Alternative Origins to Interorganizational Trust: An Interdependence Perspective on the Shadow of the Past and the Shadow of the Future

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Despite the widespread acceptance of trust as an informal governance institution, our understanding of its origins is nascent. Our review of the literature identified two distinct explanations: Trust emerges from either a shadow of the past (i.e., prior history) or a shadow of the future (i.e., expectations of continuity). In this paper we develop and empirically examine a third perspective: The potential interdependence of these two explanations. Our results strongly endorse this third perspective. We find that prior history does not directly affect trust; instead, the observed positive relationship between the two is mediated by expectations of continuity. Consistent with this result, analyses further show that a longer prior history makes the effect of continuity on trust much stronger than a shorter prior history. We interpret these findings as suggesting: (1) the criticality and centrality of a shadow of the future (i.e., a forward-looking calculus) in generating trust in interorganizational exchanges and (2) that a shadow of the past plays a facilitating, albeit indirect, role in trust building. Our conceptual model also extends the conventional use of the transaction cost logic to show how reciprocal investments in asset specificity and uncertainty drive expectations of continuity, and consequently, interorganizational trust. Our results also show, unexpectedly, that prior history has a direct negative effect on trust after specifying the mediating path of continuity. Our moderation analysis indicates when this effect occurs: When weak expectations of continuity exist, trust is lower for exchanges characterized by a longer prior history, suggesting a potential darkside of overembedded ties.

Key words: interorganizational trust; transaction cost economics; evolution of cooperation; asset specificity; uncertainty

Over the past twenty years, research has increasingly focused on the benefits of trust in interorganizational exchanges. The emphasis on trust as an informal social institution (Macaulay 1963; Macneil 1978, 1980; Granovetter 1985) initially grew to counter the transaction cost logic that formal governance institutions provide for the optimal governance of complex exchanges (Williamson 1996). For social theorists, when trust exists, parties to both organizations hold a collective trust orientation toward each organization (Zaheer et al. 1998), and thus display a willingness to rely on and be vulnerable to the other organization (Rousseau et al. 1998). Consistent with this governance objective, studies show that trust and its related normative conventions decrease transaction costs (Larson 1992, Artz and Brush 2000), improve satisfaction with exchange performance (Zaheer et al. 1998, Poppo and Zenger 2002), and improve knowledge transfer (Szulanski et al. 2004).

Although these studies validate the important role of trust in regulating behavior in interorganizational exchanges, we are less certain of its precise origins. For some, trust is an outcome of a forward-thinking assessment of costs and benefits: When a sufficient shadow of the future exists, the benefits of acting in a cooperative fashion outweigh its costs. Thus, an expectation of continued interaction, the “shadow of the future,” is necessary to promote cooperation, and perceptions of trust (Telser 1980, Axelrod 1984, Ring and Van de Ven 1992, Parkhe 1993). For this game-theoretical logic, prior history does not matter—“the past is merely a sunk cost” (Zaheer and Harris 2005, p. 181).

A contrary, alternative position is that history matters: The shadow of the past transforms an undersocialized relationship to one in which the history of prior relations and interactions form a social institution capable of building trust (e.g., Blau 1964; Granovetter 1985, 1992; Gulati 1995). According to this view, a party’s trust of the other is developed over time by accumulating through the relationship exchange experiences that indicate the kind of behavior to expect from the other party (e.g., Luhmann 1979, Larson 1992, Zajac and Olsen 1993, Lewicki and Bunker 1996). Once trust exists, it is reinforced and supported through the
“social-psychological bonds of norms, sentiments and friendships” as well as the faith in the morality and goodwill of others (Ring and Van de Ven 1994, p. 93; Uzzi 1997). Thus, trust, if routed through a shadow of the past, does not dissipate when an end game unexpectedly occurs—nor does it emerge because of a forward-thinking calculus.

Although the shadows of the past and future are dominant perspectives in the literature, empirical confirmation is surprisingly sparse, and no study has simultaneously examined these two origins or their potential interplay (see Zaheer and Harris 2005, p. 182). In particular, although prior work shows that organizational perceptions of future exchange encourage cooperation (Heide and Miner 1992), it provides only mixed support on whether the shadow of the past encourages trust. For example, some find that prior history is associated with trustlike normative conventions (Poppo and Zenger 2002), whereas others find that prior history is unrelated to trust after controlling for the impact of communication and shared values on trust (Young-Ybarra and Wiersema 1999).

Moreover, although not widespread in the literature, some contend that these logics may not accurately describe the formation of trust in interorganizational exchanges. Gambetta (1988, p. 228), for instance, questions whether the game-theoretic prediction of cooperation occurs “whatever the initial move and the succession of further moves.” Consistent with this critique, Arino and Torre’s (1998) case study demonstrates that despite a shadow of the future, if parties do not develop behavioral patterns that provide for equity, then premature dissolution of the exchange relationship is likely. Others claim that over time, learning is a more probable outcome than trust from prior interactions between exchange partners (Zollo et al. 2002, p. 704). Thus, unresolved in this current debate is how, and which of, these two origins account for the emergence of trust (Zaheer and Harris 2005).

Clarifying the origins to trust is the theoretical and empirical contribution of this paper. We challenge the conventional logics underlying the shadow of the past and future by developing an interdependence perspective: The past and the future are necessarily intertwined as origins to trust. First, we argue that, over time, prior experience results in greater learning between the two partners, which may lead parties to have greater expectations of continuity, and consequently trust. This logic implies that the past does not have a direct positive effect on trust; instead, the past only indirectly affects trust through a shadow of the future. That is, expectations of continuity may account for the relationship between prior experience and trust. Second, we propose that exchanges characterized by a longer shadow of the past and future may have a synergistic effect on trust—that is, this combination may have a greater effect on trust than any other combination of these factors. The past represents exchanges that have developed strong social institutions that support the development of trust—yet without a shadow of the future, an endgame looms large on the horizon and parties deviate from the prevailing norms and routines to maximize self-interest. Similarly, even when continuity is expected, without a long history the requisite social institution is relatively weaker and underdeveloped, leading to lower levels of trust. This view counters the game-theoretic logic that only the future matters as a determinant of trust—the shadow of the past may play a facilitating role in influencing trust as well.

In sum, our study not only examines the two origins independently, but also advances an alternative position that may more accurately describe the emergence of trust in interorganizational exchanges. Our interdependence perspective challenges the conventional logic that only prior history or the future matters, and instead suggests the prominence of both the past and a forward-thinking calculus in the evolution of trust. In this way, we contribute to the literature by commenting on the unresolved question of how and whether the shadows of past or future account for trust in interorganizational relationships. Figure 1 depicts our conceptual model.

### The Origins of Trust

Although there are various conceptualizations of trust, in interorganizational relationships Zaheer et al. (1998, p. 143) define trust as an exchange partner’s expectation that the other party can be relied on, will behave as predicted, and will act fairly. This definition emphasizes reliability, predictability, and fairness as the focal components of trust, with an assumption that trust is relational and that the possibility of betrayal is an inherent feature of trust.

### Shadow of the Future

One economic explanation for the emergence of trust is that it is a cost-effective safeguard, conditional upon the existence on extrinsic incentives. Central to this logic is that trust follows from cooperation, and that the formation of trust is deliberate—it is based on a rational assessment of forward-looking conditions such that it can be rewarding to behave as if trusted others,

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**Figure 1** The Conceptual Model

- **Exchange hazards**
  - Asset specificity
  - Uncertainty
- **Expectation of continuity**
- **Trust**
- **Prior exchange history**
- **H1**
- **H2**
- **H3a**
- **H3b**
- **H4a**
- **H4b**
even in vulnerable situations. When the expected payoff from cooperation outweighs the gain from self-interested behavior, cooperation emerges through reciprocity: First you act in a cooperative manner, then I do. The stability of reciprocal acts of cooperation depends critically on sufficient value being placed on future returns and on the expected time horizon for future exchange (Axelrod 1984, p. 124).

In general, this game-theoretical logic advances that the longer the expected time horizon, the higher the benefits from cooperation. For example, when the expected payoffs from a finite series of cooperative exchanges are known and large compared to the gains of defecting in the present (and losing the stream of returns from future business), parties choose to cooperate. Alternatively, if there exists a determinate endpoint, reflecting a finite time horizon or a one-shot transaction, cooperation may disintegrate (Telser 1980, p. 44). Further work has shown that cooperation may also occur when a nonzero probability of continuity exists. For example, both parties may adopt, though not necessarily communicate, a strategy that if the other ever acts opportunistically, they shift from a high cooperative return to a low return thereafter. When a party knows that it is in their best financial interest to cooperate fully, and assuming that the other party is also aware of this condition, then cooperation can dominate (Hill 1990, p. 506; Parkhe 1993, p. 800). This situation is believed to best characterize stable close working relationships (e.g., buyer-supplier transactions as well as alliances) between firms.

Many endorse this game-theoretical logic as a likely origin of cooperative processes and thus trust in interorganizational exchanges. When business arrangements are established by commitments to future interaction, this self-enforcing mechanism enhances cooperation and performance of market exchanges by enabling trust (Telser 1980, Ring and Van de Ven 1992, Dyer and Singh 1998). Parties choose to cooperate in many value-sharing activities that are difficult to specify contractually, such as sharing private information or tacit knowledge, because “they have credible assurances that they will be rewarded for them” (Dyer and Singh 1998, p. 671). For example, sharing private proprietary information is extremely risky should it leak to competitors (or be used by the supplier to create products for the competition). Therefore, parties share such information when there is a sufficiently long window of future exchange such that the gains from repeat business outweigh the benefits one could gain from the opportunistic use of proprietary information. Similarly, given expectations of future interaction, parties collaborate with one another to facilitate adaptation rather than use this opportunity for self-gain by strategically disclosing information to one another (Heide and Miner 1992). Cooperative assurances are built through reciprocal acts and depend critically upon a significantly long time horizon of future exchange. Without a window of continuity, short-term gains would derail trust.

**Hypothesis 1 (H1).** The greater the expectations of continuity, the greater the level of interorganizational trust.

**Shadow of the Past**

A second alternative origin of trust is the shadow of the past. According to this view, trust is built incrementally over time through prior interaction and experiences (Blau 1964, Gulati 1995), and as such is an “emergent feature of a social structure that creates and reproduces them through time” (Uzzi 1997, p. 45). One critical aspect of the social structure is the social institution, the norms and codes of conduct that support the development and use of trust in economic exchanges (e.g., Macaulay 1963; Macneil 1978, 1980; Granovetter 1985). For example, Gulati (1995, p. 92) explains, “the idea of trust...is based on the premise that through ongoing interaction, firms learn about each other and develop trust around norms of equity.” Moreover, ongoing interaction sanctions behavior, and in doing so forms a credible basis for developing mutual expectations (Macaulay 1963, Larson 1992). Consistent with this, many note that information exchange and joint problem-solving arrangements are necessary practices that both regulate exchange behavior and facilitate justice and trust (Macneil 1978, Uzzi 1997, Husted and Folger 2004). McEvily et al. (2003, p. 92) further contend that over time trust may emerge as an organizing principle, capable of facilitating the coordination of work and routines between the two organizations.

According to this logic, prior history creates a unique path to trust. Interestingly, this logic provides little to no economic motivation for the origin (and sustenance) of trust. Rather, the central motivation is to promote shared identities in social relationships and thus fulfill basic human needs such as social belongingness (Turner 1987, Granovetter 1992, Uzzi 1997). Trust augments commitment to a relational view of exchange—parties view exchange as a cooperative and mutual undertaking and develop practices and routines that can benefit the exchange as a whole.

While this logic is well represented in the literature, empirical tests are scarce and present contradictory results (e.g., Young-Ybarra and Wiersema 1999, Poppo and Zenger 2002). Some also question the path dependency of this social logic. They contend that prior history may not be necessarily related to trust because trust is likely a scarce resource; instead, cooperation (Gambetta 1988) or learning (Mayer and Agyes 2004, Zollo et al. 2002) are more likely outcomes of ongoing interaction. Given the dominant logic that trust emerges from prior history, we predict:

**Hypothesis 2 (H2).** The longer the prior exchange history, the higher the level of interorganizational trust.
The Interdependence of the Shadows of the Past and Future

Contrary to the preceding logics that the shadows of the past or future are independent and competing accounts for the emergence of trust, we present an alternative account for the emergence of trust in interorganizational exchanges: The past and the future are necessarily intertwined as origins of interorganizational trust. We offer two ways in which prior history and expectations of continuity may be interdependent. First, the shadow of the past is not a complete explanation for the emergence of trust. That is, only when the past is linked to a path of the future does the past lead to trust. This is a very strong statement, implying that the shadow of the future explains why or how the past causes trust. Analytically, this logic requires a test of mediation (Baron and Kenny 1986). Second, exchanges characterized by a longer shadow of the past and future lead to a greater effect on trust, i.e., the shadows of the past and future have a synergistic effect on building trust. Analytically, this logic requires a test of moderation and informs our mediation analysis by showing that prior history may have a facilitating effect on trust through its interaction with continuity expectations.

Our mediation argument is based on the logic that prior history generates learning, to a nontrivial degree, that increases perceptions of stability and thus continuity of interorganizational exchanges. Most process models of cooperation argue that over time parties learn from shared experiences of not only the kind of behavior to expect from one another, but also normative routines that enhance value creation (Zajac and Olsen 1993, Arino and Torre 1998, Ring and Van de Ven 1994, Dyer and Chu 2003). Similarly, models of trust also focus on the critical role of learning over time: The development of trust depends in large part on the accumulated firsthand knowledge of others and the interaction history of the two parties (e.g., Blau 1964, Ring and Van de Ven 1994, Lewicki and Bunker 1996).

Consistent with these literatures, we argue that the initial learning in an exchange relationship focuses on understanding each party’s capabilities and expectations underlying the production and delivery of the product. However, this initial learning is fraught with error and uncertain judgments; information is incomplete and uncertainty still abounds regarding the other’s type, expectations, and capabilities. For example, Larson (1992, p. 88) recounts managerial impressions of this initial stage: “When I first started I didn’t know whether I could believe what they told me” or “We went through a trial and error period. We learned from mistakes…. .” In addition, parties may routinely exit exchange relationships as fit disappears or as they chose to experiment with other suppliers and buyers. Thus, early on, parties are less inclined to become committed to a particular exchange relationship.

Over time, however, as learning deepens, it reflects dimensions that are associated with stability. For instance, parties become more confident in the performance of each other—to the extent that the supplier’s performance is satisfactory and reliable over time, buyers will become more reluctant to shift to an unknown supplier. Tangentially, as prior history increases, parties learn how to transact with one another in a more efficient and effective manner. This learning is reflected by standard routines and procedures that enhance mutual coordination and cooperation, and may even enhance the value created through the exchange relationship, especially as strategic and operational objectives are coordinated and integrated by the two companies (Larson 1992, Madhok and Tallman 1998, Dyer and Chu 2003). Learning relational routines such as information sharing and joint problem solving, which facilitate adaptation to unexpected requests or changes and focus outcomes on the mutual interests of both parties, is critical to the stability of exchanges. Consistent with this, managers explain “Over time, you build a history of situations, compromises, and solutions. You learn the unwritten rules and how they want to play the game…” (Larson 1992, p. 88).

Learning how to transact with one another reduces a tendency to shift to an unknown supplier because parties become more committed to the exchange relationship. Parties seek continuity because it enables continued savings from decreased transaction costs and potentially greater exchange performance. This interdependence logic suggests that interorganizational trust is built incrementally over time as social institutions become more refined and capable of producing trust. However, the path from prior history to trust is not direct. Rather, it is indirect because prior history enables greater interorganizational stability through learning, which in turn produces greater levels of continuity. This logic implies that past history will not have a direct effect on trust: Any observed relationship between the two is a result of the mediating effect of continuity expectations. In sum, whereas H1 and H2 indicate that the past or the future alone is sufficient for the development of trust, our alternative logic implies their interdependence: The shadow of the future accounts for the effect of the shadow of the past on trust.

**Hypothesis 3A (H3A).** *An expectation of continuity mediates the positive effect of prior exchange history on interorganizational trust.*

We next explore the interdependence of continuity and prior history by specifying the conditions that lead to the greatest level of trust. Our central argument is that the two shadows are collectively beneficial to developing and maintaining the use of a social institution that enables trust. Without both, the norms and expectations that characterize the exchange relationships are
less likely to yield as much trust. Our moderation logic suggests that building trust is inextricably linked to the past, because the past proxies for those exchanges that have created a social institution that best supports the development and use of trust. However, because building these institutions is both complex and costly, expectations of continuity must exist; otherwise, parties would not be motivated to build the requisite social institution because the costs outweigh its short-term benefits. In other words, continuity is desired because otherwise the notion of a social institution that provides the basis for building trust would be nonsensical. As Macneil (1978, p. 854) explains, social institutions function to regulate behavior because continuity is desired; without it, the exchange reverts back to the classic market “atomistic” transaction. For instance, processes that support planning and problem solving in the present are viewed in terms of planning and preparing for the future. Dore (1983) similarly argues that for the social norm of obligation to enforce cooperation, parties must be involved in long-term recurrent exchanges (see also Ring and Van de Ven 1992, p. 489; 1994). Therefore, trust does not simply emerge over time, but requires an expectation of continuity. Consistent with this logic, Anderson and Weitz (1989, p. 312) argue that trust is inherently about resolving short-term inequities to yield a long-term benefit.

When expectations of continuity and prior history work collectively, their joint effect has a stronger impact on trust. Exchanges that are represented by both long shadows of the past and future did not dissolve due to irreconcilable differences, but instead are sustained through a social institution that supports trust because of continuity. In such relationships, parties have made various relationship-specific investments in processes and norms that support justice and cooperation (Larson 1992, Ring and Van de Ven 1994, Uzzi 1997). However, for exchanges that do not enjoy the support of either a long shadow of the past or a strong expectation of continuity, trust is unlikely to be as deep. For instance, without a long shadow of the past, social institutions are relatively weaker because young relationships are unlikely to have a well-developed set of processes and practices that support justice, cooperation, and thus trust (Arino and Torre 1998). As a result, the dynamics between parties can more easily cause unfair perceptions to stray from acceptable standards, leading to increased transaction costs and a higher possibility of dissolution (Husted and Folger 2004, p. 720). In such instances, trust, if it ever existed, is more likely to dissipate. Similarly, without a sufficient shadow of the future, the prevailing social institution is less likely to support trust, because an endgame looms large on the horizon (Hill 1990). That is, parties’ behaviors will deviate from the norms and expectations that produce trust because the gains from self-interested behaviors are larger; this in turn will lower the level of interorganizational trust.

Hypothesis 3B (H3B). Prior exchange history and the expectation of continuity have a positive collective effect on trust.

Exchange Hazards as Drivers of the Shadow of the Future

Many view trust-based relationships as an efficient governance solution to settings in which transactional risk is present and opportunistic behavior is likely (Bradach and Eccles 1989, Noordewier et al. 1990). Based on the logic presented in H1, we amplify two transactional risks that shape a reliance on continuity, and thus trust in interorganizational exchanges. According to transaction cost economics, the foremost transactional risk is the hazard of specialized assets. Because the specialized portion of the asset is not transferable to other uses, premature termination of the exchange relationship results in a sizeable economic loss. The governance solution according to Williamson (1996, p. 30) is “harmonizing the contractual interface that joins the parties, thereby to effect adaptability and promote continuity.” That is, parties seek a longer-term contract with customized provisions to safeguard their investment from self-interested or opportunistic behaviors (Joskow 1988, Poppo and Zenger 2002). However, many types of industrial exchanges are not characterized by long-term contracts, but instead by short-term (often one year) contracts or even handshake agreements (see Macaulay 1963, Richardson 1972). Empirical studies confirm that these practices occur in a wide variety of industries, including electrical and electronic, transportation, and general machinery (Heide and John 1990), automobile assemblers and their suppliers (Walker and Poppo 1991), and garment assemblers and their suppliers (Uzzi 1997, p. 42).

An obvious governance solution for these types of market exchanges is to create expectations of continuity, which often occurs in buyer-supplier exchanges through the notion of repeat business: The renewal of short-term trade contractual agreements (Heide and Miner 1992). In these exchanges expectations of continuity are perceptual—based on parties’ beliefs that continuation will occur through the renewal of short-term trade contracts. However, practices surrounding the granting of repeat business can differ dramatically. Prior to the mid-1980s, antagonistic arm’s-length practices generally characterized buyer-supplier exchanges. Buyers had multiple suppliers for each procurement agreement and when suppliers did not submit to the buyer’s request (usually to lower costs), the buyer would switch the business to another supplier. Thus, buyer switching costs were very low. During the mid-1980s, many industries began to switch from using multiple suppliers for each procurement agreement to a more relational practice in which single sourcing with cooperative suppliers is rewarded through repeat business
(Jackson 1985, Spekman 1988, Helper 1991, Walker and Poppo 1991). Because the arm’s-length practices create extremely competitive and antagonistic relationships, many believe that these more exclusive cooperative relationships are needed for U.S. firms to compete more effectively on a global basis (Dore 1983).

In this study we focus on how reciprocal investments in specialized assets lead to greater perceptions of continuity. Reciprocity is “a mutually contingent exchange of benefits between two or more units” (Gouldner 1960, p. 140); one group is likely to contribute to another that in turn provides it with benefits. Williamson (1996, pp. 134–135) asserts that reciprocity transforms a unilateral supply relationship to a bilateral one. As a result, “reciprocity can serve to equalize exposure of the parties, thereby reducing the incentive of the buyer to defect from the exchange” (p. 135). Moreover, “the buyer’s commitment to the exchange is more assuredly signaled by his willingness to accept reciprocal exposure to specialized assets” (p. 135).

Reciprocal investments may take several forms, including changes in tool development and product design, the redesign of quality control or delivery systems, or investments that facilitate joint redesign initiatives such as common computerized bar codes controlled by jointly developed software (Larson 1992, p. 92). Ultimately, these reciprocal investments increase each other’s dependence on one another. Buyers and suppliers are willing to make such reciprocal investments because acting in this coordinated manner shows their willingness to work together and share risk. These gains from cooperation and repeat business are higher than opportunistic gains minus the costs of reestablishing an alternative trade relationship. Reciprocal investments can function as a pledge for exclusivity and commitment and can serve as a signal for continuity, and thus trust. This logic is similar to the logic that argues that reciprocated investments in specialized assets signal good-faith intentions (Anderson and Weitz 1992). Consistent with this logic, Heide and Miner (1992) find that when continuity is likely, parties with specialized assets are less likely to engage in opportunistic behavior because such acts are contrary to their self-interest. Empirical work also shows that specialized assets are associated with greater levels of commitment to the relationship (Anderson and Weitz 1992), greater levels of continuity (Parkhe 1993), and greater levels of joint action (Heide and John 1990). Therefore,

**Hypothesis 4A (H4A). The higher the level of asset specificity, the greater the expectation of continuity.**

A second factor that is likely to shape expectations of continuity is uncertainty, which refers to unanticipated changes in circumstances surrounding an exchange (Noordewier et al. 1990). Uncertainty challenges exchange coordination by creating the need for adaptation in situations fraught with incomplete and asymmetric information. Because these informational problems make it difficult for parties to predict future market demand, the optimal procurement strategy is to remain flexible in their supply arrangements so that firms can more fluidly adapt to the changing environment. Parties favor autonomous contracting, not relational contracting, to switch sources of supply as dictated in response to the uncertainty. When market exchanges are associated with high levels of uncertainty, expectations of continuity are less likely because continuity precommits parties to one another when adaptation can be less costly if coordinated through the market mechanism: Parties adapt to the uncertainty by selecting the best vendor or source of supply, given the type of change (Williamson 1996). Therefore, uncertainty is likely to be associated with lower expectations of continuity, and lower levels of trust.

**Hypothesis 4B (H4B). The higher the level of uncertainty, the lower the expectation of continuity.**

### Methodology

#### Sampling and Data Collection

We chose the purchasing relationships between manufacturers and their major suppliers as the empirical setting because the major supplier is the one with whom the manufacturer has frequent interactions, and derives the greatest benefit from developing trust (Dyer and Singh 1998; Zaheer et al. 1998, p. 146; Dyer and Chu 2003, p. 61). From a Dun and Bradstreet mailing list, we randomly chose half of the manufacturers from the electric and electronic industries, where companies experience highly uncertain environments, such as unpredictable supply and parts prices, and half from industries such as textile, furniture, and fabricated metal products, which have relatively more constant environments. In this way, we expected to create sizable variance in our focal variables because we expected uncertainty to cause expectations of continuity.

In these industries long-term contracts are not common. Interviews with industry experts indicated that it was rare for contracts to be more than one year in duration. In the electronics industry, even if repeat business is expected, managers prefer the one-year contract because it gives them flexibility for changing specifications on a yearly basis. If substantial specific investments are made, the contract may extend to three years. In the textile industry, there is more variance on the short-term aspect of the contract. For low-volume orders, the contract may only be a few weeks long. For large-volume orders, durations closer to a year are common because production is continual. Such large-volume orders are more likely to be represented in our sample because of our
focus on major suppliers. Interviews also indicated that managers view the contract more as an agreement, and the deal is often closed with a handshake. In the textile industry, trade association membership often gives companies boilerplate nonbinding agreements so that parties can become knowledgeable about the key terms of trade that they should discuss and negotiate prior to closing the deal. The use of short-term agreements is common in many types of industrial exchanges, but often receives less attention from the academic literature because of the focus on strategic alliances and partnerships that require much greater investment and risk among parties (see Richardson 1972 for early exceptions).

The heads of purchasing departments are key informants in our study. Because these managers are responsible for securing materials from suppliers, they are knowledgeable about their relationship with the supplier, making them an appropriate respondent to a self-administered survey. We rely on key informant data from the buyer side because previous work has indicated that buyers and suppliers overall have consistent perceptions of their exchange relationships (Anderson and Narus 1990, Zaheer et al. 1998). Further, the careful selection of key informants together with multi-item scales can provide reliable and valid information (John and Reve 1982), as suggested by many empirical studies on interorganizational relationships (e.g., Noordewier et al. 1990, Kumar et al. 1992, Jap and Ganesan 2000).

To assess whether the key informants had relevant knowledge, we conducted a pretest on 37 managers randomly selected from the list. We asked how long they had been working in their company and occupying their current positions. On average, the informants had 9.58 years of working experience in their companies and 6.5 years in their current position. These scores suggest that the respondents are experienced and knowledgeable about purchasing operations (cf. Jap and Ganesan 2000). Following Kumar et al. (1992), we further assessed the knowledge of the respondents by asking how much they know about the supplier’s (1) sales volume; (2) profit; (3) switching costs to other customers; and (4) the supplied product. The mean knowledge level was 5.9 out of 7 (1 = little knowledge, 7 = a great deal of knowledge), highly comparable with the results in previous studies (e.g., Heide and Miner 1992, Kumar et al. 1992). This suggests that our respondents are knowledgeable informants.

We mailed each purchasing manager a questionnaire, together with a cover letter, a gift with the university logo, and a postage-paid return envelope. Two weeks later, a second mailing was conducted to increase the response rate. Altogether we sent out 680 questionnaires; 20 (2.9%) were undeliverable due to wrong addresses. Of the remaining 660 delivered questionnaires, 137 completed surveys were received, with a response rate of 20.8%. Of these companies, 49.6% were from electric and electronic, 13.9% from textile, 11.7% from furniture, and 24.8% from fabricated metal product industries.

We checked for nonresponse bias in two ways. First, we compared early (the first quarter) and late (the last quarter) respondents on a number of key variables such as prior exchange history, asset specificity, uncertainty, expectation of continuity, and trust. Using multivariate analysis of variance (MANOVA), we found no significant differences on these measures between early and late responders (Wilks’ Λ = 0.65; F = 1.33; p = 0.32), indicating an absence of nonresponse bias (Armstrong and Overton 1977). Second, we compared the responding and nonresponding firms on demographics such as firm size, firm age, and industry. Again using MANOVA, we found that the responding and nonresponding firms were not significantly different in their demo profiles (Wilks’ Λ = 0.99; F = 0.28; p = 0.84). The results of these two steps provide evidence that nonresponse bias appears to be negligible in our study.

**Measures**

We adapted our measures from previous studies on the basis of relevant literature and discussions with industry practitioners. The questionnaire items were further refined through in-depth interviews with three purchasing managers and then pretested on a sample of 37 purchasing managers. Based on their responses, a small number of questionnaire items were revised to enhance clarity. All the scales, unless specifically otherwise indicated, were measured with a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). The measurement items and the results of validity analyses are reported in the appendix.

Consistent with previous work (e.g., Gulati 1995, Uzzi 1997, Poppo and Zenger 2002), we used prior history of the exchange to assess the degree of shadow of the past. We asked how long the manufacturer had worked with the supplier (in years). Because this variable had a positive skewness value (3.50), we transformed this measure by taking its logarithm. Following the transformation, the skewness value was close to zero (−0.12), indicating a symmetric normal distribution.

To capture shadow of the future, we adapted the measure from Heide and Miner (1992), which measures the manufacturers’ expectation of continuity regarding future interaction with their suppliers. According to the game-theoretic logic, players will defect from cooperation if there is only one round of play. They will also defect from a cooperative pattern of behavior if there is repeated play, but with a fixed, known ending point—because each player expects the other to defect in the final round, this known endpoint leads players to defect in the first round of exchange. Therefore, it is not the known or future finite number of times, but the expectation of future cooperation that leads the

Operationalization of the shadow of the future as an expectation is also consistent with procurement practices in the industrial exchanges found in prior empirical studies. For example, in Heide and Miner’s (1992) sample of manufacturing industries (i.e., electrical and electronic, transportation, and general machinery), buyer-supplier exchanges were typically coordinated by short-term contractual agreements. This practice also characterizes relationships with automobile assemblers and their suppliers (Walker and Poppo 1991) as well as garment assemblers and their suppliers (Uzzi 1997, p. 42). Our interviews further revealed that companies seldom specify a long-term contract with their suppliers. Therefore, we use the expectation of continuity as our measure of the shadow of the future.

Consistent with Zaheer et al. (1998), our five-item measure of interorganizational trust consists of three components: Reliability, predictability, and fairness. We also include a general indicator of trust. One item (the relationship with this supplier can be characterized as mutually trusting) directly assesses interorganizational trust; one item (this supplier keeps the promises it makes to your company) reflects the reliability component; two items (your firm is sure that what this supplier says is true; This supplier fulfills its commitments exactly as specified) indicate predictability; and one item (when making important decisions, this supplier is concerned about your company’s welfare) reflects fairness (cf. Kumar et al. 1995, Zaheer et al. 1998).

We examine two types of exchange hazards: Asset specificity and uncertainty. Asset specificity (AS) refers to transaction-specific assets that are not redeployable to alternative uses (Williamson 1985). Because highly specific assets represent a high level of dependence and switching costs should the exchange partner need to find an alternative source of supply, we operationalize it as parties’ dependence in the relationship and switching costs to alternative partners. This operationalization is consistent with prior empirical studies (e.g., Kumar et al. 1995; Poppo and Zenger 2002; see also David and Han 2004, p. 49). Because our conceptual logic emphasizes reciprocal investments, we measure AS as a composite construct with two first-order factors, one on the buyer side and the other on the supplier side. Uncertainty refers to unanticipated changes in circumstances surrounding the product exchange in the marketplace. We adapted its measure from Noordewier et al. (1990), capturing the manufacturer’s perceptions of uncertainty associated with the supply market.

Common Method Assessment. Because the same respondent is used to collect information on the independent and dependent variables, a common method bias may occur. Following Podsakoff et al. (2003), we address this potential concern in two ways. First, we assess whether common method bias exists by performing a Harman one-factor test that loads all the variables into a principal component factor analysis. According to this test, if either (a) a single factor emerges from the factor analysis, or (b) several factors emerge but factor 1 accounts for the majority of the variances, then common method bias is a concern. For our data, a factor analysis of all the measurement items reveals a solution that accounts for 69.18% of the total variance, and factor 1 accounts for 25.20% of the variance. Because a single factor did not emerge and factor 1 did not explain most of the variance, common method bias is unlikely to be a concern in our data. Second, we tease out the effect of common method by controlling for the effects of an unmeasured latent methods factor (Podsakoff et al. 2003, p. 894) in the analytical models that we use to test the hypotheses (Models 2 and 3, Table 2). For these models, we add one first-order factor with all the indicators of expectation of continuity and trust. In this way, the first-order factor serves as the common method factor that controls for any systematic (e.g., common method) variance between expectation of continuity and trust.

Construct Validity. Prior to the analysis of our hypotheses, we assessed the construct validity of our measures following the guideline outlined by Anderson and Gerbing (1988). First, our exploratory factor analysis for all the items of multi-item scales resulted in factor solutions, as theoretically expected. Then, we computed the reliability coefficient (Cronbach alpha) for each scale, and each coefficient was greater than 0.70, exceeding acceptable standards of reliability. Third, we used confirmatory factor analyses (CFA) to assess the convergent and discriminant validity of the measures. The results of CFAs, such as goodness-of-fit index, factor loading, composite reliability, etc., are reported in the appendix. The model fits the data satisfactorily ($\chi^2(156) = 255.99$, $p = 0.01$; goodness-of-fit index [GFI] = 0.91, comparative fit index [CFI] = 0.95, incremental fit index [IFI] = 0.95; root mean square of error approximation [RMSEA] = 0.05); and all factor loadings are highly significant ($p < 0.001$), pointing to the unidimensionality of the measures (Anderson and Gerbing 1988). Further, the composite reliabilities (ranging from 0.737–0.921) were all above the 0.70 benchmark, and the average variance-extracted indices were greater than or equal to 0.50 benchmark. Thus, these measures demonstrate adequate convergent validity and reliability.

We assessed the discriminant validity of the measures in two ways. First, we ran pairwise, chi-square difference tests for all the latent scales to determine whether the restricted model (correlation fixed at 1.0) fit the data significantly worse than the freely estimated model (correlation estimated freely). All chi-square differences
were highly significant (e.g., the test for expectation of continuity and trust yielded a $\Delta \chi^2(1) = 123.15$, $p = 0.00$), providing evidence of discriminant validity (Anderson and Gerbing 1988). Second, we calculated the shared variance between all possible pairs of constructs to determine whether they were lower than the average variance extracted for the individual constructs. The results show that for each construct, the average variance extracted was much higher than its highest shared variance with other constructs, in additional support of discriminant validity (see the appendix) (Fornell and Larker 1981). Overall, these results show that our measures possess satisfactory reliability and validity.

Controls. Consistent with previous studies (e.g., Jap and Genesan 2000, Poppo and Zenger 2002), we include exchange performance, exchange turnover, firm size, and industry as controls. We assess exchange performance with two objective indicators: Late delivery (the percentage of orders (deliveries) of products from this supplier that are late) and defect rate (the percentage of products delivered by this supplier that are defective, not up to specifications, the wrong items, or otherwise unacceptable). Exchange turnover is measured by the logarithm of the total amount (in dollar) of product purchased in the past year. Firm size is indicated by the logarithm of the number of employees. Industry is coded as three dummy variables: Textile, furniture, and metal, using electronic and electric industries as the baseline. Table 1 presents the basic descriptive statistics and correlations of the measures.

### Analyses and Results

Because our model contains both a mediating (H3A) and moderating test (H3B), we use a combination of structural equation modeling (SEM) and regression analysis to test the hypotheses. Although SEM can generate more accurate results because it estimates structural relations and measurement errors simultaneously, its significant tests generated by popular estimators such as maximum likelihood (ML) are inappropriate for models involving interactions (Bollen 1989). Thus, we use regression analysis to test H3B, which specifies an interaction effect of prior history and continuity on trust. For the remaining hypotheses we use SEM with the maximum-likelihood estimation method. Note that for the relationships that are examined with both SEM and regression, the results are consistent and of similar magnitude (see Tables 2 and 3).

For SEM, we use the model illustrated in Figure 1 as the base model. Prior history, AS, and uncertainty are the exogenous constructs, with continuity as the intermediate construct, and trust the outcome variable. The seven control variables are also included in the model and are linked directly to continuity and trust. To test the mediating hypothesis (H3A), we follow Baron and Kenny’s (1986) procedures and estimate three models: Model 1 with prior history as an exogenous variable only, Model 2 with continuity as an exogenous variable only, and Model 3 the full model (i.e., the model in Figure 1).

As discussed in the prior section, to control for the potential common method effect, we add one common factor with all the indicators of expectation of continuity and trust in Models 2 and 3 to tease out the systematic (e.g., common method) variance between expectation of continuity and trust (Podsakoff et al. 2003, p. 894). All three models fit the data satisfactorily, and the results are summarized in Table 2.

H1 assesses the game-theoretic logic that the shadow of the future (i.e., expectation of continuity) is the key origin of interorganizational trust. As Table 2, Model 3 shows, expectation of continuity strongly promotes trust ($\beta = 0.483$, $p < 0.001$), in support of H1. Model 2, a reduced-form model, also yields a similar effect ($\beta = 0.513$, $p < 0.001$).

### Table 1 Basic Descriptive Statistics of the Constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prior history</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Continuity</td>
<td>0.34*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Trust</td>
<td>0.14*</td>
<td>0.46**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. AS</td>
<td>0.02</td>
<td>0.14*</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Uncertainty</td>
<td>-0.14*</td>
<td>-0.40**</td>
<td>-0.34**</td>
<td>0.24**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Late delivery</td>
<td>-0.04</td>
<td>-0.09</td>
<td>-0.21*</td>
<td>0.12</td>
<td>0.23**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7. Defect rate</td>
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<td>-0.10</td>
<td>-0.25**</td>
<td>0.12</td>
<td>0.18*</td>
<td>0.29**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Turnover</td>
<td>0.04</td>
<td>-0.01</td>
<td>0.17*</td>
<td>-0.17*</td>
<td>0.08</td>
<td>-0.07</td>
<td>-0.04</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9. Firm size</td>
<td>0.03</td>
<td>0.24**</td>
<td>0.17*</td>
<td>0.05</td>
<td>-0.03</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.07</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Textile</td>
<td>-0.03</td>
<td>0.08</td>
<td>0.07</td>
<td>-0.13</td>
<td>0.01</td>
<td>-0.02</td>
<td>0.03</td>
<td>-0.02</td>
<td>-0.10</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Furniture</td>
<td>-0.07</td>
<td>0.01</td>
<td>-0.10</td>
<td>0.12</td>
<td>-0.12</td>
<td>-0.08</td>
<td>-0.04</td>
<td>-0.13</td>
<td>0.20*</td>
<td>-0.15*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>12. Metal</td>
<td>-0.02</td>
<td>-0.07</td>
<td>-0.07*</td>
<td>0.00</td>
<td>0.04</td>
<td>0.09</td>
<td>0.03</td>
<td>0.13</td>
<td>-0.02</td>
<td>-0.23*</td>
<td>-0.21*</td>
<td>1.00</td>
</tr>
<tr>
<td>Mean</td>
<td>2.56</td>
<td>5.82</td>
<td>5.53</td>
<td>3.76</td>
<td>2.52</td>
<td>6.09</td>
<td>2.07</td>
<td>4.89</td>
<td>5.51</td>
<td>0.14</td>
<td>0.12</td>
<td>0.25</td>
</tr>
<tr>
<td>S.D.</td>
<td>0.74</td>
<td>0.99</td>
<td>1.05</td>
<td>1.10</td>
<td>1.10</td>
<td>7.63</td>
<td>2.13</td>
<td>4.23</td>
<td>1.76</td>
<td>0.35</td>
<td>0.32</td>
<td>0.43</td>
</tr>
</tbody>
</table>

Notes. Sample size = 137. *$p < 0.05$, **$p < 0.01$. 
H2 examines the shadow of the past logic: prior history leads directly to trust. In Model 1, in which prior history is the only exogenous variable, we find that prior exchange history positively affects trust ($\beta = 0.107$, $p < 0.05$). However, in the full model (Model 3), prior history is actually negatively related to trust ($\beta = -0.109$, $p < 0.05$). These results show that the effect of prior history on trust is more complicated than predicted by the social logic.

H3A examines whether an expectation of continuity mediates, and thus accounts for, the relationship between prior history and trust. According to Baron and Kenny (1986), a mediating effect must satisfy the following conditions: (1) the independent variable (prior history) must affect the outcome variable (trust), (2) the independent variable must affect the mediator (continuity), and (3) when the mediator (continuity) enters the model, the contribution of a previously significant independent variable, prior history, should drop significantly for partial mediation and become insignificant for full mediation.

Table 2, Model 1 shows that condition (1) is satisfied, i.e., prior history positively affects trust. Model 3 shows that condition (2) is satisfied, i.e., prior history positively impacts expectation of continuity ($\beta = 0.220$, $p < 0.01$). Model 3 further shows that when the path between continuity and trust is estimated, the sign of prior history on trust actually changes from positive to negative, demonstrating that the positive effect of prior history on trust is fully mediated by continuity (Baron and Kenny 1986). To better understand this mediating effect, we follow Baron and Kenny (1986) to compute the indirect effect of prior history on trust through continuity. We find this indirect effect to be significant and positive ($\beta = 0.192$, $p < 0.01$). This suggests that the positive effect of prior history on trust is achieved through expectation of continuity. In other words, continuity mediates the positive effect of prior history on trust, in support of H3A.

Taken together, these findings suggest that (1) prior history’ effect is positive overall (i.e., positive total effect on trust); (2) this positive effect is not direct but is only achieved indirectly through an expectation of continuity; and (3) without an expectation of continuity, the direct, unmediated effect of prior history on trust is negative. The last finding, that prior history has a negative effect on trust, is unexpected. We offer our interpretation of this effect in the discussion section, together with the results of the moderation tests.

H3B examines whether prior history and expectations of continuity have a stronger collective effect on trust. A moderated regression analysis is the appropriate approach to test for interaction effects (Aiken and West 1991). To preserve the measurement structure of each scale, we used factor loadings obtained from CFA to compute the factor score and then ran the regression with factor scores. To deal with the possible multicollinearity between the interactions terms and their components, we mean-center each scale constituting an interaction term and then create the interaction terms by multiplying the relevant mean-centered scales (Aiken and West 1991). The results are reported in Model 4, Table 3.

Consistent with our prediction, the interaction term is positively associated with trust ($\beta = 0.215$, $p < 0.01$), providing support to H3B. In addition, the regression results are highly consistent with those reported in Table 2. For example, prior history is negatively ($\beta = -0.119$, $p < 0.05$), and continuity is positively ($\beta = 0.435$, $p < 0.001$), related to trust. Note that the largest variance inflation factor (VIF), a multicollinearity indicator, is 1.732, well below the usual benchmark of 10.
Moreover, the VIF associated with prior history and continuity is only 1.207 and 1.298, respectively, indicating that multicollinearity is not a concern in these findings.

To gain more insight on the interaction effect of prior history and continuity, we conduct simple slope tests following the procedure used by Aiken and West (1991) for decomposing the interactive term. The test requires that we split the variable, prior history, into two groups: A low (one standard deviation below the mean) and a high (one standard deviation above the mean) group. We then estimate the effect of expectation of continuity on trust for the low and high group, respectively. Figure 2(a) indicates that when prior history is long, expectation of continuity has a stronger positive impact on trust ($b = 0.590, p < 0.001$) than when prior history is short ($b = 0.277, p < 0.01$). Similarly, we estimate the effect of prior history on trust in low versus high levels of continuity. Figure 2(b) shows that when expectation of continuity is low, the longer the prior history, the lower the level of trust (simple slope: $b = -0.350, p < 0.01$). In contrast, when expectation of continuity is high, prior history positively affects trust (simple slope: $b = 0.168, p < 0.05$).

H4A and H4B examine exchange hazards as important antecedents to expectations of continuity. As Table 2, Model 3 shows, specialized assets positively increase expectations of continuity ($\beta = 0.281, p < 0.01$), whereas uncertainty lowers the expectation of continuity ($\beta = -0.431, p < 0.001$). These results fully support H4A and H4B.

**The Effects of Controls on Trust.** As Table 2 shows, poor performance, as indicated by late delivery and defect rate, is negatively related to trust. This result is not surprising because prior work shows a positive association between trust and exchange performance (Zaheer et al. 1998, Poppo and Zenger 2002) and lowered transaction costs (Dyer and Chu 2003). Exchange turnover is positively related to trust, suggesting that large-volume transactions help establish trust because these transactions enable more mutual understanding between the buyer and supplier. Firm size positively affects trust in Model 1 and continuity in Model 3. We suspect that large firms are likely to have more stable demands (because size correlates with market dominance) and therefore are in a better position to build more enduring relationships with suppliers, which consequently fosters

<table>
<thead>
<tr>
<th>Independent var.</th>
<th>Models</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6 (electronic firms only, N = 68)</th>
<th>Model 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior history</td>
<td>-0.119*</td>
<td>0.009</td>
<td>-0.083†</td>
<td>Turnover/size</td>
<td>0.078</td>
</tr>
<tr>
<td></td>
<td>(0.091)</td>
<td>(0.112)</td>
<td>(0.103)</td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Expectation of continuity</td>
<td>0.435***</td>
<td>—</td>
<td>0.444***</td>
<td>Expectation of continuity</td>
<td>0.459***</td>
</tr>
<tr>
<td></td>
<td>(0.081)</td>
<td>(0.106)</td>
<td>(0.074)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior history × Continuity</td>
<td>0.215***</td>
<td>—</td>
<td>0.169†</td>
<td>Turnover/size × Continuity</td>
<td>0.193*</td>
</tr>
<tr>
<td></td>
<td>(0.085)</td>
<td>(0.108)</td>
<td>(0.097)</td>
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<tr>
<td>Asset specificity</td>
<td>-0.073</td>
<td>0.187*</td>
<td>-0.052</td>
<td>AS</td>
<td>-0.062</td>
</tr>
<tr>
<td></td>
<td>(0.061)</td>
<td>(0.077)</td>
<td>(0.083)</td>
<td></td>
<td>(0.062)</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>-0.013</td>
<td>-0.336***</td>
<td>-0.170</td>
<td>Uncertainty</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.079)</td>
<td>(0.080)</td>
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<td>(0.068)</td>
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<tr>
<td>Controls</td>
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</tr>
<tr>
<td>Late delivery</td>
<td>-0.100†</td>
<td>-0.084</td>
<td>-0.083</td>
<td>-0.096</td>
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</tr>
<tr>
<td></td>
<td>(0.099)</td>
<td>(0.011)</td>
<td>(0.009)</td>
<td>(0.009)</td>
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</tr>
<tr>
<td>Defect rate</td>
<td>-0.176*</td>
<td>-0.179*</td>
<td>-0.059</td>
<td>-0.131†</td>
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<tr>
<td></td>
<td>(0.031)</td>
<td>(0.040)</td>
<td>(0.037)</td>
<td>(0.031)</td>
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<tr>
<td>Exchange turnover</td>
<td>0.136*</td>
<td>0.203*</td>
<td>0.176*</td>
<td>—</td>
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</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.020)</td>
<td>(0.020)</td>
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<tr>
<td>Firm size</td>
<td>0.076</td>
<td>0.220**</td>
<td>0.095</td>
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<tr>
<td></td>
<td>(0.037)</td>
<td>(0.047)</td>
<td>(0.042)</td>
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<tr>
<td>Textile</td>
<td>-0.035</td>
<td>0.060</td>
<td>—</td>
<td>-0.078</td>
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<td></td>
<td>(0.191)</td>
<td>(0.245)</td>
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<td>(0.199)</td>
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<tr>
<td>Furniture</td>
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<td>-0.113</td>
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<tr>
<td></td>
<td>(0.208)</td>
<td>(0.272)</td>
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<td>(0.210)</td>
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</tr>
<tr>
<td>Metal</td>
<td>-0.084</td>
<td>-0.099</td>
<td>—</td>
<td>-0.062</td>
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<td>(0.153)</td>
<td>(0.198)</td>
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<td>(0.156)</td>
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<tr>
<td>R-square</td>
<td>0.386</td>
<td>0.274</td>
<td>0.471</td>
<td>0.349</td>
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</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p < 0.001, †p < 0.10.
trust. Industry types such as textile, furniture, and metal have no significant bearing on either continuity or trust.

Additional Model Specifications, Analyses, and Findings. We examine a number of alternative model specifications to verify our findings. One potential concern of our model is that the causality between continuity and trust may be reversed: Trust may be an antecedent of expectations of continuity. To address this concern, we test a structural model that contains a link from trust to expectation of continuity as well as link from continuity to trust (Bollen 1989). Because this is a nonrecursive model, we specify the controls in a slightly different manner from Model 3. Otherwise the model would be overidentified and could not be estimated. We linked late delivery, defect rates, and exchange turnover to trust, and linked firm size and industry types to continuity. The results show that continuity positively affects trust ($\beta = 0.407$, $p < 0.001$), but trust does not affect continuity ($\beta = 0.145$, $p = 0.447$). The stability index of this nonrecursive model is only 0.117, much lower than the 1.00 cutoff, showing that the model estimation is highly stable (Fox 1980). These results support our original model specification that, in line with the game-theoretic logic, expectations of continuity enable cooperation and consequently lead to greater levels of trust.

A second concern is that our measures of continuity and trust may share a common emotional valence regarding the relationship between the buyer and supplier, which may cause a biased estimation of the model. As an additional way to address this common method concern, we ran a regression model (Model 5, Table 3) that used asset specificity and uncertainty as proxies for expectations of continuity. Because these two variables do not share the same kind of emotional component that continuity does with trust, biased estimation of this relationship is less likely. Thus, we can use this alternative model as a type of corroboration test. We find a similar pattern of results when comparing the effect of continuity on trust (see Model 3, Table 2) with the effects of exchange hazards on trust (see Model 5, Table 3): Asset specificity, which acts as a pledge for continuity, positively affects trust ($\beta = 0.187$, $p < 0.05$); and uncertainty, which decreases expectations of continuity, negatively affects trust ($\beta = -0.336$, $p < 0.001$). Moreover, when comparing Model 5 with Model 4, the significant effects of asset specificity and uncertainty in Model 5 became nonsignificant in Model 4 after continuity entered the model. Consistent with Model 3 (Table 2), this shows that an expectation of continuity fully mediates the relationships between asset specificity/uncertainty and trust. We further find that, consistent with Model 3 (Table 2) and Model 4 (Table 3), prior history does not have a positive impact on trust (see Model 5, Table 3, $\beta = 0.009$, $p > 0.10$). Note, however, that the effect of prior history on trust in Models 3 and 4 is significant and negative, whereas in Model 5 it is not significant. We infer from this comparison that exchange hazards are not perfect proxies for expectations of continuity.

Another potential concern is that our measure of the shadow of the past examines exchange duration, and we do not measure variation in exchange frequency. A better indicator of the shadow of the past may be the total volume of past interactions (i.e., prior history $\times$ exchange frequency). We consider two alternative model specifications to address this concern. First, we ran a regression analysis with electronic firms only, assuming that firms within a particular industry have a similar level of exchange frequency (see Table 3, Model 6). Although the estimates have lower significant levels due to the smaller sample size ($N = 68$), the results are consistent with those reported in Table 2, Model 3. For example, prior history negatively ($\beta = -0.083$, $p = 0.085$) affects trust and continuity positively ($\beta = 0.444$, $p = 0.000$) affects trust, and their interaction term positively impacts trust ($\beta = 0.169$, $p = 0.044$).

Second, we use exchange turnover/firm size as a proxy for the total volume of past interactions. The regression results indicate that when continuity is not in the model, exchange turnover/firm size positively affects trust ($\beta = 0.134$, $p = 0.081$), which is consistent with our result regarding the effect of prior history on trust (see Model 1, Table 2). However, when continuity enters the model (see Table 3, Model 7), the effect of turnover/size is no longer significant ($\beta = 0.078$, $p = 0.210$), which is generally consistent with previous model specifications showing that continuity fully
mediates the positive effect of prior history on trust (see Table 2, Model 3 and Table 3, Model 5). Moreover, the interaction term of turnover/size and continuity positively affects trust ($\beta = 0.193$, $p = 0.012$), consistent with our previously reported results regarding the positive interaction of prior history and continuity. This analysis suggests that number of years (given our sampling strategy of a frequently used, major supplier) is a reasonable proxy for the shadow of the past.

Taken together, these results show that our findings of the interdependence of shadows of the past and future (H3A and H3B) are quite robust to alternative model specifications.

Discussion

Although the benefits of trust in interorganizational exchanges are well established and verified in the empirical literature, we know relatively less about their origins. Such understanding is important not only from a normative perspective—when should we expect trust to characterize exchange relationships—but also from a theoretical perspective, because the literature specifies two contrasting origins, the shadow of the past and the shadow of the future. Although these two accounts have traditionally been treated as independent alternative logics for the emergence of trust (Zaheer and Harris 2005), we argue that this prior treatment is overly simplistic because the two logics are necessarily intertwined as explanations for trust. Our results confirm this interdependence perspective, and overall show that expectations of continuity, a forward-thinking calculus, play a central and critical role in generating interorganizational trust because it accounts for the positive relationship between prior history and trust. Further, the past plays a facilitating, albeit indirect, role in producing trust through strengthening the effect of continuity on trust.

Most striking is the finding that prior history does not directly enhance trust; rather, the observed positive relationship between the two is mediated by expectations of continuity. That is, after controlling for the path dependency of prior history-continuity-trust, the direct effect of prior history on trust is no longer positive. We argue that this mediated effect exists because, over time, learning increases between the two partners, which drives expectations of continuity. In other words, as parties learn about one another—their ability to perform satisfactorily, and their competencies—they are less likely to switch to alternative parties. This generates greater expectations of continuity and encourages exchange partners to build stronger trust. We also suspect that, over time, learning grows more substantial as normative conventions and routines are established, which facilitates the more difficult social exchange processes underlying continuity and trust: Cooperation, perceptions of equity and justice, and bilateral adaptation.

While this learning logic is consistent with prior literature (Macneil 1978, 1980; Ring and Van de Ven 1992, 1994; Arino and Torre 1998; Husted and Holger 2004), our unique contribution is to propose and empirically confirm the critical role of the shadow of the future in explaining why the shadow of the past triggers trust. This finding departs significantly from the social view that trust emerges incrementally over time through the development of normative conventions (Blau 1964, Gulati 1995, Uzzi 1997). This result also informs the more recent quandary about whether trust encapsulates organizational routines. Zollo et al. (2002) propose that although learning is likely to occur over time between two parties, trust is a less probable outcome of time. McEvily et al. (2003) alternatively envision trust as embodying organizing and coordinating principles—presumably these principles are learned over time and many of them either form the basis of trust, or result because of trust. Although our study does not specifically address the evolution of routines and norms and their relationship to trust, it does suggest, contrary to Zollo et al. (2002), that trust is a likely outcome of prior history for parties engaged in frequent transactions in which learning occurs and expectation of continuity arises.

Even though we find that prior history by itself does not positively affect trust, the moderation analysis (H3B) enables us to more fully understand the influence of prior history on continuity, and thus on trust. Our results show that prior history plays a facilitating role in trust building through its interaction with continuity. That is, a longer prior history actually makes the effect of continuity on trust much stronger than a shorter prior history (see Figure 2(a)). These findings suggest that the normative conventions that are built through the history of the exchange add incrementally to the development of trust by strengthening the impact of continuity on trust. Thus, the social fabric of interorganizational exchanges (e.g., normative conventions that define social institutions and the social processes) serves an important, albeit indirect, function in producing trust in economic exchanges.

Taken together, our mediation result, explained above, indicates the central role that expectations on continuity play in generating trust. Our moderating results further suggest the facilitating role of prior history in strengthening the effect of continuity on trust. Therefore, the two origins are intertwined as origins of interorganizational trust.

Unexpectedly, we find that after controlling for the mediating effect of continuity, prior history has a negative effect on trust. Our moderation analysis indicates when this effect occurs: When weak expectations of continuity exist, trust is lower for exchanges characterized by a longer prior history. These findings, though surprising, appear to be consistent with emerging literature focusing on the dark side of social ties (Anderson
and Jap 2005). Anderson and Jap (2005, p. 76) found in a survey of over 1,500 business relationships, “relationships often linger in states of deterioration for surprisingly long periods with neither side terminating the relationship.” Consistent with their remarks, we suspect that there is less trust in these long-standing exchanges because parties are no longer willing to continue the relationship; however, they may linger in terminating the exchange because one party is more powerful or has more resources, or for lack of better alternatives. Thus, when an endgame looms large on the horizon, long-standing ties are vulnerable to opportunism and effective adaptation, leading to a lower level of trust. Further research is needed to study this potential dark side of long-standing ties.

Our study also extends the transaction cost logic by examining two antecedents to expectations of continuity—reciprocal investments in specialized assets and uncertainty. We argued that for our sample, with exchanges characterized by short-term contracts and repeat business, trust would not be directly determined by exchange hazards as previous work has argued (e.g., Bradach and Eccles 1989, Madhok 1995, Poppo and Zenger 2002). Rather, expectations of continuity mediate the relationship between exchange hazards and trust. Consistent with our logic, we find that reciprocal investments in specialized assets increase expectations on continuity and trust. We reason that reciprocal investments can function as a pledge for exclusivity and commitment and can serve as a signal for continuity and, thus, trust. We further find that because uncertainty is associated with lower expectations of continuity, trust is less likely to develop. This result is consistent with the transaction cost logic; the most efficient response to exogenous uncertainty is remaining flexible with respect to sources of supply—thus, parties resist commitments of continuity to minimize transaction costs associated with bilateral adaptation. Overall, these findings enrich our understanding of the exchange conditions that affect expectations of continuity and, thus, trust.

Limitations and Future Research
Although several different model specifications verify the reliability of our findings about the interdependence of the shadows of the past and the future, as with any cross-sectional design, our study is subject to several limitations. In our cross-sectional study, we do not directly examine in a temporal manner how the shadows of the past and the future influence trust, and therefore cannot fully confirm the directionality of our causal inferences. Moreover, we suspect that drivers of trust development are likely to change over time. Because prior work indicates the criticality of establishing trust early in exchange relationships (Zajac and Olsen 1993, Arino and Torre 1998), our study suggests that in early stages of trust development, transactions should be characterized by relatively benign environments: Less uncertain environments enable greater expectations of future interactions, which can fuel the emergence of trust. Similarly, even though our study asserts that social institutions such as normative conventions and routines are critical to creating trust in interorganizational exchanges, our empirical study does not examine how social institutions evolve and change over time. While many conceptual works have described the desirable normative conventions that define such social institutions, a longitudinal study would help to clarify how social institutions change and which kinds of normative conventions and routines are associated with trust over time.

In our research setting, repeat business incentives and the renewal of short-term trade agreements characterize the governance of buyer-supplier relationships. Although this is a common form of industrial exchange, it would be interesting to see if our findings are generalizable to more complex settings, such as those involving more complex contracts that signify more risky strategic investments (as in strategic alliances or joint ventures). Such research may examine the interplay of formal contracts, social ties, and expectations of continuity as antecedents to trust. Also, whereas our findings show the dark side of long-lasting ties when low expectations for continuity exist, we do not assess their underlying mechanisms. Further research is encouraged to tackle this intriguing issue of when and how social ties are detrimental.

In sum, our study confirms the interdependence of the shadows of the past and future in building trust. In particular, our findings indicate that the shadow of the future is a critical path to trust when the shadow of the past and transactional risks exist. Trust building for these industrial exchanges appears to be inherently a result of a forward-thinking calculus—a calculus that is informed through learning over time and through risk (e.g., reciprocal investments in asset specificity and uncertainty). However, we also find that the shadow of past is still important, because it can strengthen the impact of continuity expectations on trust, and thereby indirectly foster trust. Therefore, the shadow of the past and the future are intertwined as origins to interorganizational trust.

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Appendix. Measurement Items and Validity Assessment

Prior exchange history
1. How long has your company been doing business with this supplier (in years)?

Expectation of continuity: CR = 0.876, AVE = 0.643, HSV = 0.251
1. Your company expects the relationship with this supplier to continue for a long time.
2. The periodic renewal of the relationship with this supplier is virtually automatic.
3. The relationship with this supplier is a long-term alliance.
4. The relationship with this supplier is enduring.

Trust: CR = 0.921, AVE = 0.752, HSV = 0.251
1. The relationship with this supplier can be characterized as mutually trusting.
2. This supplier keeps the promises it makes to your company.
3. Your firm is sure that what this supplier says is true.
4. This supplier fulfills its commitments exactly as specified.
5. When making important decisions, this supplier is concerned about your company’s welfare.

Asset specificity
Buyer side: CR = 0.737, AVE = 0.500, HSV = 0.145
1. It would be difficult for your firm to replace this supplier’s products with another supplier’s product line.
2. The total costs of switching to another comparable supplier would be prohibitive for your firm.
3. It would be costly for your firm to lose this supplier.

Supplier side: CR = 0.792, AVE = 0.560, HSV = 0.145
1. It would be difficult for this supplier to replace the sales and profits realized from your firm with another customer.
2. The total costs of switching to another comparable customer would be prohibitive for this supplier.
3. It would be costly for this supplier to lose your firm.

Uncertainty: CR = 0.746, AVE = 0.530, HSV = 0.198
1. Availability of the major product in the market is highly uncertain.
2. Uncertainty in the production of the major product in the market is a real problem.
3. The supply of the major product is not stable.
4. The price for the major product in the market is volatile.

Goodness-of-fit: $\chi^2(156) = 255.99, p = 0.01; \text{GFI} = 0.91, \text{CFI} = 0.95, \text{IFI} = 0.95; \text{RMSEA} = 0.05$

Notes. SFL = standardized factor loading; CR = composite reliability; AVE = average variance extracted; HSV = highest shared variance with other constructs.

Endnotes
1There are very important but subtle distinctions regarding mediation versus moderation tests. According to Baron and Kenny, the two tests are not exclusive, but provide different types of information. As Baron and Kenny (1986, p. 1173) explain:

Specifically, we differentiate between two often-confused functions of third variables: (a) the moderator function of third variables, which partitions a focal independent variable into subgroups that establish its domains of maximal effectiveness in regard to a given dependent variable, and (b) the mediator function of a third variable, which represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest.

Thus, the implications and meaning of these two analytical tests are quite different. Moderation focuses on the joint effects of two factors on the dependent variable. Mediation is concerned with processes that transform or account for the effect of the independent variable on the dependent variable. Thus, to fully understand the effects of prior history and continuity on trust, we need to examine both the mediating and moderation effects.

2We thank an anonymous reviewer for suggesting this test.

References


