

PROVISIONALLY FORTHCOMING: ORGANIZATION SCIENCE

INTERORGANIZATIONAL TRUST, GOVERNANCE CHOICE, AND
EXCHANGE PERFORMANCE

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Abstract

This paper looks at when and how preexisting interorganizational trust influences the choice of governance and in turn the performance of exchange relationships. We theorize that preexisting interorganizational trust complements the choice of governance mode (make, ally, or buy) and also promotes substitution effects on governance mode choice while impacting exchange performance. We evaluate hypotheses using a novel three-stage switching regression model and a sample of 222 component-sourcing arrangements of two assemblers in the automobile industry. Analysis of our data broadly supports our hypotheses. High levels of preexisting interorganizational trust increased the probability that a less formal, and thus less costly, mode of governance was chosen over a more formal one. This finding suggests a substitution effect of interorganizational trust on governance mode choice that in turn shapes exchange performance. We also found a complementary effect of trust on performance: regardless of the governance mode chosen for an exchange, trust enhanced exchange performance. Additional evidence of the complementary effect of trust on performance was that trust somewhat reduced interorganizational conflict.

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A growing debate in the strategic management, organization theory, and contracting literatures concerns the role of interorganizational trust in determining governance choice and performance in exchanges. Broadly defined, interorganizational trust is an organization's expectation that another firm will not act opportunistically (Bradach and Eccles, 1989). Some scholars studying interorganizational trust argue that "trust can substitute for hierarchical contracts in many exchanges and serves as an alternative control mechanism" (Gulati, 1995). The implication is that if trust exists when firms enter an exchange relationship, they may use less formal modes of governance and therefore preexisting trust enhances exchange performance. A rich body of research suggests that trust may substitute for formal governance if the cooperative behavior trust generates offers a less costly and more effective safeguard than complex contracts or vertical integration (e.g., Bradach and Eccles, 1989; Dyer, 1997; Gulati, 2007; Lincoln and Gerlach, 2004; Nootboom et al., 1997; Zaheer and Venkatraman, 1995). Substitution of trust for formal governance may also arise if the use of contracts "crowds out" the use of trust in governance (e.g., Frey, 1997). Indeed, the use of a contract may signal distrust, thereby undermining the development of relational exchange and perhaps encouraging opportunistic behavior between exchange partners (Fehr and Gächter, 2000; Ghoshal and Moran, 1996; Malhotra and Murnighan, 2002; Sitkin and Roth, 1993).

Focusing on the performance implications of interorganizational trust, scholars also have argued that preexisting trust between firms entering exchange relationships benefits those relationships regardless of the chosen governance structure. This occurs because trust reduces transaction costs and facilitates coordination (Aulakh et al., 1996; Dodgson, 1993; Gulati and Singh, 1998; Zaheer and Venkatraman, 1995; Zaheer et al., 1998;). Along these lines, some researchers have proposed that formal governance and relational governance (via trust) can act as complements (Poppo and Zenger, 2002) to enhance exchange performance (Mayer, 1999). Some have even argued that formal governance is necessary for trust, implying that high levels of exchange performance cannot be achieved by trust alone (Lazzarini et al., 2001). This body of research broadly echoes North's (1990, 46) assertion that "formal rules can complement and increase the effectiveness of informal constraints."

In contrast to these arguments, our view is that the question is not *whether* trust is a substitute or complement to formal governance, but rather *when* and *how* it may serve as both simultaneously. In this paper, we develop a theory about (1) when and how dyadic preexisting interorganizational trust—the level of trust that existed prior to a dyad’s current exchange—leads to the substitution of one governance mode for another (and to subsequent performance effects) and (2) when and how interorganizational trust complements any formal governance mode in enhancing exchange performance. We develop our theory by examining the three prototypical governance choices for dyadic exchanges, “buy,” “ally,” and “make,” which Williamson (1991) called “market,” “hybrid,” and “hierarchy.” In the *buy* mode, an organization procures an input from another using a simple contracts. In the *ally* mode, one organization enters a formal arrangement with another using a complex (yet incomplete) contract to procure the input. In the *make* mode, one organizational unit procures from another unit that is part of the same broader organization.

We theorize that trust between organizations at the time they enter an exchange relationship can lead to the *substitution* of a less formal governance mode (e.g., buy) for a more formal mode (e.g., ally). In other words, partners are likely to use less formal governance when there is trust between them. In Williamson’s (1991) parlance, preexisting trust is a “shift parameter” whose magnitude may affect choice of governance mode, which may enhance exchange performance by allowing use of less costly governance structures. A key contribution of our paper is to increase understanding of trust as a shift parameter for governance modes. The substitution effect arises because trust can mitigate some of the contracting hazards associated with exchange, which reduces the need for more formal controls. Such substitutions are particularly likely to occur when the exchange hazard is near certain “critical values”—the level of asset specificity without trust, when buy and ally are close substitutes or ally and make are close substitutes. In such situations, trust tips the balance toward less formal modes.

We further argue that preexisting trust can complement any mode of governance and thus improve exchange performance whenever contracting hazards are present by reducing both instances of conflict and the costs of resolution. Because contracting hazards are present in all modes of governance—including intrafirm exchange—we propose that preexisting interorganizational trust has a

complementary effect in all modes. Thus, our theory suggests that preexisting trust simultaneously has a substitution effect on governance mode and a complementary effect on exchange performance.

To examine our propositions, we use a novel data set of 222 sourcing arrangements from two U.S. auto assemblers. Our data, drawn from a comprehensive survey, allow us to analyze interorganizational trust, governance choice, and perceived performance in a single statistical framework. We use a three-stage switching regression model to account for unobserved heterogeneity (e.g., Hamilton and Nickerson, 2003; Masten et al., 1993). This analysis is the first to empirically assess endogenous governance mode choice and concomitant performance implications, using the tripod of alternative governance modes.

THEORY AND HYPOTHESES

Interorganizational Trust

Trust is a complex topic that has been examined through a wide array of disciplinary lenses (for a review of this diverse literature, see Gambetta, 1988; Kramer, 1999; Rousseau et al., 1998). In recent years, the inherently interpersonal notion of trust has been extended to organizations. One premise of this extension is that interorganizational trust is linked to the predictability of a partner firm's behavior toward a vulnerable focal firm. If the partner firm fulfills positive expectations, the focal firm develops greater confidence in the partnership, and this confidence in turn mitigates future concerns about opportunism (Gulati, 1995; Hill, 1990; Parkhe, 1993; Nooteboom, 1996; Nooteboom et al., 1997; Zaheer and Venkatraman, 1995). Over time, even though turnover of workers and managers may occur at both firms, institutionalizing processes crystallize expectations, and new boundary spanners are socialized to accept the firmwide expectations for this partner's behavior (Zaheer et al., 1998; Zucker, 1987).

We focus on the effects of interorganizational trust existing prior to a current exchange and its effects on governance choice and performance in the current exchange. In particular, we look at the trust engendered by past interactions that generate trust by shaping expectations of subsequent behavior (Gulati, 1995, 2007). For instance, over time a firm may avoid partners who have demonstrated a propensity for opportunistic behavior and retain those who have not. In this way, recurrent interaction with a partner leads to an expectation of behavior superior to that of an untested partner. Past

interactions also engender social processes (Granovetter, 1985; Zucker, 1987) and interaction patterns (Blau, 1964) that scholars have identified as important foundations of trust (Dore, 1987; Gulati, 1995, 2007; Gulati and Sytch, 2007, 2008; Heide and Minor, 1992; MacNeil, 1980).¹ Our focus on preexisting trust also allows us to consider the role of such trust in governance structure choice at the time an exchange is formalized as well as trust's effect on the subsequent performance of the exchange.

A Baseline Theory of Governance Choice and Exchange Performance

Governance cost is a class of transaction cost that refers to (1) the costs of drafting, negotiating, and safeguarding an agreement between two or more actors and (2) the ex post costs of contracting, generated by maladaptation, haggling, administration, and bonding (Williamson, 1991).² Lower governance costs imply that exchange partners make adjustments and adaptations at low cost. Governance costs have a critical impact on expected exchange performance because performance levels increase when governance costs are lower, all else held equal.

To examine the impact of governance costs on performance, transaction cost theorists largely focus on the dichotomy of make versus buy, and practically all extant empirical work examines this dichotomy. More recent theory adds ally as a governance mode (Bradach and Eccles, 1989; Williamson, 1991; Gulati, 1995), but few empirical studies address this expanded set of modes. Figure 1 graphically represents the traditional transaction cost theory predictions that we use to describe our baseline argument and also for expositional purposes. Let $M(k;\theta)$, $X(k;\theta)$, and $H(k;\theta)$ in Figure 1 represent expressions of

¹ "Institutional context" offers another source of interorganizational trust (Fukuyama, 1995; Zucker, 1987) and can assert a powerful influence on the behavior of exchange partners through positive and negative reinforcement (Zukin and DiMaggio, 1990). In contexts rich with institutional constraints, opportunistic behavior may be less likely (for examples from the Italian districts, see Lazerson, 1988; Weiss, 1984). Thus, the institutional context may also affect general expectations about anticipated behavior and in turn engender interorganizational trust.

² Williamson (1985, 21) describes expected ex post governance costs that arise once a governance structure is chosen as including (1) the "maladaptation costs" incurred when bilateral parties are not able to respond quickly and easily to problems stemming from disagreements and self-interested bargaining (see also Williamson, 1996, 107); (2) the "haggling costs" incurred when partners attempt to realign their exchange should it have drifted out of alignment due to unanticipated events; (3) the set up and running costs associated with the governance structures to which disputes that arise during the exchange are referred (e.g., management costs to monitor and resolve disputes, administrative controls that establish rules and procedures for resolving disputes, etc.); and (4) the "bonding costs" that come from investing in commitments, such as mutual investments to signal financial commitment to the exchange, which thereby mutes incentives for opportunism. Our theoretical arguments, which are provided below, will feature how interorganizational trust affects these sources of governance costs.

the expected governance costs associated with buy, ally, and make modes of governance, as a function of asset specificity (k) and a vector of shift parameters (θ) (Williamson, 1991). We set aside these shift parameters for the moment but will return to them subsequently. Williamson also identified two additional transaction attributes—uncertainty and frequency—that interact with asset specificity in determining the magnitude of exchange hazards. In this paper, we suppress consideration of uncertainty and frequency to focus on Williamson’s “main locomotive,” asset specificity. Doing so eases exposition without sacrificing generality.

<Insert Figure 1 about here>

Williamson asserted that the shape of the governance cost curves are such that $M(0) < X(0) < H(0)$ and $\partial M/\partial k > \partial X/\partial k > \partial H/\partial k > 0$ and, importantly, that these curves intersect so that $M(k_1) = X(k_1)$ and $X(k_2) = H(k_2)$. These assertions imply that procurement through simple contracts (buy) is the least costly mode of organization (i.e., offers superior performance) for low levels of asset specificity (i.e., $k < k_1$); that procurement through internal production (make) is the least costly mode of organization for high levels of asset specificity (i.e., $k > k_2$); and that procurement through complex contracts (ally) is the least costly mode of organization for moderate levels of asset specificity (i.e., $k_1 < k < k_2$). The intersections of the curves M and X , denoted by k_1 , and the curves X and H , denoted by k_2 , identify the *critical values* of asset specificity at which the transaction-cost-economizing governance choice shifts from one mode to another. At these critical values, the adjacent governance modes are nearly equally efficient because they incur equivalent governance costs.

In the following sections, we argue that preexisting interorganizational trust acts as a shift parameter for the three governance cost curves. Investigating how precisely preexisting trust affects the curves for buy, ally, and make allows us to predict how trust affects both governance choice and exchange performance.

Trust and the Buy Mode of Governance

According to a substantial literature in economics and sociology, trust lowers transaction costs in all kinds of exchange relationships in which a risk of opportunism is present (e.g., Bradach and Eccles, 1989: 104; Nooteboom, 1996; Nooteboom et al., 1997). Bradach and Eccles (1989), for instance, argued

that transactions are rarely governed *solely* by the market. Along similar lines, Arrow (1974: 23) maintained that “trust is an important lubricant of the social system” that adds efficiency to many economic exchanges. Supporting these statements, empirical research has shown trust to be an important element of market exchanges in industries as varied as residential homebuilding (Eccles, 1981), banking (Eccles and Crane, 1988), electrical and electronic components (Nooteboom et al., 1997), and textiles-clothing (Mariotti and Cainarca, 1986) and that businesspeople often rely on trust even when a transaction involves exposure to exchange hazards (Macaulay, 1963, 58). Prior research suggests that trust between firms involved in an exchange is likely to increase confidence in and positive expectations about each partner’s behavior, reducing the need for control through formal governance mechanisms. A buy mode of governance may therefore be chosen even when some level of exchange hazard is present, and trust will lower expected governance costs. Thus, the efficiency-enhancing and hence cost-reducing effects of trust can increase exchange performance in the buy mode of governance when exchange hazards are present (Gulati, 1995, 2007; Hill, 1990; Parkhe, 1993).

In this context, we turn to mapping the effect of preexisting trust on the governance cost curve for buy (see Figure 1). Preexisting trust lowers expected maladaptation and haggling costs because exchange partners are more likely to avoid disputes or resolve them quickly. Under the buy mode of governance, inconsequential set-up and running costs and no bonding costs are incurred, so these costs need not be considered. Trust has no effect on the buy governance cost curve when exchange hazards are absent ($k = 0$) but otherwise shifts governance costs downward (i.e., when $k > 0$). As exchange hazards grow, trust reduces costs even more because avoiding or quickly resolving disputes, which trust facilitates, has greater economic significance for larger contractual hazards. Thus, the greater the expected trust, the lower the governance costs.

We identify preexisting trust as a particular shift parameter (γ) that relocates the governance cost curve for the buy mode of governance, $M(k, \gamma)$. We assume that the presence of trust implies that $\gamma > 0$ (although our theory may apply equally well to distrust, which would imply $\gamma < 0$). Codifying this relationship in terms of our buy governance cost curve implies that $M(0, 0) = M(0, \gamma) \forall \gamma > 0$, which indicates that trust does not lower governance costs when exchange hazards are absent (i.e., $k = 0$) and

$0 < \frac{\partial M(k, \gamma)}{\partial \gamma} < \frac{\partial M(k, 0)}{\partial \gamma} \forall k > 0, \gamma \geq 0$, which indicates that the cost curve for the buy mode of governance with trust is flatter and below the cost curve for buy without trust. Figure 2 depicts this relationship between $M(k, 0)$ and $M(k, \gamma)$.

<Insert Figure 2 about here>

Trust and the Ally Mode of Governance

Trust also shifts the ally governance costs curve, but to a lesser extent than it moves the buy curve. We propose that trust influences expected governance costs in the context of complex contracts—the ally mode. As mentioned earlier, in the presence of interorganizational trust among alliance partners, disputes arise less frequently and, when they do, are often resolved by the parties themselves without recourse to third parties, bureaucratic policies, or written contracts. Trust is also associated with sustainable mutual interdependence between exchange partners in an atmosphere of bilateral commitment, making relationships more flexible and adaptive to unforeseen contingencies (Dwyer et al., 1987; Gulati and Singh, 1998; Gulati and Sytch, 2007). Furthermore, trust complements formal governance in ally modes by attenuating the expectation of opportunistic behavior and facilitating partner coordination (Barney and Hansen, 1994; Gulati, 1995, 2007; Mayer, 1999).

Although trust can facilitate adjustments with a complex contract, the contract nonetheless constrains the efficacy of trust for making such adjustments. While some adjustments are made without reference to a contract. Macaulay (1963) described complex contracts as frameworks for adjustment.

At times relatively contractual methods are used to make adjustments in ongoing transactions and to settle disputes. Demands of one side which are deemed unreasonable by the other occasionally are blocked by reference to the terms of the agreement between the parties. The legal position of the parties can influence negotiations even though legal rights and litigation are never mentioned in their discussions. (64)

The fact that partners can appeal to the contract therefore shapes and limits the range of feasible adjustments even when trust is present. Indeed, many scholars (e.g., Fehr and Gächter, 2000; Ghoshal and Moran, 1996; Lubell and Schola, 2001; Malhotra and Murnighan, 2002; Sitkin and Roth, 1993; Tenbrunsel and Messick, 1999) have asserted that complex contracting may limit the effectiveness of trust and potentially dissipate it. This can happen if actors attribute cooperation to contractual constraints

rather than to a partner's goodwill (Malhotra and Murnighan, 2002) and adopt a calculative rather than a moral or ethical frame of reference (Tenbrunsel and Messik, 1999), increasing actors' proclivities for opportunistic and other trust-damaging pursuits (Ghoshal and Moran, 1996). Indeed, Macaulay (1963, 64) noted that "businessmen object that in [complex contracts] one gets performance only to the letter of the contract. Such planning indicates a lack of trust and blunts the demands of friendship, turning a cooperative venture into an antagonistic horse trade." Per this description, complex contracts truly constrain the efficacy of trust for making adjustments.

Preexisting trust may expand the scope of adjustments exchange partners are willing to embed in a contract or leave out of it, choices that in turn influence their expectations (Dwyer et al., 1987; Macaulay, 1963; Macneil, 1983). In other words, preexisting trust may expand the scope of the contract or the set of adjustments perceived as reasonable (Larson, 1992; Lorentz, 1988; Luhman, 1979). At the same time, the detailed and sophisticated contracts typical of the ally mode can limit the scope of adjustment available for exchange partners. Such contracts often either set explicit expectations or specify permissible adjustments, narrowing the window for spontaneous relational adjustment that trust can open. In contrast, simple contracts that do little to set expectations or specify adjustments offer no such constraint. Additionally, because parties tend to develop deep-rooted patterns of interdependence in ally relationships (Dwyer et al., 1987), a fear of betrayal that may trigger sizeable losses additionally constrains trust-driven adjustment (Nooteboom, 1996).

Thus, although trust can reduce governance costs in the ally mode, the complex contracts associated with this structure constrain its benefits. So, at best, trust may have the same effect on the ally mode as it does on the buy mode, at least for low levels of exchange hazards. But our discussion suggests that the effect of trust, though significant, should be smaller for ally than for buy. As in the buy mode of governance, in the ally mode trust is expected to (1) have no effect on governance costs when exchange hazards are absent (therefore, $X[0, 0] = X[0, \gamma] \forall \gamma \geq 0$) and (2) lower the governance cost associated with the ally mode whenever exchange hazards are present. We conclude that preexisting trust lowers expected governance costs more for buy than for ally. Thus, $\frac{\partial M(k, \gamma)}{\partial \gamma} < \frac{\partial X(k, \gamma)}{\partial \gamma} < 0 \forall k > 0, \gamma > 0$.

Trust and the Make Mode of Governance

Some scholars assume that trust affects only market modes of organization (Chiles and McMackin, 1996), yet earlier studies suggest that trust can matter in hierarchical exchanges as well (e.g., Perrow, 1986). Bradach and Eccles (1989, 107), for instance, argued that “trust ... plays an important role in intrafirm interactions.” We expressly assume that interorganizational trust can exist between distinct organizations within a firm, such as divisions and business units, that are engaged in interfirm exchange (e.g., component procurement). Though scholars have identified antecedents of trust in dyadic relationships between senior managers (e.g., Bercerra and Gupta, 2003), very few have investigated the effects of trust on the governance costs or performance of intrafirm exchanges (Gulati, Lawrence, and Puranam, 2005). More generally, a substantial literature in sociology and psychology examines the effects of trust in organizations, but most of this research looks at trust within groups or between subordinates and superordinates (e.g., Dirks and Ferrin, 2001).

Despite the dearth of prior theoretical and empirical work, we expect preexisting trust to affect governance costs and performance in the make mode as well. As argued above for the buy and ally modes, disputes should arise less frequently in the presence of trust, and when they do, they should more often be resolved by the exchange partners themselves, without recourse to authority. We therefore expect interorganizational trust to have no effect when hazards are absent from an exchange (i.e., $H[0, 0] = H[0, \gamma] \forall \gamma > 0$) and to lower the governance cost associated with the make mode whenever exchange hazards are present, so that $0 < \frac{\partial H(k, \gamma)}{\partial k} < \frac{\partial H(k, 0)}{\partial k} \forall k > 0, \gamma > 0$.

Yet a critical question remains: Does trust lower governance costs in the make mode more than in the ally mode, all else being equal? In the make mode, bureaucracy, administrative controls, and authority shape organizational behavior and limit the ability of exchange partners to make adaptations other than those prescribed by management. Thus, the lubricating effect of trust is likely to be more limited in this context. The constraints imposed by governance in the make mode may also be more limiting than those in an ally mode because the former relies on authority as the ultimate means of resolving disputes, so any agreement can be overruled by fiat, whereas the latter relies on the courts, which have contracts as guides to resolving disputes.

Furthermore, anecdotal evidence suggests that management may sometimes intentionally propagate conflicts among organizational units. By so doing, management may not only obtain otherwise unavailable information but also encourage units to monitor each other's performance. Although interunit monitoring potentially benefits overall organizational performance (Rotemberg and Saloner, 1995), the resulting tension among units certainly further constrains the role of trust in shaping the performance of hierarchically organized exchanges. This discussion suggests that although trust lowers governance costs for intrafirm exchanges, it lowers governance costs for ally even more, so that

$$\frac{\partial X(k, \gamma)}{\partial \gamma} < \frac{\partial H(k, \gamma)}{\partial \gamma} < 0 \quad \forall k > 0, \gamma > 0.$$

Predicting Governance Choice and Exchange Performance

Now we use our theoretical discussion to generate predictions for the effects of trust on governance choice and exchange performance. We expect preexisting interorganizational trust to *substitute* for formal governance by enabling the use of less formal governance modes and to *complement* governance by enhancing performance in all modes. Our theory suggests that trust lowers governance costs for all modes of governance, but more for buy than for ally and more for ally than for make. We have argued that this differential exists because formal governance shapes behavior, constraining what trust can do. These constraints are greatest in the make mode, least in buy, and intermediate in ally.

This differential lowering of governance costs has two effects on governance choice: (1) preexisting trust extends the range of asset specificity within which the buy mode offers efficient governance and (2) trust in conjunction with the ally mode becomes the efficient choice for some range of asset specificity within which make was previously the most efficient choice. Preexisting trust shifts the critical values of k_1 and k_2 to the right, toward higher levels of exchange hazards. Per our prior arguments, these shifts also would lead to greater *substitution* effects, but the substitution of buy for ally and of ally for make would occur only near the critical values k_1 and k_2 .

Figure 2 shows these effects, graphing the expected baseline governance cost curves for buy, ally, and make along with expected cost curves when preexisting trust is present (when $\theta = \gamma > 0$) and illustrating that preexisting interorganizational trust shifts the reduced-form equations from $M(k, 0)$, $X(k, 0)$, and $H(k, 0)$ to $M(k, \gamma)$, $X(k, \gamma)$, and $H(k, \gamma)$. The substitution effect of interorganizational trust on

governance costs can be seen in Figure 2 because the critical value of k_1 —where $M(k, 0)$ and $X(k, 0)$ intersect—shifts to the right to k_1^γ —where $M(k, \gamma)$ and $X(k, \gamma)$ intersect. Similarly, the critical value of k_2 —where $X(k, 0)$ and $H(k, 0)$ intersect—shifts to the right to k_2^γ —where $X(k, \gamma)$ and $H(k, \gamma)$ intersect. This figure shows that trust enables buy to substitute for ally between k_1 and k_1^γ and for ally to substitute for make between k_2 and k_2^γ . We predict that trust encourages the use of less formal arrangements for certain ranges of exchange hazards. Our hypotheses make clear the expected substitution effects of trust:

H1A: The greater the level of preexisting interorganizational trust, the greater the exchange hazard that can be governed by a buy instead of an ally mode of governance.

H1B: The greater the level of preexisting interorganizational trust, the greater the exchange hazard that can be governed by an ally instead of a make mode of governance.

In addition to having these substitution effects on governance modes, trust complements them by lowering their costs, thus enhancing exchange performance regardless of mode. Trust lowers expected governance costs over all three modes whenever exchange hazards are present. Because lower costs translate into higher performance, trust enhances exchange performance in all three modes of governance. Put differently, trust always *complements* buy, ally, and make with respect to performance because it facilitates making adjustments that lower costs. This assertion resonates with Poppo and Zenger's (2002) conclusion that trust complements governance. Interorganizational trust thus causes two inter-related effects: it has a substitution effect with respect to governance by affecting the choice of mode for a given level of asset specificity, while at the same time it lowers governance costs. Both of these effects improve exchange performance.

Notice in Figure 2 that the minimum expected governance cost scribed out by $M(k, \gamma)$, $X(k, \gamma)$, and $H(k, \gamma)$ is lower at all points than the one scribed out by $M(k, 0)$, $X(k, 0)$, and $H(k, 0)$, except when no hazard is present. This complementary effect lowers governance costs when hazards are present, which translates into a positive effect on exchange performance. The higher the preexisting interorganizational trust, the lower the expected governance costs, all else being equal. It is possible that such lower costs could lead to increases on the margin in asset-specific investments, but such a substitution is not likely unless significant gains are expected. Note also, however, that the expected governance cost reductions from preexisting interorganizational trust are greatest for buy and least for make for every level of asset

specificity greater than zero, as we suggested in our earlier theoretical discussion. That is, the strength of trust's complementation differs systematically for buy, ally, and make:

H2A: The higher the level of preexisting interorganizational trust, the lower the expected governance cost for exchanges organized as buy, ally, and make, all else being equal.

H2B: Preexisting interorganizational trust has a greater effect on lowering expected governance cost for exchanges organized as buy than as ally, all else being equal.

H2C: Preexisting interorganizational trust has a greater effect on lowering expected governance cost for exchanges organized as ally than as make, all else being equal.

METHOD

Sample and Data Collection

Data came from a comprehensive 1995 survey of lead component buyers at the Ford Motor Company and at the Chrysler Corporation. The sampling frame consisted of all commodities that go into the assembly of an automobile; this methodology offers an advantage over automotive studies with more restricted samples of exchanges (e.g., Walker and Weber, 1987). Drawing on a previous study of the automobile sector (Monteverde and Teece, 1982) and discussions with industry informants, we listed 120 components that go into most automobiles. The comprehensiveness of this list was verified with several industry executives and also against component lists the firms used to monitor parts' quality. For each component, senior managers at the two automobile assemblers supplied the names of the buyers who oversaw sourcing. Additionally, the controller's office in each company verified the expert status of each survey respondent. The approach of contacting the most knowledgeable informant is consistent with prior research in other contexts (e.g., Heide and John, 1990; Venkatraman and Grant, 1986; Walker and Poppo, 1991). The sample included both internal and external sourcing relationships. The unit of analysis for this study was existing component exchange ties, with each survey respondent providing data on the component itself and on its company's two largest suppliers (or one supplier, if only one existed) of that component. Our unit of analysis improves on several prior studies of governance choice in the auto industry (Masten et al., 1989; Monteverde and Teece, 1982) because of our unique focus on individual

transactions. This focus, in turn, enables us to conduct a fine-grained analysis of governance choice and its consequences in each transaction.

We complemented our survey with 37 in-depth interviews in two waves (16 at Chrysler, 21 at Ford) with individuals responsible for sourcing internally and externally. The initial interviews were exploratory and open-ended and were intended to clarify the procurement relationships. In later interviews, we sought information relevant to our central constructs of trust and the performance of different governance modes. We pretested the questionnaire with executives at the participating companies to remove ambiguities and confirm the face validity of the measures.

Survey implementation involved several standard steps for ensuring a good response rate (Fowler, 1993). Sixty-four buyers responded from Ford, and 67 from Chrysler, numbers representing response rates of 53 percent and 56 percent, respectively, and an overall response rate of 55 percent. After exclusion of 40 entries with missing data, our sample consisted of 222 existing sourcing arrangements, some internal and some external.

We examined nonresponse bias by comparing the characteristics of the components for which responses were received with the characteristics of those for which we received none. We looked at two key characteristics of commodities identified in prior research—type of sourcing and engineering complexity—and used Monteverde and Teece's (1982) ratings of these characteristics as a basis for this comparison. A Kolmogorov-Smirnov two-sample test to assess the probability of differences in the distribution of respondents and nonrespondents for these two variables (Siegel and Castellan, 1988) indicated that respondents and nonrespondents came from the same population.

To ensure that some of our self-reported measures of constructs like performance did not suffer from serious perceptual biases, we conducted some additional analyses for some of our survey measures. Given that exact performance data were inaccessible to us for confidentiality reasons, we asked our contacts at each firm to correlate scores on four measures from a random subsample of 20 percent of valid survey responses with objective, internally tracked indicators of these measures from the year before the survey. This was done for the past target-price ratio, defect rate (inverted), change in component price

(inverted), and improvement in defect rate. The obtained correlation coefficients of over .90 attested to the reliability of the survey measures.

Measures

Dependent Variables

For TRUST, our first dependent variable, we used three items, listed in Table 1, that reflect the three elements that define interorganizational trust (Cummings and Bromily, 1996; Dyer, 1997; Zaheer et al., 1998; Zaheer and Venkatraman, 1995). Zaheer et al. (1998) used two additional questions to define interorganizational trust. We omitted these because they represent antecedents of preexisting trust.³ Each question used a 7-point Likert scale ranging from *strongly disagree* to *strongly agree*. We evaluated the reliability of our dependent variable by estimating Cronbach's alpha coefficient (Nunnally, 1978) for the battery of three items; this alpha was .80.

MODE, our second dependent variable, identified how an exchange to procure a component was organized. We classified as make exchanges with a division of a respondent's own company, as ally exchanges characterized by long-term complex contracts, and as buy exchanges characterized by short-term (i.e., a year or less) contracts and competitive bidding. Along with providing these three choices of governance mode, a clear definition of each was provided to the respondent so they could make an informed selection. Respondents were asked to identify which of these three categories governed a relevant exchange. Of the 222 exchanges on which information was complete, 24 were organized as make, 126 were organized as ally, and 72 were organized as buy. MODE was an ordered categorical variable, coded 0 for buy, 1 for ally, and 2 for make.

We assumed that lower governance costs correspond to higher economic performance. Because firms keep archival figures on the economic performance of exchanges confidential, we based our PERFORMANCE measure on thirteen questions, derived from a literature survey, fieldwork, and our pretests, concerning assembler satisfaction. To measure assembler satisfaction, we tapped the survey respondents' opinions of a component supplier's attractiveness; as noted, respondents were component

³ In separate analyses we included these omitted measures of trust and found consistent results.

buyers employed by the assemblers. All questions (displayed in Table 2) employed a 7-point Likert scale. The first ten questions reflected the respondent's view of how attractive a supplier was compared with the best alternative supplier for the commodity in question (1, *much less attractive*; 7, *much more attractive*). The next three questions pertained to the frequency of buyer-supplier disagreement and the difficulty of negotiations over sharing the financial burden of engineering change requests and raw material cost increases (1, *fairly easy*, to 7, *very difficult*).

Unlike some prior studies that have assessed exchange performance as subjective satisfaction only (e.g., Gulati et al., 2005), we looked at both subjective and quasi-objective measures of performance. The latter were scaled measures of average past target ratio, average past price change rate, average defect rate, and improvement in average defect rate. We used factor analysis to identify relevant performance dimensions based on the above-mentioned comprehensive list of survey questions on the performance of exchange relationships. We analyzed our thirteen performance measures using exploratory factor analysis with varimax rotation, which measures unobservable theoretical constructs using reflective indicators (Carmines and Zeller, 1979; Zeller and Carmines, 1980). Table 2 displays factor loadings for the three factors that emerged from the analysis. A single factor with an eigenvalue of 6.15 accounted for 75% of the variation in our data. Only the first two factors yielded eigenvalues greater than 1; the second factor had an eigenvalue of 1.43, explaining no more than 18% of the variation. Using a loading coefficient greater than or equal to 0.30 and eliminating items with high cross-factor loadings (Kim and Mueller, 1978), we concluded that the first ten of our variables loaded onto the first factor. All of these variables were qualitative measures of performance consistent with strong economic performance. The three remaining variables loaded onto the second factor, which we called CONFLICT, with one of them exhibiting a high cross-factor loading. Zaheer et al. (1998) used these three items to represent conflict and negotiation costs that mediate overall performance, though neither construct was statistically significant in their study. Given their weak empirical results, we considered the aggregate measure of conflict a potentially ambiguous measure of performance; it cannot differentiate between functional and dysfunctional conflict, which may have vastly different implications for performance (Gulati and Sych, 2007). With the factor underlying PERFORMANCE explaining over four times more

variance than the factor underlying CONFLICT, we used PERFORMANCE as our primary dependent variable, but we also include the analyses on CONFLICT as an empirically derived construct, on the assumption that it may reflect lower transaction costs.

We evaluated the reliability of our PERFORMANCE construct by estimating Cronbach's alpha for the battery of ten items; the estimate, .93, indicated a sufficient level of scale reliability.. The battery of items comprising CONFLICT had Cronbach's alpha of .78, also representing sufficient reliability.

Covariates

Our first set of covariates identified antecedents of interorganizational trust:

COMPONENT HISTORY was the logarithm of the number of years an assembler had purchased the focal component of a current exchange from the supplier, which typically encompassed the history of transacting episodes between the exchange partners.

ORGANIZATION HISTORY, the logarithm of the number of years an assembler had purchased any component from the supplier, captured the history of all transacting episodes between the exchange partners. Assemblers are presumably likely to recontract with suppliers who have performed well. Thus, good performance engenders interorganizational trust.⁴ Ongoing selection of suppliers by assemblers would suggest the presence of trust, all else being equal.

BUYER TENURE was the logarithm of the number of years that a lead component buyer had been with the present company. The longer a buyer has been with an assembler, the more likely it is that expectations held by others have been institutionalized and adopted by the buyer.

BUYER HISTORY was the logarithm of the number of years that an assembler's buyer had personally dealt with a supplier. The longer a buyer has worked with a supplier, the greater the likelihood that social attachments, which engender trust, exist.

EXPERIENCE captured whether, on the basis of past experience, a buyer could *not* rely on a supplier to keep promises made. This was based on the response to a single 7-point Likert item rated

⁴ Zaheer et al. (1998) argue that expectations held by employees of an organization can be transmitted to and from boundary spanners through institutionalization. These expectations develop over time (Ring and Van de Ven, 1992) at an organizational level. Thus, the history of exchange interactions between organizations is a relevant antecedent.

from *strongly disagree* to *strongly agree*. The higher the response, the lower the preexisting trust we expected.

Our second set of covariates related to the degree to which dyad partners had made cospecialized investments—the level of asset specificity in an exchange. We did not include contract duration in our model because duration is likely to be endogenous with asset specificity and governance. Our model indicates that higher asset specificity corresponds to more formal modes of governance. Our survey provided three items intended to assess the degree of asset specificity:

SUPPLIER ASSET SPECIFICITY measured a buyer's agreement (1, *strongly disagree*, to 7, *strongly agree*), with the statement, "This supplier has made significant investments in terms of equipment, facilities, and engineering designed specifically to meet the buyer's supply requirement for the commodity." Our auto industry interviewees had suggested that suppliers typically make specific investments, when these are called for.

ASSEMBLER ASSET SPECIFICITY measured the buyer's agreement (1, *strongly disagree*, to 7, *strongly agree*), with the statement, "Your company has made significant investments in tooling and equipment that are specific to your relationship with the supplier." We did not combine SUPPLIER ASSET SPECIFICITY and ASSEMBLER ASSET SPECIFICITY because the latter may signal a credible commitment in response to a supplier's specific investments, which may reflect an exchange of hostages to mitigate hazards (Williamson, 1993).

An additional measure of asset specificity was BREADTH, the extent to which an assembler used a focal component. Components used over multiple platforms are likely to be standardized, whereas components with a single use are more likely to require cospecialization. To conserve degrees of freedom in our analysis, we coded BREADTH as an ordered categorical measure of the extent of use: companywide, in more than one platform, in one platform, in one model, or in one trim line; higher levels corresponded to higher degrees of cospecialization.

Control Variables

To insure the robustness of our results and to identify our regression models, we included several control variables (listed in Table 1):

FORD was a dummy variable that identified assembler-specific effects. Chrysler was our omitted assembler.

INFO measured the extent to which a buyer and supplier exchanged information. This variable, constructed from ten items ($\alpha = .81$; specified in Table 1), accounted for how information channels between organizations affect trust, governance choice, and exchange performance, independent of factors that may build information channels. For instance, the variables capturing length of relationship defined above may affect trust and information channels, both of which may affect performance. Including INFO as a control allowed us to distinguish among potential sources of performance benefits. We also performed a factor analysis of the ten items (not reported). All loaded onto a single factor.

COMPONENT REVENUE and OVERALL REVENUE were categorical measures of the annual dollar value of purchases from a supplier for, respectively, a focal exchange and all exchanges between the assembler and supplier. The qualitative categories were less than \$10 MM, \$50 MM, \$100 MM, and more than \$100 MM. To conserve degrees of freedom in our analysis, however, we used whole numbers ranging from 1 for the lowest category to 4 for the highest category for each variable. We used these variables to control for the effect that the size of a transaction might have on either the emergence of preexisting trust or governance choice. Controlling for the amount of information exchanged, we assumed that the size of a transaction affects governance mode choice but not performance. The greater the transaction in terms of revenue, the more economical it is for a firm to incur the fixed cost of setting up and running an ally or make form of organization. Hence, we expected size to act as a shift parameter in such a way that the organizational mode chosen would move from buy, to ally, to make as exchange size increases.

Table 3 displays summary statistics and correlation coefficients for our variables. No correlation is large enough to pose estimation problems. Table 4 provides summary statistics for all variables by mode of exchange governance.

Analysis

An important concern in evaluating the effect of trust on governance choice and performance was unobserved heterogeneity, because unobserved factors not accounted for statistically might correlate with

trust, governance, and performance. For instance, personal friendships between buyers and personnel at suppliers are unobservable in our data but could have an impact on all three variables. Also, we had to identify the level of interorganizational trust that existed prior to a current focal exchange. To account for unobserved factors and identify preexisting trust, we implemented a three-stage switching regression model (e.g., Hamilton and Nickerson, 2003; Masten et. al, 1991). In the first stage, we modeled interorganizational trust as a function of exchange attributes and antecedents of preexisting trust. In the second stage, we modeled choice of governance mode as a function of transaction attributes and predicted preexisting trust, while omitting the antecedents of preexisting trust, to statistically identify PREDICTED TRUST. Finally, in the third stage we modeled exchange performance as a function of governance choice, transaction attributes, and the predicted level of preexisting trust. We omitted from the third equation variables that affect governance choice but not performance, to statistically identify the predicted governance mode choice. Admittedly complicated, this method was statistically necessary, and its use here represents one of the few attempts in an empirical study on trust to account for unobserved heterogeneity. In view of our theory, it was also important to consider the simultaneous effects of trust on governance and performance.

Regression Equations

Eq (1) took the form:

$$(1) \quad \text{TRUST}_i = \alpha_0 + \alpha_1 * \text{FORD} + \alpha_2 * \text{INFO} + \alpha_3 * \text{COMPONENT REVENUE} + \alpha_4 * \text{OVERALL REVENUE} + \alpha_5 * \text{SUPPLIER ASSET SPECIFICITY} + \alpha_6 * \text{ASSEMBLER ASSET SPECIFICITY} + \alpha_7 * \text{BREADTH} + \alpha_8 * \text{BUYER_TENURE} + \alpha_9 * \text{BUYER HISTORY} + \alpha_{10} * \text{COMPONENT HISTORY} + \alpha_{11} * \text{ORGANIZATION HISTORY} + \alpha_{12} * \text{EXPERIENCE} + \varepsilon_{1i}$$

where ε_{1i} is a random error term. All variables in Eq. (1) need not be viewed in causal terms. Some of them (e.g., ASSEMBLER ASSET SPECIFICITY and SUPPLIER ASSET SPECIFICITY) are included because they are explanatory variables in the second or third stages. Also, because responses from a given survey respondent could be correlated over suppliers/exchanges, we controlled for such correlation by using the clustering option in STATA. Clustering affects the estimated standard errors and the variance-covariance matrix of estimators, typically leading to larger standard errors but not affecting estimated coefficients.

In the second stage of our model, we used an ordered probit model (e.g., Greene, 2002) to examine the effect of preexisting interorganizational trust, accounting for the level of asset specificity, on governance mode choice. This procedure allowed us to assess the substitution effect. To address the potential for endogeneity between our construct for trust and governance choice (i.e., governance choice might engender trust during an exchange), we constructed the predicted level of preexisting trust, P_TRUST, and omitted antecedents of trust found in the first stage from the second stage. We used this predicted level of trust in Eq. (2) to investigate Hypotheses 1A and 2A. Our second-stage equation took the form:

$$(2) \quad \text{MODE}_i^* = \beta_0 + \beta_1 * \text{FORD} + \beta_2 * \text{INFO} + \beta_3 * \text{COMPONENT REVENUE} + \beta_4 * \text{OVERALL REVENUE} + \beta_5 * \text{SUPPLIER ASSET SPECIFICITY} + \beta_6 * \text{ASSEMBLER ASSET SPECIFICITY} + \beta_7 * \text{BREADTH} + \beta_8 * \text{P_TRUST} + \varepsilon_{2i},$$

where ε_{2i} is a random error term and MODE_i^* represents the index of an ordered probit estimation. With respect to actual governance mode choices, $\text{MODE}_i = 0$ if $\text{MODE}_i^* \leq \mu_1$, $\text{MODE}_i = 1$ if $\mu_1 < \text{MODE}_i^* \leq \mu_2$, and $\text{MODE}_i = 2$ if $\text{MODE}_i^* > \mu_2$, where μ_1 and μ_2 are referred to as break points in the ordered probit. We used P_TRUST, the level of interorganizational trust predicted by Eq (1), instead of TRUST. Doing so allowed us to account for possible endogeneity between the level of trust and the governance mode choice. Again, we allowed clustering on respondents to control for correlations among a buyer's assessments of different suppliers.

Finally, we examined to what extent governance mode choice and preexisting trust affect exchange performance, which allowed us to examine complementary effect while accounting simultaneously for possible substitution. Our third stage employed a switching regression analysis in which we estimated three models—one each for buy, ally, and make—and included the appropriate inverse Mills ratios, calculated from the ordered probit analysis to assess the performance delivered by each organizing mode (Idson and Feaster 1990; Madalla, 1983). The inverse Mills ratio corrects for sample selection bias that may arise from self-selection of organizational modes (Hamilton and Nickerson, 2003; Masten, 1991). Without such a correction, our coefficient estimates could be biased by unobservable factors affecting both governance mode and performance. Our third-stage model had three equations:

$$(3) \quad \text{PERFORMANCE}_{ij} = \gamma_{j0} + \gamma_{j1} * \text{FORD} + \gamma_{j2} * \text{INFO} + \gamma_{j3} * \text{SUPPLIER ASSET SPECIFICITY} + \gamma_{j4} * \text{ASSEMBLER ASSET SPECIFICITY} + \gamma_{j5} * \text{BREADTH} + \gamma_{j6} * \text{P_TRUST} + \gamma_{j7} * \text{MILLS_RATIO}_j + \varepsilon_{ji},$$

where j is [buy, ally, make], MILLS_RATIO_j is the inverse Mills ratio for organizing mode j , and ε_{ji} is a random error term. The switching regression model allowed us not only to evaluate the performance delivered by each governance mode but also to quantify the effect of inappropriate matches of exchange conditions to mode (Maddala, 1983). We omitted from Eq. (3) the controls COMPONENT REVENUE and OVERALL REVENUE to identify our ordered probit model econometrically because we assumed that the size of a transaction had no direct effect on performance. Without omitting these variables, our estimate of predicted mode choice would be identified only by the nonlinearity of the ordered probit. We again allowed for clustering to control for correlations among a buyer's assessments of different suppliers. We also reestimated Eq. (3) with CONFLICT as our dependent variable:

$$(3a) \quad \text{CONFLICT}_{ij} = \gamma_{j0} + \gamma_{j1} * \text{FORD} + \gamma_{j2} * \text{INFO} + \gamma_{j3} * \text{SUPPLIER ASSET SPECIFICITY} + \gamma_{j4} * \text{ASSEMBLER ASSET SPECIFICITY} + \gamma_{j5} * \text{BREADTH} + \gamma_{j6} * \text{P_TRUST} + \gamma_{j7} * \text{MILLS_RATIO}_j + \varepsilon_{ji}.$$

RESULTS

Table 5 displays the set of nested models used to assess TRUST. Model 1 includes the dummy variable controlling for the assembler and our two controls for revenue. No coefficient is significant, and the model has little explanatory power. Model 2 adds our three measures of asset specificity but explains little variance ($R^2 = .06$). Only the coefficient for SUPPLIER ASSET SPECIFICITY ($p < .10$) is statistically significant, which offers a significant but limited improvement over Model 1 ($p < .05$).

Model 3 shows an R^2 of .48 and a substantial improvement over Model 2 ($p < .01$). Only the coefficients for EXPERIENCE, COMPONENT REVENUE, and the constant are significant in Model 3. The coefficient for EXPERIENCE is negative ($p < .01$), which indicates that trust is lower when past experience suggests a supplier will not keep promises. The coefficient for COMPONENT REVENUE ($p < .05$) is also negative, which suggests that the higher the expectations for a specific component, the lower the level of trust in a supplier.

It is important to note that none of our parameter estimates for asset specificity are related to TRUST. These estimates suggest that contracting hazards in an exchange had little to do with the level of trust in our context, a finding consistent with our model capturing preexisting trust.

Models 4, 5, and 6 in Table 5 present results from our ordered probit analysis of governance choice. Model 4 is our baseline model, with an R^2 of .05. Model 5, adding our asset specificity proxies, yields a pseudo R^2 of .07 and is a significant improvement ($p < .05$) over Model 4. Model 6, adding the predicted level of trust, shows a pseudo R^2 of .08 and significant improvement over Model 5 ($p < .01$).

The coefficients are generally consistent over these three nested models, so we focus our attention on Model 6. The coefficient for OVERALL REVENUE is significant ($p < .01$) and positive, indicating that the probability of choosing a more hierarchical governance mode increases with the sum of revenue over all the exchanges between an assembler and a supplier. This finding suggests that interdependencies that influence organizational choice may exist over dyadic transactions (Argyres and Libeskind, 1999). The coefficient for SUPPLIER ASSET SPECIFICITY was nonsignificant in Model 5 but positive and significant ($p < .05$) in Model 6, indicating that governance choice is more likely to shift from buy, to ally, to make as supplier asset-specific investment grows. This change in significance might have arisen because P_TRUST, which was omitted in Models 4 and 5, is correlated with both SUPPLIER ASSET SPECIFICITY and MODE. The coefficient for BREADTH is significant ($p < .01$) and positive, which implies that the more narrowly a component is used, the more likely governance choice is to shift from buy, to ally, to make. Both of these findings support Williamson's prediction that transaction attributes are matched in a transaction-cost-economizing way to governance structure. The coefficient for ASSEMBLER ASSET SPECIFICITY is nonsignificant, suggesting that buyer-specific investments have little influence on governance choice.

Our estimated level for preexisting interorganizational trust is significant ($p < .05$) and negative. The negative sign indicates that the greater the trust, the less likely an exchange is to be organized hierarchically. Supporting Hypotheses 1A and 1B (predicting a substitution effect), higher levels of trust shift the governance choice from make, to ally, to buy.

Before discussing the third stage of our model, we focus our attention on assessing the marginal effects of SUPPLIER ASSET SPECIFICITY, BREADTH, and P_TRUST, to compare the effects of asset specificity and preexisting trust on governance choice.⁵ Table 7 reports the marginal probabilities at the mean value, 20th percentile, and 80th percentile for each covariate, with all other covariates held at their means. We are mainly interested in comparing the magnitude of the marginal effect for P_TRUST at the 20th percentile with the magnitude of the marginal effect for asset specificity proxies like SUPPLIER ASSET SPECIFICITY at that percentile. As expected, higher SUPPLIER ASSET SPECIFICITY or BREADTH increases the marginal probability of an ally or make choice and decreases the marginal probability of either a buy or an ally choice. Conversely, higher levels of P_TRUST decrease the probability that make will be chosen and increase the probability that either ally or buy will be chosen. Perhaps the most interesting finding evident from Table 7 is that marginal effects are greater for P_TRUST than for either measure of asset specificity. Indeed, this finding suggests that managing preexisting trust deserves much attention if governance choice has substantial cost implications, as we assert in our theory. We conclude that trust may have a greater marginal effect than asset specificity on governance choice.

Table 6 reports results for our switching regression model of performance. Models 7, 8, and 9 report nested regressions analyzing exchange performance in the 72 exchanges organized as buy. We focus our attention on Model 9 because its coefficients are consistent with previous models and it offers not only the largest R² but also a significant improvement over Model 8. Only two coefficients are statistically significant (p < .05) in Model 9. The coefficient for INFO is positive, indicating that higher levels of information exchange correspond to higher levels of performance within the buy mode. The coefficient for P_TRUST is also positive, indicating that higher levels of trust correspond to higher

⁵ We note that the marginal effects of the regressors on the probabilities in an ordered probit do not equal regressor coefficients and depend on μ_1 and μ_2 . The marginal effects for any particular regressor, X_i , are calculated by:

$$\frac{\partial P_{Buy}}{\partial X_i} = -\phi(\mu_1 - \beta X) \beta_i; \quad \frac{\partial P_{Ally}}{\partial X_i} = [\phi(\mu_1 - \beta X) - \phi(\mu_2 - \beta X)] \beta_i; \quad \frac{\partial P_{Make}}{\partial X_i} = \phi(\mu_2 - \beta X) \beta_i$$

The marginal effect thus varies with the value of X_i .

performance within the buy mode of governance. This finding is consistent with Hypothesis 2A (predicting a complementary effect). The coefficients for our Mills ratios are nonsignificant, indicating that unobserved heterogeneity is not problematic in estimating coefficients for this mode of governance.

Models 10, 11, and 12 (see Table 6) report nested regressions for analyzing exchange performance in the 126 exchanges organized as ally. Only the coefficient for the Mills ratio is significant ($p < .05$) in Model 10. It is negative, which indicates that selection bias is an appropriate concern. Model 11 ($R^2 = .32$), which incorporates our three asset specificity measures, provides a significant and substantial improvement in explanatory power over Model 10 ($R^2 = .08$). The coefficient for SUPPLIER ASSET SPECIFICITY is positive and significant ($p < .01$), and the coefficient for BREADTH is positive and weakly significant, indicating that performance is higher when specific supplier investments are higher or when a component is used more narrowly by an assembler. Our inverse Mills ratio for ally again is significant ($p < .01$) and negative. Also, our constant term is highly significant and negative. Model 12 incorporates P_TRUST, which increases our R^2 to .49 and offers a significant improvement over Model 11. In Model 12, the coefficients for SUPPLIER ASSET SPECIFICITY ($p < .01$) and ASSEMBLER ASSET SPECIFICITY ($p < .10$) are significant and positive. These coefficients indicate that performance is higher when specific investments by either supplier or buyer are higher. The coefficient for P_TRUST is positive and significant ($p < .01$). Supporting Hypothesis 2B, pre-existing trust complements ally mode governance by improving exchange performance.

Models 13, 14, and 15 (see Table 6) report nested regressions for analyzing the level of performance in the 24 exchanges organized as make. No coefficient is significant in Model 13. Model 14, incorporating our asset specificity variables, is a significant improvement ($p < .01$) over Model 13 ($R^2 .55$ vs. 0.09). The coefficients for SUPPLIER ASSET SPECIFICITY and BREADTH are significant ($p < .05$) and positive. These estimates indicate that higher performance is correlated with higher levels of specific investments by the supply divisions and more narrow use of a component by the buying divisions. The inverse Mills ratio ($p < .05$) and the constant ($p < .01$) are significant, although the former is positive and the latter negative. The coefficient for the inverse Mills ratio indicates that assemblers would experience lower performance if the exchange were organized under ally or buy.

Model 15, which incorporates P_TRUST, offers no significant improvement in fit. The coefficient for P_TRUST is nonsignificant, which suggests that exchange performance is not significantly enhanced when preexisting trust is present (a complementary effect). Therefore, we reject Hypothesis 2C. Estimates for other coefficients are similar to those found in Model 14, except that the Mills ratio is now weakly significant.

We reestimated our switching regression model with CONFLICT in place of PERFORMANCE as the dependent variable. Table 8 reports our results. Only 216 observations were available for Models 16–24. Because the independent variables for our model of CONFLICT are the same for our model of PERFORMANCE and because most coefficient estimates are nonsignificant, we focus only on consistently significant findings. First, the negative and significant coefficient estimates for FORD in Models 19 through 21 indicate that Ford's ally exchanges experienced less conflict than did Chrysler's. Second, only the Mills ratios for make exchanges are statistically significant, albeit weakly, which indicates that exchanges organized internally experience less conflict than they would if organized otherwise. Finally, the coefficients for P_TRUST in Models 18 and 21 indicate that higher levels of trust correlate with lower conflict in the buy and ally modes.

DISCUSSION AND CONCLUSION

Is interorganizational trust a substitute for or complement to formal governance? The resolution of this debate is of more than academic interest. The disparate views described herein offer fundamentally different implications for how firms manage and support exchanges, and competing prescriptions for strong exchange performance. The substitution view suggests that exchange performance is superior when trust is present, allowing for less formal governance to safeguard an exchange, whereas the complementation view suggests that exchange performance is superior when trust operates together with formal governance and is thus independent of the governance structure used. Perhaps one reason for the disconnect between alternative perspectives on the role of trust and formal governance in exchange performance arises from the emergence of two parallel research streams: one on governance choice and another on exchange performance. Very few studies have considered both.

Seeking to resolve this debate, we focused on the impact of interorganizational trust existing prior to a given exchange, arguing that such trust complements the use of appropriate formal governance in shaping exchange performance. Trust lowers costs for all modes of governance whenever exchange hazards are present and thus enhances performance regardless of mode. Governance cost decreases because trust facilitates adaptation: exchange partners are more likely to avoid disputes or resolve them quickly (Gulati and Singh, 1998; Gulati et al., 2005). Reduced governance costs translate directly into better exchange performance.

Yet our theory also suggests that trust can lead to a substitution of less formal for more formal modes of governance. We argued that the governance-cost-reducing benefits of trust are greater for buy than for ally and greater for ally than for make. This differential impact of trust on governance costs over organizing modes arises because formal governance limits the range of adaptations that trust can facilitate. Make imposes greater constraints than ally, thus limiting the benefits of trust more in the former mode. The result of this differential impact is that the buy mode of governance, with the addition of trust, can be used over a broader range of exchange hazards than can buy without trust, which in turn offers lower governance costs and enhances exchange performance. Also, an ally exchange with trust can substitute over some range of exchange hazards for make, which enhances exchange performance. These substitutions over various types of governance of exchange relationships take place near the critical values of asset specificity, where buy and ally or ally and make have similar governance costs without trust. Thus, preexisting interorganizational trust is both a complement to and a substitute for formal governance modes and can greatly enhance exchange performance.

Our empirical analysis of the performance of exchange relationships for the sourcing of components in the U.S. auto industry broadly supports our theory. We saw a substitution effect: higher preexisting interorganizational trust corresponded to less hierarchical governance. The higher the level of trust, the more likely buy was, rather than ally, and ally rather than make. We also saw a complementary effect of trust on exchange performance. Trust enhanced performance for buy and ally and lowered conflict for both. It had no effect on make. Thus, trust complements buy and ally governance choices by lowering conflict and enhancing performance.

In sum, this study makes several distinct contributions to the study of interorganizational trust, governance, and exchange performance. First, it contributes to the existing body of research by explicating not only the relationship between interorganizational trust and formal governance but also the performance implications of each for exchange relationships. Although prior studies have focused on the relationship between formal and informal governance mechanisms (e.g., Gulati, 1995; Nooteboom et al., 1997), few studies have explicitly addressed the ramifications of such factors for exchange performance (e.g., Gulati et al, 2005).

Second, this study adds to the small number of empirical investigations that highlight the intricate interplay of trust and formal governance arrangements using field data. Prior studies on the interplay between governance and trust have been either conceptual (e.g., Dwyer et al., 1997; Hill, 1990; Nooteboom, 1996), experimental (e.g., Malhotra and Murnighan, 2002), or ethnographic (e.g., Larson, 1992). Finally, although much prior research on the interplay of trust and governance has been restricted to a particular governance mode—studies of the heterogeneity within ally arrangements (e.g., Gulati, 1995; Larson, 1992; Parkhe, 1993), for example—this investigation spans the whole continuum of governance arrangements, from hierarchical exchanges to simple open market transactions. In doing so, this study reveals how trust and formal governance influence exchange performance in all major governance modes.

This study also has important managerial implications. Our findings on substitute and complementary effects between trust and governance imply substantial costs and performance loss within exchanges if managers use an inappropriate mode of governance to structure an exchange. Managers who choose unwisely will either incur added costs by adopting and maintaining unneeded formal governance structures or expose themselves to potentially costly adaptation losses by relying on inadequate formal safeguards. Both outcomes can generate substantial costs (Mayer and Nickerson, 2004). Our findings suggest that the performance of exchange relationships benefits from preexisting interorganizational trust. Yet simply developing interorganizational trust may not be enough to fully realize available performance benefits; the level of benefit depends not only on generating trust but also on relying on it to support less

costly governance. Thus, ongoing and central questions for managers should concern not only how to create trust but also how to obtain its full benefits.

Several areas of potential improvement are worth noting to aid future research efforts. First, our study suggests that it is empirically important to distinguish between preexisting trust and trust emerging during an exchange through ongoing interaction. Our cross-sectional data forced us to identify preexisting trust econometrically. Panel data on trust before, during, and after exchanges would greatly enhance understanding of the timing and complex interplay between trust and governance choice. Relatedly, recent work has suggested the need for a more dynamic approach to understanding exchange partner selection and the emergence of trust. For instance, Bercovitz et al. (2006) found that exchange partners that exceed expectations are more likely to enter future exchanges. Gulati and Sytch (2008) uncovered the intricate relationship between a history of interfirm interaction and formation of interorganizational trust. This relationship, positive in later stages, is characterized by initial ambivalence and virtually nonexistent trust, because opportunities for demonstrating trustworthiness and evidence for judging the trustworthiness of a partner are insufficient. Further, history ceases to matter once partners are far along into transacting with each other, since processes of learning about and identification with the partner subside. These dynamics, which are related to the emergence of trust and to its possibly diminishing marginal returns, require further scholarly investigations.

A more specific caveat is that we measured PERFORMANCE and CONFLICT in reference to the best alternative supplier for a commodity. We of course would have preferred an archival and objective measure of performance for each exchange, but we had no access to such data owing to issues of confidentiality. An absolute qualitative measure (i.e., How well does this supplier perform compared with all suppliers?) would also be problematic because of the great variety of components and the reliability issues this diversity creates. That is, performance in one component area may not be equivalent to performance in another. Thus, in view of feedback from managers and buyers, we asked respondents to compare each focal supplier of each component to the best alternative supplier for the same component so that the performance measure would be comparable within a class of components. This approach may have led to certain biases. For instance, our discussion with buyers suggested that a next-best supplier

might be willing in some contexts to make idiosyncratic investments similar to those of the actual supplier, but the alternate supplier could still be viewed as inferior owing to lack of trust. In this case, we would expect the coefficients for the effect of asset specificity on performance to be biased downward. It also could be the case that the next best supplier could be equally trusted, which would also bias our coefficients downward. In sum, we think that our measurement approach would bias our coefficients toward zero, which suggests that our estimates are conservative.

One more related caveat with our measure of performance arises from our measuring exchange performance only from the standpoint of the assembler and at one point in time. While an ideal approach would have been to obtain dyadic data with performance measures from both partners conducted over a period of time, this was not feasible with our sample. Consistent with most prior studies (e.g., Gulati and Sych, 2007; Parkhe, 1993; Zaheer and Venkatraman, 1995) we relied upon a one-sided cross-sectional measure of performance.

Another important caveat to this research is that we chose not to consider uncertainty. Technological, behavioral and demand uncertainty all could play important roles in determining governance choice and performance for exchanges. We did not include uncertainty in our study for several critical reasons. First, we think that given the central focus of this work on asset specificity, formalizing our theory around this factor is consistent with the way much of the literature has developed (e.g., David and Han, 2004; Masten et al., 1991; Shelanski and Klein, 1995). Including uncertainty would offer only incremental value and would reduce parsimony and prevent a focus on the central issue of the interplay among trust, governance, and performance. Also, we are unaware of any work examining asset specificity with uncertainty and rejecting asset specificity as the driver of Williamson's theory. Furthermore, if including uncertainty would introduce not one but multiple additional measures, given recent conceptual work revealing different types of uncertainty.

In sum, our approach was consistent with how much of the conceptual and empirical research in this burgeoning domain has approached these issues. Ultimately, making a trade-off between conceptual and empirical complexity and parsimony and focus, we favored the latter, especially given long precedent in the vast literature on transaction costs. Nonetheless, we did conduct some analyses with two measures

of uncertainty (volume uncertainty and technical uncertainty), which we collapsed into one using an alpha score, and included eight additional variables (two measures of uncertainty plus six interaction terms between uncertainty and asset specificity measures) into our models. In results not reported here, our main effects did not change significantly. The incorporation of various types of uncertainty into the model remains an open and important question worthy of further research.

Notwithstanding these caveats, our paper advances the literature on trust and interorganizational exchange in several ways. First and most importantly, it develops and empirically tests our theory that interorganizational trust always complements governance choice and can also facilitate the substitution of a less hierarchical governance mode for a more hierarchical one. This theory brings together two seemingly disparate views of preexisting interorganizational trust as either a substitute for or complement to governance choice. We suggest that trust can be both. The implication is that both trust and the use of appropriate governance arrangements shape exchange performance.

Our findings support and further develop many of the claims of transaction cost economists (e.g., Williamson, 1991). As asset specificity deepened, we found that the governance mode shifted from buy to ally to make. In particular, we found that specific investments by suppliers and breadth of product use were critical predictors of governance choice. Such investments also clearly affect exchange performance for ally and make governance, as performance increases with supplier-specific investment.

Unfortunately, lack of a direct measure of economic or transaction costs made it difficult to assess the effects of these costs on financial performance. Although we distinguish between preexisting trust and trust arising during the exchange, this merits further investigation. Furthermore, scholars have also distinguished between calculative and noncalculative trust. More research is needed to more fully identify and evaluate impact of each distinct facet of trust on organizational choice and performance.

This paper utilized methodological elements not typically employed in research on trust. For example, endogeneity has not been much of a concern in empirical investigations on trust. Yet it is likely that trust is indeed endogenous to a variety of antecedents, so that, absent controls for endogeneity, an analysis of the performance effects of trust will likely yield biased coefficient estimates. Indeed, our results not only support our theory but also demonstrate that correcting for endogeneity is warranted.

Our paper is also important to the growing body of research on hybrid or alliance forms. Our analysis provides one of the first empirical assessments involving the trichotomy of buy, ally, and make. This trichotomous choice model is particularly important given the growing interest in ally modes of organization over the past decade (Dyer, 1997; Gulati, 2007; Zaheer and Venkatraman, 1994). Ours is one of the first empirical examinations to include ally along with buy and make (Gulati et al, 2005). It is also of note that although the automobile industry has been the context for many empirical transaction cost economics studies, none of these has had the breadth of observations and microanalytic detail of our study. For instance, even though transaction cost economics is predicated on transaction as the unit of analysis, most studies use aggregated units of analysis, such as all the transactions involving a particular component (e.g., Masten et al., 1989), and rarely evaluate performance. Alternatively, automotive industry studies that have used the transaction as the unit of analysis have had far less data than ours (e.g., Walker and Weber, 1987). Thus, our analysis is a valuable extension of both studies of trust and governance and those based in the automobile industry.

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Table 1: Measures and Survey Questions

<i>Dependent Variables</i>	<i>Survey Questions</i>
TRUST	A constructed scale* measuring the opinion of the buyer about the supplier compared with the best alternative supplier for this commodity. The three questions concerned whether the supplier has always been even handed in its negotiation with your company, this supplier may use opportunities that arise to profit at your expense, and you trust this supplier to treat you fairly ($\alpha = 0.80$)
MODE	0 if Buy, 1 if Ally, 2 if Make.
PERFORMANCE	A constructed scale* measuring the opinion of the buyer about the supplier compared with the best alternative supplier for this commodity. The ten questions concerned the supplier's price competitiveness, Support and services, flexibility in production, product quality, product innovations, overall performance, average past target ratio, average past price change rate, average defect rate, and improvement in average defect rate. ($\alpha = 0.93$)
CONFLICT	A constructed scale* measuring the opinion of the buyer about the supplier compared to the best alternative supplier for this commodity. The three questions concerned the supplier's frequency of significant disagreements, the ease of negotiation over sharing cost-engineering changes, and the ease of negotiation over sharing cost-material cost increases. Higher levels of this construct equate to higher levels of conflict ($\alpha = 0.78$).
<i>Covariates</i>	
EXPERIENCE:	Based on past experience you cannot with complete confidence rely n this supply to keep promises made to you. (7-point Likert scale.)
COMPONENT HISTORY	Logarithm of the number of years assembler has purchased component from the supplier.
ORGANIZATION HISTORY	Logarithm of the number of years assembler has purchased any component from the supplier.
BUYER TENURE	Logarithm of the number of years that the assembler's buyer has been with the company.
BUYER HISTORY	Logarithm of the number of years that the assembler's buyer has personally dealt with the supplier.
SUPPLIER ASSET SPECIFICITY	This supplier has made significant investments in terms of equipment, facilities, and engineering designed specifically to meet the buyer's supply requirement for the commodity. (7-point Likert scale.)
BUYER ASSET SPECIFICITY	Your company has made significant investments in tooling and equipment that are specific to your relationship with the supplier. (7-point Likert scale.)
BREADTH	Ordered categorical measure of the extent to which a commodity type is used company wide (0) , more than one platform (1), one platform (2), one model (3), or in one trim line (4).
<i>Control Variables</i>	
FORD	Dummy variable to identify assembler specific effects; dummy variable FORD
INFO	Extent to which you share the ten following kinds of business information: quality information, inventory information, schedule and delivery information, detail cost information, marketing information, long-term volume projections, manufacturing process information, proprietary technical information, design information, and production capacity. (7-point Likert scale.) ($\alpha = 0.81$)
COMPONENT REVENUE	Categorical measure of the annual dollar value of purchases from supplier for focal exchange. The qualitative categories are less than \$10 MM (0), \$50 MM (1), \$100 MM (2) or more than \$100 MM (4).
OVERALL REVENUE	Categorical measure of the annual dollar value of purchases from supplier for all exchanges between the buyer and supplier. The qualitative categories are less than \$10 MM (0), \$50 MM (1), \$100 MM (2) or more than \$100 MM (4).

* All constructed variables were calculated by standardizing the items and calculating the average of the items.

Table 2: Factor Loadings for Performance Constructs

	Factor 1	Factor 2	Factor 3
<i>Buyer's Opinion of supplier compared with the best alternative supplier for this commodity</i>			
1 Price competitive	0.620	-0.127	0.356
2 Support and services	0.764	0.096	0.019
3 Flexibility in production	0.795	0.092	0.112
4 Product quality	0.817	0.174	-0.261
5 Product innovations	0.738	0.074	-0.114
6 Overall performance ¹	0.904	0.134	-0.019
7 Average past target ratio ²	0.698	-0.064	0.368
8 Average past price change rate ³	0.678	-0.107	0.399
9 Average defect rate ⁴	0.793	0.167	-0.321
10 Improvement in average defect rate ⁵	0.828	0.128	-0.206
11 Frequency of significant disagreements ⁶	-0.398	0.487	0.158
12 Ease of negotiation over sharing cost-engineering changes ⁷	-0.260	0.731	0.111
13 Ease of negotiation over sharing cost-material cost increases ⁸	-0.173	0.711	0.109
Eigenvalue	6.149	1.425	0.710
Proportion of Variance eigenvector explains	0.753	0.175	0.087

¹ We include "Overall Performance" as an item in battery of questions about the buyer's opinion of suppliers even though it can be viewed as a summary category. Alternatively, this item can be viewed as a different category of performance. As a robustness check we re-ran the factor analysis as well as all analysis and verified that our results persist.

² Target-price ratio = (actual part price at market introduction)/(target price your company set when it selected the supplier for the part).

³ Price change rate = average annual rate of price change after the market introduction (excluding the price change when the part's design was changed due to engineering changes in specification).

⁴ Defect rate = (number of defective parts)/(number of parts received).

⁵ Improvement in defect rate = average annual rate of defect change after market introduction.

⁶ "During the past year how often were there significant disagreements between your business unit and this supplier?"

⁷ "How easy are negotiations between your business unit and the supplier over sharing the burden of cost (not exactly covered by the contract) when your business unit requests engineering changes?"

⁸ "How easy are negotiations between your business unit and the supplier over sharing the burden of cost (not exactly covered by the contract) when the supplier's raw material costs increased?"

Table 3: Summary Statistics and Correlations (N=216)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 TRUST																
2 GOVERNANCE MODE	-0.054															
3 PERFORMANCE	0.589	-0.096														
4 CONFLICT	-0.474	-0.033	-0.369													
5 FORD	0.089	-0.078	0.134	-0.137												
6 INFO COMPONENT	0.019	-0.034	0.186	-0.048	0.403											
7 REVENUE	-0.102	0.173	-0.103	0.072	-0.095	0.019										
8 OVERALL REVENUE	-0.059	0.269	-0.077	0.087	-0.002	0.078	0.661									
9 BUYER TENURE	0.266	-0.059	0.227	-0.077	0.288	0.065	0.099	0.114								
10 BUYER HISTORY	0.136	0.157	0.083	-0.055	0.072	-0.205	0.016	-0.003	0.196							
11 COMPONENT HISTORY ORGANIZATION	-0.075	0.253	-0.123	0.114	-0.117	0.006	0.268	0.252	0.061	-0.004						
12 HISTORY	-0.129	0.277	-0.208	0.138	-0.004	0.024	0.197	0.405	0.102	0.013	0.595					
13 BREADTH SUPPLIER ASSET	0.094	0.231	-0.035	-0.063	-0.222	-0.185	0.053	0.089	-0.031	0.037	0.011	0.055				
14 SPECIFICITY BUYER ASSET	0.161	0.133	0.275	-0.077	0.131	0.181	0.012	0.046	0.233	0.174	-0.071	-0.016	0.049			
15 SPECIFICITY	-0.062	0.073	0.040	-0.055	0.073	0.253	0.142	0.198	-0.009	0.044	0.028	0.056	0.070	0.250		
16 EXPERIENCE	-0.634	0.127	-0.527	0.370	0.018	0.054	-0.022	0.033	-0.229	-0.024	0.122	0.146	-0.046	-0.116	0.081	
Mean	0.000	1.773	-0.003	0.000	0.505	0.000	2.551	3.194	2.371	0.536	2.480	2.942	2.491	5.704	4.699	3.130
Std. Dev.	0.842	0.625	0.767	0.831	0.501	0.616	1.077	1.011	0.938	0.564	0.846	0.720	1.357	1.151	1.757	1.482
Min	-2.742	1	-2.792	-1.994	0	-2.264	1	1	-1.100	-1.792	-1.833	0	1	2	1	1
Max	1.5573	3	1.926	2.104	1	1.333	4	4	3.714	1.153	4.317	4.317	5	7	7	7

Table 4: Summary Statistics for Buy, Ally, and Make

Variable	<i>Buy (n=72)</i>				<i>Ally (n=126)</i>				<i>Make (n=24)</i>			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
TRUST	0.030	0.769	-2.249	1.333	0.015	0.868	-2.742	1.557	-0.170	0.933	-2.025	1.557
MODE	1	0	1	1	2	0	2	2	3	0	3	3
PERFORMANCE	-0.002	0.760	-1.791	1.701	0.068	0.750	-2.792	1.926	-0.461	0.747	-1.938	1.425
CONFLICT	-0.001	0.790	-1.320	2.104	0.032	0.843	-1.994	2.104	-0.164	0.907	-1.770	1.882
FORD	0.486	0.503	0	1	0.579	0.496	0	1	0.208	0.415	0	1
INFO	0.027	0.686	-2.264	1.333	-0.008	0.524	-1.218	0.979	-0.028	0.775	-1.133	1.333
COMPONENT REVENUE	2.417	1.045	1	4	2.548	1.070	1	4	3.208	1.021	1	4
OVERALL REVENUE	2.875	1.061	1	4	3.294	0.972	1	4	3.750	0.608	2	4
BUYER HISTORY	0.374	0.591	-1.099	1.070	0.632	0.525	-1.792	1.179	0.485	0.695	-0.875	1.070
COMPONENT HISTORY	2.274	0.763	0	4.317	2.480	0.753	0	4.317	3.109	1.193	-1.833	4.248
ORGANIZATION HISTORY	2.757	0.676	1.099	4.317	2.942	0.729	0	4.317	3.534	0.350	2.996	4.248
SUPPLIER ASSET SPECIFICITY	2.069	1.271	1	5	2.627	1.384	1	5	2.917	1.248	1	5
BUYER ASSET SPECIFICITY	5.500	1.199	2	7	5.762	1.148	2	7	5.958	0.806	4	7
BREADTH	4.819	1.673	1	7	4.429	1.813	1	7	5.833	1.050	2	7
EXPERIENCE	2.889	1.240	1	7	3.183	1.577	1	7	3.458	1.587	1	6

Table 5: Interorganizational Trust and Governance Mode

	<i>Interorganizational Trust</i>			<i>Governance Mode</i>		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
FORD	0.140	0.153	0.076	-0.179	-0.137	-0.090
	(0.157)	(0.157)	(0.124)	(0.181)	(0.185)	(0.188)
INFO	-0.011	0.022	0.097	-0.044	-0.036	-0.032
	(0.138)	(0.127)	(0.100)	(0.169)	(0.179)	(0.183)
COMPONENT REVENUE	-0.072	-0.063	-0.145 *	-0.010	0.002	-0.016
	(0.089)	(0.086)	(0.065)	(0.095)	(0.093)	(0.095)
OVERALL REVENUE	0.011	0.007	0.074	0.334 **	0.311 **	0.317 **
	(0.089)	(0.087)	(0.060)	(0.098)	(0.099)	(0.099)
SUPPLIER ASSET SPECIFICITY		0.119 †	0.030		0.137	0.176 *
		(0.067)	(0.054)		(0.077)	(0.076)
BUYER ASSET SPECIFICITY		-0.060	-0.020		0.000	-0.019
		(0.041)	(0.033)		(0.054)	(0.054)
BREADTH		0.084	0.061		0.156 *	0.182 **
		(0.057)	(0.039)		(0.064)	(0.068)
P_TRUST						-0.302 *
						(0.142)
BUYER TENURE			0.085			
			(0.073)			
BUYER HISTORY			0.147			
			(0.096)			
COMP HISTORY			0.112			
			(0.090)			
ORG HISTORY			-0.140			
			(0.093)			
EXPERIENCE			-0.348 **			
			(0.041)			
CONSTANT	0.080	-0.547	0.814 *			
	(0.225)	(0.354)	(0.383)			
μ_1				0.473	1.601	1.790

μ_2				(0.329)	(0.549)	(0.538)
				2.263	3.452	3.667
				(0.348)	(0.574)	(0.560)
R^2	0.01	0.06	0.48			
F-Test		3.08 *	3.60 **			
Pseudo R^2				0.05	0.07	0.08
χ^2					2.94 *	18.23 **

Table 6: Switching Regression Model of PERFORMANCE (N = 222)

	<i>Buy</i>			<i>Ally</i>			Model 13
	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	
FORD	-0.137 (0.227)	-0.088 (0.231)	-0.128 (0.209)	0.111 (0.208)	0.009 (0.159)	-0.057 (0.131)	0.625 (0.660)
INFO	0.349 ** 0.118	0.325 * (0.124)	0.297 ** (0.100)	0.161 0.217	-0.017 (0.158)	-0.005 (0.138)	-0.272 (0.231)
SUPPLIER ASSET SPECIFICITY		0.056 (0.109)	-0.114 (0.088)		0.367 ** (0.081)	0.220 ** (0.070)	
BUYER ASSET SPECIFICITY		0.032 (0.067)	0.004 (0.052)		0.007 (0.040)	0.055 † (0.032)	
BREADTH		0.122 (0.098)	-0.065 (0.081)		0.107 † (0.055)	-0.046 (0.051)	
P_TRUST			0.989 ** (0.187)			0.637 ** (0.109)	
Mills ratio-buy	0.117 (0.383)	0.443 (0.448)	-0.419 (0.401)				
Mills ratio-ally				-0.466 * (0.227)	-1.136 ** (0.260)	-0.432 * (0.206)	
Mills ratio-make							0.479 (0.537)
CONSTANT	0.173 (0.437)	-0.237 (0.460)	0.338 (0.449)	-0.126 (0.152)	-2.684 ** (0.588)	-1.423 ** (0.535)	-1.338 (0.787)
R ²	0.09	0.13	0.40	0.08	0.32	0.49	0.09
F-stat		0.87	28.05 **		7.22 **	34.04 **	

† p<.10; * p<.05; ** p<.01

Table 7: Marginal Effect of Regressors*

	<i>Marginal Effects on Probability</i>		
	Buy	Ally	Make
SUPPLIER ASSET	-0.065	0.042	0.023
SPECIFICITY at 20th percentile			
SUPPLIER ASSET	-0.062	0.034	0.027
SPECIFICITY at mean			
SUPPLIER ASSET	-0.054	0.017	0.037
SPECIFICITY at 80th percentile			
BREADTH at 20th percentile	-0.071	0.052	0.019
BREADTH at mean	-0.064	0.036	0.028
BREADTH at 80th percentile	-0.054	0.014	0.040
P_TRUST at 20th percentile	0.098	-0.041	-0.057
P_TRUST at mean	0.106	-0.059	-0.047
P_TRUST at 80th percentile	0.113	-0.075	-0.038

* All covariates except focal one set to mean.

Table 8: Switching Regression Model of CONFLICT (N = 216)

	<i>Buy</i>			<i>Ally</i>			Model 22
	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21	
FORD	0.090 (0.290)	-0.036 (0.286)	0.081 (0.248)	-0.399 ** (0.199)	-0.389 † (0.201)	-0.282 † (0.161)	-1.2 (0.72)
INFO	0.038 (0.159)	0.077 (0.135)	0.082 (0.128)	-0.084 (0.193)	-0.077 (0.190)	-0.064 (0.166)	0.6 (0.40)
SUPPLIER ASSET SPECIFICITY		-0.019 (0.085)	0.061 (0.078)		-0.059 (0.100)	0.025 (0.094)	
BUYER ASSET SPECIFICITY		-0.063 (0.060)	-0.030 (0.058)		0.018 (0.052)	-0.051 (0.054)	
BREADTH		-0.256 ** (0.096)	-0.161 (0.107)		-0.030 (0.082)	0.031 (0.081)	
P_TRUST			-0.783 ** (0.187)			-0.602 ** (0.132)	
Mills ratio-buy	-0.087 (0.352)	-0.693 (0.418)	-0.546 (0.359)				
Mills ratio-ally				0.029 (0.309)	0.154 (0.425)	0.108 (0.421)	
Mills ratio-make							-1.0 (0.80)
CONSTANT	-0.134 (0.424)	0.248 (0.367)	-0.428 (0.424)	0.267 (0.153)	0.635 (0.710)	0.232 (0.680)	1.7 (1.30)
R ²	0.01	0.12	0.32	0.07	0.08	0.23	0.0
F-stat		4.01 *	17.49 **		0.14	20.88 **	

† p<.10; * p<.05; ** p<.01

Figure 1: Governance Costs as a Function of Asset Sp

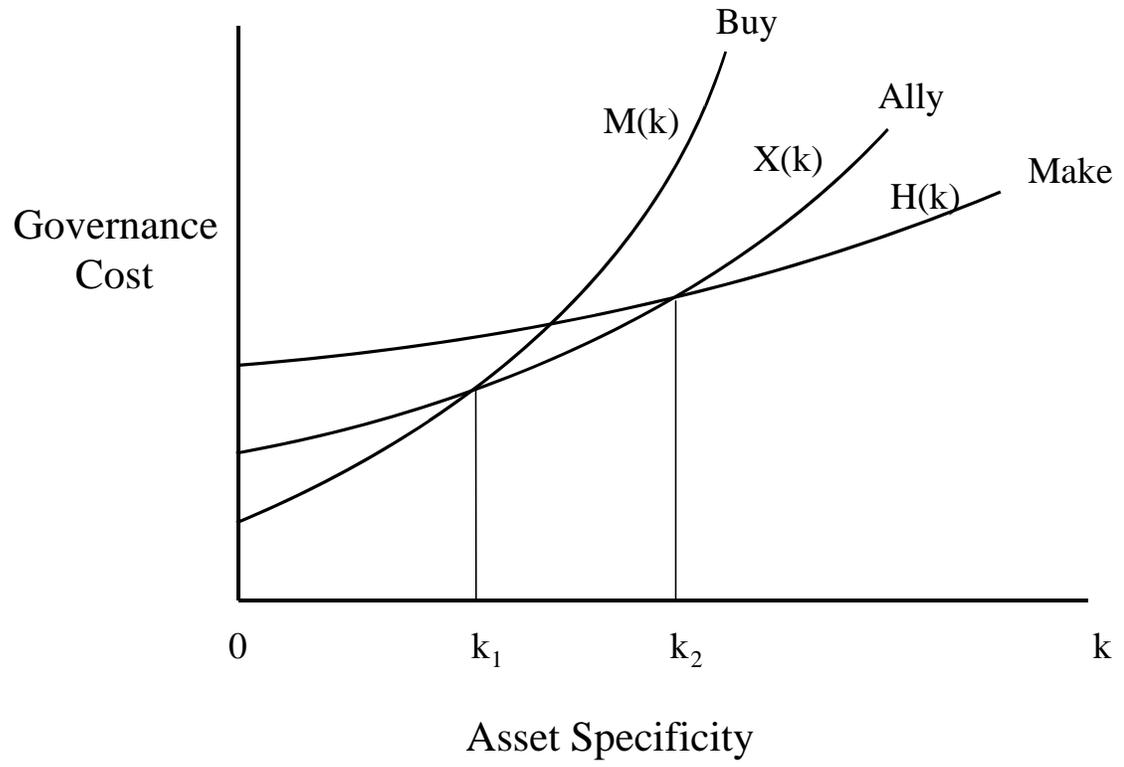


Figure 2: Governance Costs as a Function of Asset Specificity

