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## Essays on the governance of buyer-supplier relationships
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# Chapter 3

# EFFECTS OF TRUST AND GOVERNANCE ON RELATIONAL RISK[1]

## 3.1    INTRODUCTION

Widespread competition in world markets, the increasing importance of fixed costs (Ohmae, 1989), rapid technological development, and the rising complexity of input and output markets (Zuscovitch, 1994), have made market competition increasingly like a race. To have a chance of winning this race, firms must concentrate on their core competencies (Prahalad and Hamel, 1990). To do this, they need alliances with other firms that allow them (1) to share fixed costs (of, for instance, R&D, production, and distribution and sales), (2) to share the risks of development, (3) to enhance their own core competencies, (4) to acquire access to complementary competencies (Porter and Fuller, 1986), and (5) to increase speed of market entry (Lei and Slocum, 1991). Hence, the design and implementation of alliances are vital. Early researchers paid much attention to the control of alliances, in order to cover the risks involved in cooperation between firms with different objectives; more recent researchers have found that excessive concern with control can be counterproductive (Lorange and Roos, 1992), that the management of alliances is critically concerned with attitudes and interpersonal relationships (Faulkner, 1995), and that attention should be paid to issues of trust (Barber, 1983; Killing, 1988; Lorenz, 1988; Palay, 1984). The purpose of the reported study was to extend that line of research.

"Alliance" is a broad term capturing many forms of interfirm cooperation that go beyond market transactions. Explanations of alliances in the literature focus on the trade-off between the perceived advantages of full ownership, market contracts, and intermediate positions (Contractor and Lorange, 1988; Hagedoorn, 1993; Osborn and Baughn, 1990). Prominent approaches to the systematic comparison of the various forms that interfirm alliances can take (such as long-term purchasing agreements, licensing, collaboration on R&D, technology exchange, and joint venture) are the strategic behavior perspective

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1    This chapter is based on Nooteboom, B., Berger, H., and Noorderhaven, N.G. 1997. Effects of trust and governance on relational risk. *Academy of Management Journal*, 40(2): 308-338. This article is reprinted in 2008: Nooteboom, B., Berger, J., and Noorderhaven, N.G. 2008. Effects of trust and governance on relational risk. In R. Bachman, and A. Zaheer (Eds.), *Landmark papers on trust.* Cheltenham UK: Edward Elgar.

(Kogut, 1988; Porter and Fuller, 1986), the theory of international production (Dunning, 1995), and transaction cost economics (Gulati, 1995; Hennart, 1988).

Alliances entail problems of coordination and mutual dependence. Transaction cost economics in particular has focused on these problems. Chiles and McMakin (1996) distinguished two perspectives in transaction cost economics. The first is a long-term evolutionary perspective in which objective transaction costs determine the survival of the fittest governance forms. The second is a short-term managerial choice perspective in which managers act on subjective costs that are based on varying perceptions and evaluations of risk. The latter explains why firms in similar circumstances may make different make-or-buy trade-offs. We took the latter perspective.

According to transaction cost economics, dependencies are the result of switching costs, which arise from specific investments, investments worth less or nothing outside a given alliance (Williamson, 1975). Although the objective of a partnership is joint creation of value, there is a fiduciary risk of opportunistic exploitation of dependence. This risk may lead partners to integrate activities in a single firm, which offers better control of opportunism (Joskow, 1985; Williamson, 1975), through sales of assets, a merger or an acquisition, or an equity joint venture.[2] But a nonintegrative contractual alliance between different firms has advantages over integration: the strong incentives experienced by separate firms responsible for their own survival, the economies of scale realized in production by specialized firms (Williamson, 1975), and great flexibility in the configuration of scope, which indicates efficiencies from cost sharing between products.

But such alliances raise complicated issues of governance as they are "hybrid" forms of organization between market and hierarchy (Williamson, 1991). The fiduciary risks of dependence, corresponding problems of coordination, and problems of spillover need to be dealt with. Daems (1983) discussed different forms of governance in different industries; Lei and Slocum (1991) compared licensing, joint ventures, and consortia; Osborn and Baughn (1990) contrasted joint ventures and contractual modes for international alliances; Walker and Poppo (1991) compared coordination mechanisms between and within organizations; Walker and Weber (1987) discussed adjustment, switching, and transaction costs; and Teece (1986) studied problems of spillover, the role of complementary assets in innovation, and implications for integration, licensing, and collaboration. Grandori (1995) attempted to systematically inventory governance forms under different conditions.

Traditionally, approaches from economics have focused on the roles of self-interest and opportunism. The threat of opportunism has to be taken into account, and means of constraining opportunism include contracts and monitoring, which Williamson (1975) called "legal ordering"; incentives such as shared ownership of specific investments; restraint of opportunism to safeguard future profits yielded by cooperation (Axelrod,

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2    In the following, we use joint venture to refer to an equity joint venture, which is a new firm set up with equity supplied by parent firms.

1984; Heide and Miner, 1992); and a reputation mechanism, or posting of hostages, which Williamson (1985) called "private ordering." In early work, Williamson (1975) recognized the relevance of "atmosphere," but he did not further develop this notion in his later work (Williamson, 1985). Williamson (1993) posited that trust makes sense only if it goes beyond calculative self-interest, but since he maintained the centrality of calculativeness, there is no room in his view for trust. In other research traditions, notably the work of the Industrial Marketing and Purchasing Group (IMP), trust is a central variable (Easton, 1989; Hakånsson, 1982; 1987; 1989; Johanson and Mattsson, 1987). But in that perspective, trust is viewed as so pervasive that the role of self-interest and the temptations of opportunism are ignored. In various other studies, trust has been viewed as the glue that keeps business partners together (Barber, 1983; Killing, 1988; Lorenz, 1988; Palay, 1984). Our perspective is that trust and opportunism both play roles, and that trust, coercion, and incentives are all relevant dimensions of goverance (cf. Buckley and Casson, 1988).

In addition to limiting transaction costs, trust may also form part of the utility of a relationship. According to social exchange theory (Blau, 1964), exchange and cooperation often have a social dimension (intrinsic utility) as well as an economic dimension (extrinsic utility). Economists tend to think of value in exchange as something that exists independent of a transaction. As Murakami and Rohlen noted, "The value of the relationship itself is typically ignored and the impersonality of the transaction is assumed" (1992: 70). In intrinsic utility, the exchange process itself matters, as does the economic surplus that the exchange yields. Buckley and Casson (1988) also recognized the significance of the exchange process. People may prefer to transact on the basis of trust and its sources: ethics, kinship, friendship, and empathy. Social exchange relies more on unspecified, implicit obligations, which depend on shared systems of meaning, belief, and ethics, than on formal contracts. The idea that exchange includes noncontractural elements goes back (at least) to Durkheim.

The economic relevance of trust is that it reduces the specification and monitoring of contracts, provides material incentives for cooperation, and reduces uncertainty (Hill, 1990). Transactions are thus cheaper, more agreeable, and more flexible. With detailed formal contracts, it is more difficult (slow and costly) to modify terms when conditions change. Apart from its own worth, trust pays. But it also carries the risk of betrayal.

The purpose of the present study was to extend the transaction cost framework to address trust and to test that extended framework empirically. More specifically, we sought to determine (1) whether the instruments for governance posited in transaction cost economics as related to coercion (contracts, monitoring, hostages) and to incentives (long-term perspective, reputation, reciprocal dependence) have an effect on perceived relational risk, and (2) whether trust also has a significant effect on relational risk. Finding such an effect would falsify the claim of previous theory that trust is a redundant concept.

For an empirical test, this study focused on a particular type of alliance: the buyer-seller dyad. The extensive literature that has developed is chiefly based on the marketing

channels paradigm, resource dependence theory, transaction cost economics reasoning, and relational contract theory (Heide, 1994). Some researchers have paid attention to the degree of partners' closeness, a concept with multiple facets, including cooperation, collaboration, commitment, joint action, and expectations of continuity (Anderson, 1996). Our work belongs to this stream in the literature, but it more explicitly combines insights from transaction cost economics with other factors. We saw trust between parties as shaping the evaluation of the risk of dependence stemming from, among other things, investments in relation-specific assets.

## 3.2    TRUST

To proceed, we first need to define trust and to specify a framework in which it fits with other aspects of governance. Trust may concern a partner's ability to perform according to the intentions and expectations of a relationship (competence trust) or his or her intentions not to defect (intentional trust; cf. Barber, 1983). Here, we focus on the latter type of trust. Of course, risks arising from failures of competence are important in subcontracting relations, but our focus was on the relation between intentional trust and cooperation. However, we did not ignore competence trust; the reliability of a partner's competence is included in the measure of the partner's value.[3]

It is useful to distinguish between behavioral trust, "the willingness to increase one's vulnerability to another whose behavior is not under one's control" (Zand, 1972: 230), from intentional trust, or the subjective probability that one assigns to benevolent action by another agent or group of agents (cf. Dasgupta, 1988; Gambetta, 1988; Mayer, Davis, and Schoorman, 1995). Behavioral trust can be based on intentional trust, but can also be based on other factors (such as a failure to recognize unilateral dependence), and the existence of intentional trust cannot be inferred from the presence of behavioral trust alone (Craswell, 1993; Kee and Knox, 1970; Noorderhaven, 1995; 1996). Consequently, in order to use intentional trust as an explanatory variable, we had to measure it independently.

Since our focus was on relations between organizations, the question of the relation between the conduct of individuals and the conduct of firms arises. As Ring and Van de Ven (1994) argued, they are related by the roles individuals are assigned in organizations. Conduct "qua persona" is restricted and guided by organizational roles. Alignment between the two types of conduct can be a problem. If cooperation is founded on trust based on personal bonding, problems may arise concerning the exigencies of organizational role. Personal loyalty may deviate from organizational interest and may even lead to corruption or embezzlement. The development of personal ties that are too strong may need to be prevented by personnel turnover. Conversely, personnel change may lead to a breakdown of relations based on personal trust. Such considerations should be part of governance.

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3    For example, to evaluate a supplier we looked not only at quality, but also at quality assurance, and not only at delivery time, but also at delivery reliability.

Our approach to the problem noted above was as follows. First of all, if trust is indeed a subjective probability assigned to conduct, it can logically apply to a subjective probability held by an individual with respect to the conduct of an organization. Of course, this subjective probability may, at least in part, be based on the experiences and perceptions of and constraints on members of the organization with which the focal individual's organization is related. Thus, we treated trust in terms of the relational risk with respect to a partner organization perceived by an individual who enacts the relation with the partner organization. This formulation yields the first in a series of propositions that structure our theoretical analysis: It makes sense to treat trust as a perception of an individual with respect to a partner organization. The argument implies that trust is not an objective condition and that it varies between individuals, even those in otherwise identical conditions.

## 3.3    DIMENSIONS OF TRUST

Williams (1988) proposed a scheme for the determinants of cooperation, which is reproduced as Figure 3.1. Williams argued that none of these sources by itself suffices, that, in cooperation, some mix will always be operative, and that no universally best mix can be specified. Often, trust will not suffice as a basis for cooperation. Conversely, material self-interest and coercion are seldom sufficient as a basis for cooperation: since one partner cannot fully control the other's conduct by threat and reward (cf. Deutsch, 1973), each needs trust to strengthen this fragile basis for cooperation (Ring and Van de Ven, 1994).

|  | Macro Level | Micro Level |
|---|---|---|
| Egotistic | Coercion or fear of sanctions from some authority (God, law) | Material advantage  of interest |
| Nonegotistic | Ethics: Values/norms of proper conduct | Bonds of friendship, kinship, or empathy |

**Figure 3.1: Sources of cooperation (Williams, 1988).**

If trust is identified with a subjective probability that a partner will not abuse one's dependence, without further qualification, then anything that contributes to such subjective probability would belong to trust—anything that restrains the partner from opportunistic conduct. That would include the direct control that one partner may exercise over the other's conduct by contract, monitoring, or threat (coercion). It would also include motives of self-interest that restrain the partner, such as the preservation of its

reputation (Weigelt and Camerer, 1988), expectation of future rewards from cooperative conduct in the present (Telser, 1980), or the desire to protect hostages (Williamson, 1985). Indeed, these sources are often included in the notion of trust (e.g, Chiles and McMakin, 1996), and Williamson (1993) discounted as unnecessary any notions of trust not based on the promotion or protection of self-interest. However, we adopted a narrower notion of trust, as going beyond self-interest: an individual trusts someone if he or she believes the other is likely to cooperate even if the latter is not coerced to do so and has no direct material interest in doing so.

There are two arguments for this view. One is that it corresponds more closely to intuitions: Is a perception really trust when one expects someone to conform to agreements out of self-interest or coercion? We agree with Williamson that trust makes sense only if it goes beyond calculative self-interest. Following Nooteboom (1996), we propose that an individual trusts someone when he or she is willing to *forego* guarantees based on coercion or self-interest. Only then does trust economize on transaction costs. This notion was the second reason we saw trust as we did: we wanted to investigate how causes beyond coercion and self-interest could affect relational risk. Thus, our second proposition is that trust is a source of cooperation that coexists with sources of cooperation based on self-interest and coercion.

In Figure 3.1, trust is associated with the nonegotistic sources of cooperation; loyalty to a partner results from norms and ethics and from bonds of friendship or kinship rather than from coercion and material self-interest. Thus, proposition three is that one dimension of trust is the institutionalization of values and norms that constitute an ethics of transactional relationships. It would not be justified to say that the recognition of such institutions is absent from traditional transaction cost economics. Williamson (1991), for example, recognized the effect of the "institutional environment" on transaction costs, but under the assumption that such an environment applied equally to all actors in a given context or national culture. This assumption does not serve to distinguish between alternatives of governance structure ("institutional arrangements") within a given context. We disagree for two reasons. First, susceptibility to values and norms (which we take to be part of the institutional environment) is likely to differ between individuals and between organizations, as a function of organizational culture. Thus, the impact of values and norms may vary within national boundaries (cf. Noorderhaven, 1995). Second, institutions may not be exogenous to a transaction relationship and may partly develop within it (Ford, 1980).

The second dimension of trust pertains to attachments between transacting firms in the form of friendship or kinship bonds (Seabright, Levinthal, and Fichman, 1992), which we indicate as "habitualization".[4] This form of trust is related to the concept of social exchange indicated before. Social exchange is, by its nature, restricted to insiders: people with whom a focal individual shares bonds. Trust requires familiarity and mutal

[4]    Presumably, trust based on such bonds would be close to Williamson's (1993) notion of personal trust, which he reserved for nontransactional relations with friends, family, and other loved ones. We do not accept such radical separation between impersonal business relations and personal relations.

understanding and, hence, depends on time and context, on habit formation, and on the positive development of a relation. Repeated interactions lead to the forming of habits and the institutionalization of behavior (Berger and Luckmann, 1966). Consequently, patterns of behavior are shielded from rational decision making in the pursuit of efficiency. Case study research has borne out that in industrial buying relations, buyers display a strong tendency to persist in the use of existing suppliers (Woodside and Möller, 1992). This kind of inertia has to be reckoned with in a theory of vertical interfirm relations.

As Hirschman (1984) indicated, trust, unlike most economic commodities, can grow rather than wear out through use. Thus, habitualization becomes part of the "invisible assets" (Itami and Roehl, 1987) that make future cooperation easier to implement. If trust is associated with a subjective probability that a partner will cooperate, then optimism, positive experience, and naivety increase that subjective probability, and trust therefore varies among agents, even under similar circumstances. A zero probability, or blind distrust, prevents an agent from cooperation and thus prevents the opportunity to build trust based on successful cooperation, so zero trust remains zero (cf. Gambetta, 1988). But if, on the basis of a nonzero subjective probability of cooperation by a partner, an individual enters cooperation, experience will lead to adjustment of the probability. If subjective probability is adapted to experience in a Bayesian process, it increases with positive experience. However, negative experience is likely to have a greater impact: when trust is betrayed, it may take a long time to build up again. If trust is blind, in the form of a unit subjective probability, it is likely to cause disappointment sooner or later because few partners will be able to resist every opportunity for defection. But positive experiences with a relationship plus an expansion of its scope will enhance a favorable perception of the probability of cooperation. Thus, the fourth and final proposition guiding our research was that a second dimension of trust is habitualization, defined as familiarization, habit formation, and bonding generated or confirmed by positive experiences.

Our two dimensions of trust, institutionalization and habitualization, correspond to two of the three "factors of perceived trustworthiness" proposed by Mayer, Davis, and Schoorman (1995) on the basis of an overview of the trust literature. Benevolence, in Mayer and colleagues' analysis, is "the extent to which a trustee is believed to want to do good to the trustor, aside from an egocentric profit motive" (1995: 718). This corresponds roughly to our dimension of habitualization. Integrity is "the trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable" (Mayer et al., 1995: 719). This aspect, based on, among other things, Sitkin and Roth's (1993: 368) concept of value congruence, clearly parallels our dimension of institutionalization. The third aspect distinguished by Mayer and colleagues is ability, akin to the concept of competence trust discussed above.

We noted that the two dimensions of trust are closely related in the notion of embeddedness (Granovetter, 1985): social relations often jointly develop norms or institutions and bonds of friendship or empathy. Thus, it may not be possible to separate the two dimensions in empirical work.

## 3.4    TRUST AND GOVERNANCE

We proposed that trust, in the narrow sense defined here, is a significant source of cooperation, along with coercion and self-interest. It yields a significant addition to governance as conceived by Williamson (1985; 1993), who looked only at contractual coercion (legal ordering) and self-interested incentives (private ordering). To embed non-self-interested trust in a wider scheme of governance, we proceeded as follows (cf. Nooteboom, 1996): X is willing to engage in cooperation with Y (either begin or continue cooperation), even if this makes X dependent, if X has a more or less well-grounded belief in the form of a subjective probability that Y will cooperate in the sense of not misusing such dependence. This belief may be based on the perceived available opportunities for misuse on the part of Y, Y's incentives for misuse, and Y's propensity to employ the opportunities. Propensity to use opportunities for defection in particular is related to trust, which has its basis in ethics, kinship, friendship, or empathy.

Our definition of *intentional trust* is now as follows: X trusts Y to the extent that X chooses to cooperate with Y on the basis of a subjective probability that Y will choose not to employ opportunities for defection that X considers damaging, even if it is in the interest of Y to do so. According to this definition, trust goes beyond forbearance, which Buckley and Casson (1988), defined as honoring both formal and informal obligations. Trust goes beyond obligations based on agreements and also applies to unforeseen contingencies. The analysis is elaborated into the following scheme for the risk of opportunism for the focal agent, labeled "ego," in relation with his or her partner, labeled "alter" (Nooteboom, 1996). We employ these terms in the remainder of this report because the scheme applies equally to both sides and is claimed to apply not only to the buyer-seller relations we studied, but also to interfirm relations and alliances in general. With the terms ego and alter, we also stress that we are not dealing with objective, impersonal forces and that each partner has his or her own perspective and more or less subjective perceptions, in line with the managerial choice perspective (Chiles and McMakin, 1996) that we adopted from the start.

Figure 3.2 depicts the perceptions of ego: how the size and probability of the loss he or she perceives depends on the partner's (alter's) perceived opportunities, propensity, and incentives for opportunism. A similar scheme applies to that partner.

The risk of opportunism has two dimensions: the probability that alter will behave opportunistically, and the loss ego incurs if he or she does. In an earlier study (Chapter 2), we investigated the determinants of only one side of risk: the size of a possible loss. Here we wanted to investigate the explanation of both sides of risk simultaneously.
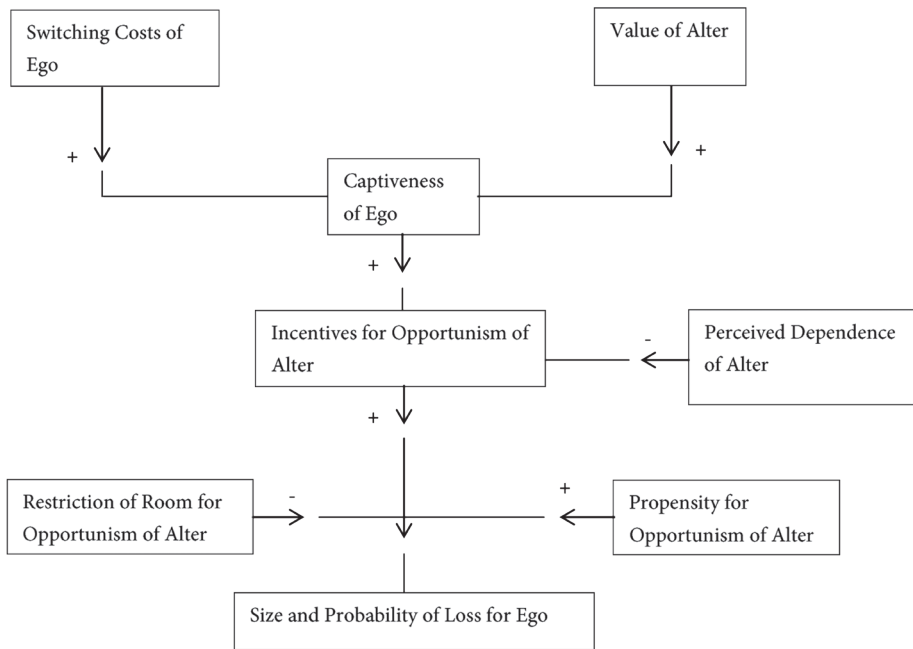
**Figure 3.2: Determinants of risk of opportunism: perceptions of ego.**

Relational risk has several causes. In the top half of the scheme we find the determinants of incentives for opportunism. Alter is tempted toward opportunism to the extent that ego is captive because of the value of alter relative to alternatives and ego's switching costs. It should be noted that in addition to switching costs (which may be due to dedicated investments), we recognize the value of the partner, which constitutes the reason for embarking upon the relationship. In this view, transaction costs can arise if there are no dedicated assets or other sources of switching costs (Walker and Weber, 1987).[5]

We note also that alliances are entertained not only to minimize total production and transaction costs, as transaction cost economics suggests, but also for reasons of strategy—access to resources, market entry, preemption of competition—and exchanges of competencies (Contractor and Lorange, 1988; Kogut, 1988). Value is specified in relative terms, as excess over the next best alternative partner. Value is higher to the extent that the partner has a unique, valuable offering, and it is at its highest when the partner has a monopoly. Thus, value also depends on market structure (Kogut, 1988). Together, the value of the partner and switching costs determine captiveness, or dependence, which provides the partner with an incentive to defect by taking advantage of it. But this advantage works

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5    However, the value of a partner as can be viewed a switching cost, as value ego stands to lose when the relationship is discontinued.

only to the extent that dependence is asymmetric. Alter's incentive toward opportunism is reduced to the extent that he or she is dependent upon ego, given his or her participation in ownership of specific assets, or because of the future rewards of cooperation.

However, such a threat of defection does not always exist. If a partner only obtains benefit from actual contribution, there is no problem. For example, if in joint research alter can benefit from ego's knowledge only if alter has developed the capacity to absorb the knowledge by contributing to the research (Grandori, 1995), then opportunism is self-defeating.

Figure 3.2 indicates that there are several ways to restrain opportunism, if a partner has incentives toward it. One way is direct supervision and authority, bringing the relationship under unified control through a merger/acquisition or a joint venture (hierarchy, in transaction cost economics). The second is control by means of contract, the legal and private ordering of transaction cost economics. In Figure 3.2 we add trust, as discussed, in the (perceived) propensity of an agent to exploit room for opportunism.

Figure 3.2 suggests many instruments for controlling relational risk: (1) Ego can reduce its stake in specific assets, and thereby reduce switching costs, yielding less captiveness and a smaller potential loss (in case the relationship breaks or the partner takes opportunistic action). (2) Ego can diversify so that the value of one partner relative to the next best one is reduced, thus reducing captiveness and potential loss. (3) Ego can limit room for alter's opportunism through contracts and monitoring. (4) Ego can reduce the partner's opportunities (or incentives) for opportunism by taking hostages. (5) Ego can reduce the partner's opportunities for opportunism by takeover or by instituting a joint venture (the latter might also be interpreted as taking a hostage). (6) Ego can reduce the partner's incentives for opportunism by building an attractive future potential for cooperation. (7) Ego can reduce alter's incentives for opportunism by threatening to damage alter's reputation. (8) Ego can reduce alter's incentives for opportunism by increasing alter's stake in specific assets, thereby increasing his or her switching costs and potential loss. (9) Ego can reduce alter's incentives for opportunism by increasing the uniqueness of ego's value for alter. (10) Ego can reduce alter's propensity toward opportunism by building trust through personal bonds and shared norms and values. (11) Ego can select only partners with whom ego shares many norms and values.

Each of these instruments has its cost or problems. Generally, in transaction cost economics expectations concerning self-interest are expected to be less binding than authority (Dow, 1987; Walker and Poppo, 1991). But unified control in a merger/acquisition carries the price of fewer high-powered incentives and flexibility and the risks that different cultures will not be effectively integrated. A joint venture carries set-up costs and also risks of integration failure. Strict contractual control may set off a vicious cycle of suspicion and retaliation via restrictions, which may stifle a relationship. It also reduces flexibility, which may work against joint development since at the outset of a relationship firms cannot define expectations or demands exactly. Monitoring may be technically infeasible, and it

matters whether a partner can observe performance (output) or only effort (input; Alchian and Demsetz, 1972; Fama and Jensen, 1983). Reduced commitment in specific assets may destroy the objective of developing complementary competencies for joint development. In some technologies, however, specialized products can be made with general purpose assets, so that the need for specific assets is limited (Nooteboom, 1993a). Diversification of partners, to limit the uniqueness of any of them, multiplies costs and may provide a disincentive for all partners to do their best. The availability of partners depends on market structure. The basis for trust may be absent in novel alliances between partners without any common cultural background. Thus, the optimal governance package depends on a number of contingencies: the objectives of an alliance, the structure of payoffs, market structure, and technical and cultural conditions.

Trust can only be considered an instrument of governance in a limited sense: it contributes to risk reduction, but it cannot be instituted instantaneously. If trust is not already present, it has to be built by developing bonds or shared norms and values. It can be more an outcome than a precondition of a relation, in which case it provides an improved basis for ongoing cooperation. Shared norms and values should, however, be a criterion for the selection of partners and in that sense can serve as an instrument.

The contingency of many possible configurations of governance under different conditions has implications for the conclusions of any empirical study, including our own. Finding no hypothesized effect of some purported instrument of governance does not prove that the instrument is irrelevant in general. Lack of significance may just mean that it does not fit the contingencies of the case at hand. On the other hand, finding an effect proves that an instrument is relevant, even if in other cases relevance is not apparent.

## 3.5    HYPOTHESES

For our present purpose, we used the scheme in Figure 3.2 to derive hypotheses for empirical testing. We note that our focus was differences in the size and the probability of the potential loss perceived by transaction partners. This focus is not customary in transaction cost economics or in previous studies of alliances. Some of the factors that we expected to be important have been included in previous empirical work, but our hypotheses concerning the size and probability of risk are novel and cannot be directly derived from previous empirical work. The hypotheses are logically derived from the analytical framework described above.

The first two hypotheses concern what the focal partner (X) stands to lose if the relationship with Y breaks. In line with the logic of transaction cost economics, this potential loss constitutes the maximum for which X can be "held up" and thereby defines the maximum size of the loss that X can incur. This loss thus affects the size rather than the probability of loss: it is not the size of perceived potential loss that may induce the partner to engage in opportunistic conduct, but the measures of governance that we will consider later.

Logically, then, this maximum size of loss for X is equal to the total value of Y relative to that of the next-best option, plus the switching costs that X would incur in switching to the next-best alternative. The core of transaction cost economics is that switching costs for X are constituted by assets that are owned or guaranteed by X and are specific to the relationship - that is, they would need to be incurred again in a similar relation with another partner.[6] Thus,

**Hypothesis 1:** The value that a partner offers relative to the next-best alternative has a positive effect on the size of possible loss rather than an effect on its perceived probability.

**Hypothesis 2:** The costs of switching to an alternative partner, measured by means of asset specificity, have a positive effect on the size of possible loss rather than an effect on its perceived probability.

Now we turn to instruments of governance and contingencies, which affect the opportunities for alter to defect - to break a relation or threaten to do so, and thereby affect the probability - rather than the size - of loss. First of all, traditionally, the threat of sanctions, in legal or private ordering, plus the monitoring required to impose them, has been seen as the main instrument for imposing compliance with the terms of an agreement. In legal ordering this imposition occurs by means of contracts that can be enforced in a court of law, such as the detailed contracts negotiated in the relationship between electric utilities and coal mines (Joskow, 1985). In private ordering it can take the form of posting hostages, reputation mechanisms, and other restraints. We reconstruct these forms of ordering in terms of restricting opportunism.

**Hypothesis 3a:** Legal ordering, taken as a restriction of room for a partner's opportunism, has a negative effect on the perceived probability of loss rather than an effect on its size.

**Hypothesis 3b:** Private ordering, taken as a restriction of room for a partner's opportunism, has a negative effect on the perceived probability of loss rather than an effect on its size.

Next, we turn to trust, which constitutes the core of the present article, with its two dimensions of institutionalization and habitualization. We propose that trust yields an additional basis for restraining opportunism and that it operates by limiting the inclination of alter to employ available room for opportunism (Figure 3.2). Thereby it reduces the probability of loss (rather than its size) and enables partners to go foward, even though not all contingencies arising in the relationship are known (Andaleeb, 1992). In a previous study, we found a negative effect of trust on perceived dependence (Chapter 2), but here, with a different data set, we wanted to be more precise, and we hypothesized trust to negatively affect the perceived probability of loss, not the size of loss.

**Hypothesis 4a:** Institutionalization (partners' shared norms and values) has a negative effect on the perceived probability of loss rather than an effect on its size.

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6    We note that switching costs may be more than assets owned or vouched for: they may include loss of hostages or reputation.

**Hypothesis 4b:** Habitualization (partners' having established habits, bonds, good communication, and empathy) has a negative effect on the perceived probability of loss rather than an effect on its size.

Next, we allow for an effect of self-confidence: an agent who is confident of her or his own value will be more trusting than one who is diffident (cf. Deutsch, 1973): the agent will perceive a smaller probability of loss. An effect of own value can also be interpreted differently. According to Figure 3.2, alter has less incentive toward opportunism to the extent that he or she depends on ego, since ego might retaliate with opportunism. If ego is confident about her or his value to alter, ego may rationally expect alter to have little incentive toward opportunism, and ego will therefore perceive a lower probability of loss.

**Hypothesis 5**: The value one partner offers another (relative to the partner's next best alternative) has a negative effect on the perceived probability of loss rather than an effect on its size.

The literature on repeated games (Axelrod, 1984) demonstrates how the expectation of future cooperation reduces the incentive for opportunistic behavior: short-term benefits from defection may be less than long-term gains from ongoing cooperation. Long-term business relations have been shown to lead to closer cooperation and more collaboration (Lane and Bachmann, 1996). Heide and Miner (1992) found a positive relationship between expected continuity and cooperation but did not look at perceived dependence and the associated risk. We propose that in long-term relationships there is more at stake, yielding a positive effect on size of loss. But long-term relations also offer more possibilities of establishing personal ties and of growing trust as an invisible asset, so the perceived probability of loss is lower.

**Hypothesis 6a:** The past growth of a relationship has a positive effect on the size of loss and a negative effect on the perceived probability of loss.

**Hypothesis 6b:** A long-term perspective has a positive effect on the size of loss and a negative effect on the perceived probability of loss.

Hypotheses 5, 6a, and 6b do not pertain to trust, as narrowly defined before, in that the variables posited to affect loss are egotistic sources of cooperation: they pertain to the rational evaluation of self-interest. They do not affect inclination toward opportunism, but do affect incentives inspired by self-interest. According to Emerson's (1962) theory of dependence as well, ego's dependence on alter can be balanced by alter's dependence on ego. To the extent that ego knows alter to be dependent on him- or herself, ego will perceive loss associated with his own dependence on alter to be less probable. This is one interpretation of the effect of ego's own value for alter, (Hypothesis 5), and we can proceed further along this line: ego may have other knowledge of alter's dependence that may constrain alter's perceived incentives for opportunism, as illustrated in Figure 3.2. Thus,

**Hypothesis 7:** Other factors that promote a partner's dependence, and thereby reduce his or her incentives for opportunistic behavior, have a negative effect on the perceived probability of loss rather than an effect on its size.

## 3.6    CONTROLS

From the perspective of managerial choice (Chiles and McMakin, 1996), and in view of the structure of our data (ten customer relationships for each of ten suppliers), we expected firm-specific effects. To what extent are perceptions of relational risk determined by characteristics of the perceiver rather than by the objective conditions of a transaction relationship? Our empirical work was designed as an experiment to investigate such effects, along with systematic effects of the configuration of governance.

First of all, some people (and some firms) are more sensitive to risks (exhibit higher uncertainty avoidance) than others. Uncertainty avoidance, originally conceptualized as a dimension of national culture by Hofstede (1980), was later shown to also be associated with organization-level variables (Hofstede, Nuijen, Ohayv, and Sanders, 1990). We expected that, ceteris paribus, firms with higher uncertainty avoidance would perceive higher risks; in particular, higher probability of loss. Thus,

**Hypothesis 8:** High uncertainty avoidance on the part of a focal agent has a positive effect on the perceived probability of loss rather than an effect on the size of loss.

A large firm is likely to be subject to lower transaction costs and relational risk than a small firm, as a result of its high capacities for search, contract design, monitoring, and litigation, strong specialized staff functions, and wide range of products, markets, and transaction relations, which yield opportunities for alternative employment of partially specific assets, lower switching costs, and a greater spread of risk (Nooteboom, 1993b). Consequently, a large firm is likely to incur lower risk.

**Hypothesis 9:** The size of the firm of a focal agent has a negative effect on the size of loss rather than an effect on its perceived probability.

However, as we could not be sure that firm characteristics such as uncertainty avoidance and size would account for all firm-specific effects, we added dummy variables for firms to test for remaining effects.

## 3.7    DATA AND MEASUREMENT

A major question was how trust was to be measured. We used factor analysis to construct measures from multiple questionnaire items relating to the different dimensions of trust contained in a survey of buyer-seller relations.

One assumption guiding our analysis was that opportunism and trust are to some extent idiosyncratic: they vary between people and organizations even if other conditions are identical. As a result, trust, governance choices, and their effects on perceived risk will vary between people. We wanted to include this assumption in our study and therefore asked each of ten suppliers in the same industry about ten customer relationships. We could thus test for systematic effects of trust, governance, and so forth, as opposed to firm-specific effects.

The study focused on the microelectronics assembly industry in the Netherlands, which produces components for such things as telecommunications equipment and process control devices, often in small series and according to the specifications of buying firms. Suppliers were approached through the employer's association for the electronics and metal industry in The Netherlands. Ten suppliers agreed to cooperate. In the beginning of 1994, a member of the research team visited these firms. These visits took an average of three-and-one-half hours. During the visit, the researcher collected data pertaining to relationships with ten of the firm's most important customers. The questionnaire was based on one we had developed and tested in a previous study (Chapter 2) of 67 suppliers of a single manufacturer of photocopying machines. Hence we again used the self-developed scales which have been introduced in Chapter 2. For the current study, we omitted items that had proved to be of little value and added some new items. Either the general manager or the sale manager of a firm completed the questionnaire, with the researcher clarifying questions when necessary. This procedure minimized the risk of respondents' misunderstanding the questions and also guaranteed that there were no nonresponses, and hence, no missing data. To maintain comparability between relationships, we designed the questionnaires to be completed horizontally: a respondent answered a question for all 10 relationships before moving on to the next question. In this way, data were obtained with regard to 97 relationships.

Apart from variables that by their nature are binary (yes/no) or cardinal (e.g., firm sales) all items on the questionnaire had five-point response scales. We chose the items on the basis of their hypothesized relation to latent variables that resulted from the theoretical analysis. Most variables were represented by multiple underlying items, but some had only a single item. We used confirmatory factor analysis to test the measurement hypotheses and Cronbach's alpha to determine overall construct reliability, setting the cut-off point at the usual value of .70. Factor loadings were used to determine whether each item contributed significantly to the joint factor, with the cut-off point at the usual value of 0.3. When an item had a lower loading, it was dropped, and the analysis was repeated for the remaining items until a reliable scale with reliable loadings emerged. We then added

the items to yield a measure of the latent variable. Appendix 3.1 gives the resulting scales with their alpha values and specification of the underlying items. As shown, all multi-item scales had alphas above .70, except growth of business between the partners ($\alpha$ = .68).

The size of ego's potential loss was measured on a two-item scale, and the probability of loss on only a one-item scale. For the relative value that a partner offered, we had two measures: the partner's share of the total sales of ego, and a scale of four other items, the remaining indicators of the value of alter. As joining these measures into one scale of partner value greatly reduced the alpha coefficient, we used both measures. Ego's asset specificity was the aggregate of four variables, one for each dimension of asset specificity specified by Williamson, with a total of ten items. Restriction of room for alter's opportunism was the aggregate of two scales, one for legal ordering and one for private ordering, with a total of seven items. Trust was the aggregate of two dimensions, habitualization and institutionalization, with a total of six items. The relative value offered by ego to alter was an aggregate of six items. Continuity of the relationship was an aggregate of two scales, past growth of the relationship and future perspective, with a total of five items. Limitation of alter's inclination toward opportunism, or restraint of alter, was composed of five items, and uncertainty avoidance of ego had seven items. Firm size of ego was naturally a cardinal measure.

First, we tested the idea that the size of ego's potential loss and the probability of such loss constituted separate dimensions. In factor-analytic terms, we asked if the dimensions were orthogonal. To determine this, we compared the results of a factor analysis of the two items underlying size of loss with results on the three items of size of loss and probability of loss taken together. Table 3.1 reports the results.

Table 3.1: Orthogonality of size and probability of loss.[a]

| Construct | Alpha | Items | Factor Loading | Communality |
|-----------|-------|-------|----------------|-------------|
| Size of loss | .90 | Size | .94 | .88 |
| | | Size | .86 | .74 |
| Size + probability of loss | .26 | Size | .95 | .90 |
| | | Size | .86 | .73 |
| | | Probability | -.34 | .12 |

[a]N = 97.

The table shows that Cronbach's alpha, which was quite high for the size of loss, deteriorated drastically when the single item for probability of loss was added (from α = .90 to α = .26). A factor is then formed, with high loadings from the items of size of loss (.95, .86), but a low loading (-.34) from the probability item, with a correspondingly low communality (.12) of that item with the factor. The loading of -.34 is only just above the absolute value of the cut-off point of .3. This is sufficient evidence to conclude that our measurements of size and probability of loss indeed represent separate dimensions, warranting separate regression equations to explain each.

Since we asked each of ten suppliers about ten customer relationships, each relationship is nested in a group of relationships centered around one particular supplier. As the observations from the same group are generally more similar than the observations from different groups, the assumption of indepencence of all observations may be violated. Under these circumstances multilevel analysis is advocated to be the appropriate statistical method (e.g., Hox, 2002). A major restriction of multilevel analysis, however, is the higher-level sample size that is required for stable estimates. Where at least fifty higher-level samples are required (Maas and Hox, 2005), our study totals ten. As an alternative to multilevel analysis we applied (ordinary least squares) multivariate analysis and included dummy variables and firm-related variables (viz. uncertainty avoidance and firm size of the supplier) to allow for group-effects.

To test the hypotheses explaining size of loss and probability of loss, we regressed these variables on the explanatory variables pertaining to the main categories of causation: the captiveness of ego (alter's relative value, based on its share of sales and the rest of its value, and on switching costs resulting from ego's dedicated and specific assets); governance (restriction of room for alter's opportunism through legal ordering and private ordering); alter's incentives (the value ego offers alter, the continuity of the relationship, and the restraint of alter); trust (habitualization and institutionalization); and the control variables (ego's uncertainty avoidance and ego's size).

In a second set of analyses, we split up the explanatory variables into their components. We used a backward procedure, including all the explanatory variables initially and then eliminating variables with nonsignificant effects (effects at a lower than 90 percent confidence level). Table 3.2 gives results, indicating which hypotheses were confirmed and which were not. Most of the hypotheses were confirmed. We present a systematic discussion later in the article, showing that in some cases lack of confirmation yields interesting interpretations.

**Table 3.2: Regression results of variables that affect size of loss and probability of loss.[a]**

| Hypothesis and Variable: | Hypothesis confirmed? | Size of loss: | | Hypothesis confirmed? | Probability of loss: | |
|---|---|---|---|---|---|---|
| H1: Value of alter | | | | | | |
|     Alter's share of sales | Yes | .59*** | (.00) | Yes | .02 | (.79) |
|     Remaining indicators of alters's value | No | .07 | (.45) | Yes | -.05 | (.60) |
| H2: Asset specificity | No | .10 | (.31) | Yes | .11 | (.21) |
| H3: Restriction of room for alter's opportunism | Yes | .10 | (.20) | Yes | -.34*** | (.00) |
| H4a, H4b: Trust | Yes | -.06 | (.43) | Yes | -.22** | (.03) |
| H5: Value of ego for alter | Yes | -.03 | (.72) | No | -.05 | (.58) |
| H6: Continuity | Yes | .28*** | (.00) | Yes | -.25** | (.02) |
| H7: Restraint of alter | No | .17** | (.02) | No | .01 | (.91) |
| H8: Uncertainly avoidance | Yes | .07 | (.33) | No | -.20** | (.02) |
| H9: Firm size | No | .07 | (.39) | Yes | .08 | (.43) |
| | | | | | | |
| $R^2$ | | .54 | | | .35 | |
| Adjusted $R^2$ | | .52 | | | .32 | |

[a]N = 97. Standardized coefficients are shown, with significance levels in parentheses. In the final step of the backward procedure, only those variables are retained that have a significant effect ($p < .05$); the values and significance levels of other variables were derived from earlier steps.

Note: *** $p \leq .01$; **$p \leq .05$.

The most striking lack of confirmation concerns the effect of the restraint of alter, a measure of limits on incentives for opportunism. We had expected a zero effect on the size of ego's loss and a negative effect on the probability of loss, but we found a zero effect on probability and a positive effect on size. However, inspection of the correlation matrix, found in Table 3.3, shows that restraint of alter has a strong positive correlation with ego's asset specificity, which, according to Hypothesis 2, has the effect we found for restraint of alter. This suggests that restraint of alter's opportunism may be taking the place of ego's switching costs (asset specificity).

**Table 3.3: Correlations of scaled variables.** [a]

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Size of loss | | | | | | | | | | | | | | |
| 2. Probability of loss | -.32** | | | | | | | | | | | | | |
| 3. Trust | .14 | -.30** | | | | | | | | | | | | |
| 4. Habitualization | .17 | -.38*** | .84*** | | | | | | | | | | | |
| 5. Institutionalization | .02 | -.08 | .73*** | .31** | | | | | | | | | | |
| 6. Restriction of room for alter's opportunism | .30** | -.41*** | -0.0 | .04 | .04 | | | | | | | | | |
| 7. Continuity | .40*** | -.47*** | .48*** | .45*** | .29** | .33*** | | | | | | | | |
| 8. Asset specificity | .45*** | -.05 | .02 | .04 | .08 | .17 | .17 | | | | | | | |
| 9. Value of alter | .33*** | -.33*** | .12 | -.01 | .28** | .37*** | .37*** | .56*** | | | | | | |
| 10. Alter's share of sales | .64*** | -.06 | .01 | .02 | .08 | .22 | .13 | .43*** | .15 | | | | | |
| 11. Remaining indicators of value of alter | .27** | -.29** | .14 | -.04 | -.31** | .31** | .32** | .56*** | 1.00*** | .12 | | | | |
| 12. Value of ego | .28** | -.32** | .25 | .14 | .28** | .32** | .39*** | .43*** | .85*** | .15 | .87*** | | | |
| 13. Uncertainty avoidance | .02 | -.14 | -.18 | -.07 | -.29** | -.06 | -.01 | .21 | .25 | -.12 | .24 | .11 | | |
| 14. Size | .11 | -.21 | -.04 | .03 | -.04 | .52*** | .39*** | .02 | .24 | -.04 | .19 | .18 | -.06 | |
| 15. Restraint of alter | .27** | -.13 | .25 | .14 | .20 | .00 | .24 | .54*** | .55*** | .05 | .59*** | .58*** | .13 | -.19 |

[a] $N = 97$.

Note: *** $p \leq .001$; ** $p \leq .01$.

The correlation between asset specificity and restraint of alter has an important implication: theoretically, according to Hypothesis 1, asset specificity increases the stake that ego has in a relationship and therefore increases the size of a loss, but it also contributes to the dependence of the partner: by making more specific investments ego offers a unique value to alter, which contributes to alter's dependence and thereby reduces his or her inclination toward opportunism, which reduces the probability of loss.[7]

We thus computed the regressions again excluding the restraint of alter's opportunism from the equation for size of ego's loss; results are summarized in Table 3.4.

**Table 3.4: Regression results of variables that affect size of loss and probability of loss with restraint of alter excluded.[a]**

| Hypothesis and Variable | | Hypothesis confirmed? | Size of loss | | Hypothesis confirmed? | Probability of loss | |
|---|---|---|---|---|---|---|---|
| H1: | Value of alter | | | | | | |
| | Alter's share of sales | **Yes** | .52*** | (.00) | **Yes** | .02 | (.78) |
| | Remaining indicators of alters's value | **No** | .07 | (.42) | **Yes** | -.05 | (.60) |
| H2: | Asset specificity | **Yes** | .17** | (.03) | **Yes** | .11 | (.21) |
| H3: | Restriction of room for alter's opportunism | **Yes** | .07 | (.36) | **Yes** | -.34*** | (.00) |
| H4a, H4b: | Trust | **Yes** | -.03 | (.75) | **Yes** | -.22** | (.03) |
| H5: | Value of ego for alter | **Yes** | .01 | (.87) | **No** | -.05 | (.58) |
| H6: | Continuity | **Yes** | .31*** | (.00) | **yes** | -.25** | (.02) |
| H7: | Restraint of alter | | *Excluded* | | | *Excluded* | |
| H8: | Uncertainty avoidance | **Yes** | .05 | (.48) | **No** | -.20** | (.02) |
| H9: | Firm size | **No** | .01 | (.94) | **Yes** | .08 | (.43) |
| | | | | | | | |
| $R^2$ | | | .53 | | | .35 | |
| Adjusted $R^2$ | | | .52 | | | .32 | |

[a]N = 97. Standardized coefficients are shown, with significance levels in parentheses.

Note: ***$p \leq .01$; **$p \leq .05$

The results for ego's perceived probability of loss are almost exactly like those shown in Table 3.2. For the size of ego's loss, asset specificity now has a significant effect: its coefficient hardly changes but is now highly significant. Another result is that the coefficient of

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7    This corresponds to the 'small-numbers exchange condition' (Williamson, 1975) and 'lock-in' (Williamson, 1979; 1985) of standard TCE.

continuity increases and maintains its high level of significance. This finding is consistent with the idea that the earlier lack of significance was due to the correlation between asset specificity and restraint of alter.

To test Hypotheses 3a and 3b, 4a and 4b, and 6a and 6b, we investigated how the effects were distributed over the component variables, evaluating the different aspects of asset specificity, ordering, continuity, and trust. But with the enlarged number of explanatory variables, we encountered strong multicollinearity. However, we persisted, especially regarding the trust-related variables (habitualization and institutionalization), which form the main focus of the present study. We thus tested their separate effects on the probability of loss in a reduced model with as many variables as possible left out to reduce the problem of multicollinearity. We omitted the variables that previously (Table 3.4) were found to be insignificant: those pertaining to the value of the partners to each other, asset specificity, and ego's firm size. Table 3.5 gives results.

**Table 3.5: Regression results of variables that affect size of loss and probability of loss with habitualization and institutionalization separated.[a]**

| Hypothesis and Variable | Hypothesis Confirmed? | Probability of Loss | |
|---|---|---|---|
| H1: Value of Alter | | Excluded | |
| H2: Asset specificity | | Excluded | |
| H3: Restriction of room for alter's opportunism | Yes | -.34*** | (.00) |
| H4a: Trust 1: Habitualization | Yes | -.22** | (.03) |
| H4b: Trust 2: Institutionalization | No | .05 | (.62) |
| H5: Value of ego for alter | | Excluded | |
| H6: Continuity | Yes | -.23** | (.02) |
| H7: Restraint of alter | | Excluded | |
| H8: Uncertainty avoidance | No | -.22** | (.03) |
| H9: Firm size | | Excluded | |
| | | | |
| $R^2$ | | .37 | |
| Adjusted $R^2$ | | .35 | |

[a]N = 97. Standardized coefficients are shown, with significance levels in parentheses.

Note: ***$p \leq .01$; **$p \leq .05$.

Habitualization had the expected effect, but institutionalization did not. We noted from the beginning that the two dimensions of trust were expected, on theoretical grounds, to be difficult to separate; empirically, this difficulty is reflected in their mutual correlation

*(r* = .31, p < .002, Table 3.3). Furthermore, it should be noted that the overall trust variable includes one item more than the total of its components (see the Appendix). This item was kept separate from habitualization and institutionalization because it could with equal justification be added to either of them (in both cases, Cronbach's alpha increases by more than 10 percentage points). This fact also reflects the connectedness of the two dimensions of trust. We therefore retained the result with the overall variable (Table 3.4), but we cannot rule out the interpretation that habitualization has a significant effect and institutionalization does not.

Next, we tested for any remaining firm effects. Our hypothesis was that firm effects are taken care of by the firm-related variables uncertainty avoidance and firm size. To test this prediction, we repeated the regression analyses with dummies for the ten firms whose customer relations we were studying. To reduce the chance of multicollinearity, we again allowed only for the variables that had previously been found to be significant (Table 3.4). In other words, the object was to test whether, in comparison with the last results, the addition of firm dummies (1) yielded a significant increase in $R^2$ and (2) did not disturb the results on the explanatory variables (Table 3.4). Table 3.6 gives results.

Table 3.6 shows that dummy variables do yield significant effects and that they significantly raise $R^2$. We therefore rejected our hypothesis that the two firm-specific explanatory variables sufficed to account for firm effects. The number of significant dummies is greater for the size of loss than for the probability of loss. For probability, one of the firm-specific variables, uncertainty avoidance, had a significant effect; thus, it accounts for at least part of firm variation. For size of loss, neither firm variable was significant. However, addition of the dummies did not affect the results concerning the systematic (not firm-specific) effects shown in Table 3.4. On the contrary, the size and significance of those effects increased, with the exception of the effect of uncertainty avoidance on the probability of loss (which did, however, remain significant). Thus, the omission of the remaining firm effects, which are considerable, did not bias the results on the systematic effects.

Lastly, we further tested the stability of the results by employing step-wise regression as an alternative to backward regression. The former yielded virtually the same results as the latter. The only difference worth mentioning was that fewer firm dummies were included in the end result with the stepwise procedure. In the regression equation of the probability of loss, we omitted the dummy for firm 1; in the regression of size of loss, we omitted the dummies for firms 2 and 4. For the rest, the patterns of significant and nonsignificant variables were identical, and differences in regression coefficients and their significance levels were small.

**Table 3.6: Regression results of variables that affect size of loss and probability of loss with dummy variables for firms.[a]**

| Hypothesis and variable | Hyothesis confirmed? | Size of loss | | Hypothesis confirmed? | Probability of loss | |
|---|---|---|---|---|---|---|
| H1: Value of alter | | | | | | |
|     Alter's share of sales | **Yes** | .53*** | (.00) | | *Excluded* | |
|     Remaining indicator's of alter's value | | *Excluded* | | | *Excluded* | |
| H2: Switching costs | **Yes** | .26*** | (.01) | | *Excluded* | |
| H3: Restriction of room for alter's opportunism | | *Excluded* | | **Yes** | -.35*** | (.00) |
| H4a, H4b: Trust | | *Excluded* | | **Yes** | -.26** | (.02) |
| H5: Value of ego for alter | | *Excluded* | | | *Excluded* | |
| H6: Continuity | **Yes** | .32*** | (.00) | **Yes** | -.30** | (.01) |
| H7: Restraint of alter | | *Excluded* | | | *Excluded* | |
| H8: Uncertainty avoidance | | *Excluded* | | **No** | -.16* | (.09) |
| H9: Firm size | | *Excluded* | | | *Excluded* | |
| Firm dummies | | D2 | -.15* (.09) | | D1 | -.12 (.11) |
| | | D4 | -.13* (.05) | | D2 | .32*** (.00) |
| | | D5 | -.18*** (.01) | | D6 | .35*** (.00) |
| | | D6 | -.19*** (.01) | | | |
| | | D10 | -.28*** (.00) | | | |
| $R^2$ | | .64 | | | .58 | |
| Adjusted $R^2$ | | .61 | | | .55 | |

[a]N = 97. Standardized coefficients are shown, with significance levels in parentheses.

Note: *** $p \leq .01$; ** $p \leq .05$; * $p \leq .10$.

## 3.8    DISCUSSION

The study confirms the idea that relational risk has two dimensions: size of loss and probability of loss, each of which has substantially different causes. In particular, the central hypothesis (Hypothesis 4) was confirmed: trust, induced by institutionalization and habitualization, has a negative effect on risk in the form of the perceived probability of loss. If the two components are separated, only habitualization has a significant effect; however, the two dimensions are difficult to separate and are perhaps best kept together. Perceived probability of loss is further reduced, according to Hypotheses 3a and 3b, by governance in the form of restriction of room for opportunism by means of legal and private ordering. As hypothesized (Hypothesis 6b), it is also reduced when there is perceived continuity in a relationship based on past growth and future perspective. These results can be seen as a confirmation of our thesis that both trust and traditional factors from transaction cost economics are relevant and that an extended theory of transactions applies to relational risk.

Contrary to Hypotheses 5 and 7, restraints on a partner's incentives for opportunism, in the form of the value that ego offers and other indicators of alter's dependence, do not affect the perceived probability of loss. This finding need not, of course, imply that these variables should not affect that perception. Perhaps the suppliers interviewed in the study were not sufficiently sophisticated to include this indirect evaluation of the dependence of their partners as a condition that reduced their own risk. This analysis yields a policy implication: in assessing relational risk, one partner should not only consider direct effects concerning his or her own dependence, but also indirect effects of the other partner's dependence via restraint on opportunism. But note that we also found a significant correlation between asset specificity and restraint of alter's opportunism. This finding is important, because thereby the *net* effect of specific investments can become ambiguous: asset specificity creates vulnerability in terms of the potential size of loss, but it can yield protection in the form of a reduced probability of loss.

We also found that ego's uncertainty avoidance had a *negative* effect on the perceived probability of loss, instead of the positive effect hypothesized (Hypothesis 8). This contrary effect has a clear interpretation: rather than taking a gloomy look at the perceived risk that remains after taking governance measures, as we hypothesized, risk-averse firms tend, more than others, to consider risk sufficiently covered.

Risk in the form of the size of loss experienced if a relationship goes wrong was, as hypothesized, positively affected by the value of the partner assessed in terms of the percentage of a focal agent's sales associated with that partner, but remaining aspects of partner value had no significant effect. Thus, Hypothesis 1 is partly confirmed. Switching costs resulting from dedicated and transaction-specific investments (asset specificity) also had the hypothesized positive effect on size of loss (Hypothesis 2), but only after we disallowed for an effect of restraint of alter, which is strongly correlated with asset specificity. Continuity of a relationship had its hypothesized positive effect on the size of

loss (Hypothesis 6a). Firm size did not have the hypothesized negative effect (Hypothesis 9). We do not consider this a final verdict. As is often the case, firm size is correlated with many other variables, so its effect may be masked.

Our check on firm-specific effects through dummy variables showed that such effects are important but that variables such as uncertainty avoidance and size do not suffice to cover all firm effects. However, the omission of firm dummies did not, in the present study, yield a bias in the measurement of the systematic effects derived from our extended theory of transactions.

As discussed, different contingencies are likely to lead to different configurations of governance, so we cannot conclude that the present results apply in all cases. The results do show that certain elements of governance and trust have the expected effects, at least in this case, and in that sense, theory is confirmed. Moreover, we should recall that the study focused on intentional trust, not competence trust.

The present study confirms our earlier finding of a negative effect of trust on perceived dependence (Chapter 2), but here we added more detail, dividing trust into two dimensions (institutionalization and habitualization) and dividing the risk of dependence into the size and the probability of loss. Of course, these procedures do not eliminate the need to test the external validity of the effect of trust on other sets of data. Another indication for further research emerges from the result that the incorporation of uncertainty avoidance and firm size did not suffice to account for the firm-specific effects of perceived risk exhibited by firm dummy variables. Next, treating all observations as independent, while in fact dependencies between observations exist, may result in underestimated standard errors and underestimated p-values (Hox, 2002). Especially conclusions about second level moderators (viz. size and uncertainty avoidance) may have been biased and show spuriously significant results (Bijmolt and Pieters, 2001). Further research is required to fully capture the multi-levelness of the observations presented in this study. Crucial to that matter is an adequate second level sample size (Maas and Hox, 2005). Furthermore, the constructs that we used to measure the size and probability of loss could be expanded to include more items. An important area for further research is the development of further hypotheses concerning which configurations of governance are expected to be the best under different conditions for relationship objectives, payoff structure, market conditions (structure of supply and demand), technical conditions (need for specific assets, opportunities for monitoring), and cultural conditions (bonding, shared norms and values). Such hypotheses should be tested in various settings.

A policy recommendation that can be derived from the study is that firms may be well advised to employ more sophistication in their assessments of relational risk. In particular, firm's agents might take into account the restraint that they need and want to exercise in view of their firm's dependence, particularly dependence resulting from the value the firm is offering to its partner.

## APPENDIX 3.1: MEASUREMENTS AND SCALES

*Dependent Variables*
- Size of loss, ego (α = .90]
  - Actually, we cannot afford a break with this customer.
  - If the relation with this customer breaks, it will take us much effort to fill the gap turnover.
- Probability of loss, ego
  - The risk in this relation is sufficiently covered by contractual and noncontractual means.

*Explanatory Variables, Captiveness (Value of Alter)*
- Alter's share of sales: percentage of total sales to the buyer (alter) as a cardinal measure of the value of alter.
- Remaining indicators of value of alter (α = .70)
  - Because we supply to this customer we are able to build up technological know-how that is also useful for other customers.
  - Because we supply to this customer we obtain market knowledge that would otherwise be difficult to access.
  - Our firm is involved in an early stage in the development of new components for this customer ("early supplier involvement").
  - This customer involves us in the testing of components and/or in prototyping.
- Dedicated assets (α = .83)
  - Our firm employs significantly more people than if we did not supply this customer.
  - Our firm must have people with specific expertise in-house to be able to supply this customer.
  - Our firm has had to create extra capacity to supply this customer.
  - We had to make investments to satisfy the specific supply conditions of this customer (e.g. for "just-in-time").
- Physical asset specificity (α = .70)
  - For our production for this customer highly specific machines, apparatus, or instruments are needed.
  - Most of the machines, apparatus, or instruments needed for the production for this customer can also be used for other customers, if necessary.
- Knowledge specificity (α = .68)
  - We have had to invest much time in acquiring the procedures desired for this customer (e.g., in the area of logistics and quality control).

- o Much specific technological know-how is required to effectively supply this customer.
- o Much knowledge of the internal organization of this customer is required for effective cooperation.
- Location specificity
  - o The location of our firm plays an important role in the relation with this customer.
- Switching costs, ego = asset specificity of ego (α = .84) = dedicated assets + physical asset specificity + knowledge specificity + location specificity.

*Explanatory Variables, Governance*

- Legal ordering (α = .79)
  - o The contract with this customer is as complete as possible.
  - o The contract forms the core of our relation with this customer.
  - o In this relation it is not so important to have a good contract.
- Private ordering (α = .71)
  - o The customer shares in the payment for specific machines and apparatus that we must make for the production for him.
  - o The customer shares in the payment for the investments in specific tools and/or measurement apparatus that we must make for the production for him.
  - o Guarantees are given for minimal custom over an agreed period of time.
  - o We give guarantees for supply for an agreed period of time.
- Restriction of room for alter's opportunism (α = .79) = legal ordering + private ordering.

*Explanatory Variables, Incentive-Related*

- Value of ego (α = .76)
  - o Our supply performance to this customer cannot be assessed on its merit if one looks only at the price.
  - o This customer is aware that our supply performance cannot be assessed on its merit if one looks only at price.
  - o Our supply to this customer is clearly custom-made.
  - o We provide an important source of information on new technologies for this customer.
  - o Our firm is involved in an early stage in the development of new components for this customer ("early supplier involvement").
  - o This customer involves us in the testing of components and/or in prototyping.

- Growth *(α = .68)*
  - The relation between our firm and this customer has continually improved in the course of time.
  - Our supply to this customer has increased strongly in the course of time.
- Future perspective *(α = .67)*
  - In this relation it is assumed that contracts will in general be renewed.
  - For the foreseeable future we do not expect a break with this customer.
  - We see the relation with this customer as a long-term relation, in which one must invest, and in which both sides are willing to make concessions if it is really needed.
- Continuity *(α = .78)* = growth + future perspective.
- Restraint of alter *(α = .80)*
  - If this customer did not behave fairly with respect to us, he could seriously damage his reputation in the market.
  - This customer is more dependent on us then we on him.
  - This customer cannot afford a break with us.
  - If the relation with our firm breaks, the customer will have trouble finding a comparable supplier.
  - We know much more about the customer than he about us.

*Explanatory Variables, Trust-Related*

- Habitualization *(α = .75)*
  - Because we have been doing business so long with this customer, all kinds of procedures have become self-evident.
  - Because we have been doing business for so long with this customer, we can understand each other well and quickly.
  - In our contacts with this customer we have never had the feeling of being misled.
- Institutionalization (α = .87)
  - In this relation, both sides are expected not to make demands that can seriously damage the interests of the other.
  - In this relation the strongest side is expected not to pursue its interest at all costs.

- Habitualization and institutionalization (α = .77) = Habitualization + institutionalization + item:
  - In this relation informal agreements have the same significance as formal contracts.

    (This item was kept separate from habitualization and institutionalization because it could with equal theoretical and empirical justification be added to either of them: in both cases Cronbach's alpha increased by 10 percentage points.)

*Control Variables*

- Uncertainty avoidance, ego *(α = .80)*:
  - In our relations with customers, our firm always tries to cover everything watertight contractually.
  - In the contact with customers we stick to the procedures and rules that apply in our firm.
  - We want to prevent becoming too dependent on one or a few large customers.
  - In our firm there is a clear preference for risky projects with an opportunity for high profits.
  - In view of the nature of our industry it is best to proceed cautiously, and not take too large steps.
  - With us, decisions are taken fast.
  - With us, administrative procedures play an important role.
- Size = ego's annual sales.