COOPERATION COSTS, GOVERNANCE CHOICE AND ALLIANCE EVOLUTION

by

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ABSTRACT

While researchers in alliance management have identified the duality of cooperation and control within alliances, comparative governance scholars have not yet developed a coherent framework for relating the costs of cooperation to governance choices. This paper proposes a theory of cooperation costs highlighting the importance of joint task complexity, interpartner diversity, strategic implications, and equity on the perception of alliance value and the formation and evolution of hybrid governance structures. A tolerance frontier is used to predict conditions for alliance failure both ex ante and after formation, as well as conditions under which an alliance will evolve once formed. The framework is illustrated through an analysis of the initial structuring and subsequent changes in the NedCar alliance between Mitsubishi Motors and Volvo, and implications for further research are discussed.

Keywords: alliances, cooperation, transaction costs, coordination costs, comparative governance
INTRODUCTION

This paper brings together prior research in alliance management to propose a theory of cooperation costs to address the conceptual and empirical gap in comparative governance literature related to alliances and other “hybrid” governance forms. In contrast to transaction cost theory formulated by Williamson (1985) that emphasizes the need for controlling a partner when the threat of opportunism is high, cooperation costs are those arising from the need to collaborate with a partner. Like Das and Teng (2000), we maintain that the simultaneous need for both control and cooperation in an alliance is a fundamental tension in alliances. Furthermore, achieving each incurs costs that, if higher than benefits, can make an alliance alternative inefficient in the comparative governance sense.

The dominance of the transaction cost perspective in the comparative governance literature has caused this field to lag behind developments in alliance research. Focusing exclusively on the need to control a partner that may behave opportunistically, the transaction cost perspective has two distinct limitations with regards to analyzing alliance formation and evolution. First, it does not recognize the particular benefits that may be possible from an alliance relationship but not through other governance options. Alliance scholars (e.g., Ariño and de la Torre, 1998; Faulkner and De Rond, 2000; Ghoshal and Moran, 1996; Hamel, 1991; Ring and Van de Ven, 1994) have clearly shown the benefits particularly associated with alliance strategies, including learning from a partner, resource pooling, and reduced environmental uncertainty as partners develop trust in each other. Zajac and Olsen (1993) made an initial attempt at redressing this weakness of a purely transaction cost approach to analyzing interorganizational strategies in a

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1 In this paper, we use the term "alliance" to refer to the very diverse group of hybrid governance structures that Ring and Van de Ven (1994) describe as cooperative interorganizational relationships, including consortia, joint product development agreements, equity joint ventures, franchising, and other forms of long-term contracting (Ariño and de la Torre, 1998; Williamson, 1991a, 1991b; Grandora and Soda, 1995; Auster, 1994). However, as discussed in the paper, we would expect cooperation costs to be more salient for relationships involving joint activity than, for example, outsourcing arrangements.
comparative governance perspective, and others have called for a “value perspective” in analyzing alliances because the benefits of an alliance are often a function of the costs, not independent as suggested by the transaction cost perspective (Madhock, 2000; Madhock and Tallman, 1998). So far, however, there has been little empirical work in this direction.

A second limitation of the transaction cost framework for analyzing alliances (either versus other governance types—market or hierarchy—or among alternative alliance structures) is its overriding concern with the costs of control. As a result, it cannot adequately address another set of costs that are particularly relevant to most alliances; namely, the costs of cooperation. Even in the complete absence of opportunistic threat (i.e., transaction costs are zero), the firm must still incur costs as it undertakes a joint task with a partner to achieve alliance-dependent benefits.

Alliance researchers have made progress towards a more comprehensive framework for these costs of cooperation. Gulati and Singh (1998), for example, showed that coordination needs had an impact on the use of hierarchical controls in an alliance separate from the appropriation concerns suggested by the transaction cost perspective. Such coordination costs, however, represent only one aspect of cooperation costs; namely, those that are task-focused. To these must be added another dimension that draws attention to the social dimension of a cooperative undertaking, what some researchers have called “process” issues (e.g., Parkhe, 1991; Tallman and Shenkar, 1994; Madhock, 1995). This distinction between task and social dimensions corresponds to what Jemison and Sitkin (1986) discussed as the "strategic fit" (task) and "organizational fit" (social) that together affect alliance success.

The framework presented in this paper builds on the premise that the costs of cooperation and control are conceptually and empirically distinct, but that both are particularly salient in the case of hybrid governance forms. It specifically addresses the costs of cooperation in an effort to balance the extensive attention that prior research has given to the costs of control. It is also applicable to the analysis of ex ante decisions (to form an alliance or not, and what structure for an alliance), as well as ex post changes in an alliance as partners respond to new circumstances.
The following section introduces this cooperation costs framework and the general propositions it suggests. We then use the case of the NedCar alliance between Mitsubishi Motors and Volvo to illustrate concepts and relationships derived from our conceptual framework. Key data and insights into this relationship are available from an intensive field study by Ishii (1997), supported by other material in the business press. We draw on those sources and show how the cooperation cost framework helps analyze the formation, implementation and evolution of this alliance.

**INTERACTION COST FRAMEWORK**

The cooperation cost framework (Figure 1) presented in this paper posits *joint task complexity* and *interpartner diversity* as fundamental sources of costs in alliances that, ironically, may also be the critical sources of benefits motivating an alliance. This duality of what are usually treated simply as costs is a key feature of this framework. Managerial perceptions of these costs relative to the benefits generated by the alliance are affected by two more dimensions that we incorporate into our framework: *strategic implications* and *equity*. The perceptions of these costs relative to the benefits of an alliance result in a focal firm’s evaluation of the value of that alliance. This section describes these key elements of the framework as the basis for introducing the notion of a tolerance frontier to explore alternative scenarios for alliance failure and managerial responses.

**Joint task complexity**

The literatures on information processing in general and joint problem-solving in particular suggest that the size of the interface across which two partners must interact is directly related to coordination costs and, consequently, inversely proportional to efficiency. Task complexity increases as either the scope or intensity of interaction between two partners increases, and is a common basis for relationship taxonomies (e.g., Garrette and Dussauge, 1995; Bensaou
and Venkatraman, 1995). Scope refers to the interface between the partners, and increases as the range of joint tasks covers more of the firm's value chain (Child and Faulkner, 1998). It will also increase as the geographic, hierarchical, market or technological scope of the joint task increases. Intensity will increase as more people from both partners are involved in the collaboration.

Reuer, Zollo and Singh (2002) include this variable in their study of post-formation changes in alliances, but their framing it in transaction cost terms illustrates the weakness of this singular focus in too many—and usually quantitative rather than qualitative—studies of alliances. Task scope may be relevant for appropriation and other control concerns, as treated under a transaction cost framework. Just as, if not more, important is the requirement that scope implies for successful collaboration, including coordination, information exchange and other linkage activities, integration mechanisms and supporting bureaucratic structures (Gulati & Singh, 1998; for other examples, see the review by Spekman et al, 1998). As either the scope or intensity of interaction increases, so do information processing needs that, in turn, require greater information processing capabilities (e.g., Daft and Lengel, 1986; Bensaou and Venkatraman, 1995).

It is more efficient in terms of coordination costs to limit the need for interaction between two or more units involved in a joint task because it reduces the costs associated with interorganizational coordination mechanisms. Indeed, this is the thrust of the literature on task partitioning (von Hippel, 1990) and modularization—of both activities and components of a complex system—as a means of increasing the efficiency of problem-solving. The primary characteristic of an alliance, however, is that the parties are working together to accomplish a task that, for whatever reason, they could not or would rather not undertake alone. The task or range of tasks of the alliance, then, requires at least some minimum level of interaction between the organizations and, accordingly, coordination between them. Similarly, as earlier work on interdependence within workgroups and between organizational units suggests, different tasks require different types of coordination modes (Thompson, 1967; Lawrence & Lorsch, 1967; Van de Ven, Delbecq & Koenig, 1976). Tasks requiring greater interaction require greater
coordination (Reuer, Zollo and Singh, 2002), and the costs of mechanisms to accomplish this coordination are accordingly higher. Furthermore, some benefits (e.g., learning and transfer of tacit knowledge) require greater interaction, so limiting interaction could have the effect of reducing efficiency even while reducing costs.

To illustrate, consider two alliances, one for co-branding and another for joint applied research and product development. In the co-branding agreement, the scope of interaction and related coordination costs are very low. The alliance task is limited to a very small part of the partners’ value chain. An alliance for applied research and development, on the other hand, suggests that the firms must cooperate across a much wider range of value-chain activities, from R&D to engineering and possibly manufacturing and marketing. Similarly, we would expect an alliance involving a particular task between two multinational firms to be more costly to coordinate in the case of a global alliance (very broad geographical scope, such as for airlines) than in a more limited region (cooperation limited to a single country or region). Not only do the costs differ, however, but so do the nature and scale of benefits that can be expected from each type of alliance.

Interpartner diversity

Differences in resources and capabilities may be a key reason for two firms to ally and the source of their mutual or shared benefit (Sakakibara, 1997), part of the "strategic fit" (Jemison and Sitkin, 1986) between two partners. However, differences along other dimensions—culture, managerial personalities, priorities, and so forth—may reduce the partners' "organizational fit" and make an alliance difficult or impossible to manage (Child and Faulkner, 1998). Prior research has shown how a lack of organizational fit can lead to deleterious interpartner conflict (Doz, 1996; Mohr and Spekman, 1994) and alliance failure (Ariño and de la Torre, 1998). Examples include differences in strategic goals and objectives (Boyrs and Jemison, 1989; Doz, 1988, 1992; Dwyer and Oh, 1988); organizational or national culture (Parkhe, 1991; Lorange and Roos, 1993); and
decision-making styles (Ohmae, 1989).

Not surprisingly, research in cross-border joint ventures and entry mode decisions has drawn attention to such factors (e.g., Barkema et al, 1997). Anderson and Gatignon (1986) cite cultural distance as a factor in firms’ decisions regarding ownership in foreign ventures; with greater distance, they are more reluctant to take full ownership. Such reluctance is supported by the findings of Li and Guisinger (1991) in a study of US-based affiliates; namely, affiliates whose partners came from culturally dissimilar countries were more likely to fail. Overcoming or accommodating such differences in individual personalities and culture (whether organizational, industrial or national) will require some adjustment by one or both partners in order for the alliance to achieve its objectives. The mechanisms to achieve this, in turn, incur costs to one or both partners. Additionally, others have found that prior relationships between partners reduce the problems arising from such cultural differences (e.g., Park and Ungson, 1997).

Diversity as used in this framework is closely related to trust, a common construct in alliance research, even if poorly operationalized and incompletely conceived (Koza and Lewin, 1998). In this framework, reducing diversity between partners is akin to the type of trust that is perhaps most salient in prior studies of alliances. For example, repeated alliances between two firms is a common proxy for trust (e.g., Gulati, 1995a), but the positive impact of a history of interaction could have nothing to do with trust defined as being able to expect a partner to not to act opportunistically; it may simply be that the firms have either reduced critical differences between them, or at least understand and learned to manage those differences. This interpretation overlaps with Zucker’s (1986) first two categories of trust; i.e., that arising from past exchanges and that from sharing common characteristics.

**Strategic implications**

The strategic implications of an alliance include important gains or losses that accrue to a firm as a result of working with a partner because of the web of relationships in which the partners
may be indirectly linked (Child and Faulkner, 1998). They have an important impact on how managers view the costs of an alliance, including those resulting from task complexity and interpartner diversity. Strategic gains or losses may be direct (a change in economic or positional advantage as a result of an alliance) or indirect (opportunity costs or costs of mechanisms to reduce strategic loss in a given alliance). Prior research highlights managerial concern with such costs and the implications for alliances (Doz, 1988; Hamel, Doz and Prahalad, 1989; Kogut, 1989; Hamel, 1991; Lei and Slocum, 1992; Bucklin and Sengupta, 1993). From a focal firm’s perspective, an alliance is less attractive as the potential for strategic loss increases (or, conversely, as gain decreases), but more attractive as the potential for strategic loss decreases (or gain increases).

Strategic implications are particularly important in alliances between direct competitors. The potential for proprietary loss and competitive disadvantage, in addition to any “bad blood” that might be expected between bitter rivals, could easily make an alliance between competitors unimaginable or, even if consummated, fraught with distrust and subterfuge. Even in the case of an alliance between organizations that do not directly compete, such as a firm’s alliance with its supplier or customer (vertical alliances), the alliance may have important strategic implications. For example, if a firm is cooperating with a supplier as part of its effort to develop a new product, the supplier will likely have access to the manufacturers strategic plans, technology or other proprietary resources. The manufacturer must consider the effects of a possible leakage of its proprietary resources to a supplier and, through that supplier, to its direct competitors. The potential threat could be related to willful opportunism by the supplier (as assumed in transaction costs) or inadvertent leakage and competitive loss.

**Equity**

Like strategic implications, managerial perceptions of equity in an alliance in turn affect their evaluation of the overall costs of an alliance (Ring and Van de Ven, 1994; Doz, 1996; Ariño...
and de la Torre, 1998; Madhock and Tallman, 1998). Equity theory focuses on an actor’s perceptions of the benefits he receives compared to the inputs he must supply (or, the costs he must incur). Alliances entail both costs and benefits for each partner. While an actor may evaluate the ratio of benefits to costs \((B/C)\) in absolute terms or by an internal standard, research on individual behavior shows that an actor’s evaluation of this ratio is usually strongly influenced by his perception of other actors’ ratios (Adams, 1963). In other words, the evaluation is relative to the perceived ratio of a referent.

In an alliance, a partner is an important referent. Prior research shows that partners are particularly sensitive to perceptions of differences in the benefit-to-cost ratio and any lack of reciprocity between partners (Kogut, 1989; Ouchi, 1980; Ariño and de la Torre, 1998; Inkpen and Beamish, 1997; Larsson et al, 1998; Powell, 1990). This could involve perceived imbalances in information sharing (Borys and Jemison, 1989; Mohr and Spekman, 1994), commitment (Anderson and Weitz, 1992) or dependence (Siriam et al, 1992; Doz, 1988, 1992). Kumar and Nti (1998) have shown that how a partner assesses and reacts to perceived inequity (cost/benefit asymmetry) in the partnership has an important impact on alliance outcomes. The perception of relative equity or inequity has obvious implications in alliances in which cost- or skill-sharing is a motivating factor (Sakakibara, 1997). As the perception of inequity increases, in either absolute terms or relative to a partner or other referent, a firm will be less willing to undertake an alliance or continue a particular alliance in the same form.

**TOLERANCE FRONTIER**

The recursive model presented in Figure 1 brings together these elements to show their relationship to the value of an alliance as perceived by a focal firm.\(^2\) As discussed, interpartner diversity and joint task complexity may be integral to achieving the benefits motivating an

\(^2\) Given this paper’s emphasis on cooperation costs, the model does not include the costs of control that a particular alliance would incur. These would of course be part of the total costs of the alliance and, if high, could have a significant impact on the perceived value of the alliance, as suggested by Zajac and Olsen (1993) and Madhock and Tallman (1998).
alliance, but also represent a source of costs as they increase the need for coordination, communication and other interorganizational processes. The perceived value of the alliance to a firm, however, is not simply an objective calculation of these costs and benefits. To this cost-benefit analysis of alliance value is added the perceptions of equity and net strategic implications.

It is this subjective—and ongoing—evaluation of the alliance’s value that drives both ex ante decisions regarding governance structure and ex post changes in alliance structure or partner behavior as this perception of alliance value changes with new information or new circumstances. Ex post changes in the alliance—whether manifest as changes in formal or informal structures and processes—become necessary as a result of imperfect information that is a typical condition at the time of alliance formation and that lead to changes in either the partners or environment in the course of an alliance (Inkpen & Beamish, 1997; Arino & de la Torre, 1998; Yan, 1998). Williamson (1991a, 1991b) has discussed such costs and the limitations of adjustment from the perspective of neoclassical contract law and elastic contracting mechanisms, while others have argued from a social interaction perspective of alliances (Gulati, 1995a, 1995b; Eisenhardt & Schoonhoven, 1996). These studies draw attention to the internal and external factors that precipitate the need for adjustment in an alliance (Bucklin & Sengupta, 1993), as well as affect the ability of partners to make necessary adjustments.

We represent the net effect of this ex ante and on-going ex post evaluation of alliance value, and managerial responses to different levels of value, using the notion of a tolerance frontier (Figure 2). First, a space is defined by the two dimensions of joint task complexity and degree of diversity between the partners, in which we locate a particular alliance. These two dimensions are used as the primary axes because they are direct sources of cooperation costs, while strategic implications and equity concern managerial perception of the overall costs of an alliance relative to its benefits (which are discussed later). Task complexity and interpartner diversity are also both characteristics of an alliance, whereas strategic implications and equity are
inherently firm-centric dimensions that are not necessarily correlated across partners (i.e., the partners could have very different perceptions of the same alliance).

We have argued that the primary costs of an alliance are those corresponding to the need to control a partner (transaction costs) and to cooperate with a partner (cooperation costs). For simplicity, in the remaining discussion we will assume transaction costs to be zero, so that the costs of an alliance \( Ca \) are determined by the cooperation costs \( Cc \) that a focal firm incurs, which we propose to be a function of task complexity \( T \) and diversity \( D \), i.e.:

\[
Ca = Cc = f(T, D)
\]

We assume that the maximum total cost \( C_{\text{max}} \) that a firm is willing to bear from an alliance is less than the benefits \( B \) it expects; i.e.:

\[
C_{\text{max}} < B
\]

\( C_{\text{max}} \) is the managerial estimation of both actual (or realized) and expected costs associated with an alliance alternative that would enable the firm to achieve the benefits that originally motivated the search for strategic alternatives. Benefits may be economic (rents, efficiency), competitive (position relative to rivals) or learning-related (acquisition of new resources or capabilities). An alliance will become unacceptable ("fail") if \( Ca > C_{\text{max}} \). Furthermore, when an alliance is at \( C_{\text{max}} \), any increase in \( T \) or \( D \) (task complexity or diversity) will necessitate an offsetting decrease along the other dimension to satisfy this condition for not failing.

This trade-off between the two dimensions can be represented by a negatively sloped line (Figure 2), creating a tolerance frontier. This frontier represents one partner's indifference curve for different levels of task complexity and interpartner diversity or, more precisely, the costs associated with these dimensions of an alliance. Although we have drawn a straight line implying a monotonic relationship between these two dimensions, we have no empirical evidence to support this or any other functional form. To the extent that there are positive interaction effects between the two dimensions that increase total costs, the curve will be concave. To simplify the discussion and illustration, however, we will assume no such interactions and treat the relationship
between these two dimensions as orthogonal and additive with respect to cooperation costs. Therefore, the tolerance frontier implies that any number of alliances, differing in their degree of task complexity and interpartner diversity (for example, alliances A1, A2, and A3 in Figure 2) could all be acceptable to a firm ($C_{a1} = T_a + D_a = C_{a2} = T_b + D_b = C_{a3} = T_c + D_a = C_{max}$).

Conversely, a given alliance structure may result in cooperation costs that are too high for a firm to accept (alliance $A4$ in Figure 2, where $C_{a4} = T_c + D_c > C_{max}$). Such an alliance would "fail"; i.e., either not be chosen ex ante or, ex post, either be dissolved or restructured. In the latter case, the partners may change their behavior within the boundaries of the existing alliance structure, or restructure it by agreeing on ways to reduce interaction scope and/or interpartner diversity. For example, they may limit the scope of the joint task, foregoing possible benefits but realizing a proportionally greater decrease in cooperation costs related to task complexity (i.e., shifting from $T_c$ to $T_a$). Thus, rather than attempt to cooperate across the value chain—an alliance that would include joint product development, manufacturing, marketing and after-sales service—they may agree to start with only one of these activities. Similarly, rather than jointly marketing the complete range of products and services that each offers, they may limit the cooperative effort to a particular product, service or market segment.

On the other hand, the partners may adopt mechanisms that reduce the cooperation costs resulting from differences between them (shifting an alliance from, for example, A4 to A3). One set of mechanisms provides a means for the partners to remove or at least clarify sources of conflict and ineffective interaction. Joint decision-making bodies and oversight committees, for example, provide a forum for partners to make their differences explicit and discuss options for coordinated action.

Another set of mechanisms reduces the differences between partners by introducing changes into one or both of them. Partners may have to adopt new routines and common standard operating procedures to enable them to work together effectively and efficiently. These could include communication protocols (language, format, timing) and reporting and approval
procedures. When such changes require a transfer of tacit knowledge, a firm may have to transfer personnel to the partner's organization or receive transferees from the partner. These mechanisms are not costless, however, and are only justified if they lead to an even greater reduction in conflict and other sources of inefficiency resulting from interpartner differences.

We can restate these implications of a tolerance curve in terms of comparative governance. The first proposition addresses a condition under which hybrid governance forms will "fail" ex ante:

**Proposition 1:** A hybrid governance form will not be chosen if cooperation costs exceed the expected benefits of an alliance.

The second addresses one basis for alliance evolution; namely, changes in the alliance structure as a result of the on-going assessment suggested by Ring and Van de Ven (1994) and others. In this case, however, that perception is a function of both realized and expected costs and benefits:

**Proposition 2:** An alliance will either be terminated or restructured if perceived cooperation costs exceed perceived benefits.

In contrast to the situation of cooperation costs exceeding a firm's tolerance, cooperation costs may be considerably less than a firm's tolerance, given an expected level of benefit (represented by A5 in Figure 2, in which cooperation costs $C_{a5} = T_a + D_a << C_{max}$, and $B/C_{a5} > 1$). This alliance, well behind the tolerance frontier, should be acceptable to the firm. The alliance could, however, be suboptimal. While costs may be lower as the alliance characteristics approach the origin (i.e., lower on both $T$ and $D$ dimensions), the absolute level of benefits may also decrease as an alliance is further left of the tolerance frontier. This is precisely the point that a number of scholars have made in their critiques of the transaction cost researchers' singular focus (in practice) on reducing costs (e.g., Zajac and Olsen, 1993; Ghoshal and Moran, 1996; Madhock and Tallman, 1998); namely, by doing so, the partners may be missing some benefits that could
accrue if the alliance were closer to the tolerance frontier and, in cost terms, “less efficient”.

For example, if the joint task scope is relatively fixed, then ex ante a firm may realize greater value by choosing a partner who is more rather than less different compared to alternative partners. These differences (in skills, work routines, values, etc.) may make a joint undertaking more costly, but they may also provide valuable learning experiences or lead to more creative outcomes. On the other hand, if the partner is already decided, then managers may be well advised to expand the scope of the joint task in search of additional benefits, as long as total costs of doing so do not exceed total expected benefits (i.e., up to $C_a = B$). For example, if the partners are relatively similar in values, objectives and communication styles (diversity relatively low, such as $D_a$), one or both firms may benefit from a greater scope of interaction. To realize benefits from greater interaction, they could increase the scope of their joint activities to include more of the value chain or other dimensions of scope. The additional (marginal) cooperation costs resulting from greater scope-related coordination costs should be more than offset by increased benefits (up to $T_c$). We restate this as:

**Proposition 3:** If cooperation costs are lower than the perceived benefits of an alliance, a firm may introduce changes that allow it to realize increased benefits, even if the changes lead to additional costs exceeding the marginal increase in benefits.

This applies equally to the ex ante structure of an alliance, or the ex post restructuring of an alliance as one or both partners gain new information or circumstances change.

For analytical clarity, the preceding discussion has treated each dimension separately and proposed ways in which a firm may manage an alliance so as to move it out of the failure region related to that dimension. A more accurate representation of firm decision-making behavior, however, is that it simultaneously considers the costs along all dimensions. Accordingly, a firm may have many different options for moving an alliance to the tolerance frontier.

One set of options focuses on one dimension only. Consider an alliance that is high or
somehow increases along one dimension and is in the failure region (A4 in Figure 2). Managerial approaches, which also incur costs, may "move" it back to the tolerance frontier to reduce the alliance along another dimension (to A1 or A3). For example, if two firms decide to increase the scope of their joint activities (shifting from A1 to A4 in Figure 2), they may bring the alliance back to the tolerance frontier by adopting mechanisms that reduce differences between the partners (shifting the alliance from A4 to A3). Alternatively, the firm may adopt managerial approaches that affect the alliance’s characteristics along both dimensions in order to reach the tolerance frontier (from A4 to A2).

**Shifts in the Tolerance Frontier**

The preceding section has discussed changes in an alliance that may lead to a shift in the alliance relative to a given tolerance frontier. In this section, we explore the situation in which the same alliance (in terms of task complexity and interpartner diversity, as well as transaction costs) could be acceptable or unacceptable. This situation arises when there is a shift in the tolerance frontier that leads to a change in the fate of a given alliance, from failure to acceptable or vice-versa. This situation arises when there is a shift in the tolerance frontier due to a change in perceived value of an alliance, which we relate to changes in strategic implications and equity.

**Strategic implications**

As already discussed, an alliance between two organizations is affected by their overall relationship as well as each partner's third-party relationships. To the extent that the two organizations are competitors for external resources, any relationship will have strategic implications that are specific to each partner. Strategic implications may represent costs or benefits (realized or potential) of an alliance, in either case affecting the perception of alliance value. Thus, we may supplement our earlier equation with this cost:

\[ C_{\text{max}} = T + D + S \]

where \( S \) are the strategic implications that may result in both costs and benefits. When the net \( S \) is
negative (i.e., strategic costs are greater than benefits), the tolerance for costs related to task complexity and interpartner diversity \((T \text{ and } D)\) will be less. As a result, the tolerance frontier will shift closer to the origin.

The shift in the tolerance frontier can be illustrated by considering a firm's ex ante evaluation of two alliance options that differ only in their strategic implications; i.e., potential partner 1 is a competitor but partner 2 is not. To simplify, assume that the degree of interpartner diversity is the same for both partners \((D_1 = D_2)\). In this case, \(C_{max}\) will be less for the alliance with the competitor, necessitating a proportional decrease in task complexity \((T)\) if \(D\) is fixed. This implies a leftward shift in the tolerance frontier \((T_o \text{ to } T_c\) in Figure 3). Given such conditions, a firm could accept an alliance with a competitor that had a more restricted scope. This follows intuitively, since we would expect a firm to be wary of forming an alliance with a broad scope for joint activity that increased the likelihood that proprietary information or other resources would leak to the competitor. Conversely, a firm would expect less of such losses to a partner with which it has no competitive relationship, and therefore be willing to engage in a broader alliance (i.e., one requiring greater task-related integration).

Similarly, the competitive relationship between two partners in an alliance may change over time, causing a shift in the tolerance frontier after an alliance is formed. The strategic implications become important if, for example, if the partners become direct competitors or one forms a relationship with a competitor of the other during the course of their alliance. In such a situation, although the characteristics of the alliance itself may not have changed, a firm's perceived costs of the alliance will have increased \((S < 0, \text{ therefore } C_{max} \text{ is smaller})\). Conceptually, the tolerance frontier will shift towards the origin, and the existing alliance structure may no longer be acceptable. If an alliance is thereby in the failure region, a firm must decide whether to change the characteristics of the alliance (as by reducing interpartner diversity or reducing the interaction scope to limit the potential loss of competitively important information) or terminate the alliance. We restate this as:
Proposition 4: Perceptions of the strategic implications of an alliance may change over time, and this affects a firm’s decision to form, maintain or alter a particular alliance.

Inequity

Unlike the other dimensions considered so far (task complexity, interpartner diversity and strategic implications), equity does not represent a source of costs or benefits. Instead, it becomes relevant when a firm views its own benefit-to-cost ratio \((B/C)\) to be lower than that of its partner or what it believes to be “fair”. Of course, a firm may have an internal benchmark for its required \(B/C\) and its perception of the alliance be unaffected by the \(B/C\) ratio of its partner. Empirical studies, however, have shown that the firm’s perception of this ratio for itself relative to that of its partner (the original sense of inequity developed in psychology) is closely related to its satisfaction with an alliance (e.g., Kumar and Nti, 1998; Ariño and de la Torre, 1998).

A firm will attempt to redress perceived inequity by either increasing its own benefits, reducing its costs, increasing the costs of its partner, or reducing its partner’s benefits. These responses have implications for the firm's tolerance frontier. The frontier will not shift, and the alliance will not "fail", if the firm is able to extract more benefits from the alliance while bearing the same level of costs. New information about unexpected benefits, or new information that its partner's costs are greater than expected, could also reestablish a perception of equity. The same result could arise if the firm changes its perception of equity (its \(B/C\) "requirement") so that it no longer compares its ratio to that of its partner, or if it changes its view of what is a "fair" ratio for its partner.

Alternatively, if the firm is unable to increase its benefits from the alliance, it may try to reduce its alliance-related costs until it perceives its benefit/cost ratio to be equitable with its partner's. Conceptually, the firm's tolerance frontier shifts towards the origin \((T_o \text{ to } T_t\) in Figure 3), and a previously acceptable alliance with cooperation costs \(T_a + D_a\) will then be in the failure region. At that point, the firm has the option of reducing these costs (or its perception of these
costs) or terminating the alliance. These possibilities are restated as:

*Proposition 5: Perceptions of inequity in an alliance may change over time, and this affects a firm’s decision to form, maintain or alter a particular alliance.*

**A COOPERATION COST PERSPECTIVE ON THE NEDCAR ALLIANCE**

The NedCar alliance between Mitsubishi Motors Corporation (MMC) and Volvo in the Netherlands provides useful illustrations of the key elements of the cooperation cost framework: joint task complexity, interpartner diversity, strategic implications and equity. Each of these factors is clearly salient in the ex ante decisions to pursue the overall strategic objectives through an alliance, rather than alone (make) or through a market transaction (buy), and to structure the alliance in a particular way. They are also relevant in analyzing these partners’ behavior and changes in the alliance once it had begun.3

This is not to say that the costs of control were zero in this case. The two firms are global automobile manufacturers, and certain proprietary information and knowledge could be quite useful to the other partner. This explains the firms’ explicitly identifying what kind of information would not be shared between them (see Appendix 1). However, once this was established, both sides seemed to respect the information boundaries. There is no evidence that interpartner competition and rivalry was an ongoing concern to either partner. In other words, the costs of cooperation, rather than the costs of control, seem to be more salient in understanding developments in this particular alliance than, for example, in an alliance in which distrust dominates the partners’ interactions. While both types of costs would be included in each firm’s overall perception of the alliance’s value, in this section we restrict our discussion to those related to the costs of cooperation.

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3 See Appendix 1 for a summary of the background and objectives of the NedCar alliance, Table 1 for a timeline of key events, and Table 2 for examples of cooperation costs, internal and external developments that affected the alliance, and changes in firm behavior or alliance structure in reaction to those developments.
Ex ante decisions

The decision by both firms to pursue an alliance rather than pursue their strategic objectives alone or through a series of market transactions was primarily determined by the types of objectives they had—learning, scale economies, product development and, for MMC, entry into Europe. These objectives (expected benefits in the cooperation cost framework) could not be efficiently pursued through market transactions. For MMC, its resources were also strained by commitments to another venture, so pursuing those benefits on its own was also not feasible. In other words, the hierarchies (make) and markets (buy) options were not feasible because the costs were too high (the case of undertaking the effort alone) or the same benefits not likely to be realized (if they either pursued it alone or relied on market transactions). On the other hand, the firms estimated that they could achieve their desired benefits through an alliance arrangement, and expected that the costs incurred would be less than those benefits.

Once agreeing to the general idea of an alliance arrangement to pursue their respective goals, the firms structured the alliance with considerable success. To make sure that their joint development work was adequately coordinated, they created a large number of joint decision-making groups, and also assigned responsibility for balancing the need for product differentiation and component standardization (as much as possible) to be a specific and empowered role (i.e., the project leaders). They managed language differences by underwriting the costs for translation. To overcome differences in skills, they planned for extensive exchanges of personnel for training and technology transfer.

As an incentive to promote behavior following an equity norm, the two each took equal ownership shares in the venture, treated NedCar as a cost center, allocated responsibility for NedCar’s output, and chose an outsider to act as the top manager. For contributions and costs that were qualitatively different, the two firms clarified their respective expertise contributions; namely, production preparation and line management by MMC, and painting, raw materials
procurement and knowledge of the European market by Volvo.

**Ex post developments and responses**

Once the two firms embarked on their alliance, we find examples of their changing particular behaviors or the structure of the alliance to respond to more accurate information that they gathered in the process of the alliance activities or to respond to changes in circumstances. Some of these responses led to increased benefits for one or both firms. For example, after working together on the NedCar activities, they also expanded their joint activities to include development of a new diesel engine and Volvo’s marketing MMC’s small trucks through its European distribution network.

Other changes represented additional costs that one or both firms had to incur in order to achieve the desired benefits. For example, MMC not only established a design center in Germany, but eventually had to locate a sub-group of that center within NedCar in order to undertake joint development work effectively. Volvo incurred considerable costs as it adopted MMC’s design process to replace its own, although this can also be considered an unexpected benefit for Volvo because MMC’s design process is more efficient. Engineers at both firms spent more time and effort than expected trying to understand and reach compromises on technical standards and components. Their inability to reach compromises in some cases made it impossible for them to share as many components as they had expected when they entered the alliance (although still enough for them to consider the effort a success). To maintain equity in the alliance, both firms purchased equal shares of the stake in NedCar that the Dutch government had to give up as a result of an EU ruling.

For most of its duration, the NedCar alliance delivered enough value to both of its partners to justify such additional costs. In other words, it seems to have existed slightly behind the two firms’ tolerance curves. However, this same alliance became untenable as changes in the strategic implications of the alliance resulted in a drastic shift in the tolerance curve towards the
origin. Specifically, once Volvo came under the same Ford umbrella as Mazda in 1999, and DaimlerChrysler acquired its 34% stake in MMC, the MMC-Volvo collaboration was no longer possible.

**IMPLICATIONS FOR RESEARCH**

The cooperation costs framework developed here provides a framework to address two issues that are typically treated separately: 1) a firm's choice among governance forms (market, hierarchy or hybrid) and 2) the choice of structure and the evolution (restructuring) of a particular alliance. We have defined cooperation costs as those incurred by a firm to establish and maintain an interorganizational interface and make adjustments in the process of undertaking a collaborative activity. These are in addition to the costs of control that has dominated comparative governance and alliance research, especially quantitative studies. This paper has proposed that it is necessary to address both costs of control and cooperation in order to understand alliance formation and evolution. As such, it has important implications for further empirical work in this area.

First, for research that investigates a firm's choice among make, buy, or ally strategies, it is necessary to specify explicitly the costs and benefits that are specific to each option and evaluate which are most salient for the firm. The assumption underlying much of the transaction cost-based studies is that the benefits of the three governance options are the same, implicitly justifying a singular focus on their relative costs. Scholars investigating alliances and other types of cooperative interorganizational relationships, however, have strongly argued that the potential benefits (or objectives) of such relationships are distinctly different from those possible from either make or buy (Argyres, 1996; Ghoshal and Moran, 1996; Poppo and Zenger, 1998; White, 2000). In particular, they cite the usefulness of such relationships for resource creation, in contrast to the focus on resource allocation of the market and hierarchy governance forms (e.g., Amendola and Gaffard, 1994; Kogut et al, 1995; Sakakibara, 1997; Ring and Van de Ven, 1994). Similarly,
the costs of each option are also qualitatively different. Accordingly, our framework has emphasized the coordination, communication and adjustment costs associated with creating and maintaining an effective interorganizational relationship, costs that are less relevant or qualitatively different for other governance forms.

Second, researchers must address these benefits and costs on a relative basis. Following Zajac and Olsen (1993) and others who call for a “value perspective” in analyzing alliances, the cooperation cost framework explicitly includes a firm's perception of alliance value in terms of a benefit-to-cost ratio. Of course, if the costs associated with different mechanisms to achieve the same benefits are not equal, we would predict that a firm would favor the least costly mechanism(s). In this case, Williamson's (1991b) argument that minimizing costs makes an important contribution to a firm’s competitiveness is relevant and appropriate. Since benefits and costs are interdependent, however, it is necessary to go beyond Williamson's focus on costs by incorporating a measure of benefits relative to those costs.

Third, the cooperation cost framework emphasized the primacy of the perception of costs and benefits. Empirical research designs should allow for variance among actors' perception of the same "objective" reality. Conceptually, scholars of both comparative governance and alliance management recognize that it is a firm's subjective perceptions of costs and its partners that affect behavior, but their empirical measures are often objective. For example, in the transaction cost framework, managers will (or should) choose ‘make’ over ‘buy’ when the threat of opportunism is high, and empirical researchers may use, for example, the number of potential suppliers as a proxy for this threat. However, that assumes that each firm in the sample 1) has access to the same suppliers and 2) has the same type of relationship with each. In other words, it disregards potentially important sources of heterogeneity among firms.

As a result, such methodological approaches have two weaknesses. First, while "objective" measures are usually easier to gather than perceptual measures, they are probably not appropriate for studies of decision-making and choice that these frameworks represent. Second,
research on organizational networks has accumulated strong evidence that there is important variation among firms and their relationships with other organizations. A firm's position in a network and the nature of its relationships affect its ability to access resources and, subsequently, compete (Gulati & Gargiulo, 1999; Burt, 1992; Powell & Brantley, 1992).

Finally, our interaction cost framework identifies the potential problems that equifinality presents for studies of alliances. Following Gulati and Singh (1998), our framework allows for many different "configurations" of alliance characteristics that could lead to the same outcome, whether alliance formation, maintenance, evolution or termination. Furthermore, these configurations are seldom fixed, and firms have a wide range of choices for configuring an alliance ex ante, or reconfiguring it after it is formed. Consider, for example, an initial proposal for an alliance that, from a focal firm's perspective, is untenable (i.e., located in the failure region of Figure 2). The firm may propose managerial mechanisms or structure that reduce the degree of task complexity, interpartner diversity or both, so that its ratio of benefits to costs is acceptable. These approaches, however, may themselves incur costs. The final structure and operations of an alliance will be a complex set of trade-offs among structural and behavioral "features", each with different benefits and costs.

The implication is that there are many different possible configurations for successful alliances. In the terminology of our framework, any configuration that results in the alliance being located on the tolerance frontier (whatever the actual shape of that frontier) would be efficient in the sense that the firm was able to derive the most benefits from the alliance at an acceptable level of total costs. Furthermore, since different firms will have different perceptions of acceptable benefit-to-cost ratios, the diversity of "acceptable" alliances (or, acceptable configurations of the dimensions proposed in this framework) is quite great.
CONCLUSIONS

This paper has developed a theory of cooperation costs to consolidate findings from research on alliances and enrich analyses of comparative governance. In the resulting framework, hybrid governance forms, including the diverse range of alliances characterized as cooperative interorganizational relationships, are evaluated relative to a focal firm's tolerance for costs associated with task complexity and interpartner diversity, and perceptions of these in turn being affected by perceptions of the strategic implications and equity in a partnership. These costs are evaluated relative to expected benefits from the alliance, and benefits and costs are interdependent.

The propositions presented draw on prior empirical and conceptual work, and the NedCar case illustrates key elements of the framework. Further empirical work, both qualitative and quantitative, could refine these constructs and test hypotheses derived from the theory. However, this framework does begin to fill a gap in the comparative governance literature by introducing the concept of cooperation costs that are particularly relevant for alliance relationships and that prior literature has identified as sources of alliance inefficiency. It also provides a parsimonious set of dimensions for distinguishing among different types of alliances, sources of alliance failure, and managerial means of structuring alliances ex ante and adapting to changes as alliances evolve after formation.
REFERENCES


Special Summer Issue, 143-164.


APPENDIX 1

NedCar alliance background and objectives

Mitsubishi Motors Corporation (MMC) formed a project team in the late 1980s to study how MMC could establish its own manufacturing presence in Europe. MMC had already determined that it had no choice but to establish local production there if it wanted to increase its sales or share of the European market. With impending consolidation of the European Community (EC) market and rapid valuation of the yen at this time, Nissan, Honda and Toyota had already established, or at least planned, production bases in Europe. The Japanese auto manufacturers had also allocated between them a voluntary quota, placing a maximum limit on the number of cars they could export to Europe; none of these companies could expect a great increase in sales through increased exports.

Having just joined with Chrysler in a large-scale investment in Diamond Star Motors (DSM) in the USA, and MMC did not have the financial or managerial resources to undertake a European production venture alone. Thus, the project team began its study of entry into the EC assuming the need to find a suitable partner.

The Dutch government, learning of MMC’s interest in establishing a manufacturing presence in the EC, initiated discussions with the company about the possibility of joint production with Volvo Car. Volvo Car, established as a joint venture between the Dutch government (70%) and Sweden’s Volvo (30%) in 1972, was originally the passenger vehicle division of the Dutch truck manufacturer DAF. Volvo Car’s manufacturing operations were located in Born, The Netherlands near the borders with Belgium and Germany, and the R&D operations in nearby Helmond. The Dutch government had not been satisfied with Volvo Car’s performance.

Volvo, which was interested in introducing a new small passenger car, recognized MMC’s small-car production expertise and saw MMC’s participation as a way of reducing the cost and risk of producing a small passenger car alone. In addition to reducing the initial investment that a greenfield investment would require, MMC was initially attracted to Volvo Car because the manufacturing facility had ample room for expansion and also had its own press factory. Moreover, through working with Volvo, MMC hoped to acquire Volvo’s leading safety technology and introduce elements of Volvo’s worker-friendly factory environment.4

From late 1990 to early 1991, MMC and Volvo negotiated the framework for their alliance, with the Dutch government acting as an interested facilitator. Negotiations nearly broke down several times, but the Dutch government was able to bring the two sides back together. Finally, a three-way investment project was announced in May and signed in August 1991, with each party taking a one-third stake in the new venture -NedCar- capitalized at DG 551 million

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(approximately €250 million).

While continuing existing production at Volvo Car, the primary activity of the NedCar alliance for both MMC and Volvo was the joint design, engineering and production of two new small passenger car models. However, both sides had shared the same and seemingly incompatible objectives for the alliance. The two firms required that both models (the Charisma and S40/V40) be differentiated products in terms of appearance, features and equipment. At the same time, they wanted to reduce costs by benefiting from economies of scale in procurement, through the use of common components and a common production line.

These goals, however, had to be subject to the two firms’ competitive concerns; they were, after all, both global auto makers with proprietary knowledge, even if their products did not compete in exactly the same market segments. Therefore, upon signing the agreement forming the NedCar project, MMC and Volvo established guidelines regarding information sharing. In particular, the firms agreed to what kind of information would not be shared as part of their collaboration. The information they did not share included technical specifications and cost structure for components that were not common to the two firms’ models. Nor did they share the complete product characteristics of the completed cars, quality data, or cost and profit structure. Regarding each other’s product design, at the development stage only the top management of each firm and the PL (who had the final say-so on shared components) had this information about both firms’ plans.

Within these information boundaries, the two firms had to cooperate across most of the value chain that brings new products from conception to market. Because they were using MMC’s Lancer as the basic platform, the alliance did not involve fundamental research or platform design work. MMC and Volvo would also be separately responsible for marketing and sales of their respective models. However, the two firms would have to cooperate closely in product design (planning and styling), product engineering (drawing and testing), process engineering and production.
<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>February</td>
<td>Mitsubishi Motor Corp. (MMC) begins to consider joint production in Europe.</td>
</tr>
<tr>
<td>1990</td>
<td>February</td>
<td>Volvo takes an equity position in Renault.</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>Heads of MMC and Volvo discuss and come to an agreement on joint production.</td>
</tr>
<tr>
<td>1991</td>
<td>May</td>
<td>MMC, Volvo and the Dutch government's Volvo Car formally announce their agreement.</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>Volvo Car announces intention to reduce personnel and restructure organization.</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>MMC, Volvo and the Dutch government sign the agreement to undertake joint production.</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>NedCar is established. Sevenstern and other board members are selected.</td>
</tr>
<tr>
<td>1992</td>
<td>February</td>
<td>Six-year improvement plan for NedCar announced.</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>EC investigates the Dutch government's DG700 million investment in NedCar.</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>MMC decides to procure the engine for NedCar from Renault.</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>MMC and Volvo begin procurement of parts for NedCar.</td>
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<tr>
<td></td>
<td>November</td>
<td>MMC establishes a design center in Germany that will assist in the design work for NedCar.</td>
</tr>
<tr>
<td>1993</td>
<td>February</td>
<td>Plan for NedCar's personnel reduction and organizational restructuring announced.</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>Volvo announces plans for its alliance with Renault. MMC announces its intention to continue with its plans for NedCar.</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>Volvo decides to break off its equity relationship with Renault. CEO Dillenhammer and 5 other directors resign.</td>
</tr>
<tr>
<td>1994</td>
<td>February</td>
<td>Volvo ends its equity relationship with Renault.</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>Rapid yen appreciation leads to decision to move up Charisma (MMC) production by 3 months (from August to May 1995).</td>
</tr>
<tr>
<td>1995</td>
<td>May</td>
<td>MMC Charisma (5-door, hatchback) production begins at NedCar.</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>Volvo S40 (4-door, sedan) production begins. Mixed production at NedCar of Charisma and S40.</td>
</tr>
<tr>
<td>1996</td>
<td>October</td>
<td>Decision to procure MMC's GDI engine for Volvo S40/V40.</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>Charisma 4-door sedan goes on sale in Japan. MMC establishes the Europe Parts Center in a lot adjacent to the NedCar facility to centralize bringing together and distribution of over 70,000 MMC car parts.</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>NedCar takes on production of Volvo's 400-series (V400).</td>
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<tr>
<td></td>
<td>December</td>
<td>Heads of MMC, Volvo Group's Preferred Stock Corp., Volvo Car and Volvo Truck agreed to jointly undertake new DDI diesel engine development, MMC's small truck Canter produced in Portugal would be sold through Volvo's European sales network, and the next NedCar model would be jointly developed.</td>
</tr>
<tr>
<td>1997</td>
<td>Spring</td>
<td>Charisma goes on sale in Singapore, Hong Kong, New Zealand and Brunei. Volvo S40/V40 goes on sale in Japan.</td>
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<tr>
<td>1999-</td>
<td></td>
<td>Ford buys Volvo, and Volvo sells its share in NedCar to MMC after DaimlerChrysler buys 34% of MMC.</td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
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<tr>
<td>2003</td>
<td></td>
<td>NedCar scheduled to end Volvo production.</td>
</tr>
</tbody>
</table>

*Drawn from Ishii (1997).*
## TABLE 2

### Cooperation cost developments in the NedCar alliance

<table>
<thead>
<tr>
<th>Anticipated costs and decisions</th>
<th>Emergent costs and actions</th>
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</thead>
<tbody>
<tr>
<td><strong>(ex ante structuring)</strong></td>
<td><strong>(ex post restructuring and evolution)</strong></td>
</tr>
</tbody>
</table>

### Joint Task Complexity
- Joint decision-making boards, including Supervisory Board, Supplier Evaluation Committee, Model Evaluation Committee, Parts Monitoring Committee, etc.
- Strong Project Leaders in each firm balancing differentiation and standardization within own firm.
- MMC establishes Design Center in Germany, then locates a sub-group within NedCar.
- Undertake a new joint development project for a DDI diesel engine.
- MMC’s small truck (produced in Portugal) sold through Volvo in Europe.

### Inter-Partner Diversity
- Translation of documents, conversations (Japanese, Swedish, English).
- Send NedCar production workers to undergo training in Japan to transfer tacit knowledge for "human-centered" processes (joining, assembly).
- Send MMC production engineers from Japan to NedCar to oversee training and implementation.
- Different corporate priorities (cost, quality safety, design and fuel efficiency at MMC, safety and quality at Volvo) and different tastes and preferences by each firm's engineering and design groups made it impossible to share some components.
- Change in process and interdepartmental power as Volvo adopts MMC's concurrent design process in place of its own.
- Technical terminology, tacit and qualitative engineering knowledge could not be fully codified or standardized across the 2 firms, resulting in a need to "reverse specify" components.

### Equity
- Equal ownership shares and NedCar as a cost center for both firms equalized a portion of the total alliance benefits and costs to each firm, and each firm had an incentive to reduce costs.
- Fixed each firm's share of NedCar's output, and each firm responsible for loss from any unutilized capacity.
- Install outsider as top manager (Dutch, from neither MMC nor Volvo).
- MMC contributes production preparation, Volvo responsible for paint process, raw materials procurement and knowledge of European market.
- MMC acquiesces and introduces a costly "late" design change request by Volvo because Volvo had acquiesced to adopting MMC's concurrent engineering organizational process.
- Both firms purchase equal shares of Dutch government's 1/3-share in NedCar when Dutch government forced to give up ownership by EU ruling in 1999 (becomes 50-50 joint venture).

### Strategic Implications
- Other Japanese firms entering Europe through direct investment, but MMC's joint venture with Chrysler in the USA (DiamondStar Motors) straining MMC's resources, so MMC only considered expanding operations in Europe with a local partner.
- MMC acquiesces and introduces a costly "late" design change request by Volvo because Volvo had acquiesced to adopting MMC's concurrent engineering organizational process.
- Both firms purchase equal shares of Dutch government's 1/3-share in NedCar when Dutch government forced to give up ownership by EU ruling in 1999 (becomes 50-50 joint venture).
- Volvo breaks off equity relationship with Renault (1994) which had been supplying engines to NedCar; by 1996, Volvo decides to procure MMC's GDI engine for Volvo S40/V40.
- Ford, with a stake in Mazda, buys Volvo (1999); Volvo sells its share in NedCar to MMC (2000) after Daimler Chrysler acquires 34% stake in MMC; and NedCar ends Volvo production (by 2003).
Endogenous model of alliance structuring, cooperation costs and value perception

FIGURE 1

(Re)Structuring of the alliance
Managerial mechanisms and shifts in alliance characteristics

The tolerance frontier is defined by the degrees of joint task complexity and interpartner diversity such that $T + D = C_{max}$. A firm has multiple options for changing the characteristics of an alliance ($A_4$) that would otherwise fail or be untenable. The firm could adopt a set of mechanisms (and incur additional costs) that reduce joint task complexity (leading to alliance $A_1$) or reduce differences with its partner ($A_3$), or adopt a combination of each that brings the alliance characteristics to the tolerance frontier ($A_2$). If the firm extensively adopts both sets of mechanisms, it may have incurred an unnecessary level of total costs or reduced the benefits it can expect from the alliance ($A_5$, well within the tolerance frontier).
A firm's tolerance for costs related to joint task complexity and diversity may change, resulting in a shift in the tolerance frontier and potential change in an alliance's fortunes. For example, when adverse strategic implications are high (a partner is or becomes a competitor, or has or forms a relationship with a competitor), the firm is less willing to accept costs associated with task complexity and interpartner diversity (i.e., $C_{\text{max}} < C_a = T + D + C_I$, so a shift from $T_0$ to $T_c$). Similarly, a firm may be less willing to bear a given level of costs if it perceives its partner as enjoying a higher benefit-to-cost ratio ($T_0$ to $T_t$). In either situation, the tolerance frontier shifts towards the origin and the alliance is left in the failure region. Conversely, the frontier may shift in the opposite direction if the competitive implications are positive or perceptions of equity are high, and a previous ‘failed’ alliance may become tenable.