance imbalance, but its impact on learning and strategic performance imbalance is weak and moderate, respectively. Therefore, compensation imbalance may function as a value appropriation mechanism but only with respect to financial performance.

Regarding the association between alliance performance and firm performance imbalance, we expected to find negative relationships, and consistent with the hypotheses, we found that learning performance and learning performance imbalance, as well as strategic performance and strategic performance imbalance, are negatively associated, which suggests a strong trade-off. That is, in alliances in which partner firms realize their learning objectives,

performance differences are less likely to be created. Similarly, alliances with a high level of strategic performance are less likely to be characterized by large differences between individual strategic performances. In contrast, we found support for a moderate trade-off with regard to financial outcomes, which means that the realization of financial outcomes is not related to their actual appropriation.

We derive several implications from these findings. An alliance's initial compensation structure affects the degree to which partner firms can achieve their financial objectives. However, compensation structure also has a negligible affect on learning outcomes, which implies that other factors probably influence the degree to which parties are able to create and appropriate learning benefits. In contrast, the findings suggest that an alliance's compensation structure directly influences strategic outcomes. Therefore, with respect to the compensation trade-off, partner firms need to find a delicate balance between cooperation and competition to realize their financial and strategic objectives. Together, these findings support the power perspective and the proposition that to advance understanding of performance in an alliance context, we must examine value creation and value appropriation mechanisms simultaneously. In Section 9.5, we discuss the implications of these findings further.

9.3 Hypothesis 3 The Learning Trade-Off

Drawing on the learning perspective (Hamel, 1991; Holmqvist, 2003; Kumar & Nti, 1998; Lubatkin et al., 2001), we proposed that as the alliance unfolds, partners confront a learning trade-off (see §5.2). That is, learning constitutes an ex-post value creation and appropriation mechanism. To capture the degree to which an alliance is characterized by learning potential and learning barriers, we introduced absorption integrativeness and absorption imbalance. We defined absorption integrativeness as the combination of each party's ability to assess and acquire the knowledge to which it is exposed throughout the alliance, regardless of whether the parties' abilities are balanced or imbalanced. We defined absorption imbalance as the asymmetry between parties' ability to assess and acquire knowledge. The empirical findings suggest that parties build relationships characterized by a trade-off between absorption integrativeness and absorption imbalance. However, the trade-off solution adopted by firms associates differentially with financial, learning, and strategic outcomes. Consistent with the operational definition of performance, we made a distinction among the financial, learning, and strategic performance dimensions. Consequently, we estimated three separate statistical models for Hypothesis 3 (i.e., models 4–6). For sake of parsimony, we discuss only the key findings pertaining to the goodness-of-fit indices and the measurement model. In Appendix 5, we report the detailed findings with respect to the measurement models.

Goodness of Fit and Measurement Model

With respect to Hypothesis 3, the goodness-of-fit indices have values above their critical values (see Table 9.4). For instance, the Chi-square statistic is insignificant with respect to the strategic (χ^2 = 84.757, d.f. = 71, p > .10) and the learning (χ^2 = 88.236, d.f. = 71, p < .10) model. An evaluation using the normed Chi-square statistic also indicates that the data fit with

the specified models; the scores range from 1.194 (model 6) to 1.313 (model 4), well below the critical value of 3.0. Other goodness-of-fit indices also indicate acceptable fit. For instance, the CFI with respect to each model is well above the desired value of .950, with scores of .971 (model 4), .977 (model 5), and .982 (model 6). Together, these findings suggest that we can proceed with an assessment of the measurement models.

Statistical models 4–6 all possess good psychometric properties. For instance, for the exogenous variables, the findings indicate good convergent validity with standardized factor loadings ranging from .542 to .885. Consistent with the findings discussed in Section 9.2, the dependent variables have acceptable convergent validity, with loadings ranging from .564 to .959 (financial), .520 to .853 (learning), and .562 to .881 (strategic). In addition, reliabilities are high: .896 (absorption integrativeness) and .611 (strategic performance imbalance).

Discriminant validity also is demonstrated; the findings indicate that the square root of the AVE is well above the pairwise correlations (see Table 9.2). For instance, with respect to model 4, the AVE values are .831 (absorption integrativeness), .573 (absorption imbalance), .791 (financial performance), and .726 (financial performance imbalance), all higher than any of the correlations between the four variables ($-.341 < r < .242$). Similar results emerge with respect to models 5 and 6, as the AVE values of .779 (learning performance), .675 (learning performance imbalance), .804 (strategic performance), and .652 (strategic performance imbalance) are higher than the correlations between the constructs used to estimate model 5 ($-.341 < r < .566$) and model 6 ($-.341 < r < .447$). In summary, with respect to models 4–6, the data fit the statistical model, and the measures possess construct validity.

Structural Model

Correlation Matrix

Table 9.2 reports the means, standard deviations, and correlations between the latent variables. The results indicate that absorption integrativeness and absorption imbalance are negatively and significantly associated ($r = -.341$, $p < .05$). In addition, absorption integrativeness positively and significantly relates to financial performance ($r = .242$, $p < .05$), learning performance ($r = .566$, $p < .05$), and strategic performance ($r = .447$, $p < .05$). However, in contrast to our expectations, absorption integrativeness is not negatively and significantly related to financial performance imbalance ($r = -.026$, $p > .05$), learning performance imbalance ($r = -.050$, $p > .05$), or strategic performance imbalance ($r = -.122$, $p > .05$). Absorption imbalance positively and significantly relates to financial performance imbalance ($r = .238$, $p < .05$), learning performance imbalance ($r = .317$, $p < .05$), and strategic performance imbalance ($r = .317$, $p < .05$), but no significant relationship was found between absorption imbalance and financial performance ($r = -.060$, $p > .05$) and strategic performance ($r = -.122$, $p > .05$), though we find a significant and negative association between absorption imbalance and learning performance ($r = -.234$, $p < .05$). Together, these pairwise correlations provide tentative support for Hypothesis 3 (i.e., Hypotheses 3a–3f).

Model 4: Financial

With respect to model 4 (i.e., financial), the estimates produced through ML estimation provide insufficient support for Hypothesis 3[45] (see Table 9.4). Specifically, the association between absorption integrativeness and absorption imbalance is significant and negative (r = -.433, p < .05), in support of Hypothesis 3a; absorption integrativeness positively and significantly relates to financial performance (β = .250, p < .05), in support of Hypothesis 3b; and absorption imbalance positively and significantly relates to financial performance imbalance (β = .389, p < .05), in support of Hypothesis 3e. However, the findings provide no support for the hypothesized negative relationships among absorption integrativeness and financial performance imbalance (β = .140, p > .05) or absorption imbalance and alliance performance (β = .081, p > .05). In addition, alliance performance and financial performance imbalance are not significantly related (r = -.125, p > .05). Thus, we must reject Hypotheses 3c, 3d, and 3f. For financial performance, the R^2 is .052, and for financial performance imbalance, it is .124, which suggests limited explanatory power (Falk et al., 1992). Together, these findings suggest that ex-post learning has a negligible influence on the degree to which firms realize their financial objectives.

Model 5: Learning

We found partial support for Hypothesis 3, the learning trade-off, when we tested model 5 (see Table 9.4). An examination of the estimates indicates that the covariance between absorption integrativeness and absorption imbalance is significant and negative (r = -.444, p < .05), in support of Hypothesis 3a. The results also support Hypotheses 3b and 3e, because absorption integrativeness positively and significantly relates to learning performance (β = .647, p < .05), and absorption imbalance positively and significantly relates to learning performance imbalance (β = .487, p < .05). Learning performance and learning performance imbalance are significantly, negatively related (r = -.294, p < .05), in support of Hypothesis 3f. However, the findings provide no support for the expected negative relationships between absorption integrativeness and learning performance imbalance (β = .147, p > .05) and absorption imbalance and learning performance (β = -.030, p > .05). Thus, we reject Hypotheses 3c and 3d. With respect to learning performance, the R^2 is .437, and for learning performance imbalance, the R^2 is .195, which suggests substantial explanatory power. Together, these findings indicate that learning functions as a value creation and appropriation mechanism, directly influencing firms' achievement of learning objectives. In addition, the findings provide support for the cooperation and competition trade-off, because learning performance and learning performance imbalance are negatively and significantly related.

[45] We hypothesized that absorption integrativeness and absorption imbalance are negatively associated (H3a), absorption integrativeness positively relates to alliance performance (H3b), absorption imbalance negatively relates to alliance performance (H3c), absorption integrativeness negatively relates to firm performance imbalance (H3d), absorption imbalance positively relates to firm performance imbalance (H3e), and alliance performance and firm performance imbalance are negatively associated (H3f).

Model 6: Strategic

The results for model 6 (i.e., strategic) provide partial support for Hypothesis 3 (Table 9.4). The association between absorption integrativeness and absorption imbalance is significant and negative (r = -.436, p < .05), in support of Hypothesis 3a. Hypotheses 3b and 3e also receive support; absorption integrativeness positively and significantly relates to strategic performance (β = .528, p < .05), and absorption imbalance positively and significantly relates to strategic performance imbalance (β = .477, p < .05). In addition, strategic performance and strategic performance imbalance are negatively and significantly related (r = -.446, p < .05), in support of Hypothesis 3f. However, the findings provide no support for the expected negative relationships between absorption integrativeness and strategic performance imbalance (β = .045, p > .05) and absorption imbalance and strategic performance (β = .126, p > .05), which leads us to reject Hypotheses 3c and 3d. The R^2 for strategic performance is .211, and that for strategic performance imbalance is .237, which suggests moderate explanatory power (Falk et al., 1992). In summary, the findings suggest that learning functions as a value creation and value appropriation mechanism, either enabling or inhibiting partner firms from achieving their strategic objectives.

Table 9.4 The Learning Trade-Off (H_3): CVA Structural Model

	Model 4 Financial			Model 5 Learning			Model 6 Strategic		
	β	**s.e.**	***z*-value**	***β***	**s.e.**	***z*-value**	***β***	**s.e.**	***z*-value**
H3a: AI ←→ AA (-)	**-.433*****	.108	-.3.532	**-.444****	.110	-3.633	**-.436*****	.107	-3.552
H3b: AI → AP (+)	**.250****	.146	2.375	**.647*****	.085	6.046	**.528*****	.107	4.759
H3c: AA → AP (-)	.081	.721	.685	-.030	.352	-.285	.126	.488	1.089
H3d: AI → FPI (-)	.140	.033	1.225	.147	.026	1.253	.045	.024	.378
H3e: AA → FPI (+)	**.389****	.177	2.787	**.487****	.146	3.096	**.477*****	.144	2.956
H3f: AP ←→ FPI (-)	-.125	.145	-.1.217	**-.294****	.059	-2.225	**-.446*****	.084	-3.090
Squared Multiple Correlation									
Alliance Performance	.052			.437			.211		
Firm Performance Imbalance	.124			.195			.237		
χ^2 **(d.f.)**	93.235 (71) p < .05			88.236 (71) p < .10			84.757 (71) p > .10		
Normed χ^2	1.313			1.243			1.194		
GFI	.918			.924			.925		
NFI	.891			.897			.900		
CFI	.971			.977			.982		
SRMR	.063			.060			.063		

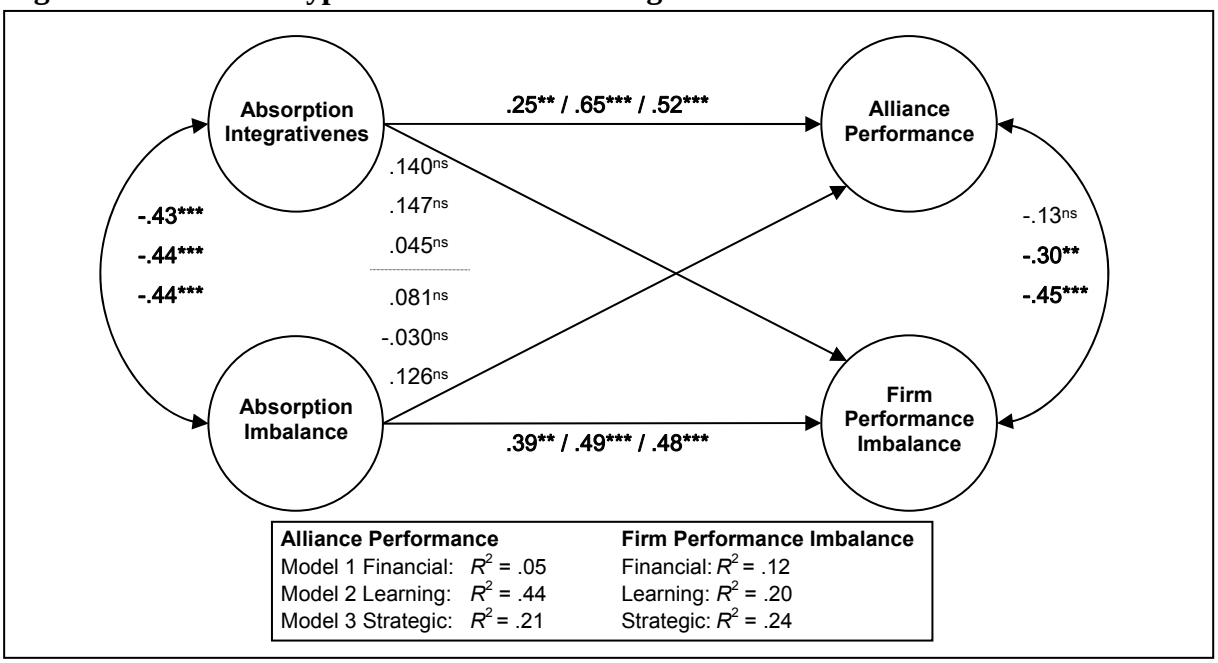
Notes: n = 144. Standardized coefficients. β = beta coefficient; s.e. = standard error; AI = absorption integrativeness; AA = absorption imbalance; AP = alliance performance; FPI = firm performance imbalance.
† ≤ .10; * p ≤ .05; ** p ≤ .01; *** p ≤ .001.

Conclusions

The findings provide partial support for Hypothesis 3. Figure 9.2 graphically represents a summary of the empirical findings. One important finding pertains to the negative relationship we find between absorption integrativeness and absorption imbalance. The results suggest that firms indeed confront a trade-off between cooperation and competition as the alliance unfolds. More specifically, within our sample of contractual alliances, firms adopted different trade-off solutions, ranging from a learning condition characterized by high value creation potential to conditions characterized by an imbalance in the learning opportunities

between the partners. That is, partner firms that established mutual openness did not simultaneously create conditions that allowed for asymmetrical learning. Inversely, the findings suggest that if one partner exploits opportunities to create a learning advantage at the expense of its counterpart, the value creation potential of the alliance is immediately reduced.

Figure 9.2 Results Hypothesis 3: The Learning Trade-Off



Notes: n = 144. Financial / learning / strategic; Endogenous variables correlation is estimated by correlation among error terms.
ns not significant; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Another surprising finding pertains to the magnitude of the effect of absorption integrativeness and absorption imbalance on the dependent variables, which is conditional on the performance dimension. When we compare the findings for the financial, learning, and strategic models, we observe the following: The trade-off between absorption integrativeness and absorption imbalance has a minimal impact on financial outcomes, but absorption integrativeness strongly influences learning and strategic performance. These findings suggest that absorption integrativeness functions as a value creation mechanism but only with respect to partner firms' learning and strategic objectives. Furthermore, the findings suggest that absorption imbalance directly influences learning and strategic performance imbalance. That is, when partners develop an alliance in which one party is better able to exploit a learning advantage, that partner also likely appropriates more learning and strategic benefits than its counterpart. This finding suggests that learning also functions as an appropriation mechanism. Regarding the association between alliance performance and firm performance imbalance, we found similar results compared with Hypothesis 2. More specifically, we found support for a strong trade-off with respect to learning and strategic outcomes. In addition, financial outcomes can best be depicted as a moderate trade-off. Together, these findings suggest that the relationship between realized value and appropriated value is conditional on the performance dimension.

We derive several implications from these findings. Learning processes directly affect the degree to which partner firms are able to achieve their learning and strategic objectives. However, the findings also indicate that learning has a negligible affect on financial outcomes, and hence, other factors likely influence the degree to which parties are able to create and appropriate financial benefits (e.g., bargaining power). Therefore, with respect to the learning trade-off, partner firms need to find a balance between cooperation and competition to realize learning and strategic objectives. These findings support the learning perspective, as well as the proposition that to advance understanding of performance in an alliance context, value creation and value appropriation mechanisms must be examined simultaneously. In Section 9.5, we discuss the implications of these findings further.

9.4 Hypothesis 4: The Relational Trade-Off

Drawing on the behavioral perspective (Aulakh et al., 1996; Cullen et al., 2000; Gouldner, 1960; Uzzi, 1996) we proposed that during the alliance post-formation stage, parties confront a relational trade-off (see §5.3). Specifically, we argued that relational norms constitute a value creation and appropriation mechanism that guides parties' behavior toward cooperation or competition. We also asserted that partner interactions guided by relational norms may develop into two types of patterns. On the one hand, partner firms could build a relationship with a long-term orientation, characterized by cooperative behavior. On the other hand, they might develop an alliance with a short-term focus characterized by competition. Cooperation is manifested through relational quality, which we defined as the extent to which partner firms feel comfortable, rely on trust when dealing with each other, and are committed to making the relationship work. In contrast, we contended that, according to the behavioral perspective, competition in alliances involves opportunistic behavior, which we defined as a party's active intention to increase its relationship benefits in ways that are explicitly or implicitly prohibited within the relationship. In contrast to our expectations, the empirical findings indicated that firms do not confront a trade-off between relational quality and opportunistic behavior. However, relational quality fulfills an important double function: It fosters learning and strategic performance while also reducing financial performance imbalance. Consistent with the operational definition of performance, we distinguished among financial, learning, and strategic performance dimensions, then estimated three separate statistical models with respect to Hypothesis 4 (i.e., models 7–9). For the sake of parsimony, we discuss only the key findings with respect to the goodness-of-fit indices and the measurement model. In Appendix 5, we report the detailed findings pertaining to the measurement models.

Goodness of Fit and Measurement Model

With respect to Hypothesis 4, the goodness-of-fit indices reveal values above their critical levels (Table 9.5). For instance, despite the significant Chi-square statistics, an evaluation using the normed Chi-square statistic indicates that the data fit the specified models; scores range from 1.462 (model 8) to 1.594 (model 9), well below the critical value of 3.0. Other goodness-of-fit indices also indicate acceptable fit. The CFI for each model is above the critical value of .950, with scores of .961 (model 7), .963 (model 8), and .954 (model 6).

Each model also possesses good psychometric properties (see Appendix 5). The findings related to the exogenous variables, relational quality and opportunistic behavior, indicate good convergent validity, with standardized factor loadings ranging from .941 to .567. Consistent with the findings discussed in Sections 9.2 and 9.3, the dependent variables also achieve acceptable convergent validity with loadings ranging from .560 to .931 (financial), .495 to .907 (learning), and .539 to .882 (strategic). In addition, reliabilities are high—.896 (absorption integrativeness) and .611 (strategic performance imbalance)—and the reliability is good—.611 (strategic performance imbalance) to .864 (relational quality). Although some factor loadings and reliability scores are below the critical values, we decided to retain them as additional analysis indicated no concerns for estimation biases (see Chapter 8). The findings also indicate discriminant validity; the square root of the AVE is well above the pairwise correlations (see Table 9.2). For instance, with respect to model 7, the AVE values are .836 (relational quality), .655 (opportunistic behavior), .799 (financial performance), and .726 (financial performance imbalance), higher than any of the correlations between the four variables ($-.270 < r < .419$). Similar results were obtained from models 8 and 9, in that the AVE values of .778 (learning performance), .684 (learning performance imbalance), .804 (strategic performance), and .657 (strategic performance imbalance) were higher than the correlations between the constructs used to estimate model 7 ($-.234 < r < .553$) or model 9 ($-.170 < r < .615$). These findings were supported by additional tests, in which we compared a baseline model without constraints to a model in which we constrained the covariance between two constructs to a value of 1.0 (see §6.4).[46] In summary, for models 7–9, the data fit well, and the measures possess construct validity, suggesting that we can proceed with an examination of the structural models.

Structural Model

Correlation matrix

Table 9.2 reports the means, standard deviations, and correlations between the latent variables. The results indicated that relational quality and opportunistic behavior are not significantly associated ($r = .041$, $p > .05$). However, relational quality positively and significantly relates to financial performance ($r = .419$, $p < .05$), learning performance ($r = .553$, $p < .05$), and strategic performance ($r = .615$, $p < .05$) and negatively and significantly associates with financial performance imbalance ($r = -.270$, $p < .05$) and strategic performance imbalance ($r = -.170$, $p < .05$). We find no significant relationship of relational quality with learning performance imbalance ($r = -.149$, $p > .05$), nor opportunistic behavior and financial performance ($r = .075$ $p > .05$), financial performance imbalance ($r = .046$, $p > .05$), learning performance ($r = .046$, $p > .05$), learning performance imbalance ($r = .094$, $p > .05$), strategic performance ($r = .091$, $p > .05$), or strategic performance imbalance ($r = -.009$, $p > .05$). Together, these findings provide no support for the relational trade-off, but to reject Hypothesis 4 we must examine the structural models in-depth.

[46] Results are not reported.

Model 7: Financial

The estimates of model 7 produced through ML estimation provide no support for Hypothesis 4 (see Table 9.7), because the association between relational quality and opportunistic behavior is not significant (r = .020, p > .05). The results provide support for Hypotheses 4b and 4d, in that relational quality positively and significantly relates to financial performance (β = .457, p < .05) and negatively and significantly relates to financial performance imbalance (β = -.303, p < .05), they provide no support for the expected positive relationship between opportunistic behavior and financial performance imbalance (β = .095, p > .05) or the negative relationship between opportunistic behavior and alliance performance (β = .125, p > .05). Consistent with prior findings, financial performance and financial performance imbalance are also not significantly related (r = .034, p > .05). Together, these findings provide no support for Hypotheses 4c, 4e, and 4f. Finally, with respect to financial performance, the R^2 is .100, whereas for financial performance imbalance, the R^2 is .227, which suggests moderate explanatory power. Relational quality thus appears to fulfill an important function with respect to value appropriation, such that its presence reduces the differences between individual financial performance derived through the alliance.

Model 8: Learning

In testing model 8 (i.e., learning), we again found no support for Hypothesis 4. The relationship between relational quality and opportunistic behavior is not significant (r = .015, p > .05), which rejects Hypothesis 4a. However, the results indicate support for Hypotheses 4b and 4d, in that relational quality positively and significantly relates to learning performance (β = .661, p < .05) and negatively and significantly relates to learning performance imbalance (β = -.180, p < .10). However, the findings provide no support for the expected positive relationship between opportunistic behavior and learning performance imbalance (β = .191, p > .05) or the negative relationship between opportunistic behavior and alliance performance (β = .001, p > .05). Learning performance and learning performance imbalance are negatively and significantly related at the 10% level (r = -.206, p < .10). Thus, we reject Hypotheses 4c and 4e but find moderate support for Hypothesis 4f. The R^2 of learning performance is .461; the R^2 of learning performance imbalance is .050. In contrast with model 7, relational quality appears to function as an important value creation mechanism, directly associated with learning performance.

Model 9: Strategic

The results of the ML estimation for model 9 provide no support for Hypothesis 4 (Table 9.5). The relationship between relational quality and opportunistic behavior is not significant (r = .013, p > .05), so we reject Hypothesis 4a. However, we find support for Hypotheses 4b and 4d; relational quality positively and significantly relates to learning performance (β = .671, p < .05), and it negatively and significantly relates to learning performance imbalance (β = -.277, p < .05). The findings provide no support for the expected positive relationship between opportunistic behavior and learning performance imbalance (β = .079, p > .05) or the negative relationship between opportunistic behavior and alliance performance

(β = .108, p > .05), which means we must reject Hypotheses 4c and 4e. Yet learning performance and learning performance imbalance are negatively and significantly related (r = -.273, p < .05), in support of Hypotheses 4f. The R^2 for strategic performance is .447, and that for strategic performance imbalance is .090. Similar to the results of model 8, these findings suggest that relational quality functions as an important value creation mechanism.

Table 9.5 The Relational Trade-Off (H_4): CVA Structural Model

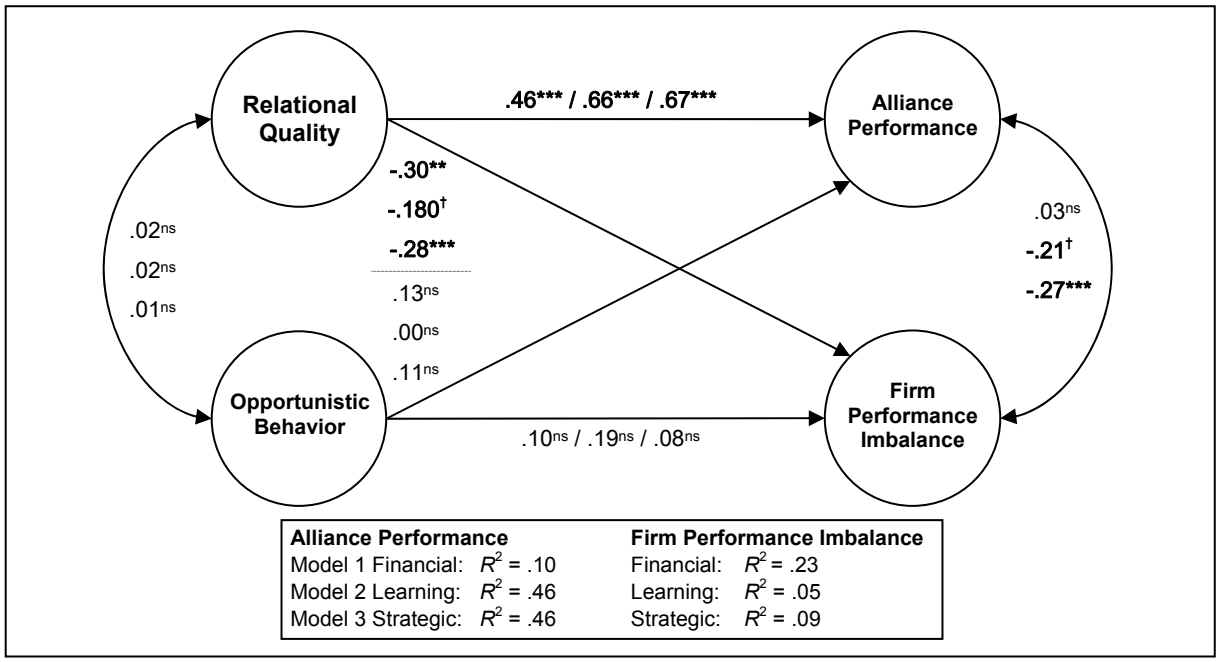
	Model 7 Financial			Model 8 Learning			Model 9 Strategic		
	β	**s.e.**	***z*-value**	***β***	**s.e.**	***z*-value**	***β***	**s.e.**	***z*-value**
H4a: RQ ←→ OP (-)	.020	.165	.186	.015	.167	.682	.013	.160	.122
H4b: RQ → AP (+)	**.457*****	.161	5.270	**.661*****	.102	7.538	**.671*****	.124	7.209
H4c: OB → AP (-)	.125	.242	1.253	.001	.137	.016	.108	.157	.879
H4d: RQ → FPI (-)	**-.303****	.039	-.3.080	**-.180**†	.027	-1.805	**-.277*****	.030	-2.508
H4e: OB → FPI (+)	.095	.058	.850	.191	.041	1.613	.079	.042	.917
H4f: AP ←→ FPI (-)	.034	.130	.326	**-.206**†	.054	-1.741	**-.273***	.064	-2.110
Squared Multiple Correlation									
Alliance Performance	.100			.461			.457		
Firm Performance Imbalance	.227			.050			.090		
χ^2 **(d.f.)**	72.401 (48) p < .05			70.168 (48) p < .05			76.523 (48) p < .05		
Normed χ^2	1.508			1.462			1.594		
GFI	.922			.925			.924		
NFI	.895			.894			.889		
CFI	.961			.963			.954		
SRMR	.066			.067			.068		

Notes: n = 144. Standardized coefficients. β = beta coefficient; s.e. = standard error; RQ = relational quality; OB = opportunistic behavior; AP = alliance performance; FPI = firm performance imbalance.
† ≤ .10; * p ≤ .05; ** p ≤ .01; *** p ≤ .001.

Conclusions

Figure 9.3 graphically depicts a summary of the empirical findings. The data provide no support for Hypothesis 4, the relational trade-off. Irrespective of the performance dimensions, firms do not trade off relational quality with opportunistic behavior, and building a high-quality relationship does not necessarily induce additional management costs (i.e., proxy measure). Nonetheless, we find substantial support for the behavioral perspective, in that relational quality functions as a value creation and value appropriation mechanism. However, the impact of relational quality on alliance and firm performance is conditional on the performance dimension. That is, not only does relational quality foster learning and strategic performance, but a high-quality relationship also attenuates the differences between firms' financial performance. Relational quality appears to attenuate the risk that one party will appropriate financial benefits at the expense of its counterpart. However, unlike other value creation mechanisms (e.g., compensation structure), it does not contribute to financial performance substantially. Rather, relational quality fosters learning and strategic performance, but as the relationship with learning and strategic performance imbalance is negligible, building relational quality does not offer a fruitful strategy for reducing the differences in individual firms' learning and strategic performance. Thus, conditional on the performance objective, a high-quality relationship can serve multiple purposes.

Figure 9.3 Results Hypothesis 4: The Relational Trade-Off



Notes: n = 144. Financial / learning / strategic; Endogenous variables correlation is estimated by correlation among error terms. ns not significant; † $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

9.5 Conclusions

In this chapter, we presented the empirical results with respect to Hypotheses 2–4, which stated that firms confront three types of cooperation and competition trade-offs: compensation, learning, and relational. Drawing on the conceptualization of a trade-off, we argued that in an alliance context, the relationships between value creation and value appropriation can best be depicted as a cooperation and competition trade-off. In particular, we argued that during the alliance formation stage, partners use their bargaining power to resolve a compensation trade-off (Hypothesis 2). We also postulated that during the post-formation stage, firms must resolve the learning trade-off to achieve their objectives (Hypothesis 3) and that relational norms guide parties' behavior toward cooperation and competition (Hypothesis 4). To provide a test of the three cooperation and competition trade-offs, we introduced six hypotheses relating cooperation, competition, alliance performance, and firm performance imbalance. Consistent with the operational definition of performance, we distinguished among financial, learning, and strategic outcomes. Consequently, with respect to each cooperation and competition trade-off, we estimated three models and undertook nine tests overall. The empirical findings provide partial support for Hypotheses 2 and 3 but no support for Hypothesis 4. Table 9.6 provides a summary.

Hypothesis 2

Drawing on the power perspective, we argued that firms face a compensation trade-off during the alliance formation stage (see §5.1), then hypothesized that compensation integrativeness and compensation imbalance may affect their ability to realize and appropriate value through a relationship. The findings indicate that firms confront such a trade-off between cooperation and competition during the alliance formation stage and, according to our sample of

contractual alliances, adopt a variety of trade-off solutions. Surprisingly, the findings indicate that the impact of compensation integrativeness and compensation imbalance on the dependent variables is conditional on the performance dimension considered. That is, compensation integrativeness fosters financial and strategic performance, and compensation imbalance positively influences financial and strategic performance imbalance. When parties direct their efforts toward cooperation during the alliance formation stage, it appears to contribute to the ex-post realization of their financial and strategic objectives. In addition, the findings indicate that ex-ante competition regarding anticipated outcomes influences the ex-post distribution of financial and strategic benefits, such that a firm that has been able to exploit a bargaining power advantage during its alliance negotiations is also likely to appropriate more financial and strategic rewards than its counterpart. However, because the relationship between an alliance's compensation structure and learning outcomes is negligible, we must conclude that the initial compensation structure functions as a value creation and appropriation mechanism, but its impact is limited just to financial and strategic outcomes. More specifically, exercising bargaining power at the expense of a counterpart directly reduces the value creation potential of the alliance, but a firm also can exploit a bargaining power advantage to a certain degree during the formation stage without jeopardizing its long-term financial objectives, because the ex-post creation of financial outcomes does not affect the distribution of financial outcomes.

Hypothesis 3

Drawing on the learning perspective, we proposed that as the alliance unfolds, partners face a learning trade-off (see §5.2). We also hypothesized that absorption integrativeness and absorption imbalance affect these parties' ability to realize and appropriate value through the relationship. The findings indicate that firms confront a trade-off between cooperation and competition during the post-formation stage, because in our sample of contractual alliances, firms adopted trade-off solutions ranging from absorption integrativeness to absorption imbalance. Surprisingly, the findings also indicate that the impact of compensation integrativeness and compensation imbalance on the dependent variables is conditional on the performance dimension considered. An alliance's initial compensation structure functions as a value creation and appropriation mechanism affecting financial and strategic outcomes, but the trade-off between absorption integrativeness and absorption imbalance directly influences learning and strategic outcomes. Therefore, absorption integrativeness fosters learning and strategic performance, and absorption imbalance positively influences learning and strategic performance imbalance, according to the findings. Together, these influences suggest that when parties direct their efforts toward cooperation, they can realize their learning and strategic objectives. In addition, ex-post competition appears to influence the appropriation of learning and strategic outcomes, but not financial outcomes. That is, openness between partner firms contributes to value creation, whereas alliances characterized by asymmetrical learning are more likely to experience disproportional appropriations of learning and strategic benefits.

Hypothesis 4

Finally, drawing on the behavioral perspective, we proposed that during the alliance post-formation stage, parties confront a relational trade-off (see §5.3), so relational norms constitute a value creation and appropriation mechanism that guides their behavior toward either cooperation or competition (Aulakh et al., 1996; Cullen et al., 2000; Kauser et al., 2004; Uzzi, 1996). The findings suggest that relational quality and opportunistic behavior are not negatively associated; unfortunately, our proxy of opportunistic behavior (i.e., management costs) did not significantly relate to either relational quality or the performance dimensions.[47] Consequently, we did not find any support for a relational trade-off. Yet the findings also indicate that relational quality fulfills a double role in contractual alliances. When we focused solely on financial performance, we found that relational quality functions as a mechanism that prevents disproportional appropriation, such that if partner firms develop relational quality, the differences between individual financial performance derived through the alliance decrease. Although relational quality attenuates learning and strategic performance imbalances, it has a much stronger impact on learning and strategic performance at the alliance level. Therefore, relational quality seems to function as a value creation mechanism that stimulates partner firms to cooperate in their efforts to achieve learning and strategic objectives. Restated, building a high-quality relationship fulfills multiple functions; relational quality fosters value creation but also reduces value appropriation differences.

Table 9.6 Hypotheses 2–4: Summary of the Results

Hypothesis (model)	Fit	R^2							Implication
H2: Compensation Trade-off			**H2a**[a]	**H2b**	**H2c**	**H2d**	**H2e**	**H2f**	
Financial performance (1)	Yes	M – M	**Yes**	**Yes**	No	No	**Yes**	No	No support H2
Learning performance (2)	Yes	L – L	**Yes**	**Yes**	No	No	**Yes**	**Yes**	Partial support H2
Strategic performance (3)	Yes	M – L	**Yes**	**Yes**	No	No	**Yes**	**Yes**	Partial support H2
H3: Learning Trade-off			**H3a**	**H3b**	**H3c**	**H3d**	**H3e**	**H3f**	
Financial performance (4)	Yes	L – L	**Yes**	**Yes**	No	No	**Yes**	No	No support H3
Learning performance (5)	Yes	H – L	**Yes**	**Yes**	No	No	**Yes**	**Yes**[b]	Partial support H3
Strategic performance (6)	Yes	M – M	**Yes**	**Yes**	No	No	**Yes**	**Yes**	Partial support H3
H4: Relational Trade-off			**H4a**	**H4b**	**H4c**	**H4d**	**H4e**	**H4f**	
Financial performance (7)	Yes	L – M	No	**Yes**	No	**Yes**	No	No	No support H4
Learning performance (8)	Yes	H – L	No	**Yes**	No	**Yes**[2]	No	**Yes**[b]	No support H4
Strategic performance (9)	Yes	H – L	No	**Yes**	No	**Yes**	No	**Yes**	No support H4

Notes: Fit = goodness-of-fit indices; E.P. = explanatory power (alliance performance – firm performance imbalance). H = high (R^2 > .40), M = moderate (.20 < R^2 < .40), and L = low (R^2 < .20).

[a] a. Cooperation and competition are negatively associated.
b. Cooperation positively relates to alliance performance.
c. Competition negatively relates to alliance performance.
d. Cooperation negatively relates to firm performance imbalance.
e. Competition positively relates to firm performance imbalance.
f. Alliance performance and firm performance imbalance are negatively associated.

[b] 10% probability level.

[47] We discuss the limitations of the research, and thus the measurement issues, in greater depth in Section 10.3.

To conclude, depicting cooperation and competition within contractual alliances as a trade-off has resulted in findings that contribute to a better understanding of performance in an alliance context. We expected to find negative associations between resource categories, positive and negative relationships between resource categories and performance objectives, and negative associations between alliance performance and firm performance imbalance. As we have discussed in this chapter, the findings provide partial support for the conceptualization of the cooperation and competition trade-off in an alliance context. For instance, with respect to resource decisions, we found that firms must resolve the trade-off with respect to their anticipated compensation during the formation stage. We also found that firms are confronted with a learning trade-off as the alliance unfolds. Focusing on performance objectives, we unexpectedly found support for just a moderate trade-off with respect to financial outcomes, whereas learning and strategic outcomes represent a strong trade-off. Together, these findings suggest that within contractual alliances, parties must consider various cooperation and competition trade-offs at the different stages of alliance development. Moreover, decisions with respect to value creation and appropriation mechanisms should be made as the firms consider their performance objectives. In Chapter 10, we discuss the theoretical and managerial implications of the findings.

Chapter 10 Reflection and Discussion

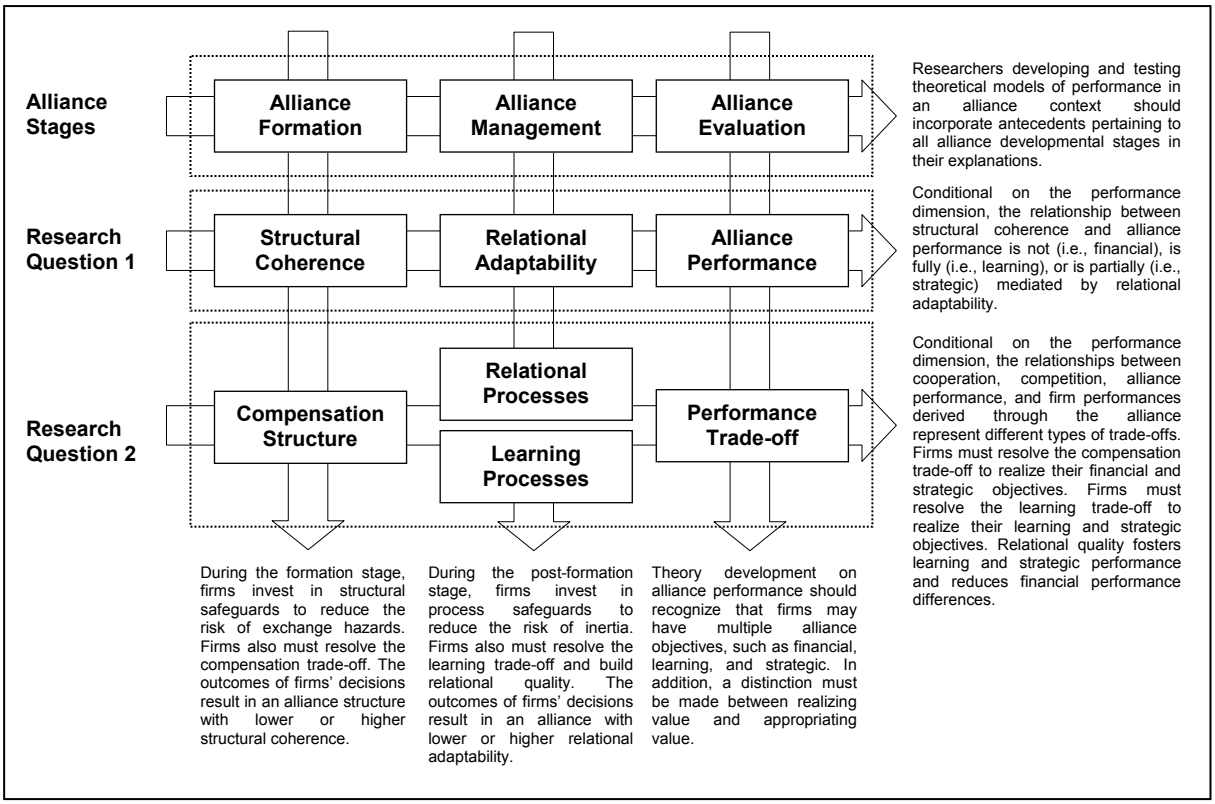
We started this dissertation by arguing that despite the unprecedented increase in alliance activity, strong anecdotal and empirical evidence indicates that alliance performance has remained weak. Firms entering alliances face considerable challenges from external dynamics, including changing market conditions, industry dynamics, and new technological developments, as well as internal dynamics, such as strategic shifts, opportunistic behavior, or failures to comply with contract obligations. To achieve superior performance, firms need to overcome these challenges by efficiently and effectively structuring and managing their relationships. Furthermore, firms need to resolve the difficulties surrounding joint value creation and overcome problems associated with appropriating their share of realized value. Therefore, the main aim of this dissertation has been to develop and test a theoretical model of performance in a strategic alliance context. With our research, we have made two substantial contributions. First, we developed, tested, and found empirical support for a hypothesis that reconciled the structure and process perspectives. Second, while drawing on the power, learning, and behavioral perspectives, we show that the simultaneous examination of the relationships among cooperation, competition, alliance performance and firm performance provides a more complete explanation of performance in contractual alliances. Thus, compared with previous alliance research, the findings extend and verify existing theoretical insights, but we also have produced several surprising insights.

This chapter presents the conclusions of the dissertation, organized as follows. In Section 10.1, we present the dissertation's findings. In Section 10.2, we discuss key findings and elaborate on several theoretical implications, whereas in Section 10.3, we present managerial implications. Limitations and directions for further research are discussed in Section 10.4, and we end the dissertation with concluding remarks in Section 10.5.

10.1 Findings

The objective was to provide a coherent set of explanations with respect to alliance performance while adopting a theoretically rich approach. Building on existing theoretical and empirical insights, we developed a research framework (see Figure 10.1) and identified two research questions that enabled us to achieve this objective. With respect to the first question—what is the relationship among alliance structure, alliance processes, and alliance performance?—we set out to develop and test a theoretical model specifying the relationships among structural coherence, relational adaptability, and alliance performance. To provide an answer to the second research question—what is the relationship among cooperation, competition, alliance performance, and firm performance derived through an alliance?—we developed a typology of trade-off types and argued that value creation and appropriation within strategic alliances represent a specific type of trade-off, that is, a cooperation and competition trade-off. Before we present and discuss the findings with respect to each research question (i.e., horizontal arrows in Figure 10.1), we briefly elaborate on the findings with respect to the alliance development stages (i.e., vertical arrows in Figure 10.1).

Figure 10.1 Research Framework and Contributions



Alliance Stages

In Chapter 1, we positioned the two research questions against the background of three alliance development stages: alliance formation, alliance management, and alliance evaluation (Brouthers et al., 1997; Das et al., 2002; Niederkofler, 1991). Building on the definition of structural coherence as the degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards, we argued that the purpose of structural safeguards is to provide, at minimum cost, the control that is necessary for parties to believe that engaging in the alliance will benefit them. Structural safeguards refer to formalized negotiation outcomes of decisions with respect to inter-firm characteristics resulting from partner selection, decision-making rights, non-recoverable investments, and compensation structure. The empirical results indicate that partner selection directly affects structural coherence through partner fit and resource complementarity. Sharing decision-making rights and joint commitment to non-recoverable investments also positively contribute to structural coherence, whereas imbalanced decision-making and non-recoverable investment imbalance have a negligible impact. Furthermore, we find that firms use a variety of instruments, including retaining own profit, sharing costs and revenues, royalties, and lump-sum payments, to organize their claims on future compensation. The findings also suggested that firms adopted different trade-off solutions with respect to their compensation structure. Thus, consistent with previous alliance research (Das et al., 2002; Doz, 1996; Dussauge et al., 1995; Harrigan, 1988; Parkhe, 1993a), we observe that firms entering alliances make decisions with respect to various structural safeguards, which may or may not contribute to the strength of foundation conditions.

For the alliance management stage, the research provided support for prior work with a focus on post-formation processes (Demirbag et al., 2000; Hamel, 1991; Inkpen et al., 2006; Mohr et al., 1994). The findings indicate that post-formation processes fulfill an important function to overcome ex-post problems and tensions between partners. Building on the definition of relational adaptability, that is, parties' willingness and ability to make modifications to the ongoing relationship without changing the initial alliance structure, we argued that firms investing time and resources to develop process safeguards are able to overcome inertial forces. The empirical findings indicate that parties that develop relational and learning processes foster relational adaptability. For instance, firms may decide to invest resources to develop a high-quality relationship characterized by trust, commitment, and mutual respect. Parties may also direct efforts toward knowledge transfer by developing learning capabilities or toward knowledge acquisition by developing absorption integrativeness. However, conditions stimulating a learning race hamper the development of relational adaptability. In sum, during the post-formation stage, firms may invest more or less in process safeguards, resulting in alliances with higher or lower relational adaptability.

When we compare the findings with previous research on alliance performance (Ariño, 2003; Geringer et al., 1991; López-Navarro et al., 2002; Olk, 2002), we recognize two important contributions. First, with respect to alliance evaluation, distinguishing among multiple performance dimensions, such as financial, learning, and strategic, is necessary to develop a coherent set of explanations of the relationship among antecedents and alliance performance. For instance, decisions made during the formation stage are particularly relevant to realize financial outcomes, whereas post-formation processes are important with respect to learning and strategic outcomes. Second, the findings suggest that it is not only important to make a distinction between alliance performance and firm performance but that theoretical models also should incorporate both outcomes to provide a comprehensive explanation. Although firms enter alliances to achieve individual objectives, they will only achieve those objectives if they cooperate to achieve the objectives of their counterparts. Hence, researchers who theorize about performance in an alliance context should include the relationship between realized value and appropriated value into their models. Next, we present the findings pertaining to the research questions (i.e., horizontal arrows in Figure 10.1).

Research Question 1: Alliance Structure and Alliance Process

Drawing on the structure perspective, we argued that during the alliance formation stage, parties erect structural safeguards to secure their individual interests and protect the relationship against exchange hazards. Structural safeguards reduce the occurrence of exchange hazards; in turn, the absence of exchange hazards fosters alliance performance. That is, an alliance structure should align parties' interests by creating an incentive structure that stimulates the creation of long-term gains through cooperation while also reducing the short-term gains from competition. Within the context of contractual alliances, the findings provide support for the structure perspective's basic propositions with respect to financial and strategic performance, but not with respect to learning performance (see Table 10.1).

Firms designing an alliance with an initial structure that consists of a constellation of mutually supportive structural safeguards experience higher levels of financial performance. Structural coherence reduces the risk of exchange hazards, which enables parties to focus on fulfilling their contractual obligations. Therefore, in the medium term, parties should be able to achieve their financial objectives even if they have not built relational adaptability. These findings imply that to achieve their financial objectives, firms can manage contractual alliances as discrete transactions, similar to a license or franchise relationship (Heide, 1994).

Table 10.1 Research Question 1: Key Findings

Research Question 1: What is the relationship among alliance structure, alliance processes, and alliance performance?

Theoretical Perspective	Empirical Findings
Structure perspective	
- Structural coherence refers to the degree to which the initial alliance structure constitutes a constellation of mutually supportive structural safeguards, including governance form, contractual provisions, and inter-firm characteristics, - Structural coherence reduces the risk of exchange hazards, such as opportunistic behavior, appropriation and spill-over concerns, and goal conflicts, - The impact of structural coherence on alliance performance is conditional on the performance objectives.	- Structural coherence directly influences financial performance and strategic performance. - Compensation integrativeness, resource complementarity, total non-recoverable investments, partner fit, and shared decision-making constitute structural safeguards. - Compensation imbalance undermines an alliance's structural coherence; the influence of decision-making imbalance and non-recoverable investment imbalance is negligible.
Process perspective	
- Relational adaptability refers to parties' willingness and ability to make modifications to the ongoing relationship, without changing the initial alliance structure. - Relational adaptability reduces the risk of inertial forces and exchange hazards. - The influence of relational adaptability on alliance performance is conditional on the performance objectives.	- Relational adaptability directly influences learning and strategic performance. - Absorption integrativeness, relational quality, and learning capabilities constitute process safeguards. - Absorption imbalance undermines relational adaptability, whereas the influence of opportunistic behavior is negligible.
Integrative perspective	
- Reconciliation of the structure and process perspectives increases explanatory power with respect to alliance performance. - The mediating effect of relational adaptability on the relationship between structural coherence and alliance performance is conditional on the performance objectives.	- Structural coherence directly influences relational adaptability. - The influence of structural coherence on financial performance is not mediated by relational adaptability. - The influence of structural coherence on strategic performance is partially mediated by relational adaptability. - The influence of structural coherence on learning performance is mediated by relational adaptability.

With respect to learning performance, the results support the process perspective. Building on the process perspective, we argued that during the alliance post-formation stage, parties may implement process safeguards to secure their individual interests (see §3.2). The purpose of process safeguards is to overcome inertial forces that hamper alliance performance. Similar to structural safeguards, process safeguards aim to direct the behavior of parties in the

relationship toward actions that will enable the parties to achieve individual interests while fostering collaboration as well. Confronted with the high probability that alliances evolve in ways that differ from initial expectations, parties need to build process safeguards so that they can efficiently and effectively implement modifications to the ongoing relationship. The empirical findings also indicate that relational adaptability fosters learning performance. Higher levels of learning performance occur if parties are willing and able to make adaptations to the ongoing relationship. Furthermore, when parties develop cooperative relational and learning processes, they reduce the risk of other ex-post exchange hazards. These findings do not suggest that structural coherence is not relevant. Although structural coherence does not directly affect learning performance, it still functions as an architecture that enables parties to build highly flexible relationships. This relationship between alliance structure and post-formation processes also pertains to strategic performance. The findings indicate that, on the one hand, structural coherence directly affects strategic performance, while on the other hand, parties achieve their strategic objectives by developing relational adaptability. Thus, to achieve their learning and strategic objectives, partner firms must seek a balance between ex-ante and ex-post investments, because the combination of initial conditions and post-formation processes drives performance. That is, neither the structure nor the process perspective alone can provide an adequate and coherent explanation. Whereas the structure perspective appears to be sufficient to understand financial performance, a reconciliation of the structure and process perspectives advances understanding of learning and strategic performance. We discuss these findings further in Section 10.2.

Research Question 2: Cooperation and Competition

The second research question focused on the relationships among cooperation, competition, alliance performance, and firm performance derived through the alliance. We proposed that this set of relationships could be depicted as a cooperation and competition trade-off (see §4.1). Within contractual alliances, firms are confronted with the need to seek a balance between cooperation and competition due to the scarcity of input resources. The choice to designate resources to a particular activity affects the amount of resources allocated to another activity, such that resource allocation to one activity comes at expense of the other. Within an alliance, firms may direct their efforts toward value-creation mechanisms at the expense of individual value appropriation. In addition, the direction and magnitude of the relationship between one resource category and a performance objective, A or B, can differ from the relationship between another resource category and performance objective A or B. We argued that firms forming and managing alliances confront a particularly strong type of trade-off, or a situation in which the partner firms confront not only resource scarcity but also a situation in which maximizing the level of individual firm performance, relative to counterparts, results in decreased performance at the alliance level. To better understand the nature of a cooperation and competition trade-off, we theorized about and tested three trade-offs: compensation, learning, and relational.

Compensation Trade-off

Drawing on the power perspective (Blau, 1964; Cook et al., 1978; Emerson, 1962; Pfeffer et al., 1978), we hypothesized that firms face a compensation trade-off during the alliance formation stage (see §5.1). Firms' use of bargaining power constitutes a value-creation and value-appropriation mechanism (Lax et al., 1986) that affects the design of the alliance's compensation structure. Parties exercise bargaining power to maximize their compensation ex-ante, such as by extracting additional financial rewards (e.g., advance payment), obtaining access to intellectual property, and optimizing their resource contribution. To capture the variety of compensation instruments, we introduced two constructs: compensation integrativeness and compensation imbalance. Compensation integrativeness refers to the combination of parties' anticipated benefits, such that a high level means that firms have formalized a compensation structure that maximizes the value-creation potential of the alliance. A compensation imbalance refers to the asymmetry between each party's anticipated benefits and thus implies firms have formalized a compensation structure in which one party can expect to appropriate more rewards from the alliance than its counterpart. Consistent with the conceptualization of the cooperation and competition trade-off, we hypothesized that compensation integrativeness and compensation imbalance affect parties' ability to realize and appropriate value through the relationship.

Within our sample of contractual alliances, firms adopted different trade-off solutions, ranging from a compensation structure characterized by high value creation potential to one characterized by an asymmetrical distribution of anticipated rewards. Unexpectedly, with respect to financial performance, we found that even though firms seek a balance between compensation integrativeness and compensation imbalance, excessive ex-ante claims on anticipated financial benefits by one partner do not affect the creation of financial benefits at the alliance level. Moreover, a moderate trade-off, which we defined as a situation in which the achievement of two performance objectives is unrelated, exists. In contrast, with respect to learning and strategic outcomes, we found support for a strong trade-off. However, because an alliance's compensation structure has an almost negligible influence on learning outcomes, factors other than compensation structure likely influence the degree to which parties can create and appropriate knowledge. The impact of compensation structure on strategic outcomes is substantial. A compensation imbalance enables one firm to obtain strategic benefits at the expense of its counterpart, whereas compensation integrativeness fosters strategic performance. In contrast to realizing financial outcomes, parties who jointly create strategic benefits also reduce the disproportional distribution of these strategic benefits.

The findings with respect to the compensation trade-off provide support for the power perspective's basic propositions (Blau, 1964; Cook, 1977; Emerson, 1962; Pfeffer et al., 1978). When two firms A and B engage in an alliance, they establish a power relationship that influences the configuration and outcomes of the relationship, particularly according to the design of the compensation structure. In addition, if an actor A maintains bargaining power over an actor B, it is likely to use that power to pursue its individual objectives—if necessary

at the expense of actor B. However, we also found that these propositions are valid only when we focus on financial and strategic outcomes. Moreover, the findings refine prior alliance research that has drawn on the power perspective (Blankenburg Holm et al., 1999; Bucklin et al., 1993; Lavie, 2007; Ramaseshan et al., 1998) by demonstrating that manifestations of bargaining power use relate differentially to various performance dimensions. That is, bargaining power drives financial and strategic outcomes, but it is not an effective mechanism to create and appropriate learning outcomes. Finally, in contrast to prior alliance research (Blankenburg Holm et al., 1999; Buchanan, 1992; Bucklin et al., 1993; Lavie, 2007; Ramaseshan et al., 1998), we captured an outcome of bargaining power use rather than focusing on power itself. With this approach, we eliminated factors, such as the difference between actual and perceived power (Kim et al., 2005), that may distort the relationship between bargaining power and negotiation outcomes.

Table 10.2 Research Question 2: Key Findings

Research Question 2: What is the relationship among cooperation, competition, alliance performance, and firm performance derived through an alliance?

Theoretical Perspective	Empirical Findings
Power perspective: - Bargaining power constitutes a value creation and appropriation mechanism, which firms use to design a compensation structure. - The impact of a compensation structure on alliance and firm performance is conditional on the performance objectives. - Financial objectives depict a moderate type of compensation trade-off, and strategic objectives depict a strong type compensation trade-off.	- Compensation integrativeness and compensation imbalance are negatively associated. - Compensation integrativeness positively affects financial and strategic performance, but has a negligible affect on learning performance. - Compensation imbalance positively affects financial and strategic performance imbalance, but has a negligible affect on learning performance imbalance
Learning perspective - Ex-post learning processes constitute a value creation and appropriation mechanism, which fosters or hampers parties' ability to assess and assimilate knowledge and information. - The impact of inter-organizational learning on alliance and firm performance is conditional on the performance objectives. - Learning objectives and strategic objectives depict a strong type learning trade-off.	- Absorption integrativeness and absorption imbalance are negatively associated. - Absorption integrativeness positively affects learning and strategic performance, but has a negligible affect on financial performance - Absorption imbalance positively affects learning and strategic performance imbalance, but has a negligible affect on financial performance imbalance
Behavioral perspective - Relational norms constitute a value creation and appropriation mechanism, which guides parties' conduct toward cooperation and competition. - The impact of cooperative relational norms on and firm performance is conditional on the alliance performance objectives. - No support is found for a relational trade-off.	- Relational quality and opportunistic behavior are not associated. - Relational quality positively affects learning performance and strategic performance. - Relational quality reduces financial performance imbalance.

Learning Trade-off

Drawing on the learning perspective (Hamel, 1991; Larsson et al., 1998; Lubatkin et al., 2001), we proposed that as the alliance unfolds, partners face a learning trade-off (see §5.2). We adopted the view that in complex alliances, parties need to assimilate newly created

knowledge or knowledge possessed by their partners to achieve their performance objectives (Lubatkin et al., 2001), irrespective of performance objectives. Consequently, learning constitutes an ex-post value creation (i.e., joint learning) and appropriation (i.e., individual learning) mechanism. To capture the extent to which an alliance is characterized by learning potential and learning barriers, we introduced two constructs: absorption integrativeness and absorption imbalance. Absorption integrativeness refers to each party's ability to assess and acquire knowledge; a high level of absorption integrativeness indicates that parties have little difficulty assessing the relevance of new knowledge (Inkpen et al., 1998) or assimilating this knowledge (Inkpen, 2000). Absorption imbalance refers to the asymmetry between parties' ability to assess and acquire knowledge. A high level of absorption imbalance indicates that one party possesses a learning advantage relative to its counterpart and that this party therefore can assess and acquire knowledge at a relatively faster pace than its counterpart.

The results suggest that firms are confronted with a trade-off between absorption integrativeness and absorption imbalance. Within our sample of contractual alliances, firms adopted different trade-off solutions, ranging from learning conditions characterized by a high value creation potential to those characterized by an imbalance in learning opportunities. With respect to financial outcomes, we found support for a moderate trade-off, but when compared with the compensation trade-off, the impact of absorption integrativeness and imbalance on financial outcomes is negligible. In terms of learning and strategic outcomes, we found substantial support for a strong trade-off, such that absorption integrativeness and absorption imbalance are negatively associated, alliance performance and firm performance imbalance (i.e., learning and strategic) are negatively related, absorption integrativeness fosters learning and strategic performance, and absorption imbalance positively relates to learning and strategic performance imbalance. These findings suggest that to achieve learning and strategic outcomes, firms need to resolve the learning trade-off. Moreover, as parties jointly create learning and strategic benefits, they also reduce the likelihood of disproportional distribution.

Taken together, these findings contribute to a better understanding of the learning perspective within the context of alliances. The findings provide support for the learning perspective's basic propositions (Hamel, 1991; Larsson et al., 1998; Lubatkin et al., 2001). When two firms A and B engage in an alliance, they establish a learning relationship that influences the development and outcomes of the relationship. In addition, if an actor A has a learning advantage relative to actor B, it likely will use this learning advantage to pursue individual objectives, even at the expense of actor B. However, exploiting a learning advantage primarily affects a firm's learning and strategic objectives. Furthermore, our research demonstrates that inter-organizational learning is not constrained to alliances with learning objectives, such as R&D alliances, but rather that firms that build cooperative learning processes also experience a higher level of strategic performance. An important implication of this finding applies to future research efforts aimed at examining inter-organizational learning processes; they may use, in addition to learning outcomes, other performance dimensions, such as financial and strategic (see §10.2).

To conclude, our research extends past alliance research on learning races (Hamel, 1991; Kumar & Nti, 1998; Larsson et al., 1998; Zeng et al., 2002). Drawing on the learning perspective, we have argued that firms may design and build an alliance that eliminates the conditions that may ignite a learning race between partners. Consistent with opponents of the learning race view (Grant et al., 2004; Zeng et al., 2002), we argued that partner firms' absorptive capacities, decisions about alliance structures, and knowledge exchange affect their abilities to assess and assimilate knowledge through the relationship. More specifically, though firms may possess different levels of absorptive capacities, they also may design and manage an alliance such that each partner has an equal opportunity to learn (Hamel, 1991; Inkpen et al., 2006). The empirical results indicate that firms trade off the potential for mutual learning with individual learning advantages. On the one hand, firms designed and managed alliances in which they foster mutual learning, but on the other hand, other firms designed and managed alliances in which they established conditions that stimulated the emergence of a learning race. If the conditions for a learning race are present, partners often experience difficulties in achieving their learning objectives at the alliance level; however, a firm with a learning advantage can realize its learning objectives at the expense of its partner.

Relational Trade-off

Drawing on the behavioral perspective (Gouldner, 1960; Uzzi, 1996; Poppo et al., 2002), we proposed that during the alliance post-formation stage, parties confront a relational trade-off (see §5.3). Relational norms may constitute a value creation and appropriation mechanism that guides parties' behavior toward cooperation or competition (Aulakh et al., 1996; Cullen et al., 2000; Kauser et al., 2004). Relational norms refer to expectations about future behavior, shared by partner firms (Heide & John, 1992). We also asserted that partner interactions may develop into two types of patterns: a relationship with a long-term orientation characterized by cooperative behavior or an alliance with a short-term focus characterized by competitive behavior. Cooperative relational norms foster relational quality, or the degree to which partner firms feel comfortable, are willing to rely on trust in dealing with each other, and are committed to make the relationship work. A high level of relational quality suggests that partner firms' intentions focus on long-term value creation and a willingness to sacrifice short-term gains (Ariño et al., 2001). In contrast, competitive relational norms likely stimulate opportunistic behavior, which we defined as a party's active intention to increase its benefits from the relationship in ways that are explicitly or implicitly prohibited within the relationship (Ping, 1993).

Unexpectedly, the empirical findings provide no support for a relational trade-off; relational quality and opportunistic behavior are unrelated. One explanation may pertain to the use of a proxy measure for opportunistic behavior, on which we elaborate in Section 10.4. Nonetheless, we found several surprising results—for instance, relational quality positively affects financial performance, but it also reduces financial performance imbalance. We found similar results with respect to learning and strategic outcomes, though with different implications. Whereas relational quality attenuates learning and strategic performance

imbalances, it has a stronger impact on learning and strategic performance than financial performance at the alliance level. Kale, Singh, and Perlmutter (2000) found that building relational capital simultaneously fosters learning and protects a firm's proprietary knowledge from unwanted transfer. This study's findings extend this result by revealing also that relational quality fulfills multiple functions in an alliance and that its impact on alliance outcomes depends on the partner firms' objectives.

Although we did not find support for a relational trade-off, the findings support the behavioral perspective in several ways. First, the findings suggest that when two actors are engaged in a relationship, they may build cooperative relational norms, which influences the development and outcomes of the alliance. Second, the findings extend prior work on the behavioral perspective by demonstrating that building a high-quality relationship can fulfill multiple functions. For example, relational quality fosters value creation, but it also attenuates value appropriation differences. Further research should explore this double-edged role of relational quality in alliances (Kale et al., 2000). Third, the research deviates from past alliance research in proposing that opportunistic behavior should be viewed as an outcome rather than an assumption (see §3.3). We did not find relationships with the dependent variables, but additional research should examine the role of opportunistic behavior, as an appropriation mechanism, in strategic alliances (Furrer & Den Ouden, 2006; Jap et al., 2003; Madhok, 2006; Ping, 1993).

To conclude, the research on cooperation and competition contributes to an in-depth understanding of the relationships between value creation and appropriation mechanisms and their impact on alliance performance and firm performance derived through the relationship. We have shown that the (implicit) assumptions that have dominated alliance research are questionable (i.e., value creation and value appropriation are either positively or unrelated). Although we did not find support for all the hypotheses, our research indicates that to develop a theory about value creation and appropriation within an alliance context (Dyer et al., 1998; Lavie, 2007; Lubatkin et al., 2001) researchers should theorize about and test these assumptions. Moreover, further research could benefit from distinguishing clearly among and specifying the relationships of value creation mechanisms, value appropriation mechanisms, realized value, and appropriated value. Our research thus is among the first to theorize and test these complex relationships, and the empirical findings warrant further research.

10.2 Discussion and Theoretical Implications

This dissertation offers rich evidence regarding the contributions of alliance design and management considerations to performance in a strategic alliance context. It complements a traditional focus on the implications of the formation and post-formation stages with a comprehensive research framework that explicates relationships between structure and process and between value creation and appropriation. It advances research on alliances by juxtaposing three alliance performance dimensions and thereby revealing the need to design and manage alliances consistent with their desired performance objectives. As mentioned

previously, our research has produced various relevant findings that may warrant further attention. Nonetheless, we decided to focus the discussion here on two main contributions: (1) the importance of structure and process and (2) the distinction between value creation and appropriation. We also identified three topics that we believe require further examination: (3) performance dimensions, (4) trade-off theory, and (5) theoretical integration.

Importance of Structure and Process

Our first main contribution is to distinguish between alliance structure and post-formation processes to explain alliance performance. Prior research typically considered structure and process separate mechanisms or focused on different conceptualizations of them. The findings reveal that distinguishing yet incorporating structure and process into one coherent theoretical model increases explanatory power. More specifically, the findings demonstrate that alliance structure fosters financial and strategic performance at the alliance level, whereas post-formation processes improve learning and strategic performance. These findings are surprising, given prior indications that have downplayed the role of post-formation processes or argued that structure is less important for realizing alliance objectives. For instance, Hennart (2006) argued that crafting an initial alliance structure is both easier and more crucial than the ex-post management of an alliance. In contrast, De Rond and Bouchikhi (2004) postulated that to understand alliance performance, it is necessary to develop a rich and detailed account of alliance development. Building on the findings, we conclude that these opposite views can be reconciled by means of considering multiple performance dimensions.

We provide support for the structure perspective, as the findings indicate that alliance structure matters: Efficient alliance design fosters performance at the alliance level. Consequently, the findings support theories that draw on the structure perspective, such as transaction cost economics (Williamson, 1985), the resource-based view (Das et al., 2000b), and game theory (Parkhe, 1993a). In terms of the transaction cost logic, the conceptualization of structural coherence associates with the conception of a quasi-hierarchy. To the extent that an initial alliance structure becomes more coherent, its nature grows similar to a unitary organizational entity. For example, parties may agree on hybrid compensation structures, share decision-making rights, or commit themselves to non-recoverable investments, which together create a set of reciprocal relationships between the parties that enable them to realize their objectives. With respect to the resource-based view, we found that the ex-ante alignment of complementary resources fosters value creation. Finally, we also produced some support for game theory insights, because we found that the nature of the payoff structure affects alliance development and performance. Consistent with the structure perspective's predictions, we conclude that the initial alliance structure constitutes an important and necessary condition to realize alliance performance.

Advocates of the process perspective also have stated that firms can reduce the risk of inertia by building cooperative post-formation processes. Learning and relational processes enable parties to repair initial design flaws without engaging in extensive contractual renegotiations.

Although developing ex-post processes requires substantial investments (Ariño et al., 2001), the findings suggest that these expenditures may be worthwhile because they foster alliance performance. In reference to prior work on inter-organizational learning (Holmqvist, 2003; Lubatkin et al., 2001), the findings suggest that decisions with respect to alliance design and management foster or inhibit partners' ability to assess and exchange knowledge. That is, the degree to which partner firms can transfer knowledge and information relates to the realization of their objectives. Consistent with relational governance predictions (Gouldner, 1960; Macneil, 1980), the findings suggest that relational quality stimulates parties' willingness and ability to make adjustments, which in turn contributes to alliance performance. Consistent with the process perspective, post-formation processes constitute an important and necessary condition for realizing alliance performance.

The observation that both alliance structure and alliance processes matter reverberates with conclusions from prior alliance research (Contractor, 2005). A finer grained examination of the findings also reveals that the results deviate from and extend past alliance research, in that we empirically demonstrate that (1) the initial alliance structure affects the development of post-formation processes and (2) the nature of the relationships among alliance structure, post-formation processes, and alliance performance depends on the performance dimension.

Traditional explanations based on the structure perspective are valid only when we focus on financial performance. Within our sample of contractual alliances, firms that designed a contractual alliance resembling a quasi-hierarchy enjoyed higher levels of financial performance. This finding is supported by Dussauge and Garrette (1995), who found that semi-structured alliances enjoy better economic performance than do unstructured co-production alliances. The implication is that to realize their financial objectives, firms should direct their efforts toward establishing a structurally coherent alliance rather than investing time and resources to build relational adaptability. Through careful partner selection, negotiation, and formalization, firms can design an alliance structure that enables them to deal with future contingencies. Moreover, to be financially successful, partner firms should implement structural safeguards that provide them with strong incentives to fulfill their contractual obligations.

Consistent with findings by Doz (1996), we find that alliance structure affects the degree to which partner firms are able to develop post-formation processes. He noted that in failing alliances, parties were unable to overcome initial design flaws, whereas in successful alliances, parties made adaptations to the ongoing relationship. If we turn our focus to learning performance, the results indicate that alliance structure serves as an architecture for relational adaptability, which is essential to achieve learning objectives. These findings also correspond with results reported by Lane, Salk, and Lyles (2001), who found that learning performance benefits as a result of a combination of initial conditions (e.g., knowledge relatedness) and post-formation processes (i.e., flexibility). Consequently, partner firms must focus on alliance formation and post-formation decisions. Moreover, design decisions should

attempt to reduce tensions that may result when firms are competitors or operate in different countries, whereas relational and learning processes enable parties to overcome emerging problems. In successful learning relationships, the importance of structure becomes negligible, as firms have created openness, transparency, and a high-quality relationship.

The interrelatedness of the structure and process perspectives becomes especially clear when we focus on strategic objectives. Consistent with prior alliance research, we find that to achieve their strategic objectives, partner firms must consider both alliance structure and post-formation processes. For instance, Aulakh et al. (1996) found that monitoring mechanisms and relational norms determine trust and that higher levels of trust positively influence sales growth and market share relative to competitors in cross-border partnerships. Similar to realizing learning objectives, partner firms must consider both the formation and post-formation stages when making decisions. However, unlike the situation with learning performance, the initial impact of alliance structure does not fade away. Within our sample of contractual alliances, we find that firms that designed structural coherent alliances realized strategic objectives through both an immediate and a delayed effect. Consequently, strategic objectives represent the most complex objectives to realize. In summary, whereas the structure perspective is sufficient to explain financial performance and the process perspective is sufficient to explain learning performance (without considering the antecedents of post-formation processes), neither is sufficient to explain strategic performance by itself.

Building on these findings, we argue that previous alliance research may require reassessments. For example, researchers who have investigated the relationships among structure, process, and alliance performance in isolation may have produced some spurious and partial findings. The validity of their findings depends on the performance dimension they used. Consider the study by Sampson (2004), who found that governance forms designed to match the predictions of transaction cost economics experience improved innovation performance compared with misaligned alliances. Specifically, she uncovered a direct relationship between alliance structure and learning performance. The findings suggest that efficient governance forms foster learning performance, but only if partner firms also develop relational adaptability. Lane and Lubatkin (1998) found that structural elements, such as basic knowledge similarity, less management formalization, research centralization, compensation practices, and research communities, positively relate to joint venture learning performance. It could be that the inclusion of alliance processes into their model would have led to different conclusions. In contrast, Dussauge and Garrette (1995) found that semi-structured alliances achieve better economic performance than unstructured co-production alliances, and according to the findings, incorporating relational adaptability would not have changed their findings, because alliance structure directly associates with financial outcomes.

Extending this logic, our findings may contribute to a better understanding of why alliance research focusing on management control has produced inconclusive findings. For instance, though Yan and Gray (1994) attributed their conflicting results to a lack of theorizing and

mixed analysis levels, the findings instead indicate that different operational definitions of performance also may have produced these results, because they used an overall satisfaction measure and found a positive relationship between dominant control and firm performance. Ding (1997) found that dominant management control positively contributed to alliance performance when using financial and non-financial measures, but Child and Yan (2003) reported a positive relationship between shared control and performance when they captured performance with a mixture of financial, learning, and strategic indicators. One tentative interpretation of these findings is that dominant control fosters financial performance, as long as partners stick to the agreement. In contrast, shared control contributes to learning performance, because joint decision-making rights reduce information asymmetry. This interpretation also may affect other strands of alliance research. For instance, the debate surrounding whether contracts and relational variables (e.g., trust) are substitutes or complements may be clarified if we were to contrast performance measures. To test their hypotheses, Lui and Ngo (2004) captured performance with completion time and overall satisfaction, whereas Luo (2002a) operationalized it as sales level and return on investment. Thus, the use of different operational definitions of performance may have contributed to inconclusive findings within previous alliance literature.

To conclude, our main contribution notes that the effectiveness of resource allocation decisions with respect to initial alliance structure and post-formation processes depends on the performance dimension. In functional-oriented alliances with one type of objective, these decisions are straightforward. When two partners both have financial objectives, they achieve them through careful alliance design; however, learning and strategic objectives require a balance between a focus on design and post-formation process. When partners have diverging or multiple objectives, resources allocation decisions become far more difficult. For example, a mixture of financial and learning objectives would require both structural coherence and relational adaptability. Future studies should propose and test models that incorporate structure and process variables and use multiple operational definitions of performance.

Distinction between Value Creation and Value Appropriation

Our second main contribution involves distinguishing between value creation and value appropriation mechanisms to explain performance in an alliance context. Prior research typically considered either one mechanism or the other and adopted either an alliance- or firm-level analysis. As an important consequence, most built on an implicit assumption: Value creation and value appropriation are not or are positively related. In contrast, we juxtaposed four constructs and thus avoided misspecifications and explicated the implicit assumptions that have guided prior research. The findings result in a better understanding of performance in an alliance context. That is, we demonstrate that value creation and value appropriation mechanisms are negatively associated; efforts to increase individual performance may come at a high cost, because these efforts damage alliance performance. Inversely, partner firms primarily investing in value creation may forsake the opportunity to extract benefits from the alliance, which would not jeopardize value creation.

Generalizing from our findings, we extend theoretical perspectives with a primary focus on value creation. For instance, we contribute to the relational view (Dyer et al., 1998)—with its focus on relation-specific assets, knowledge sharing, complementary resources, and effective governance—by highlighting how value creation mechanisms may function as appropriation mechanisms and that appropriation may adversely affect value creation. Dyer and Sing (1998) argued that knowledge sharing routines foster the creation of relational rents. However, in addition to support for their proposition, we find that an imbalance in knowledge sharing inhibits value creation. The relational view further states that self-enforcement contributes to value creation. The findings reveal that formal governance through compensation may undermine value creation, and informal governance through relational quality affects both value creation and appropriation. Therefore, when we compare our findings with propositions derived from the relational view, we conclude that a sole focus on value creation mechanisms to explain alliance performance leads to only partial insights.

We also contribute to the resource-based view (RBV) by showing that "promising" value creation conditions do not necessarily result in equitable appropriation. Proponents of the RBV argued that the alignment of complementary resources fosters value creation (Das et al., 2000b; Lambe et al., 2002), and we support this proposition by demonstrating that ex-ante alignment of complementary resources positively contributes to the strength of the initial design. However, the RBV has a crucial limitation, which we made explicit with our research: The RBV is not sufficiently clear with respect to value appropriation, in that RBV theorists simply assumed that rewards fall to the proprietor of the resources (Coff, 1999). The findings instead indicate that appropriation mechanisms, such as bargaining power, learning, and relational norms, affect the ex-post distribution of benefits. Moreover, conditional on their performance objectives, firms may use different appropriation mechanisms to reap the benefits created through synergetic resource alignment. Thus, though valuable resources constitute a source of bargaining power (Blodgett, 1991b), supplying them does not guarantee that their provider will reap the associated benefits. The resulting paradox—why would a firm supply valuable resources if it is not rewarded accordingly?—can be resolved easily by integrating appropriation mechanisms into a resource-based view of alliances.

We also extend existing knowledge on value appropriation. For instance, we highlight that the excessive use of appropriation mechanisms by one party adversely affects joint value creation, in support of Contractor and Ra (2000), who demonstrated that contractual design affects post-formation behavior. They specifically postulated that the design of a compensation structure may stimulate cooperation or opportunistic behavior, which reverberates with the findings that compensation structure relates to financial and strategic outcomes. More important, the findings suggest that even though ex-ante claims on future benefits positively associate with ex-post appropriation, excessive appropriation also undermines the value creation conditions of an alliance. One stream of organizational learning research focused on the appropriation of learning benefits (Hamel, 1991; Larsson et al., 1998), mostly on the basis of the argument that the firm, if confronted with an opportunity, will exploit a learning

advantage. The findings provide support for this assertion, but they also indicate that firms can take precautions to rebalance asymmetrical learning advantages. Moreover, our findings suggest that the impact of these precautions extends beyond learning objectives, because ex-post learning also associates with the realization of strategic objectives. Thus, we improved understanding of value appropriation in alliances by demonstrating that value appropriation affects value creation and the use of different appropriation mechanisms have different consequences for various types of performance.

We empirically demonstrated that (1) making a distinction and specifying the relationships among value creation mechanisms, value appropriation mechanisms, alliance performance, and firm performance are necessary to advance theory development and (2) the effectiveness of resource allocation decisions with respect to cooperation and competition depend on the nature of the alliance objectives pursued by the partner firms. Moreover, allowing ourselves some interpretational leverage, we propose that firms may confront not only three cooperation and competition trade-offs but also one "meta" cooperation and competition trade-off. Drawing on prior research, we proposed and tested three types of cooperation and competition trade-offs during the formation and post-formation stages. Consistent with existing research on alliance design (Blodgett, 1991b; Hagedoorn et al., 2007), we focused on the alliance's compensation structure; drawing on process-oriented research, we also addressed learning (Hamel, 1991; Inkpen, 2000; Larsson et al., 1998) and relational (Ariño et al., 1998; Kale et al., 2000) aspects. Similarly, the majority of previous studies examined distinct value creation and appropriation decision-making situations in isolation. For instance, Hamel (1991) acknowledged bargaining power, but his analysis focused on learning. Blodgett (1991) examined bargaining power but did not address its relationship with learning. Tentatively, we postulate that resource allocation decisions made by firms during different development stages to resolve a cooperation and competition trade-off may then relate to other cooperation and competition decisions. For example, firms that want to maximize their financial performance through distributive negotiations during the formation stage may allow their counterparts to appropriate learning and strategic benefits as the alliance unfolds. Alternatively, a firm pursuing learning objectives may allow its counterpart to realize its strategic objectives in exchange for greater knowledge access. Framed within the setting of our research, to be successful, firms must seek a balance among the compensation, learning, and relational trade-offs.[48] If such a meta–trade-off exists, resource allocation decisions within strategic alliances are far more complex than they have been depicted to date.

Performance Dimensions

Although the explicit aim of this study was not to examine the relationships among performance dimensions, the results indicate that with respect to theory development,

[48] This assertion is supported by our qualitative work. Several senior alliance managers indicated that to be a successful alliance manager, one should have an in-depth "sense" of the temporal relationships between various value creation and appropriation mechanisms. In contrast, interview findings also indicated that less experienced alliance managers primarily focused on the short-term consequences of resource allocation decisions.

distinguishing among financial, learning, and strategic outcomes is relevant for understanding performance in an alliance context. That is, explanatory factors relate differentially to the three performance dimensions. Retrospectively, we argue that these results emerge because financial, learning, and strategic performance possess different characteristics (Büchel et al., 2001; Kogut, 1988b). In Table 10.3, we summarize the differences and similarities among financial, learning, and strategic performance dimensions.

Financial benefits refer to specific outcomes, such as profits, productivity, cost reductions, cash flows, and revenues. Financial benefits derived from an alliance are output oriented and contribute directly to a firm's economic return on investment (Büchel et al., 2001; Hagedoorn et al., 1994). Because of their economic foundation, financial benefits are relatively easy to specify and valuate ex-ante compared with learning and strategic benefits. During the formation stage, firms often negotiate and formalize financial compensation (Blodgett, 1991b), which means that parties need to fulfill their contractual obligations to achieve their financial objectives. In addition, their explicit nature means financial benefits have a short-term time horizon (Büchel et al., 2001). Compared with learning and strategic compensation, firms likely can anticipate immediate financial returns better once the alliance is implemented. Together, these characteristics suggest that when they formalize financial compensation, firms will share the pie (e.g., joint profits) according to predetermined distribution rules (e.g., royalty fee). It also suggests that firms can appropriate financial rewards by either using bargaining power or behaving opportunistically.

Table 10.3 Alliance Performance Dimensions

	Financial	Learning	Strategic
Characteristics	- Easy to specify - Easy to valuate - Private good	- Difficult to specify - Difficult to valuate - Public good	- Difficult to specify - Difficult to valuate - Private and public good
Examples	- Profits, costs, revenues, return on investments, operating efficiency	- Managerial know-how, technological know-how, market know-how, product development know-how	- Strategic advantage, market share, business opportunities, competitive position, risk reduction
Alliance development stage (ranked in order of importance)	1. Formation stage	1. Post-formation stage 2. Formation stage	1. Formation stage 2. Post-formation stage
Value creation and appropriation mechanism	- Bargaining power - Relational norms	- Learning - Relational norms	- Bargaining power - Learning - Relational norms
Time horizon	- Short-term	- Medium-term	- Long-term
Association	- Learning: moderate - Strategic: high	- Financial: moderate - Strategic: high	- Financial: high - Learning: high

In contrast, learning refers to a situation in which realized knowledge creation and transfer become clear only as the alliance unfolds. Because of their medium- and long-term orientations (Büchel et al., 2001), learning outcomes are relatively more difficult to specify and valuate ex-ante (Contractor, 2001; Furrer, Sudharsan, & Thomas, 2001). An ex-ante assessment of the value of market, technological, and production know-how and managerial skills is cumbersome (Blodgett, 1991a). Moreover, knowledge can be a public good, so parties can appropriate knowledge and information without depleting the source during different stages of alliance development (Monge et al., 1998). It is difficult, if not impossible,

to determine the amount of knowledge creation, let alone formalize parties' claims to this realized knowledge, and then distribute it according to a predetermined rule. This challenge may explain why post-formation processes are necessary to create and appropriate knowledge jointly.

Strategic benefits represent the third type of benefits, which include strategic advantage, market power, market share, competitive advantage, and risk reduction. Strategic benefits are outcome oriented, but unlike financial benefits, they have a long-term orientation (Büchel et al., 2001). Similar to learning benefits, strategic benefits are more difficult to specify and value and are surrounded by uncertainty, because it takes time to achieve them. In turn, the creation and appropriation of strategic benefits depends on three mechanisms: bargaining power, learning, and relational norms. Firms may appropriate know-how from their partners to strengthen their core competences, but they also may behave opportunistically and withhold critical information to gain a strategic advantage over their counterparts.

Drawing on the similarities and differences, we propose that within an alliance context, financial, learning, and strategic benefits are associated with one another. Short-term financial outcomes affect medium-term learning and then long-term strategic performance. The empirical findings provide some indirect support for these assertions (see §7.4), in that financial performance and learning performance are moderately associated, and strategic performance correlates highly with financial and learning performance. These findings may suggest that long-term strategic performance is driven by short-term financial performance and medium-term learning performance. In addition, financial success may foster inter-organizational learning. Unfortunately, due to the cross-sectional nature of our study, we were unable to examine the relationships between the performance dimensions further.

Nonetheless, these findings provide fruitful directions for further research. In line with past alliance research (Ariño, 2003; Büchel et al., 2001; Gray, 2001), researchers could theorize about and test the differences and similarities among the performance dimensions. By building on these distinctions, they might refine understanding of performance in an alliance context further. In achieving a good understanding of the interrelatedness of performance dimensions, subsequent research could explore the relationships between antecedents and performance dimensions. The findings of these future research efforts then might be compared with previous alliance research that focused on one performance dimension and with research that used multiple dimensions (see Olk, 2002 for a review).

Trade-Off Theory

Building on the conceptualization of a trade-off (see §4.1), we developed Hypotheses 2–4, which specify the relationships among cooperation, competition, alliance performance, and firm performance derived through the alliance. Drawing on the power, learning, and behavioral perspectives, we hypothesized that firms need to resolve three types of cooperation and competition trade-offs. More specifically, we expected to find negative associations

between resource categories, positive and negative relationships between resource categories and performance objectives, and negative associations between alliance performance and firm performance imbalance. As discussed previously, the findings provide partial support for the conceptualization of the cooperation and competition trade-off in an alliance context (see §10.1). However, the findings also suggest that different types of trade-off exist within and perhaps outside an alliance context.

Confronted with a plethora of trade-off definitions, our research presented a first attempt to develop a coherent typology. We therefore advocate for an extended refinement of the preliminary conceptualization of a trade-off. Additional research could extend the conceptualization of trade-off types, develop guidelines for conceptual and empirical identification, and examine situations in which trade-offs are likely to occur. Moreover, we need a better understanding of why, how, and in what conditions firms can find an optimum trade-off solution. In addition, we need to test trade-off types across contexts, such as among networks, alliances, and firms, through in-depth case analysis as well as cross-sectional and longitudinal research. Together, these research efforts could answer the remaining questions and thereby contribute to a much needed theory of trade-offs.

Once a theory of trade-offs is developed, it could be used to advance and complement existing theoretical perspectives. For example, a trade-off theory may contribute to a better understanding of the relationships between exploration and exploitation (see e.g., He et al., 2004), firms' profitability and market performance (see e.g., Armstrong et al., 2007), and value creation and value appropriation (see e.g., Coff, 1999) in contexts other than alliances. Considering exploration and exploitation strategies as a trade-off rather than a dilemma, for example, could result in different theoretical and managerial implications (He et al., 2004). In summary, advancing the conceptualization of a trade-off and developing a trade-off theory constitute substantial contributions to management research in general.

Theoretical Integration

Following suggestions in previous alliance research (Colombo, 2003; Kogut, 1988b; Nooteboom, 2004; Osborn et al., 1997; Zajac et al., 1993), we advocated and adopted a theoretically rich approach in which we drew on five distinct theoretical perspectives to develop the hypotheses. This theoretical approach resulted in substantial explanatory power and advanced knowledge of performance in an alliance context. For instance, we reconciled explanations put forward by advocates of the structure and process perspectives, and the empirical findings indicate neither perspective alone is sufficient to understand alliance performance. Drawing on the power, learning, and behavioral perspectives, our research also indicates that value creation and appropriation mechanisms differentially affect alliance performance and firm performance. Unfortunately, due to sample size restrictions, we were not able to test sophisticated models that aligned the compensation, learning, and relational trade-offs. Nonetheless, the findings in total suggest that theoretical integration is a fruitful avenue for future alliance research (see Box 10.1).

Looking at the hypotheses and empirical findings, we also see various opportunities for further capitalizing on theoretical integration. Although prior research has examined the relationships between structure and process (Carson et al., 2006; Das et al., 1998; Luo, 2002a; Macneil, 1978) and though we addressed the structure and process perspectives' core logic, key variables, level of analysis, and assumptions, several topics could be explored further. We focused on the dyadic level, but structure and process explanations may pertain to the firm and network levels too. In addition, research could focus on more subtle differences than we were able to unravel, such as contractual provisions and firm behavior (see e.g., Contractor et al., 2000), inter-firm characteristics and learning (see e.g., Lane et al., 1998), or exchange hazards and inertia (see e.g., Ariño et al., 1998). Past alliance research acknowledged that efficiency, equity, and adaptability constitute important criteria that partner firms can use to assess an alliance's performance (Ariño et al., 1998; Doz, 1996), but the relationship between parties' willingness and ability to make modifications, their perceptions of realized outcomes, and the distribution fairness of these outcomes needs further elucidation (see e.g., Jap, 2001a). Integrating the structure and process perspectives is one way to explore these research directions.

Box 10.1 Seven-Step Approach toward Theoretical Integration[49]

To ease theoretical integration, researchers may adopt the approach we used to guide our decisions. **First**, they can develop a fundamental abstraction of the theories proposed to be integrated. For instance, in this study, we developed Hypothesis 1 by drawing on the logic underpinning the structure and process perspectives. **Second**, they may reinterpret the unit of analysis. In drawing on the process perspective, we shifted our unit of analysis from processes to the outcomes of these processes. Consequently, we were able to develop Hypothesis 1 and specify the relationships among variables pertaining to the structure and process perspectives. **Third**, researchers should be clear about supporting implicit and explicit assumptions. For instance, in Section 3.3, we discussed the differences and similarities between the assumptions underpinning the structure and process perspectives. **Fourth**, they can build a new theory around inter-connected points. We hypothesized about the relationships among structural safeguards, process safeguards and exchange hazards. **Fifth**, researchers should clarify the purpose and focus of their theoretical explanations. With respect to Hypothesis 1, the main aim was to explain alliance performance. **Sixth**, they may clarify the conditions in which a theoretical force dominates. For example, our research demonstrated that the appropriateness of structure and process explanations depends on the performance objective considered. **Seventh**, they may anticipate possible critics; we discussed critiques of the structure and process perspectives to argue that the perspectives are complementary instead of mutually exclusive.

Example studies: Ghosh & John (1999); Madhok (2002); Oliver (1997); Ulrich & Barney (1984)

Additional research may also seek to reconcile the power, learning, and behavioral perspectives to theorize on the "meta" cooperation and competition trade-off. Drawing on each theoretical perspective, we identified value creation and value appropriation mechanisms, and though we compared each mechanism, we did not integrate the power, learning, and behavioral perspectives because of our focus on exploring the impact of each mechanism independently (see §5.5). Nonetheless, theoretical integration may advance understanding of performance in an alliance context; previous alliance research already

[49] We acknowledge Anoop Madhok for his constructive comments.

explored relationships between power and learning processes (Inkpen et al., 1997; Makhija et al., 1997), learning and relational processes (Kale et al., 2000; Lane et al., 1998), and power and relational processes (Yan et al., 2001). Hence, we recommend further research aimed at exploring the relationship between cooperation and competition should advance our findings by integrating them with prior research into a theoretical framework.

Building on the literature reviews (see Chapters 2 and 4), we decided to embed the hypotheses within five theoretical perspectives: structure, process, power, learning, and behavioral. The findings are not limited to these theoretical perspectives, and incorporating other explanations may result in additional insights. For example, our research provides support for transaction cost economics theory, but our support is constrained to financial and strategic outcomes, so aligning transaction cost economics with a learning perspective could provide additional clarification of the relationships between alliance structure and inter-organizational learning (Nooteboom, 2004). The findings also provide support for an organizational justice perspective (Adams, 1965; Deutsch, 1985). Drawing on this perspective, researchers could develop additional explanations that provide (better) support for the relationship between post-formation processes and alliance performance (see e.g., Luo, 2005), as well as for the relationship between alliance structure and alliance processes (see e.g., Ariño et al., 1998; Doz, 1996). Some additional insights might pertain to the relationship between compensation structure and relational processes (see e.g., Contractor et al., 2000), the relationship between decision-making and learning processes (see e.g., Makhija et al., 1997), or the impact of non-recoverable investments on relational and learning processes (see e.g., Gulati et al., 1994; Jap et al., 2003; Subramani et al., 2003). To advance theory development, future conceptual and empirical research should extend our findings by integrating them with other theories.

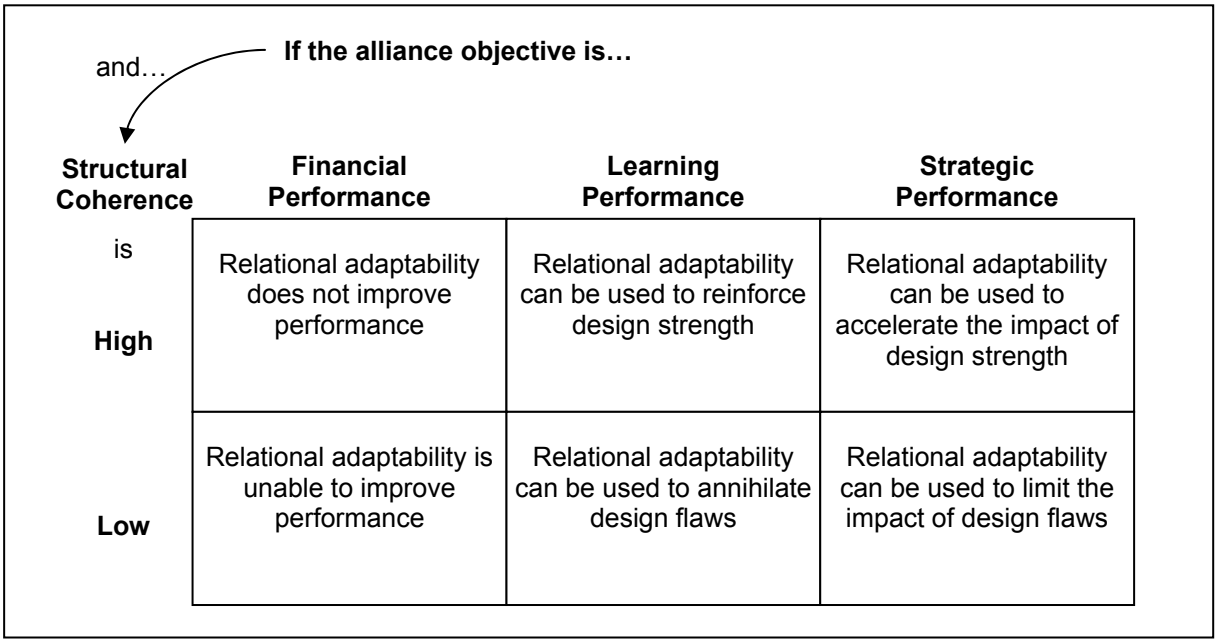
10.3 Managerial Implications

Building on the results pertaining to research question 1—what is the relationship among alliance structure, alliance processes, and alliance performance?—we derive several managerial implications. Firms should carefully consider their alliance objectives before making decisions with respect to ex-ante and ex-post investments into an alliance (see Figure 10.2). If their alliance objective is financially oriented, parties should invest their resources and time primarily during the alliance formation stage to implement structural safeguards that foster structural coherence.[50] For instance, firms may use different compensation instruments, such as ex-ante and residual sharing, to build compensation integrativeness. In addition, firms could share decision-making rights, commit themselves to making non-recoverable investments, and select partners with high fit and synergetic resources. However, firms should refrain from designing an imbalanced compensation structure, which undermines structural coherence. Together, these investments in structural coherence outweigh ex-post investments designed to build relational adaptability, which cannot improve financial performance.

[50] Firms are not likely to design an alliance with a low structural coherence intentionally, unless the alliance is formed for reasons such as legitimization or complying with government regulations.

With respect to learning performance, we derive different managerial implications. If the alliance objective is learning, parties should invest in process safeguards to build their relational adaptability. By directing their efforts toward developing relational and learning processes, parties increase their willingness and ability to make modifications to the ongoing relationship. In addition, firms may invest in structural coherence to foster relational adaptability. However, the results indicate that structural coherence in itself is not sufficient to maximize relational adaptability. Nonetheless, if an alliance structure design contains flaws, such as a compensation structure that does not provide incentives to collaborate, partners can use relational adaptability to overcome these mistakes. Building mutual trust may reduce the problems associated with ill-designed contracts (Luo, 2002a; Macneil, 1980). Hence, whereas investing in structural coherence is important to achieve financial objectives, investments in relational adaptability are critical for realizing learning objectives.

Figure 10.2 Managerial Implications: Alliance Structure and Alliance Processes



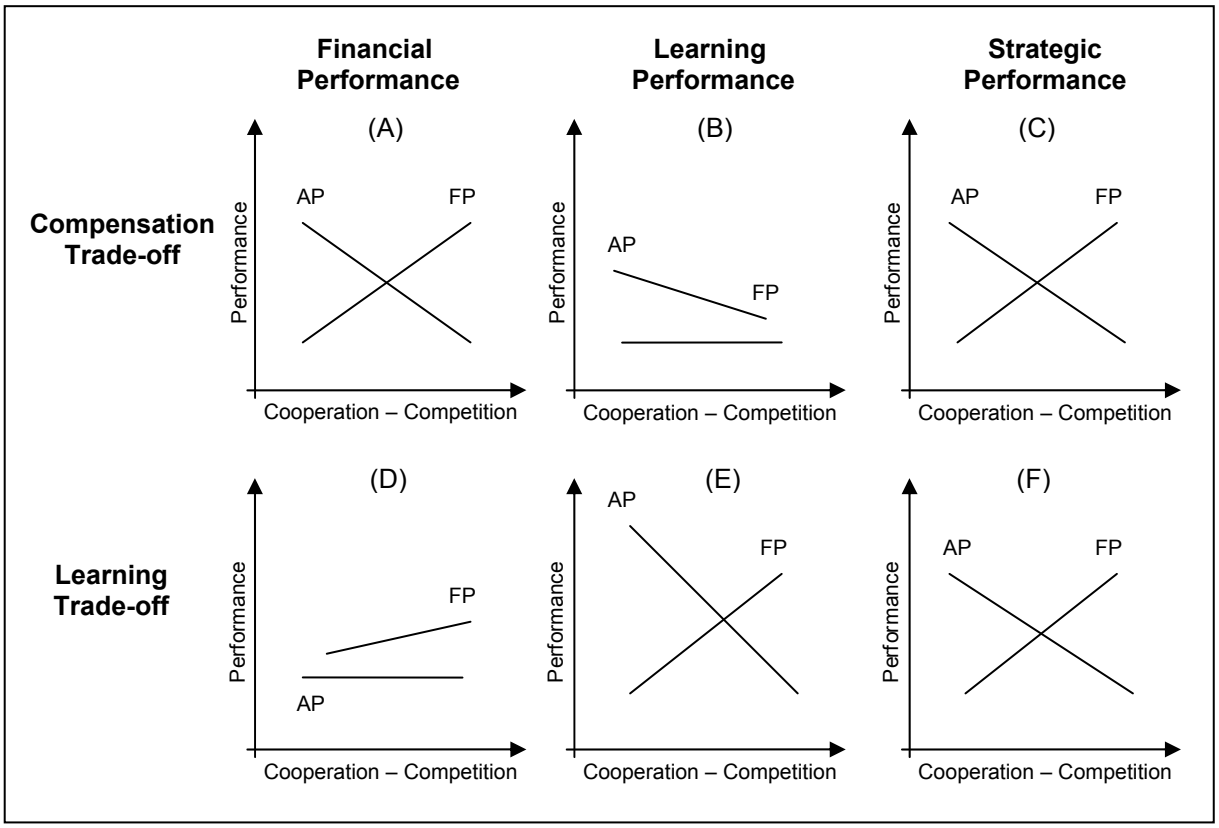
In contrast, if the alliance objective is strategic performance, parties should invest in structural safeguards to improve structural coherence and process safeguards to develop relational adaptability. By building relational adaptability, they can accelerate the impact of structural coherence, because an efficient alliance design directly influences strategic performance. If firms form an alliance with low structural coherence, developing the willingness and ability to make changes inhibits the impact of initial design flaws. Poor partner fit may directly hamper the achievement of strategic objectives, but ex-post learning processes attenuate the impact of poor partner fit on strategic performance.

Cooperation and Competition

Building on the results pertaining to research question 2—what is the relationship among cooperation, competition, alliance performance, and firm performance?—we derive the following managerial implications: Firms should consider their alliance objectives when

trying to resolve the compensation and learning trade-offs. Figure 10.3 graphically depicts six trade-off situations. With respect to the compensation trade-off, the findings suggest that an alliance manager who wants to increase financial benefits should direct his or her efforts toward bargaining power, then use this power to negotiate a compensation at the expense of its counterpart (see Figure 10.3A). However, because an increase in competition comes at the expense of cooperation, this manager should also anticipate lower financial performance at the alliance level. That is, the firm must find a balance between its individual and its counterpart's objectives (i.e., an optimum). Similarly, a firm can improve its strategic performance by engaging in cooperative or competitive efforts (see Figure 10.3C), which suggests that with respect to strategic objectives, a firm should exploit a bargaining power advantage, but only up to a threshold. In contrast, when pursuing learning objectives, a firm should not direct its resources to resolving the compensation trade-off. Although engaging in efforts to cooperate can have a positive impact on learning performance, the consequences for individual learning performance are negligible. Thus, using bargaining power to negotiate an advantageous deal at the expense of the counterpart is not a particularly useful strategy for achieving learning objectives (see Figure 10.3B). Moreover, these competitive efforts may be detrimental to relational adaptability, which is a prerequisite for learning performance.

Figure 10.3 Managerial Implications: Cooperation and Competition Trade-Off



Notes: AP = alliance performance, FP = firm performance.

With respect to the learning trade-off, we derive different implications. To achieve individual financial performance, parties do not need to resolve the learning trade-off (see Figure 10.3D). Although competitive efforts (e.g., learning barriers) may improve firm financial

performance, the impact is negligible compared with that of the compensation trade-off. Resolving the learning trade-off, however, is critical for a firm that wants to achieve its learning objectives through the alliance (see Figure 10.3E). Directing efforts toward cooperation will contribute to learning at the alliance level, which enables the firm to appropriate a larger share of knowledge as the alliance unfolds. Efforts toward competition represent an alternative strategy for a firm to appropriate knowledge, but excessive (perceived) exploitation of the partner firm may ignite a learning race, which has detrimental consequences for knowledge creation and appropriation. A firm should search for an optimum between its own and its counterpart's objectives. Similarly, for strategic performance, a firm should aim to achieve its objectives by finding a balance between cooperation and competition (see Figure 10.3F). When a party increases its competitive efforts, it attains higher individual strategic performance, but that benefit comes at an expense of cooperative efforts and reduces strategic performance at the alliance level. Therefore, a firm should always try to balance between its individual and its counterpart's strategic objectives.

Finally, because we find no support for the relational trade-off, we cannot derive implications to help alliance managers with respect to cooperation and competition. However, several managerial implications can be derived from our findings. As discussed in Section 10.2, relational quality fulfills two functions: (1) fostering alliance performance and (2) reducing firm performance differences. That is, a high-quality relationship reduces financial performance differences between firms, such that parties are less likely to behave opportunistically as the alliance unfolds. In addition, a high-quality relationship fosters learning and strategic performance, suggesting that relational quality removes barriers to joint knowledge creation and exchange and strategic value creation. Consequently, alliance managers should invest time and resources to build trust, commitment, and mutual respect, from the partner selection stage until the very moment partners decide to dissolve the alliance.

10.4 Limitations and Further Research

To delineate the scope of the research, we made several decisions about this dissertation's theoretical and empirical boundaries (see §1.5). For instance, we focused on contractual alliances with a long-term orientation and multiple objectives. In addition, we adopted a dyadic perspective and drew on five theoretical perspectives to develop and test the hypotheses. Consequently, the results of our research are valid within this particular context; future theory development could benefit from a richer theoretical and empirical setting.

The present study attends to contractual alliances with a long-term orientation and multiple objectives, so extending the research framework to the context of joint ventures, franchises, and license agreements might results in different findings. Joint ventures are distinct from contractual alliances in their governance form, because these equity arrangements establish a new organizational entity (Gulati et al., 1998). Sharing ownership contributes to an alliance's structural coherence, may foster relational adaptability, and may affect parties' decisions about the different cooperation and competition trade-offs, because a joint venture creates

additional reciprocal relationships between the partners (e.g., equity). In contrast, unlike contractual alliances, licenses and franchise relationships are similar to discrete market transactions (Dwyer et al., 1987), which means structural coherence may be more important for achieving financial performance objectives, and relational adaptability may become less relevant, because investments in the ongoing relationship do not outweigh future benefits. In addition, the need to resolve the compensation trade-off may become greater, but the impact of the learning trade-off may diminish. Restated, alliance research should aim to replicate our study using different governance forms to increase the validity of the theoretical models.

In this study, we adopted a dyadic perspective and thereby somewhat neglected a conceptualization of firms as autonomous organizations that consist of individual employees. Our simplified view may discard relevant insights necessary to understand alliance performance. For instance, drawing on the power perspective, we argued that parties use bargaining power to design an alliance compensation structure. Thus, we theorized about a relationship between bargaining power and compensation structure at the dyadic level, but we did not extensively explore the relationships between perceived power and use of power (see e.g., Kim et al., 2005), bargaining power and negotiation strategies (see e.g., Rao et al., 1998), or individual bargaining power and the choice of compensation mechanisms (see e.g., Hagedoorn et al., 2007). With respect to the other theoretical perspectives, adopting a dyadic level of analysis may have led us to discard relevant insights. Adopting a dyadic perspective on learning ignores that firms may develop different learning strategies (Larsson et al., 1998) and that learning occurs between individuals (Soekijad & Andriessen, 2003). Hence, additional research should explore the relationships between individual persons, individual firm decisions, and dyadic outcomes (i.e., multilevel analysis).

Another theoretical boundary pertains to the development of a medium-range theory of alliance performance. We focused on contractual alliances that had been operational for less than five years, which implies the alliances were in place long enough to enable the parties to achieve their objectives, but likely without major reorganizations of the relationship. Consequently, our findings may be limited to the initial operational phase of an alliance. As alliances age, external and internal dynamics probably affect the alliance structure, alliance processes, and, perhaps, the decisions parties make with respect to the cooperation and competition trade-offs. For example, parties' relative bargaining power may shift as knowledge and information transfers occur (Inkpen et al., 1997), mutual transparency and receptivity with respect to learning may change due to external technology developments (Koza et al., 1998), and cooperative behavior may shift to competitive conduct as a result of shifts in corporate strategy (Ariño et al., 1998). Research to extend our medium-range theory to a long-range theory of alliance performance should incorporate explanations that recognize the dynamics of cooperation (Bell et al., 2006; Das et al., 2002; Koza et al., 1998).

Methodological Limitations

Our research contributes to a better understanding of research design choices and alliance research (see Chapters 6 and 7); we assessed an informant's knowledge about the alliance to address the use of key-informants (Campbell, 1955) and about the partner to address the use of one-sided data (Kumar et al., 1993). In addition, we conducted multiple tests to deal with common method bias (Podsakoff et al., 2003) and non-response bias (Armstrong et al., 1977). Finally, to address concerns surrounding the use of aggregate measures (Edwards, 2001a), we drew on existing literature and developed a procedure that enabled us to assess the appropriate use of difference scores within an alliance context. Although we resolve various methodological concerns typical to alliance research—and cross-sectional alliance research in particular—extensions of our work should address several other limitations.

First, we used a cross-sectional design to assess our hypotheses, which means we did not account for inter-firm or time variations (Bowen & Wiersema, 1999). Therefore inferences from our data should be interpreted conservatively. Further research could adopt a longitudinal design to overcome these problems, as well as reduce concerns about common method biases (Podsakoff et al., 2003) and enable researchers to examine the relationships among financial, learning, and strategic performance (see §10.2).

Second, we used a one-sided key informant approach to collect our data (Campbell, 1955), which enabled us to increase our sample size. We collected our data by targeting a single informant in each alliance and took several precautions to reduce the likelihood of biases, such as assessing the informant's knowledge about the alliance and its partner. Gathering data from both sides of a relationship and contacting multiple respondents within each partner firm would have improved the quality of our data (Kumar et al., 1993). Dyadic data also could overcome some of the problems associated with the subjective approach we used in computing our aggregate measures (Kristof, 1996). However, dyadic data are clearly challenging to collect and likely would reduce the sample size to unacceptable levels.

Third, despite extant efforts to increase sample size, the usable sample of 151 constrained the choices of statistical techniques. A larger sample would have enabled us to use more sophisticated estimation techniques and achieve a more in-depth understanding of the relationships. For instance, with a larger sample, we could have conducted a more sophisticated mediation analysis (Shaver, 2005), used polynomial regression analysis to examine the impact of the difference scores (Edwards et al., 1993), and added control variables to the covariance analysis to better understand the cooperation and competition trade-offs. Additional research should replicate and extend the findings by considering alternative data collection procedures, such as personal interviews, to increase sample size.

Fourth, we adopted a convenient sampling strategy across industries and countries. Although we were very careful in the sample frame construction, we can only make conservative inferences. In contrast, a within-industry analysis might uncover more details that are difficult

or even impossible to detect with this study's data. Obtaining more data within one country also may reduce the likelihood of distorting factors, such as institutional forces and managerial preferences (De Man, 2005; Scheer et al., 2003). To increase the validity of our inferences, further research could adopt a non-random sampling strategy within industries and countries.

Fifth, though the measures possess acceptable psychometric properties, room for improvement exists. For instance, we conceptualized and operationalized structural coherence and relational adaptability as second-order constructs and took several precautions to ensure construct validity (see §6.3). Nonetheless, additional research should develop indicators that directly measure these second-order constructs to take into account any loss of information due to aggregation. In addition, we also developed new measures of firms' anticipated compensation and potential to assess and absorb knowledge; future research may develop finer-grained measures. For instance, our operationalization of absorption captured a firm's ability to assess and acquire knowledge, but it did not incorporate the degree to which a firm was able to exploit the newly acquired knowledge (Zahra et al., 2002). Finally, to reduce social desirability bias, we used a proxy measure for opportunistic behavior: ex-post management costs. This measure possessed construct validity, but it did not relate to the dependent variables. Therefore, further research should explore the nomological validity of this measure further.

Sixth and finally, additional research could extend and improve the measures of alliance performance. Although all three performance dimensions possess acceptable convergent validity and reliability, with respect to learning and strategic performance, some concerns arose about discriminant validity. That is, using covariance analysis, we found that the performance dimensions, though conceptually distinct, partially overlap from an empirical perspective. Thus, we need better, and perhaps objective, measures of alliance performance to overcome these concerns.

Further Research

In addition to addressing the theoretical implications (see §10.2) and methodological limitations, several other topics could provide fruitful paths for additional research. First, researchers might examine in greater depth the antecedents and configuration of structural safeguards (i.e., structural coherence). For example, research questions could focus on the relationships between alliance negotiation and alliance structure (see e.g., Ganesan, 1993), interdependence and alliance structure (see e.g., Lee et al., 2003), or behavioral aspects and alliance structure (see e.g., Rao et al., 1998). Furthermore, we assumed that firms make decisions with respect to each structural safeguard independently, but researchers may question this explicit assumption and examine the relationships between structural safeguards by focusing on different configurations of structural safeguards and their antecedents and consequences (see e.g., Contractor et al., 2000; Hagedoorn et al., 2007).

Second, additional research should examine post-formation processes in more depth and explore the relationships between relational and learning processes. Prior empirical research adopted a process perspective (see e.g., Beamish et al., 2003; Brouthers et al., 2006; Demirbag et al., 2000), and a more fine-grained understanding would advance theory development. Research questions may focus on the relationships among relational adaptability, trust, commitment, opportunistic behavior, knowledge transfer, and knowledge acquisition. An illustrative study conducted by Gulati, Lawrence, and Puranam (2006) examined procurement modes in supplier–buyer relationships and found that performance differences across modes of procurement arise as a function of the match between adaptive capacity and the adaptation requirements associated with the exchange—not just the match between governance form and transaction hazards.

Third, other factors related to the formation, management, and evaluation of alliances may affect the relationships specified by the theoretical models. Researchers have shown that firms with alliance capabilities achieve higher levels of performance compared with firms without alliance capabilities (Heimeriks et al., 2007; Den Ouden, Ziggers, & Duysters, 2005; Simonin, 1997); research therefore should explore the impact of alliance capabilities on partner firms' decisions about alliance structure, alliance processes, and value creation and appropriation. Prior research has also demonstrated that the dependence relationship between firms affects alliance formation and development (Kumar et al., 1995b; Pfeffer et al., 1978). Further research could explore the relationship between interdependence and parties' solutions to the cooperation and competition trade-offs. Finally, as alliances unfold, parties may perceive a variety of problematic situations to which they need to respond (Furrer et al., 2006; Geyskens & Steenkamp, 2000; Ping, 1993). The selection and use of response strategies affects post-formation processes and therefore relational adaptability, the learning trade-off, and the relational trade-off. Research should explore these relationships in far more depth.

10.5 Concluding Remarks

Despite a high failure rate, alliances are critical strategic tools in firms' competitive arsenals. To achieve superior alliance performance, firms must overcome internal and external challenges by efficiently and effectively designing and managing their relationships. That is, firms need to resolve the difficulties that surround value creation, as well as overcome problems associated with appropriating their share of realized value. From a theoretical perspective, this dissertation sheds light on these difficulties by examining the relationships between alliance structure and alliance processes, in addition to their impact on alliance performance. In addition, we identified the cooperation and competition trade-offs that firms need to resolve, each with its own impact on value creation and appropriation. By providing an in-depth understanding of performance in an alliance context, the findings enable firms to manage their partnerships better. Such a thorough understanding of alliance formation, management, and evaluation is a prerequisite for the twenty-first century, when successful alliances are, and will continue to become even more, an integral part of any firm's competitive advantage.

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Appendix 1 Theoretical Perspectives

Within the alliance literature, multiple theoretical perspectives have been used to explain alliance related phenomena, including:

- agency theory (Aulakh, 2001; Reuer & Miller, 1997);
- the behavioral perspective (Aulakh, Kotabe, & Sahay, 1996; Cullen et al., 2000; Ganesan, 1994; Heide & John, 1992; Kauser & Shaw, 2004; Uzzi, 1996)
- equity theory (Adams, 1965; Scheer, Kumar, & Steenkamp, 2003);
- game theory (Gulati, Khanna, & Nohria, 1994; Parkhe, 1993a; Zeng & Chen, 2003);
- institutional theory (Osborn & Hagedoorn, 1997; Oxley, 1999);
- organizational justice theory (Huppertz, Arenson, & Evans, 1978; Johnson, Korsgaard, & Sapienza, 2002; Kumar & Nti, 1998; Luo, 2005);
- the organizational learning perspective (Hamel, 1991; Holmqvist, 2003; Kumar & Nti, 1998; Larsson, Bengtsson, Henriksson, & Sparks, 1998; Lubatkin, Florin, & Lane, 2001);
- political economy theory (Wood & Gray, 1991; De Wulf & Odekerken-Schröder, 2001);
- relational governance theory (Dwyer, Schurr, & Oh, 1987; Heide & John, 1992; Macneil, 1980; Noordewier, John, & Nevin, 1990: Poppo & Zenger, 2002);
- the resource-based view (Barney & Arikan, 2001; Eisenhardt & Schoonhoven, 1996; Hitt, Dacin, Levitas, Arregle, & Borza, 2000);
- the resource dependence perspective (Blankenburg Holm, Eriksson, & Johanson, 1999; Pfeffer & Salancik, 1978); and
- transaction cost economics (Gulati & Singh, 1998; Parkhe, 1993a).

A review of all theoretical perspectives listed above is well beyond the scope of this dissertation. Moreover, other researchers have already presented reviews of these theoretical perspectives (Barringer & Harrison, 2000; Child & Faulkner, 1998; Gray & Wood, 1991; Gulati, 1998; Oliver & Ebers, 1998; Wood et al., 1991; De Wulf et al., 2001). Nonetheless, we elaborate on five theoretical perspectives to which we refer frequently in the dissertation: equity and organizational justice theory, game theory, relational governance theory, the resource-based view, and transaction cost economics. We discuss each theory's core proposition, strengths, and critiques and provide examples of alliance research. We do not discuss the structure perspective, the process perspective, the power perspective, the organizational learning perspective, or the behavioral perspective, as we elaborate on these perspectives elsewhere (see Chapters 2–5).

Equity Theory and Organizational Justice Theory

Advocates of equity theory (Adams, 1965) and organizational justice theory (Deutsch, 1985; Greenberg, 1987) argued that (in)equity, (in)justice, or (un)fairness affect the behavior of exchange partners. Equity theory (ET), originally a job motivation theory, acknowledges that variable factors affect employees' assessments and perceptions of their relationship with their work and employers. ET is built on the belief that employees become de-motivated, both in relation to their job and their employer, if they feel as though their inputs are greater than the

outputs. Employees can be expected to respond to this imbalance is different ways, including demotivation, reduced effort, becoming disgruntled, or acting disruptive. A strength of equity theory is that it recognizes the inherent inequality between exchange partners (De Wulf et al., 2001). Authors have criticized ET, as it does not take into account whether parties in a relationship are able and/or motivated to judge their respective input to output ratios. Equity theorists also have assumed that parties strive for equitable relationships in any situation (De Wulf et al., 2001). Organizational justice theory (OJT) has progressed since Adams (1965) introduced the concept of inequity in distributive situations. Researchers focused on the fairness of pay or outcomes in work settings, commonly referred to as distributive justice (see Deutsch 1985 for a review). Research efforts have recognized the need to consider other aspects of workplace justice, such as the fairness of the formal policies or procedures used for decision-making, which is referred to as procedural justice.

In an alliance context (see e.g., Johnson et al., 2002; Kumar, Scheer, & Steenkamp, 1998; Luo, 2005; Scheer et al., 2003) inequity exists when the perceived inputs and/or outcomes of one firm in an exchange relationship are inconsistent with the perceived inputs and/or outcomes of the partner firm (Huppertz et al., 1978). Perceived inequities lead exchange partners to feel under- or over-rewarded, affect behaviors in subsequent periods by encouraging these parties to change their inputs to the relationship, and result in suspicion and mistrust of the exchange partner (Ganesan, 1994). Equitable outcomes stimulate confidence that parties do not take advantage of each other and are concerned about each other's welfare (Ganesan, 1994). For instance, Scheer, Kumar, and Steenkamp (2003) found that Dutch automobile dealers reacted adversely to positive and negative inequities in their relationships with their automobile suppliers. Luo (2005) found that alliance profitability is higher at high levels of shared perceptions of procedural justice, particularly higher than that prompted by asymmetrical perceptions. In summary, ET and OJT seek to understand the antecedents and consequences of deviations from the norm of distributive and procedural justice in exchange relationships.

Game Theory

The field of game theory (GT) came into being with the 1944 classic *Theory of Games and Economic Behavior* by John von Neumann and Oskar Morgenstern. GT has played and will continue to play an important role in the social sciences and is now used in many diverse academic fields. A branch of mathematical analysis, GT was developed to study decision-making in conflict situations. Such situations exist when two or more decision makers who have different objectives act on the same system or share the same resources. GT provides a mathematical process for selecting an optimum strategy, that is, an optimum decision or a sequence of decisions in the face of an opponent who has a strategy of his or her own. Thus, GT is a theory of rational behavior for situations in which (1) two or more actors have available to them (2) a finite number of courses of action, each leading to (3) a well-defined outcome with gains and losses expressed in terms of numerical payoffs associated with each combination of courses of action and for each decision maker; the actors also have (4) perfect

knowledge of the rules of the game—that is, (1), (2) and (3)—but no knowledge about the opponents' moves and are (5) rational in the sense that they make decisions that optimize their individual gains. Child and Faulkner (1998) critiqued GT and argued that it does not include factors, such as the personalities of the players, their social ties, the communication between the players, norm-building, and institutional rules, that affect strategic decision-making. Moreover, Sebenius (1992) postulated that the assumption of hyperrationality (i.e., behavior motivated only by calculation) is too simplistic.

In an alliance context, GT has been used to understand the relationships among alliance structure, alliance development, and outcomes (Parkhe, 1993a, 1993b), unilateral commitment and relational processes (Gulati et al., 1994), pay-off structure and cooperation (Song et al., 2002; Zeng, 2003), the dynamics of cooperation (De Ridder, 2007), and learning and alliance development (Nti & Kumar, 2001). For instance, Zeng and Chen (2003) argued that structural and motivational changes in an alliance's payoff structure directly affected parties' inclination to cooperate. Parkhe (1993a) showed that the presence of game theoretic structure elements, such as behavioral transparency, long-term time horizons, and partner interactions, reduce the use of contractual safeguards. In summary, though scholars argued that GT assumptions deviate from reality, within an alliance context, researchers drawing on GT have produced several valuable and in some instances counterintuitive insights.

Relational Governance Theory

Relational governance theory (RGT) offers a valuable complement to classical contracting (Macneil, 1980), as it explicitly distinguishes intermediate types of exchange between discrete transactions and complete internalization of transactions (De Wulf et al., 2001). Whereas classical contract law relied primarily on the legal framework as a mechanism to plan exchanges, (re)negotiate contracts, and resolve contractual conflicts, RGT states that relying on legal mechanisms can be costly in terms of resources and time. Relational governance is a social institution that governs and guides parties to behave in a mutually beneficial manner based on a common understanding of relational norms (Macneil, 1980; Noordewier et al., 1990; Poppo & Zenger, 2002). Because unforeseen conditions may affect the relationship, relational norms are suggested as complementary enforcement mechanisms (see e.g., Dwyer, Schurr, & Oh, 1987; Heide et al., 1992). Relational norms refer to behaviors such as flexibility, joint problem solving, solidarity, the creation and use of power, and information exchange (Heide et al., 1992; Macneil, 1980). Parties engaging in exchanges based on implicit contracts are less in need of monitoring their exchange partners or building formal safeguards in the relationship. The strength of RGT is that it provides a conceptual framework that is able to capture the dimensions and dynamics that underlie the nature of exchange relationships, as well as the belief structures and activities that are necessary for successful exchange relationships (Nevin, 1995). Researchers have criticized RGT for failing to prescribe optimal types of governance to deal with specific characteristics of the exchange, as well as for its use for descriptive and conceptual purposes, and because researchers attempting to empirically

measure and assess the role of constructs, such as flexibility and solidarity, have achieved limited success (De Wulf et al., 2001).

In an alliance context, researchers have drawn on RGT to examine, for instance, the relationships among trust and contracts (Lee & Cavusgil, 2006), interdependence, explicit and normative contracting (Heide et al., 1992), and relational norms and performance (Aulakh, Kotabe, & Sahay, 1996). For instance, Poppo and Zenger (2002) found that customized contracts complemented by relational governance resulted in higher levels of alliance performance. Luo (2002a) showed that contract completeness guided the course of operation, ex post cooperation overcame the limitations of contracts, and both independently and interactively drove alliance performance. In summary, proponents of RGT have asserted that relational mechanisms operate as self-enforcing safeguards that are effective and less costly than contractual governance.

Resource-Based View (RBV)

The resource-based view of the firm (RBV) has emerged as one of several important explanations of firm performance differences in the field of strategic management (Barney, 1991; Rumelt, 1984; Wernerfelt, 1984), and its main contribution is that it developed the idea that "a firm's competitive position is defined by a bundle of unique resources and relationships" (Rumelt, 1984 p. 557). The core logics that distinguishes it from other strategic management theories are resource heterogeneity and resource immobility (Barney, 1991). The first assumption implies that competing firms may possess different bundles of resources and refers to those resource attributes: scarcity and non-substitutability. A firm's resource is scarce when the demand for that resource is greater than its supply, whereas non-substitutability refers to the unique nature of this resource in conceiving and implementing strategies compared with other resources. The immobility assumption implies that resource differences may persist and refers to inelastic supply. That is, a particular resource does not become available, though demand for that resource is high. Building on these assumptions, the main RBV proposition is that valuable, rare, inimitable, and non-substitutable resources foster a sustainable competitive advantage (Barney, 1991). However, the RBV is not without critiques, as researchers have argued that the RBV is tautological (Priem & Butler, 2001; Silverman & Baum, 2002; Williamson, 1999), views value creation as endogenous (Priem et al., 2001), neglects to incorporate value appropriation (Coff, 1999), and is subject to measurement problems (Ray, Barney, & Muhanna, 2004), among other issues.

With regard to alliances, a complete theory of the RBV and strategic alliances is lacking (Das & Teng, 2000). Nonetheless, researchers have drawn on the RBV to examine alliance-related phenomena (see Barney et al., 2001 for a review), including the role of resources in partner selection (Hitt et al., 2000; Mowery, Oxley, & Silverman, 1998), the formation of alliances (Eisenhardt et al., 1996), selection of governance form (Colombo, 2003), the management of alliance (Ireland, Hitt, & Vaidyanath, 2002), and the performance of strategic alliances (Inkpen, 2001). For instance, Stuart (2000) found that younger and smaller firms without cutting-edge technologies formed alliances with larger firms with leading technologies. Hitt et

al. (2000) found that firm in emerging markets were more likely than those in developed markets to select partners based on financial assets, technical capabilities, intangible assets, and willingness to share expertise. In summary, the RBV contributes valuable insights to value creation within strategic alliances, but to become a coherent RBV of strategic alliances, substantial conceptual and empirical research is required.

Transaction Cost Economics (TCE)

Building on the work by Coase (1937), Williamson (1975) developed the transaction cost economics (TCE) theory and examined the transaction cost advantages of two different governance forms: hierarchy and market exchange. At the core of TCE are the axioms that certain exchange characteristics give rise to transaction difficulties and that different governance mechanisms vary in their cost-minimizing properties. For instance, transactions with an uncertain outcome, that recur frequently, and that require substantial transaction investments (i.e., asset specificity) are more efficiently organized through a hierarchical governance form. Exchanges that are straightforward, non-repetitive, and that require few transaction-specific investments are more likely to be organized through market exchange. Thus, under conditions of asset specificity, opportunism, and uncertainty, transaction costs for market exchanges are greater than those of more long-term relational exchanges, implying that an increase in transaction costs is accompanied by a shift from external to internal governance. Restated, firms reduce transaction costs by selecting a governance mode that is optimal, given transaction properties. Researchers have criticized TCE (David & Han, 2004; Ghoshal & Moran, 1996), arguing that it puts too much emphasis on opportunistic behavior (Ghoshal et al., 1996), neglects the role of relational governance (Heide et al., 1992), fails to recognize the potential value generated by transaction-specific investments (Madhok & Tallman, 1998), represents a static approach that ignores issues pertaining to learning and innovation (Nooteboom, 2004), and does not take into account interdependencies between the parties in a relationship (De Wulf et al., 2001).

To understand better the antecedents and consequences of governance form decisions, researchers argued that alliances should be considered a hybrid governance form on the "market–hierarchy" continuum (Borys & Jemison, 1989; Heide, 1994; Williamson, 1985). Therefore, TCE has been used to develop and test theories with respect to joint ventures (Hennart, 1988), alliance governance form decisions (Chen & Chen, 2003), appropriability hazards (Gulati et al., 1998; Oxley, 1997), transaction-specific investments (Buvik & Reve, 2001; Judge & Dooley, 2006), and alliance outcomes (Barthelemy & Quelin, 2006; Sampson, 2004b). For instance, Sampson (2004) found that governance forms designed to match the predictions of transaction cost economics experienced improved innovation performance compared with misaligned alliances. In summary, transaction cost economics explanations contribute to a better understanding of the relationships among antecedents and the implications of alliance structure.

Appendix 2 Definitions

Construct	Conceptual Definition	References
Absorption Integrativeness	The combination of both parties' ability to assess and acquire knowledge to which they are exposed through their relationship, regardless of whether parties' capabilities are balanced or imbalanced	Chen (2004); Dyer & Singh (1998); Lane & Lubatkin (1998); Zahra & George (2002)
Absorption Imbalance	The asymmetry between each party's ability to assess and acquire knowledge to which it is exposed through the relationship	Dyer & Singh (1998); Hamel (1991); Kumar & Nti (1998); Larsson, Bengtsson, Henriksson, & Sparks (1998)
Alliance Performance	The degree of both partners' accomplishment of intentional and emergent objectives, with respect to financial, learning, and strategic objectives	Ariño (2003); Geringer & Hebert (1991); López-Navarro & Molina-Morales (2002)
Compensation Integrativeness	The combination of parties' anticipated benefits as formalized in the alliance contract, regardless of whether parties' anticipated compensations are balanced or imbalanced	Blodgett (1991); Greenhalgh & Chapman (1998); Kersten (2001); Thompson (1990)
Compensation Imbalance	The asymmetry between each party's anticipated benefits as formalized in the alliance contract	(Blodgett (1991); Greenhalgh & Chapman (1998); Kersten (2001); Thompson (1990)
Decision-making Imbalance	The asymmetry between each party's formal authority over alliance activities (i.e., decision-making rights)	Bucklin & Sengupta (1993); Child & Yan (2003); Child & Yan (1999); Steensma & Lyles (2000)
Firm Performance Imbalance	The asymmetry between each party's accomplishment of intentional and emergent objectives, with respect to financial, learning, and strategic objectives	Child (2002); Child & Yan (2003)
Learning Capabilities	The extent to which the partner firms have created a regular and repeatable pattern of routines that support knowledge and information transfer	Dyer & Nobeoka, (2000); Dyer et al. (1998); Hamel (1991)
Non-recoverable Investment Imbalance	The asymmetry between parties' commitment to make specialized, tailored, and difficult to redeploy expenditures	Buvik & Andersen (2002); Buvik & Reve (2001); Klein, Crawford, & Alchian (1978)
Opportunistic behavior	The extent to which parties seek to increase their benefits from the relationship in ways that are explicitly or implicitly prohibited within the relationship	Maitland, Bryson, & Van de Ven (1985); Ping (1993); Wathne & Heide (2000); Williamson (1975, 1985)
Partner Fit	The extent to which interfirm characteristics, such as strategic, cultural, organizational, and operational features, are compatible at the formation stage	Douma, Bilderbeek, Idenburg, & Looise (2000); Park & Ungson (1997); Sarkar, Echambadi, Cavusgil, & Aulakh (2001); Saxton (1997)
Relational Quality	The extent to which partner firms feel comfortable, are willing to rely on trust in dealing with another, and are committed to the relationship	Ariño, De la Torre, & Ring (2001); Kumar, Scheer, & Steenkamp (1995b)
Relational Adaptability	Parties' willingness and ability to make modifications to the ongoing relationship, without changing the initial alliance structure	Aulakh & Madhok (2002); Doz (1996); Hallen, Johanson, & Seyedmohamed (1991); Heide & John (1992)
Resource Complementarity	The extent to which the joint use of distinct sets of resources yields a higher total return than the sum of returns that could be earned if each set of resources were used independently	Chi (1994); Dyer & Singh (1998); Harrison, Hitt, Hoskisson, & Ireland, (2001)
Shared Decision-making	Both parties' formalized formal authority over alliance activities (i.e., decision-making rights), regardless of whether parties' decision-making is balanced or imbalanced	Cullen, Johnson, & Sakano (1995); Johnson, Cullen, & Sakano (1996); Subramani & Venkatraman (2003); Yan & Gray (2001)
Structural Coherence	The degree to which an initial alliance structure constitutes a constellation of mutually supportive structural safeguards, including governance form, contractual provisions, and inter-firm characteristics	Dussauge & Garrette (1995); Miller (1986)
Total Non-recoverable Investments	Both parties' formalized commitment to make specialized, tailored, and difficult to redeploy expenditures, regardless of whether parties' non-recoverable investments are balanced or imbalanced	Buvik & Anderson (2001); Jap & Anderson, (2003); Subramaniam & Venkatraman (2001); Williamson (1985)

Appendix 3 Pre-test Participants

Company	Name	Function
BlueDome	S. Gribnau	Business Development Manager
CGI	B. Chomey	Director Enterprise Alliances
Cisco Systems	A. Slager	
CRV	F. de Graaf	Business Development
CRV	A. Lindeboom	Managing Director
Dassault Systems	J. Guillouet	Business Development Alliances
Draka Holding	M. Bosman	Investor Relations Manager
Enraf	T. Tielen	Marketing & Business Development Director
Fortis	F. Dausy	Senior Vice President
Getronics	A. van Grinsven	Cisco Alliance Manager
Human Inference	J. Jonker	Alliance Project Manager
Interpay	D. van de Pol	Manager New Business International
KLM	H. de Graauw	Director Alliances
Organon	H. Theunissen	Senior Director Research Alliances
Philips	H. Olde Bolhaar	Senior Vice-President Alliance Office
Pigture Group	J. van Vugt	Director
Staffware	F. Bussemaker	Marketing and Alliance Manager
Stork	B. van Steen	Director Merger and Acquisitions
Stork Maintenance Management	W. Moonen	General Manager
Terra Sports Technology	M. Smit	Commercial Director
Unisys	H. de Grooth	Director Customer Focused Business

- 12 interviewees indicated to remain anonymous.
- Acknowledgement is given to Sander Degens, Marcel aan den Boom, and Emiel van Alphen for their research assistance.

Appendix 4 Questionnaire

COOPERATION AND COMPETITION WITHIN ALLIANCES

GROWING AND SHARING THE PIE

Center for Strategy and Alliances

Radboud University Nijmegen

INTRODUCTION

The aim of this questionnaire is to gain insight into the cooperative and competitive forces found within alliances. We are particularly interested in the relationship between creating and sharing alliance outcomes.

We have decided to only approach those managers who work with alliances on a regular basis. As a consequence, our sample is relatively small, which in turn makes your contribution to this research project of great importance. This questionnaire has been constructed very carefully and it should take **less than a half hour** of your valuable time to complete. The information you provide us with will be treated as strictly confidential, and will remain anonymous. We would appreciate it if you would return your responses **before the 23th of November.**

We will be happy to send you a summary of the research results. If you would like to receive this summary, please provide your contact details at the end of the questionnaire.

YOUR PARTICIPATION IS CRUCIAL TO THE SUCCESS OF THIS RESEARCH PROJECT!

Mr. Brian den Ouden, MSc.
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Professor John Bell, PhD.
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Center for Strategy and Alliances
Radboud University Nijmegen
The Netherlands

INSTRUCTIONS

Please read these instructions carefully!

In this questionnaire we define an alliance as a *collaborative contractual arrangement between two independent organizations sharing resources to attain common and individual objectives*. This definition incorporates buyer/supplier relationships, joint R&D alliances, joint distribution alliances, joint production alliances, or co-marketing alliances. It excludes acquisitions, joint ventures, and licensing or franchising arrangements. We kindly ask you to select one particular alliance and refer to it when responding to the questions.

In this questionnaire we use expressions as "**your firm**" and "**your partner**". Both expressions refer to the organizational entity that has entered into the alliance. This could, for example, be a business unit within a diversified firm, an autonomous subsidiary, or an entire organization.

The questionnaire is divided into two sections, each referring to a particular period of time:

Section A	refers to the conditions surrounding alliance formation and the negotiation results,
Section B	refers to the period between signing the alliance contract and the present.

This questionnaire consists of questions with corresponding 7-point scales. When answering the questions, please circle the number which fits your perception most closely. If you cannot answer the question, please circle the "not applicable" (NA) option. **Please be as discriminating as possible when answering questions. Particularly in the case of questions that refer to a difference between your firm and your partner.** Please see the box below for an example question.

Please indicate the extent to which each partner:

		Your firm								Your partner							
		Not at all						To a large extent	NA	Not at all						To a large extent	NA
4.1	Anticipated difficulties when pursuing its strategy if the alliance had not been formed	1	2	3	4	5	6	7		1	2	3	4	5	6	7	

The possible answer categories range from "not at all" to "to a large extent". If, in your view, your firm expected "not at all" difficulties in pursuing its strategy "1" should be circled. Number "7" should be circled if difficulties were to be expected "to a large extent". If, in your view the expected difficulties in pursuing your firm's strategy is somewhere in the middle, between "not at all" and "to a large extent", the number which fits your perception most closely should be chosen. You are asked to answer the question from each partner's perspective. Please be as discriminating as possible in your responses.

SECTION A: ALLIANCE FORMATION AND NEGOTIATIONS

The questions in this section refer to the conditions during alliance formation and the negotiation results. When answering the questions, please **think of one contractual alliance** which meets the following criteria:

(1) The alliance partners have a contractual agreement with neither equity nor shares involved,
(2) The alliance has been established by two companies and has a long-term orientation with multiple objectives,
(3) The alliance contract was signed within the past five years.

ALLIANCE CHARACTERISTICS

Please answer the following questions about the alliance. (Please circle the appropriate answer)

1.1	In which year was this particular alliance established?	.....
1.2	Is the alliance international?	Yes No

How would you characterize the alliance? (More than one category is possible)

2.1	Research and Development alliance	□	2.4	Marketing and Sales alliance	□
2.2	Purchasing alliance	□	2.5	Distribution alliance	□
2.3	Production alliance	□	2.6	Other, please specify:	

ALLIANCE OBJECTIVES

Below we present a list with objectives the partners may have had at the time of forming the alliance. According to your perception, please indicate the extent to which the following **objectives** were important to each partner:

		For your firm								For your partner							
		Not important						Very important		Not important						Very important	
3.1	Knowledge of production processes	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.2	Marketing know-how	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.3	Managerial techniques	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.4	Technological know-how	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.5	Product development know-how	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.6	Revenues	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.7	Decrease in investments	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.8	Profits	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.9	Improving operating efficiency	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.10	Return on investment	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.11	New business opportunities	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.12	Increase in market share	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.13	Enhancing reputation	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.14	Enhancing competitive position	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.15	Risk reduction	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.16	Financial objectives in general	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.17	Learning objectives in general	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.18	Strategic benefits in general	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
3.19	Other, please specify:	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

MUTUAL DEPENDENCE

This question refers to the extent to which **both partners were dependent on one another** at the time of formation. Please indicate the extent to which each partner:

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
4.1	Anticipated difficulties in pursuing its strategy if the alliance had not been formed	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
4.2	Specifically needed the partner's resource contribution (e.g., knowledge, market access, or capital)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
4.3	Specifically needed this alliance in order to improve the company's performance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
4.4	Had limited alternatives available to achieve its objectives (e.g., few potential partners)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

UNIQUE INVESTMENTS

Your firm or your partner may have agreed to make investments that are unique to this specific alliance (i.e. investments that are difficult and costly to re-use with other partners). According to the **contractual clauses**, please indicate for each partner the extent to which it agreed to make **unique investments in:**

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
5.1	Physical resources (e.g., facilities or equipment)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
5.2	Marketing resources (e.g., distribution channels)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
5.3	Technological know-how (e.g., intellectual property)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
5.4	Human resources (e.g., hiring, selecting, or training)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
5.5	Specific procedures (e.g., manuals or routines)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

MANAGEMENT CONTROL

Please indicate the extent to which each partner **acquired control** over the following decisions:

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
6.1	Strategic decisions (e.g., pricing or setting priorities)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
6.2	Operational decisions (e.g., staffing or planning)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
6.3	Technological decisions (e.g., innovations or R&D)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
6.4	Financial decisions (e.g., capital or profit allocation)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

According to the **contractual clauses**, please indicate to which extent you agree with these statements:

		Strongly disagree						Strongly agree	
7.1	Each partner could independently perform their tasks within the alliance	1	2	3	4	5	6	7	NA
7.2	Each partner was autonomous in conducting the assigned tasks	1	2	3	4	5	6	7	NA
7.3	A clear division was made between tasks allocated to each partner	1	2	3	4	5	6	7	NA

RESOURCE CONTRIBUTIONS

Please indicate the extent to which each partner **agreed to provide** the alliance with:

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
8.1	Financial resources	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
8.2	Physical resources	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
8.3	Human resources	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
8.4	Technological know-how	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
8.5	Marketing capabilities	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
8.6	Managerial capabilities	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

Please indicate the extent to which:

		Not at all						To a large extent	
9.1	The partners used each other's resources to attain goals beyond their individual reach	1	2	3	4	5	6	7	NA
9.2	Both partners had complementary strengths that were beneficial to one another	1	2	3	4	5	6	7	NA
9.3	Resources brought into the alliance by each partner were very valuable to the alliance	1	2	3	4	5	6	7	NA
9.4	Both partners provided resources that enabled them to achieve mutual objectives	1	2	3	4	5	6	7	NA

PARTNER FIT

This question refers to the **partners' organizations compatibility** to one another at the time of forming the alliance. Please indicate to what extent:

		Not at all						To a large extent	
10.1	The management styles and philosophies of the partners were compatible	1	2	3	4	5	6	7	NA
10.2	The organizational cultures were compatible with each other	1	2	3	4	5	6	7	NA
10.3	The goals of the partners within the alliance were aligned	1	2	3	4	5	6	7	NA
10.4	The partner firm's operations were compatible	1	2	3	4	5	6	7	NA

DISTRIBUTION OF BENEFITS AND COSTS

According to the **contractual clauses**, how did the partners agree to divide financial benefits and costs?
(More than one response possible)

11.1	Sharing of profits	☐	11.6	Buy-back of manufactured products	☐
11.2	Sharing of revenues	☐	11.7	Sharing intellectual property	☐
11.3	Royalties	☐	11.8	Each firm retains own revenue and profit	☐
11.4	Transfer-pricing	☐	11.9	Cost sharing	☐
11.5	Lump-sum fee	☐	11.10	Other, please specify:	

The following questions refer to each partners' satisfaction with the **contractual clauses**. Please indicate the extent to which **each partner was satisfied** with:

		Your firm								Your partner							
		Very dissatisfied						Very satisfied		Very dissatisfied						Very satisfied	
12.1	The type of knowledge it agreed to contribute to the alliance (e.g., technological or marketing)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
12.2	The amount of knowledge it agreed to contribute to the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
12.3	The type of resources it agreed to contribute to the alliance (e.g., capital, supplies, staff, or equipment)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
12.4	The amount resources it agreed to contribute to the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
12.5	The extent to which the alliance enabled it to benefit from a strong brand	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
12.6	The extent to which it could benefit from intellectual property created within the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
12.7	The extent to which the alliance enabled it to gain financial benefits (e.g., profit or cost savings)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

Thinking of the **contractual clauses**, please indicate for **each partner** the extent to which:

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
13.1	The total expenditures to the alliance were below the company's initial expectations	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
13.2	It was satisfied with the degree to which the alliance enabled it to recover its investments	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
13.3	It was satisfied with the company's total contribution to the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
13.4	It was satisfied with the benefits it would obtain through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
13.5	It was satisfied with the valuation of its total contribution to the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
13.6	The sum of benefits was above the company's original expectations	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
13.7	It was pleased with the gains it would receive through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

GENERAL NEGOTIATON RESULTS

Please indicate to which extent each partner:

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
14.1	Agreed to invest a great deal into this specific alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
14.2	Agreed to provide capabilities critical to the alliance (e.g., technological or management)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
14.3	Acquired control over overall decision making within this alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
14.4	Agreed to make investments tailored to this alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
14.5	Could exercise substantial influence on decisions to be made within this alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
14.6	Agreed to make substantial unique investments in this alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
14.7	Agreed to provide intangible know-how important to this alliance (e.g., intellectual property)	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

SECTION B: ALLIANCE OPERATIONS AND PERFORMANCE

The questions 15 through 21 refer to **the period after the alliance contract had been signed**. Please think again about the alliance you selected previously and be as discriminating as possible when answering questions.

LEARNING DIFFERENTIALS

This question refers to the extent to which each partner has had the **capacity to absorb the knowledge** that was made available through the alliance. Please indicate for each partner the extent to which:

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
15.1	It could decide on the usefulness of knowledge made available through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.2	It saw the connection between knowledge acquired via the alliance and known knowledge	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.3	It immediately benefited from knowledge gained through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.4	It could assess the extent to which new knowledge was valuable	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.5	It could immediately use new knowledge acquired through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.6	It could instantly exploit knowledge acquired through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.7	Knowledge made available through the alliance matched the existing knowledge base	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.8	It could determine whether new knowledge from the alliance was of high quality	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
15.9	New knowledge from the alliance was easily integrated into the existing knowledge base	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

PARTNER RELATIONS

This question refers to the extent to which the partner firms developed **learning capabilities**. Please respond to the following statements. Since the signing of the alliance contract the alliance has been characterized by:

		Strongly disagree						Strongly agree	
16.1	The development of routines that have enabled mutual learning	1	2	3	4	5	6	7	NA
16.2	Intensive communication between the partners	1	2	3	4	5	6	7	NA
16.3	Recurrent contacts between the partners	1	2	3	4	5	6	7	NA
16.4	The implementation of procedures that have enabled mutual learning	1	2	3	4	5	6	7	NA
16.5	Frequent information exchange between the partners	1	2	3	4	5	6	7	NA
16.6	Policies that facilitate mutual learning	1	2	3	4	5	6	7	NA

This question refers to the **quality of the relationship**. Please respond to the following statements. Since the signing of the alliance contract the relationship between the partners has been characterized by:

		Strongly disagree						Strongly agree	
17.1	Mutual trust between the partners	1	2	3	4	5	6	7	NA
17.2	Mutual respect between the partners	1	2	3	4	5	6	7	NA
17.3	Mutual commitment between the partners	1	2	3	4	5	6	7	NA

Please indicate the extent to which **additional resources** within the alliance have been allocated to the following activities:

		Not at all						To a large extent	
18.1	Assuring that both partners have fulfilled their contractual obligations	1	2	3	4	5	6	7	NA
18.2	Renegotiating the division of contributions and benefits	1	2	3	4	5	6	7	NA
18.3	Monitoring both partner firms' behaviour	1	2	3	4	5	6	7	NA
18.4	Coordinating the alliance	1	2	3	4	5	6	7	NA

ALLIANCE PERFORMANCE

Please indicate the extent to which each partner has **achieved the following objectives** through this alliance up **until now:**

		For your firm								For your partner							
		Very poorly						Very well		Very poorly						Very well	
19.1	Knowledge of production processes	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.2	Marketing know-how	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.3	Managerial techniques	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.4	Technological know-how	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.5	Product development know-how	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.6	Revenues	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.7	Decrease in investments	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.8	Profits	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.9	Improved operating efficiency	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.10	Return on investment	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.11	New business opportunities	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.12	Increased market share	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.13	Enhanced reputation	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.14	Enhanced competitive position	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.15	Risk reduction	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.16	Financial objectives in general	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.17	Learning objectives in general	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.18	Strategic benefits in general	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
19.19	Other, please specify:	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

According to your own perception, please indicate the extent to which **each partner up until now**:

		Your firm								Your partner							
		Not at all						To a large extent		Not at all						To a large extent	
20.1	Has been satisfied with the knowledge it gained through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
20.2	Has been satisfied with the financial benefits it attained through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
20.3	Has gained a strategic advantage over its competitors	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
20.4	Has viewed the alliance as a profitable investment	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
20.5	Has learned important new knowledge through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA
20.6	Has been satisfied with the strategic benefits it attained through the alliance	1	2	3	4	5	6	7	NA	1	2	3	4	5	6	7	NA

ALLIANCE DYNAMICS

Please answer the following questions.

21.1	Has the alliance substantially been affected by changes in the partner firms' strategies?	Yes	No
21.2	Has the alliance substantially been affected by changes in the alliance's environment?	Yes	No
21.3	Was the creation of new knowledge necessary to reach the common alliance objectives?	Yes	No
21.4	Has the alliance been surrounded by high levels of uncertainty?	Yes	No
21.5	Is each partner firms' share of the outcomes dependent on what it provides to support the alliance?	Yes	No
21.6	Are the outcomes of the alliance shared equally between the partner firms?	Yes	No
21.7	Did both partner firms fulfil their contractual obligations?	Yes	No
21.8	Has the contract substantially been changed after it had been signed?	Yes	No
	If so, please specify type of modification(s) and the number of months that have passed since signing:		
	Modification: ..... Months :		

GENERAL INFORMATION

For the following questions, please remember that the expressions "**your firm**" and "**your partner**" refer to the organizational entity that entered into the alliance. For example, this could be a business unit, a subsidiary, or an entire organization.

Please answer the following questions?

22.1	Are the partner firms' technologies related?	Yes	No
22.2	Did the partners have previous alliances with each other prior to this relationship?	Yes	No
22.3	Are the partner firms competitors?	Yes	No

Do both partner firms have an equal amount of experience with alliances? (Please select one response)

23	Yes, partner firms have equal amount of experience	☐
	No, your firm has more experience	☐
	No, partner firm has more experience	☐

Is the size of the partner firms similar in regard to annual revenues (Please select one response)?

24	Yes, partner firms have similar revenues	☐
	No, your firm has more revenues	☐
	No, partner firm has more revenues	☐

Please answer the following questions.

25.1	In which industry does your firm operate primarily?	.....
25.2	In which industry does your partner firm operate primarily?	.....
25.3	In which country is your firm established?	.....
25.4	Number of employees in your firm:	.....

Please indicate to what extent you agree with the statements listed below.

		Strongly disagree						Strongly agree	
26.1	I am very knowledgeable about the alliance	1	2	3	4	5	6	7	NA
26.2	I am involved in the management of the alliance	1	2	3	4	5	6	7	NA
26.3	I was involved in the contractual negotiations	1	2	3	4	5	6	7	NA
26.4	I have frequent contact with the partner firm	1	2	3	4	5	6	7	NA
26.5	I think the questionnaire was too long	1	2	3	4	5	6	7	NA

Please answer the questions below.

27.1	What is your job title?	.....
27.2	How long have you had this job?	..... years
27.3	How long have you been involved in this alliance?	..... years

Please provide any comments or questions you might have:

.....

.....

.....

.....

.....

.....

.....

RESEARCH RESULTS

Please remember, your information will be **treated confidentially** and will remain **anonymous**. This section will be processed separately from the main questionnaire.

I would like to receive a management summary of the research findings. Please attach your business card or provide your contact details below:

Please circle: Mrs. Mr. Ms.

Title: .....

First name: .....

Surname: .....

Company name: .....

Address: .....

Postal/Zip Code: .....

City / State: .....

Country: .....

Telephone: .....

E-mail: .....

THANK YOU FOR YOUR PARTICIPATION

PLEASE RETURN THE QUESTIONNAIRE TO THE FOLLOWING ADDRESS

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Center for Strategy and Alliances
Mr. Brian den Ouden MSc
PO Box 9108
6500 HK Nijmegen
The Netherlands

E-mail: B.denouden@fm.ru.nl
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Appendix 5 Hypotheses 3 and 4: CVA Measurement Models

Measurement Model: Learning Trade-off

	Model 4 Financial			Model 5 Learning			Model 6 Strategic		
Absorption Integrativeness	**L.**	**s.e.**	***z*-value**	**L.**	**s.e.**	***z*-value**	**L.**	**s.e.**	***z*-value**
AE_1: (A_{1f} + $A_{1\,p}$)	.837			.832			.837		
AE_2: (A_{2f} + $A_{2\,p}$)	.862	.087	12.356	.856	.088	12.244	.860	.087	12.358
AE_3: (A_{3f} + $A_{3\,p}$)	.874	.090	12.574	.885	.090	12.813	.874	.090	12.625
AE_4: (A_{4f} + $A_{4\,p}$)	.744	.098	10.031	.741	.099	9.959	.747	.098	10.108
Absorption Asymmetry									
AI_1: $\sqrt{(abs(A_{1\,firm} - A_{1p}))}$	.655			.674			.653		
AI_2: $\sqrt{(abs(A_{2\,firm} - A_{2p}))}$	.633	.179	5.257	.580	.164	5.101	.617	.175	5.271
AI_3: $\sqrt{(abs(A_{3\,firm} - A_{3p}))}$	.554	.168	4.865	.556	.161	4.958	.552	.167	4.910
AI_4: $\sqrt{(abs(A_{4\,firm} - A_{4p}))}$	.542	.168	4.791	.566	.163	5.020	.562	.168	4.971
Alliance Performance									
AP_1	.959			.802			.788		
AP_2	.772	.090	8.936	.853	.138	9.734	.881	.117	9.942
AP_3	.635	.102	7.508	.672	.163	7.944	.736	.138	8.839
Firm Performance Imbalance									
FPI_1	.798			.645			.562		
FPI_2	.792	.150	6.667	.825	.248	5.394	.738	.244	5.033
FPI_3	.564	.044	5.869	.520	.064	4.959	.646	.078	4.947

Notes: *n* = 144. Standardized coefficients; s.e. = standard error; L. = factor loading; Coefficients of leading indicator were set to 1.0 to establish the scale for the construct. See Chapter 7 for details of the computation of the aggregate measures.

Measurement Model: Relational Trade-off

	Model 7 Financial			Model 8 Learning			Model 9 Strategic		
Relational Quality	**L.**	**s.e.**	***z*-value**	**L.**	**s.e.**	***z*-value**	**L.**	**s.e.**	***z*-value**
RQ_1	.941			.940			.927		
RQ_2	.817	.067	11.838	.830	.064	12.489	.825	.066	12.288
RQ_3	.736	.075	10.305	.720	.075	10.187	.747	.075	10.650
Opportunistic Behavior									
OP_1	.639			.645			.625		
OP_2	.668	.244	4.286	.670	.242	4.292	.692	.262	4.231
OP_3	.579	.209	4.346	.568	.204	4.338	.567	.209	4.343
Alliance Performance									
AP_1	.931			.855			.782		
AP_2	.792	.087	9.825	.798	.122	9.656	.882	.114	10.259
AP_3	.648	.101	8.035	.670	.150	8.107	.742	.138	8.937
Firm Performance Imbalance									
FPI_1	.792			.580			.539		
FPI_2	.801	.151	6.650	.907	.362	4.521	.806	.305	4.581
FPI_3	.560	.043	5.830	.495	.069	4.828	.595	.078	4.736

Notes: *n* = 144. Standardized coefficients; s.e. = standard error; L. = factor loading; Coefficients of leading indicator were set to 1.0 to establish the scale for the construct. See Chapter 7 for details of the computation of the aggregate measures.

Afterword

"*The goals and motives that guide human action must be looked at in the light of all that we know and understand; their roots and growth, their essence, and above all their validity, must be critically examined with every intellectual resource that we have. […] Only barbarians are not curious about where they come from, how they came to be where they are, where they appear to be going, whether they wish to go there, and if so, why, and if not, why not*."[51]

Although, it is beyond the scope of this afterword to discuss Isaiah Berlin's quote in-depth, I would like to mention that it inspires me, as most of Isaiah Berlin's work. It signals a purpose in life, and helps me to understand why I always have been curious, professionally as well as personally, to reflect on human action.

Taking a professional perspective, the PhD trajectory provided me with multiple answers to an equal amount of intriguing questions. I started on what looked like a simple quest to explain alliance performance. To date, I have gained academic "know-what" and "know-how" about the design and execution of (quantitative) scientific research, the broader field of strategic management, and in particular about the phenomenon of strategic alliances. However, to further satisfy my desire for knowledge, I have examined response strategies to adverse situations, designed and conducted experimental research, reflected on the relevance of management research, studied qualitative research techniques, and explored science philosophy. To paraphrase Berlin's words, I did not deplete my "intellectual resources" and I am looking forward to advance my professional career with a similar drive. Academically, my next objective is to improve the art of writing persuasively and convincingly about different intriguing topics, such as value creation and appropriation, circumplex structures, and corporate social responsibility alliances. Furthermore, I aim at disseminating the produced knowledge to various stakeholders within the management research system, including scholars, students, consultants, and practitioners.

On a personal note, the PhD period offered me extant opportunities to explore and to reflect on human action; that is, my own actions within different settings. For instance, I actively participated in the academic community and I have developed a fair understanding of the implicit and explicit rules of engagement. In addition, I attended professional communities, interviewed managers, gave presentations at companies, and engaged in consultancy activities. These experiences made me again, and even more aware that practitioners play a different game. To bridge these worlds, which I belief is of great importance, one requires an in-depth understanding of human action, which can only be achieved by continuous reflection. To develop these reflective skills, I think that one should seek to engage with a plethora of persons and communities. Therefore, I always have searched for a mixture of

[51] Berlin, I. 1997. The pursuit of ideal, in Hardy H. & Hausheer R (Eds). ***The proper study of mankind: An anthology of essays***. New York, Farrar, Straus, and Giroux: 2.

work-related and non-work related interactions and today I conclude that this strategy has been worthwhile. Nightly conversations with colleague PhD's, drinking beers with the co-promoter, fierce debates with intimate friends, déjà vu's with complete strangers, casual talks with clubbers, diners with family and friends, (a) romantic encounter(s), and the many co-travelers along the way, not only fueled and fulfilled my desire to observe and reflect, but also forced me to consider my own behavior. It made me become a better academic.

Retrospectively, the PhD period was a marvelous adventure, facilitated by numerous people allowing me to create my own experiences. At this point, I cannot order, rank, or list all the people I would like to thank. I am grateful to everyone I have met during this period, as each encounter encouraged me to continue my explorations. That said, I would like to acknowledge three persons in particular. Arnold, thanks for your continued support and creating the opportunity to begin the PhD. I look forward to reflect with you on this period, while enjoying a good glass of wine. John, I really enjoyed our conversations. You always had a gift to smoothen my disturbed mind; thanks. I am looking forward to develop new projects and to continue to learn from you. Olivier, thanks for your enormous support and comradeship. As writing more would only trigger an "Alice" like provocative response, I will not make an attempt.

Taking your family for granted seems to be easy. Fortunately, though other persons may perceive it as unfortunately, the roller coaster ride I always tend to enjoy with my family enables me to appreciate life. Edward thanks for opening doors, whether physically or mentally. Somehow, you always trigger me to descend from the ivory tower and enjoy the wonders of life. Mom and Dad, you two keep still amazing me; the continuous willingness and ability to make sacrifices, allowing me to pursuit my dreams, has been beyond what any child can expect from its parents. I have been very lucky and I am deeply grateful. Thanks.

Finally, as there is nothing more to write, let the journey continue…

Brian
Amsterdam, 2008

Dutch Summary / Nederlandse Samenvatting

Een strategische alliantie betreft een vrijwillige, lange termijn, contractuele samenwerkingsrelatie tussen twee ondernemingen om individuele en gemeenschappelijke doelstellingen te realiseren door het combineren van middelen (o.a. kennis en geld). Het aangaan van strategische allianties stelt ondernemingen in staat om doelen te realiseren die anders moeilijk te verwezenlijken zijn. Neem bijvoorbeeld, de Japanse medicijnenfabrikant Takeda die de Noord-Amerikaanse markt wilde betreden met een diabetes medicijn. Door het aangaan van een strategische alliantie met de Amerikaanse branchegenoot Eli Lilly, kreeg Takeda eenvoudig toegang tot Eli Lilly's distributienetwerk, terwijl Eli Lilly het productassortiment tegen lage kosten uitbreidde met een nieuw medicijn. Zulke voordelen van samenwerken hebben geleid tot een toename in het gebruik van allianties door ondernemingen, maar uit empirisch onderzoek blijkt dat allianties vaak voortijdig mislukken. Bijvoorbeeld, de zeer succesvolle alliantie tussen Disney en Pixar gericht op de productie en distributie van animatiefilms (o.a. Toy Story en Finding Nemo) werd niet voortgezet als gevolg van diverse conflicten (o.a over de verdeling van de opbrengsten).

Tot op heden ontbreekt het in de alliantieliteratuur aan een theoretisch model dat eenduidige verklaringen geeft waarom bepaalde ondernemingen wel en andere ondernemingen niet de beoogde gemeenschappelijke en individuele doelstellingen realiseren. Het doel van dit onderzoek is een bijdrage te leveren aan het oplossen van deze lacune door het ontwikkelen en testen van een theoretisch model dat inzicht geeft in factoren die samenwerkingsprestaties beïnvloeden. Om dit doel te bereiken zijn twee onderzoeksvragen geformuleerd:

(1) Wat is de relatie tussen alliantiestructuur (ex ante), alliantieprocessen (ex post) en de gemeenschappelijke samenwerkingsprestatie?

(2) Wat is de relatie tussen het collaboratie−competitie spanningsveld en de gemeenschappelijk en individuele samenwerkingsprestaties?

Alliantiestructuur, Alliantieprocessen en Samenwerkingsprestatie

In de literatuur zijn er twee hoofdbenaderingen die verklaringen geven voor samenwerkingsprestaties: (1) de structuurbenadering en (2) de procesbenadering. De structuurbenadering stelt dat een efficiënte inrichting van een alliantie noodzakelijk is om de alliantiedoelen te realiseren. Een efficiënte structuur komt tot stand doordat samenwerkingspartners wederkerige relaties creëren als gevolg van keuzes met betrekking tot de alliantievorm, het alliantiecontract, en partner selectie. De mate waarin de alliantiestructuur efficiënt is ingericht wordt in dit onderzoek structurele coherentie genoemd. Ter illustratie, indien partners een alliantiecontract formaliseren waarin staat dat de verdeling van opbrengsten is geregeld door een mix van ex ante (bv. vooruitbetaling) en ex post (bv. winstdeling) afspraken, dan creëren zij een financieel wederkerige relatie. Het creëren van structurele coherentie is belangrijk, aangezien het de partners prikkels geeft om gezamenlijk

te werken aan het realiseren van de alliantiedoelstellingen. Dat wil zeggen, de aanwezigheid van wederkerige relaties reduceert de kans op opportunistisch gedrag en conflicten die het succes van de samenwerking ondermijnen.

In de literatuur wordt ook een andere benadering genoemd, die vooral belang hecht aan het initiëren van alliantieprocessen. Deze procesbenadering stelt dat het adaptatievermogen van de partners bepalend is voor de samenwerkingsprestatie. Het adaptatievermogen van de partners is gedefinieerd als de mate waarin de partners bereid en bekwaam zijn om veranderingen door te voeren in de alliantie. Het adaptatievermogen neemt toe naarmate de samenwerkingspartners bouwen aan de kwaliteit van de relatie wat zich uit in vertrouwen, respect, en betrokkenheid. Vertrouwen in elkaar, bijvoorbeeld, fungeert als een signaal naar de partners toe dat men bereid is te handelen in het belang van de alliantie. Het adaptatievermogen wordt ook groter naarmate de partners leerprocessen initiëren gericht op het delen van kennis en informatie. Kennisdeling helpt partners bij het bepalen en implementeren van gewenste en noodzakelijke veranderingen. Het ontwikkelen van adaptatievermogen is belangrijk. Het voorkomt dat de samenwerkingspartners vast komen te zitten in een herhalend patroon van interacties en handelingen resulterend in een situatie van inertie. De aanwezigheid van inertie belemmert de partners in het behalen van de alliantiedoelen.

Hypothese en Bevindingen
Bouwend op de inzichten voortkomend uit de structuur- en proces benadering stelt hypothese 1 dat de gemeenschappelijke samenwerkingsprestatie enerzijds direct en positief wordt beïnvloed door de coherentie van de alliantiestructuur, en anderzijds indirect via het adaptatievermogen van de partners. De hypothese is getoetst met drie verschillende dimensies van samenwerkingsprestatie: financiële doelen, leerdoelen, en strategische doelen.

De resultaten van het survey onderzoek laten zien dat de financiële samenwerkingsprestatie positief en alleen direct wordt beïnvloed door structurele coherentie. Structurele coherentie heeft daarnaast een positief en direct effect op het adaptatievermogen van de partners. Adaptatievermogen associeert positief en direct met leerprestatie van de partners. Dit betekent, gegeven het effect van structurele coherentie op adaptatievermogen, dat de relatie tussen structurele coherentie en het realiseren van leerdoelen volledig gemedieerd wordt door adaptatievermogen. De realisatie van strategische doelen wordt enerzijds direct beïnvloed door structurele coherentie en anderzijds indirect via het adaptatievermogen van de partners. Deze bevindingen ondersteunen Hypothese 1 gedeeltelijk.

Theoretische en Management Implicaties
De theoretische implicatie is dat noch de alliantiestructuur noch de alliantieprocessen alleen een afdoende verklaring geven voor samenwerkingsprestaties. De verklaringen voortkomend uit de structuurbenadering blijken een beperkte geldigheid te hebben, want de alliantiestructuur is primair bepalend voor de realisatie van financiële en strategische doelen.

De verklaringen voorkomend uit de procesbenadering blijken vooral geldig te zijn in een situatie waarin het doel van de alliantie leren of strategisch van aard is. Een belangrijke management implicatie is, dat het succes van strategische allianties wordt bepaald door de mate waarin beslissingen met betrekking tot de inrichting van de alliantiestructuur en het initiëren van alliantieprocessen consistent zijn met de beoogde doelstellingen van de partners.

De Spanning tussen Collaboratie en Competitie in Strategische Allianties

De spanning tussen collaboratie en competitie in een strategische alliantie is een belangrijk maar onderbelicht thema in de alliantieliteratuur. Collaboratie verwijst naar de mate waarin partners samenwerken om de gemeenschappelijke doelen te realiseren (ook wel waardecreatie genoemd). Competitie heeft betrekking op de mate waarin partners concurreren om individuele doelstellingen te realiseren (ook wel waardeverdeling genoemd). Een overzicht van de alliantieliteratuur laat zien dat de vigerende theorieën en empirische onderzoeken zich voor het merendeel richten op deelaspecten van waardecreatie en waardeverdeling. Bijvoorbeeld, de "resource-based view" geeft een verklaring voor waardecreatie in allianties, omdat deze theorie zich richt op de synergetische effecten die ontstaan wanneer ondernemingen middelen combineren (bv. grondstoffen, producten en technologische kennis). De transactiekostentheorie geeft primair een verklaring voor waardeverdeling in allianties, omdat deze theorie zich richt op het minimaliseren van productie en transactiekosten van één partner. Een implicatie van deze observatie is dat een substantieel deel van het onderzoek is gebaseerd op de impliciete assumptie dat waardecreatie en waardeverdeling niet gerelateerd zijn.

De tweede onderzoeksvraag richt zich op het expliciet maken van deze assumptie door de relaties tussen collaboratie, competitie, en gemeenschappelijk en individuele samenwerkingsprestatie te vervatten in een coherent theoretisch model: de collaboratie en competitie trade-off. De collaboratie en competitie trade-off stelt dat succesvolle allianties gekenmerkt worden door samenwerkingspartners die een balans vinden tussen waardecreatie en waardeverdeling en daardoor in staat zijn gemeenschappelijke en individuele doelstellingen te realiseren. Bijvoorbeeld, de zeer succesvolle alliantie tussen Philips en Douwe Egberts met betrekking tot de Senseo koffiemachine, wordt gekenmerkt door een set van financiële afspraken (o.a. royalties), die beide partijen prikkels geeft om samen te werken, maar ook beide partijen in staat stelt hun individuele financiële doelen te realiseren. De collaboratie en competitie trade-off is gebruikt om de hypothesen 2–4 te formuleren, die zich richten op de compensatie trade-off, de leer trade-off en de relationele trade-off. De hypothese 2–4 zijn getoetst met drie dimensies van samenwerkingsprestatie – financieel, leren en strategisch – als afhankelijke variabele.

Hypothesen en Bevindingen

Hypothese 2, de compensatie trade-off, stelt dat de inrichting van de formele compensatiestructuur (de afspraak betreffende de verdeling van kosten en baten) direct van invloed is op enerzijds de gemeenschappelijke en anderzijds de individuele

samenwerkingsprestaties. De belangrijkste resultaten van het survey onderzoek tonen aan dat naarmate beide partners meer tevreden zijn over het te verwachten rendement dit een positief effect heeft op het behalen van gemeenschappelijke financiële en strategische doelen. Indien de compensatiestructuur één partner bevoordeelt (d.w.z. een onbalans in de verdeling van het verwachte rendement), dan leidt dat tot een uitkomst waarbij één van de samenwerkingspartners meer profijt heeft van de alliantie. Dat wil zeggen, deze partner haalt meer financiële en strategische voordelen uit de samenwerking dan haar partner. De bevindingen ondersteunen hypothese 2, echter alleen met betrekking tot financiële en strategische samenwerkingsprestaties.

Hypothese 3, de leer trade-off, stelt dat het vermogen van de samenwerkingspartners om kennis te delen en te integreren in de eigen organisatie van invloed is op het behalen van gemeenschappelijke en individuele alliantiedoelen. Dit vermogen wordt in dit onderzoek absorptievermogen genoemd. De belangrijkste resultaten van het onderzoek tonen aan dat naarmate partners meer competent zijn om kennis te absorberen dit een positief effect heeft op het realiseren van gemeenschappelijke leerdoelen en strategische doelen. Indien één partner een leervoordeel heeft als gevolg van een groter absorptievermogen, dan leidt dat tot een uitkomst, waarbij één van de samenwerkingspartners meer voordeel ontleent aan de samenwerking. Deze partner is beter in staat is geweest de individuele leerdoelen en strategische doelen te realiseren. De bevindingen ondersteunen hypothese 3, echter alleen met betrekking tot de leerprestatie en de strategische samenwerkingsprestatie.

Hypothese 4, de relationele trade-off, stelt dat de kwaliteit van de samenwerking van invloed is op het behalen van de gemeenschappelijke en individuele samenwerkingsprestaties. Een goede werkrelatie tussen de partners kenmerkt zich door vertrouwen, betrokkenheid en respect en een slechte werkrelatie wordt gekenmerkt door opportunistisch gedrag van de partners. De belangrijkste resultaten tonen aan dat naarmate de partners een goede werkrelatie hebben gebouwd, dit een positieve invloed heeft op het realiseren van de gemeenschappelijke leerdoelen en strategische doelen. Daarnaast blijkt dat een goede werkrelatie positief bijdraagt aan een meer evenredige verdeling van financiële opbrengsten tussen de partners. Ondanks deze interessante bevindingen, is er geen ondersteuning gevonden voor hypothese 4.

Theoretische and Management Implicaties

Een relevante theoretische implicatie is dat in bepaalde gevallen – die van de compensatie en leer trade-off – waardecreatie en waardeverdeling van invloed zijn op elkaar. Het onderzoek toont ook aan dat de compensatie trade-off, de leer trade-off, en de kwaliteit van de relatie een verschillend effect hebben op de gemeenschappelijke en individuele samenwerkingsprestaties. Kortom, de bevindingen geven (gedeeltelijke) ondersteuning voor de propositie dat samenwerkingspartners geconfronteerd worden met de collaboratie en competitie trade-off en dat de wijze waarop partners omgaan met de spanning tussen waardeverdeling en waardecreatie het succes van de strategische alliantie bepaalt.

Een implicatie voor alliantiemanagers is dat de consequenties van beslissingen die genomen worden tijdens het formeren en managen van de alliantie verder kunnen reiken dan initieel bedoeld is. Bijvoorbeeld, een partner kan proberen de individuele financiële doelstellingen op korte termijn te realiseren door een claim te leggen op toekomstige opbrengsten. Echter, een claim die ten laste komt van het verwachte rendement van de samenwerkingspartner ondermijnt de prikkel om gezamenlijk te gaan werken aan het behalen van de gemeenschappelijke financiële doelstellingen. Uiteindelijk heeft dit tot gevolg dat beide samenwerkingspartners een lager rendement zullen halen dan verwacht. In het onderzoek zijn drie vergelijkbare situaties gevonden, waarbij het behalen van individuele doelstellingen door een sterke focus op waardeverdeling een onverwacht negatief effect kan hebben voor de partners op lange termijn. De eerste situatie betreft de compensatie trade-off en het realiseren van strategische samenwerkingsprestaties; de tweede en derde situaties betreffen de leer trade-off en het realiseren van leerprestaties en strategische doelen.

Beperkingen en Toekomstig Onderzoek

De data voor het empirisch onderzoek zijn verzameld door het uitzetten van een cross-sectionele Web-survey onder managers verantwoordelijk voor een contractuele alliantie. Diverse maatregelen zijn genomen om de beperkingen behorend bij dit type onderzoek te voorkomen. Aandacht is daarbij onder meer uitgegaan naar het zorgvuldig benaderen van informanten, het bepalen van de geschiktheid van informanten voor deelname aan het onderzoek, het ontwerpen van een betrouwbare en valide vragenlijst, het voorkomen van "common method bias", en het gebruiken van geschikte data analyse technieken. De genomen maatregelen en de resultaten van diverse post hoc analyses (o.a. non-response en common method bias) ondersteunen de observatie dat de resultaten van het onderzoek valide en betrouwbaar zijn.

Desalniettemin, heeft het onderzoek een aantal beperkingen. Ten eerste, richt het onderzoek zich alleen op contractuele allianties, waardoor de bevindingen beperkt zijn tot dit type samenwerkingsverband. Toekomstig onderzoek zou zich kunnen richten op andere alliantievormen, zoals joint ventures, franchise relaties en licentie overeenkomsten. Ten tweede, in het onderzoek is gebruik gemaakt van informanten werkzaam bij één van de samenwerkingspartners. Het verzamelen van data onder beide samenwerkingspartners zou de validiteit en betrouwbaarheid van de bevindingen verhogen. Ten derde, hypothese 1 is getoetst met "partial least squares estimation" en de hypothesen 2–4 met covariantie analyse. Gegeven de onderzoeksvragen zijn deze technieken adequaat, maar een grotere steekproef had het gebruik van meer geavanceerde statistische technieken toegestaan. Dit had wellicht geresulteerd in meer genuanceerde bevindingen. Ten vierde, de constructvaliditeit en betrouwbaarheid van de latente variabelen was voldoende. Toch bestaat er ruimte om de psychometrische eigenschappen van een aantal constructen te verbeteren, waaronder de variabelen compensatie, absorptievermogen, en opportunisme.

In aanvulling op deze methodologische suggesties kan toekomstig onderzoek zich richten op het verder ontwikkelen en testen van het theoretische raamwerk. Bijvoorbeeld, een beter begrip is gewenst over de eigenschappen en antecedenten van structurele coherentie. Daarnaast is meer inzicht nodig in de wijze waarop samenwerkingspartners alliantieprocessen initiëren en hoe deze processen bijdragen aan het adaptatievermogen van de partners. Ook is meer onderzoek nodig dat zich richt op waardecreatie en waardeverdeling in strategische allianties. Het verder ontwikkelen en testen van de collaboratie en competitie trade-off kan daarbij fungeren als vertrekpunt. Bijvoorbeeld, een beter begrip van de werking (o.a. de bepaling van een optimum) van de compensatie trade-off en de leer trade-off, vormt een relevante bijdrage aan alliantieliteratuur. Ook zou onderzoek kunnen uitwijzen of succesvolle strategische allianties gekenmerkt worden door een balans tussen de verschillende waardecreatie- en waardeverdelingsmechanismen. Tenslotte, meer onderzoek is nodig naar de relatie tussen de drie verschillende dimensies van samenwerkingsprestatie: financieel, leren, en strategisch. Een belangrijke vraag daarbij is: realiseren samenwerkingspartners de alliantiedoelen volgens een bepaalde chronologische volgorde?

Conclusies

Het onderzoek heeft drie belangrijke bevindingen opgeleverd. Ten eerste, noch de alliantiestructuur noch de alliantieprocessen bieden voldoende voorwaarden voor het behalen van superieure samenwerkingsprestaties. Ten tweede, succesvolle strategische allianties worden gekenmerkt door samenwerkingspartners die in staat zijn een balans te vinden tussen collaboratie en competitie. Ten derde, beslissingen met betrekking tot de inrichting en het management van strategische allianties hebben een verschillend effect op de realisatie van financiële prestaties, leerprestaties, en strategische prestaties. De bevindingen zijn vastgelegd in een theoretisch gefundeerd raamwerk dat ondernemingen zal helpen bij het succesvol ondernemen in de 21^{e} eeuw. Een tijdperk waarin strategische allianties een steeds belangrijker instrument zullen zijn voor het bereiken en behouden van concurrentievoordeel.

About the Author

Brian V. Tjemkes (Leiden, 8th of February, 1973) has obtained a bachelor degree in Hospitality Management from the Hotelschool the Hague and a Masters of Science degree in Business Administration from Radboud University Nijmegen. After being employed as consultant and lecturer, he is currently working as assistant professor at the VU University Amsterdam. His research interests primarily center around three topics: strategic alliances, circumplex structures, and the relevance of management research. His work has been disseminated through presentations at academic and professional conferences, various publications, and other activities among which strategic alliance consultant, freelance lecturer, and member of the advisory board of Breed Creative Communications.