

2-6-2017


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Recommended Citation

McEvily, B., Zaheer, A., & Kamal, D. K. F. (2017). Mutual and Exclusive: Dyadic Sources of Trust in Interorganizational Exchange. *Organization Science*. <https://doi.org/10.1287/orsc.2016.1102>

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MUTUAL AND EXCLUSIVE:

DYADIC SOURCES OF TRUST IN INTERORGANIZATIONAL EXCHANGE

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Key words: trust, dyad, power, interorganizational

Acknowledgements: The authors gratefully acknowledge the insightful comments and constructive suggestions provided by Senior Editor, Paul Adler, and two anonymous referees. In addition, we appreciate the excellent feedback and recommendations for improvement that we received on earlier versions of the paper from: Ron Burt, Johan Chu, Ilya Cuypers, Melissa Graebner, George John, Tat Koon Koh, Dan Kovenock, Fabrice Lumineau, Deepak Malhotra, Luiz Mesquita, Elizabeth Pontikes, Laura Poppo, Amanda Sharkey, Maxim Sytch, Bart Vanneste, Candace Ybarra, Chris Yenkey as well as participants at the 2015 Economic Science Institute workshop at Chapman University, the 2016 Organizations and Markets workshop at University of Chicago, and the Social Structure, Trust, and Entrepreneurship symposium at the 2016 Annual Meetings of the Academy of Management. This paper draws on data collected as part of a larger project that included Vincenzo Perrone.

Abstract. Trust in interfirm exchange has traditionally been treated as mutually held and jointly determined by the two parties in a relationship. Yet, the expectations of exchange partners can, and routinely do, differ with respect to the goals, preferences, and vulnerabilities in their shared relationship. To account for such differences in expectations we propose a broadened conceptualization of the sources of interorganizational trust as dyadic. Viewing the sources of trust as dyadic expands the conventional focus on mutual elements to further emphasize exclusive features of an exchange relationship. To substantiate our theory, we examine a key source of interorganizational trust, exchange hazards, and assess the extent to which its effects vary as a function of: (1) the locus of exchange hazards (own vs. other) in the dyad, (2) the degree of power imbalance in the dyad, and (3) each party's power position in the dyad. To assess the validity of our claims we devise a matched dyad research design and collect identical information from both buyers and suppliers in a given exchange relationship. Based on our results, we make three unique observations consistent with the notion of dyadic sources of trust. First, the same exchange hazards have contrasting effects on trust (enhancing versus diminishing) across the dyad. Second, the degree of power imbalance has opposing effects across the dyad. Third, the relative significance of partners' exchange hazards varies based on their respective power positions.

What explains trust in ongoing interorganizational exchange relationships? Given the importance of trust for exchange processes (e.g., Madhok 1995, Ring and Van de Ven 1994), governance (e.g., Gulati 1995, Zaheer and Venkatraman 1994, 1995), and performance outcomes (e.g., Carson et al. 2003, Dyer and Chu 2003), research attention has increasingly focused on the antecedent conditions fostering trust among exchange partners (e.g., Gulati and Sytch 2007, Poppo et al. 2008, Puranam and Vanneste 2009, Young-Ybarra and Wiersema 1999). Conceptualized as a relational concept, trust is seen as being mutually held and jointly determined by the two parties in an exchange. The relational emphasis is rooted in the sociological tradition for which "... trust must be conceived as a property of *collective* units (ongoing dyads, groups, and collectivities), not of isolated individuals ... It is the mutual 'faithfulness' [Simmel 1900 (1978)] on which all social relationships ultimately depend" (Lewis and Wiegert 1985: 968, emphasis in the original). Significantly, this relational orientation extends to the commercial realm where trust is similarly conceptualized "... as a set of expectations shared by all those in an exchange" (Zucker 1986: 54). Drawing on these sociological foundations, Ring and Van de Ven (1994: 110) emphasize that interorganizational trust develops when the parties come "to know themselves and evolve a common understanding of mutual commitments." Similarly, Gulati and Sytch (2007: 41) argue that high levels of joint dependence promote "reciprocal acts of trust from their partners and [foster] a higher level of mutual trust in the relationship." While the focus on mutual and reciprocal elements of interorganizational trust is consistent with the relational origins of the concept, it is incongruent with the recent recognition that there are also facets of trust that are exclusive to each party in the relationship (Ertug et al. 2013, Korsgaard et al. 2015, Zaheer and Harris 2005; Zaheer and Fudge Kamal 2011).

To reconcile the mutual and reciprocal elements with those that are exclusive to exchange partners, we propose a broadened conceptualization of the sources of interorganizational trust as *dyadic*. While consistent with sociological foundations (Adler and Kwon 2002, Blau 1964), our dyadic conceptualization refines our understanding of the sources of trust in critical ways. In particular, the mutual aspect of trust that prior conceptualizations have traditionally featured presupposes that the two parties to a relationship have a largely shared orientation. Yet, trust has also been recognized to be bidirectional in the sense that the relationship involves two parties, each of which concurrently occupies the role of trustor and trustee (Coleman 1990, Korsgaard et al. 2015). The dual trustor-trustee roles suggest that the decision to trust, and how much (on the part of the trustor), is separate from the decision

to uphold trust (on the part of the trustee). While these two decisions may be related, they need not be, and the extent to which the expectations of trustor and trustee are distinct introduces a facet of interorganizational trust that is at odds with a mutual conceptualization. Consistent with the notion that expectations differ, research has identified separate goals, preferences, and vulnerabilities that exchange partners have in their shared relationship (Fichman and Goodman 1996, Weber et al. 2005). For instance, while buyers may be more concerned with relationship outcomes such as price, performance and service, suppliers may focus more on safeguarding their relationship-specific investments (Geyskens et al. 1998, Nyaga et al. 2010). Such differences in expectations make it imperative to develop a theoretical framework that goes beyond the mutual aspects to also account for the *exclusive* features of the relationship that influence interorganizational trust—what we refer to as dyadic sources of trust.

To advance our understanding of dyadic sources of trust in ongoing exchange relationships, we theorize how a critical antecedent condition can have both mutual and exclusive effects. Specifically, exchange hazards (i.e., conditions such as relationship-specific investments that may increase the costs and risks of engaging in exchange due to the potential for opportunism) have been identified as among the most important features that influence trust in an evolving relationship (Gulati and Nickerson 2008, Jap and Anderson 2003, Young-Ybarra and Wiersema 1999). Thus far, however, research has generally treated exchange hazards as having mutual effects in terms of influencing both parties' trust in each other, in the same way and to the same degree, regardless of which party has made the relationship-specific investments (Dyer and Chu 2003, Lui and Ngo 2004, Poppo et al. 2008). The main research question we address in this paper is: To what extent do each party's (i.e., buyer's and supplier's) exchange hazards influence trust, in different ways (e.g., positive versus negative), and to differing degrees, on both sides of the dyad?

In addition to the mutual effects, we argue that exchange hazards also have effects on trust that are exclusive to either side of the dyad, depending on each party's unique goals, preferences, and vulnerabilities. Critically, whether the relationship-specific investments are one's own or the counterpart's, which we refer to as *cross-dyad* effects, may in fact matter for explaining interorganizational trust. On the one hand, investments in relationship-specific assets by a focal party are thought to be viewed as a signal of commitment by the counterpart. On the other hand, the focal party's investments in relationship-specific assets are thought to be seen as a threat of opportunistic exploitation

of that party. Beyond these cross-dyad effects of exchange hazards, the relative degree of relationship-specific investments may also matter. The extent to which the two parties' levels of investments differ introduces an element of power into a model of the sources of interorganizational trust. The degree of divergence between the relationship-specific investments on either side of the dyad indicates a *power imbalance* in the relationship, which we argue has opposing effects on the two parties' trust in each other. Moreover, which side of the power-dependence relationship each party resides on defines the *power positions* in the relationship and, as we argue in more detail below, differentiates the influence of the power-advantaged versus the power-disadvantaged (Casciaro and Piskorski 2005, Emerson 1962) party's investment in relationship-specific assets on trust. Taken together, we argue that in addition to being a mutual source of trust for both parties, exchange hazards exert effects that are both exclusive across the dyad and exclusive to each party's power dependence in the relationship.

We test our theory of the dyadic sources of trust in ongoing interorganizational relationships in the context of buyer-supplier exchange. Since our dyadic theory necessitates observing the antecedent conditions and trust for both parties in a given exchange relationship, we devised a matched dyad research design. We collected identical information from both buyers and suppliers about their exposure to exchange hazards in their particular relationship and about each party's trust in each other.

Our results reinforce our assertion that a dyadic approach provides a more comprehensive and precise explanation of the sources of interorganizational trust than the traditional approach of treating the antecedents as mutual. In particular, we make three unique observations. First, the same exchange hazards have contrasting effects on trust (diminishing vs. enhancing for the focal party vs. the counterpart, respectively) across the dyad. Second, the degree of power imbalance has opposing effects on the trust of the more versus the less powerful party. Third, the relative significance of partners' exchange hazards varies based on their respective power positions, with the more powerful party's given more weight.

THEORY AND HYPOTHESES

Conceptualizing Trust

In the interorganizational literature, trust has been defined as the expectation that another organization can be relied upon to fulfill its obligations, will behave in a predictable manner, and will act and negotiate fairly when the possibility for opportunism is present (Zaheer et al. 1998). This conceptualization of trust

has been widely used in research on interorganizational relationships (e.g., Dyer and Chu 2003, Gulati and Sytch 2007, Poppo et al. 2008) and, therefore, serves as the basis of our definition. Although we conceptualize trust at the interorganizational level, we argue that expectations about trust ultimately originate within individuals, but can be directed at other individuals or collective entities such as organizations. Trust encompasses an array of concepts, including beliefs about another party's trustworthiness, the intention to trust, and trusting behaviors (i.e., McEvily and Tortoriello 2011, Schilke and Cook, 2015). Consistent with the interorganizational literature (Gulati and Sytch 2007) and for ease of exposition, we simply use the term "trust" in the remainder of the paper, but recognize that strictly speaking it is the perceived trustworthiness aspect of overall trust that we consider (Schilke and Cook 2015). Accordingly, we view trust as the degree to which the counterpart (i.e., buyer or supplier organization) is perceived by the boundary-spanner (i.e., purchasing manager or supplier representative) to be reliable, predictable, and fair.

In the following section, we propose a dyadic theoretical framework that goes beyond the mutual elements to emphasize the exclusive features of the relationship that influence interorganizational trust. As a baseline, we anticipate that interorganizational trust will be mutual. Specifically, we expect that the exchange partners' trust in each other will be related. Since the mutuality of trust is widely acknowledged, we do not formally hypothesize—but do empirically validate—this relationship in our analyses. Instead, our primary focus is to explain and predict the effects on trust that are exclusive to either side of the dyad, above and beyond the mutual effects.

The Dyadic Influences of Exchange Hazards on Trust

As noted previously, the hazard of exchange has featured prominently in analyses of the sources of interorganizational trust. The dominant approach thus far has been to focus on the reciprocal component of exchange hazards when, for instance, both parties make investments in specialized assets (Poppo et al. 2008). Here the mechanisms linking exchange hazards to trust are mutual commitment (Young-Ybarra and Wiersema 1999), joint dependence, and the logic of embeddedness (Gulati and Sytch 2007). One exception is a study by Ganesan (1994) that recognized exchange hazards as distinct between the two parties. Even so, the two sides of the dyad were conceptualized as mirror images, which again treated the effects of exchange hazards as mutual and reciprocal, although from both sides. In contrast, we explain

how the differential exposure to exchange hazards of each party has distinct effects on the focal party and the counterpart—i.e., *cross-dyad* effects. We further predict the influence of the *power imbalance* (in terms of the relative level of investment in relationship-specific assets) on the two parties' trust in each other. Lastly, we hypothesize the relative magnitude of the cross-dyad effects, in terms of which party's exchange hazards will have a greater influence on the two parties' trust in each other, based on their relative *power positions* in the dyad. We summarize our hypotheses in the research model shown in Figure 1. Before developing the logic for these three sets of predictions, we first establish the relevance of exchange hazards for interorganizational trust.

 Insert Figure 1 about here

Exchange Hazards. Following transaction cost theory, we suggest that the hazards of exchange are derived from non-transferable asset-specific investments and environmental uncertainty (Williamson 1985). Asset specificity refers to the extent to which investments to support a particular transaction lose value if redeployed for use in the best alternative use (Klein et al. 1978). Uncertainty in the transaction environment refers to the inability to predict contingencies (John and Weitz 1988).¹ Both factors determine the “hazard” of exchange, as Williamson (1985: 56) clearly emphasizes, “To be sure, asset specificity only takes on importance ... in the presence of uncertainty. It is nonetheless true that asset specificity is the big locomotive to which transaction cost economics owes much of its predictive content.” Accordingly, we define exchange hazards as the combination of asset specificity and uncertainty, rather than either asset specificity or uncertainty alone (Anderson and Schmittlein 1984, Walker and Weber 1984).

Asset specificity makes exchange more hazardous due to the potential for ex-post opportunism and holdup, particularly when unforeseen adjustments are called for as uncertainty rises. When the hazards of exchange are low, either contracts can be specified easily or the problems of holdup are minor. In contrast, when the hazards of exchange are non-trivial, exchange partners are inclined to trust each

¹ Environmental uncertainty is distinct from behavioral uncertainty in that the latter emphasizes the inability to anticipate and understand actions (Krishnan et al. 2006).

other less because of the greater possibilities for opportunism due to the unpredictability and unforeseen nature of contingencies, coupled with the greater possibilities of renegotiating and bargaining in bad faith (Anderson 1988). Such “calculativeness” influences judgments about trust based on the extent to which a party anticipates that the expected gains of engaging in exchange outweigh the expected losses (Coleman 1990, Dasgupta 2000, Doney and Cannon 1997). As a party’s own exchange hazards increase, the expected losses rise due to possible opportunism by the counterpart. As a result, the ratio of expected losses to expected gains increases, thereby diminishing trust. Consistent with these ideas, previous research has found that when exchange hazards are high, trust in the counterpart is lower (Dwyer and Oh 1987, Morgan and Hunt 1994). This leads to our first set of hypotheses:

Hypothesis 1: A focal party’s own exchange hazards will have a negative effect on its own trust in the counterpart.

Hypothesis 1a: The supplier’s exchange hazards will have a negative effect on its own trust in the buyer organization.

Hypothesis 1b: The buyer’s exchange hazards will have a negative effect on its own trust in the supplier organization.

Cross-Dyad. It is important to note that the theoretical arguments summarized above linking exchange hazards to trust do not explicitly identify which party’s exchange hazards are affecting which party’s trust. Implicit in these arguments is the idea that each party’s *own* exchange hazards negatively affect its own trust in the counterpart. Yet such a perspective only considers one side of the dyad and overlooks the potential effect of one party’s exchange hazards on the *counterpart’s* trust in it. We further argue that each party occupies a unique position in the relationship with regard to exposure to exchange hazards and that each party’s exchange hazards affect not only its own trust in the counterpart, but also the counterpart’s trust in it.

Specifically, the effect of the focal firm’s exchange hazards on the counterpart’s trust in it is likely to be driven by a different mechanism than potential opportunism. Because a focal firm’s exchange hazards constitute an investment in the relationship, the counterpart is likely to view the focal firm as committed to a course of action beneficial to the counterpart (Anderson and Weitz 1992, Poppo et al. 2008). Moreover, to the extent that the focal firm’s investment in the relationship increases switching

costs, its incentive to behave opportunistically is lessened due to its increased dependence on the counterpart (Nooteboom et al. 1997). Thus, the focal firm's exchange hazards should have a positive effect on the trust of the counterpart. In the context of buyer-supplier exchange relationships, this leads to the following set of hypotheses:

Hypothesis 2: The counterpart's exchange hazards will have a positive effect on the focal party's trust in the counterpart.

Hypothesis 2a: The buyer's exchange hazards will have a positive effect on the supplier's trust in the buyer organization.

Hypothesis 2b: The supplier's exchange hazards will have a positive effect on the buyer's trust in the supplier organization.

In sum, we expect exchange hazards to have opposite effects on trust across the dyad—a firm's own exchange hazards will *negatively* affect its trust in the counterpart (H1a and H1b) and *positively* affect the counterpart's trust in the focal firm (H2a and H2b). These opposing effects of exchange hazards on trust across the dyad represent our point of departure from the existing literature. If the prevailing view of exchange hazards being mutual is correct, these effects should be parallel across the dyad. Alternatively, if there are elements of exchange hazards that are separate for each party, as we propose, the effects should differ across the dyad.

Power Imbalance. Implicit in foregoing predictions is the idea that each firm's exchange hazards are independent and unrelated. In contrast, we argue that beyond the presence of relationship-specific investments on both sides of the dyad, the extent to which the two parties' levels of investments differ adds an element of power into a model of the antecedents of interorganizational trust. In the classic formulation of power-dependence, the power of a focal party in relation to its counterpart is the inverse of the focal party's dependence on the counterpart (Emerson 1962: 33). The extent to which one party is more invested than the other in assets specific to the relationship indicates a greater level of dependence on the counterpart, than vice versa (Gulati and Sytch 2007). The link between exchange hazards and power-dependence is based on the availability of alternatives—as a party increases its relationship-specific investments, switching costs rise, making the replacement of the partner with an alternative less viable (Heide and John 1988). Importantly, while previous research has elaborated the rationale for why

relatively equal power (i.e., joint dependence) enhances trust among exchange partners (Anderson and Weitz 1989, Gulati and Sych 2007), the influence of the degree of power imbalance on trust has received limited theoretical attention.

Power imbalance explicitly recognizes the *relative* degree of divergence (correspondence) between the two parties' investments in relationship-specific assets. In this respect, a party's own exchange hazards are viewed in light of those of the counterpart. We suggest that power imbalance consists of two mechanisms that combine to influence judgments about the trustworthiness of a counterpart. Power imbalance simultaneously consists of a threat of opportunism (stemming from a party's own exchange hazards) and a situation of mutual hostages (stemming from the counterpart's exchange hazards). The combined effect of these two mechanisms differs depending upon the degree of imbalance and upon which side of the imbalance a party resides. When a focal party's own exchange hazards are high and the counterpart's are low, the threat of opportunism faced by the focal party looms large. Yet, the same, high level of exchange hazards for the focal party combined with, for example, an intermediate level of exchange hazards for the counterpart constitutes a distinct dynamic. In this case, the counterpart's investments partially offset those of the focal party, thereby creating "mutual hostages," generating a degree of dependence balancing, and limiting the potential for opportunism (Heide and John 1988). From the standpoint of the focal party, the counterpart's offsetting investments can also be seen as a signal of commitment (Anderson and Weitz 1992). Together, the threat of opportunism and the extent of mutual hostages determine the degree of power imbalance.

With respect to the degree of imbalance, the magnitude of imbalance is likely to have a differential effect on the two parties' trust in each other depending on which side of the imbalance a party resides.² Specifically, we would expect greater imbalance to be associated with lower trust in the counterpart for the less powerful (i.e., supplier) party since the risk of loss from opportunism outweighs the potential gains. Conversely, for the more powerful (i.e., buyer) party we anticipate greater imbalance

² Clearly, which party (buyer versus supplier) is more powerful is likely to vary across exchange contexts. Accordingly, we take the approach of verifying the relative power of exchange partners by empirically observing the distribution of power between the buyer and supplier industries (based on concentration ratios) and between the particular buyer and supplier firms participating in a given exchange relationship (based on relationship-specific investments). As we demonstrate in the Methods section, the buyers are more powerful than suppliers in our empirical setting. For this reason, in the theory section we refer to the more powerful party as the buyer and the less powerful party as the supplier.

will be associated with higher trust in the counterpart since the potential gains surpass the risk of loss from opportunism.

This leads to our next set of hypotheses:

Hypothesis 3: The degree of power disadvantage (advantage) decreases (increases) trust in the counterpart for the power disadvantaged (advantaged) party.

Hypothesis 3a: The greater the ratio of supplier to buyer asset specific investments, the lower the supplier's trust in the buyer organization.

Hypothesis 3b: The greater the ratio of supplier to buyer asset specific investments, the greater the buyer's trust in the supplier organization.

Power Position. The preceding hypotheses predicted that the influence of power imbalance on trust would depend on the power position (advantaged versus disadvantaged) of each party. We further predict that power position will also distinguish the relative influence of each party's exchange hazards on trust. In particular, we build on the cross-dyad prediction (hypotheses H1a/b and H2a/b) that both parties' exchange hazards will influence both parties' trust in each other to argue that the power-advantaged party's exchange hazards will exert greater influence than those of the power-disadvantaged.

Our core assertion is that power position in the dyad affects the allocation of attention to information (Ebenbach and Keltner 1998) upon which inferences about trust are made. Power advantage in relationships affects a range of behaviors and outcomes, including how parties form judgments about each other (Ebenbach and Keltner 1998). Since powerful individuals are less dependent on others, they are less motivated to pay careful attention to those less dominant (Erber and Fiske 1984). Consistent with this view, "[t]he 'situated focus theory of power' (Guinote 2007) suggests that as a consequence of power, people direct more attention to themselves" (Pitesa and Thau 2013: 636). On the other hand, less powerful parties carefully attend to the actions and intentions of others in order to navigate relations within such a precarious exchange context. In general, such attention reinforces the persistence of a hierarchy, whereby more information about powerful individuals is more available because of the general tendency to attend to such individuals more than to those lower in the hierarchy (Magee and Galinsky 2008).

The influence of power advantage on allocation of attention affects a variety of judgments, including attributions of trust. According to attribution theory, individuals form judgments about trust by processing information as "intuitive auditors" that engage in "mental accounting" (Kramer 1996). In the

midst of complex situations, individuals take shortcuts and use heuristics to conserve cognitive resources (Fiske and Taylor 1991, Kahneman and Tversky 1979). Such heuristic processes and the judgments they produce are systematically influenced by a person's position of power in a relationship. For instance, in a study of doctoral candidate–faculty adviser relationships, doctoral candidates recalled significantly more negative behaviors by their relatively more powerful faculty advisors than vice versa (Kramer 1996). In addition, doctoral students' estimates of their “private ruminations” (time spent thinking about their relationships with their advisors) were significantly higher than those of their advisors.

A key implication of this line of research for our purposes is that a power position produces a divergence between the more and less powerful parties in the allocation of attention to information upon which inferences about trust are made. As Kramer (1996) argues, the less powerful party in a relationship faces greater uncertainty due to its relatively greater reliance on the more powerful party for valued resources and outcomes. Given the greater uncertainty, the power-disadvantaged party will tend to pay more attention to the more powerful party relative to itself in an effort to make inferences about the motives and intentions of the more powerful party toward itself. At the same time, the less powerful party also tends to over-interpret the meaning of their interactions with the more powerful party, as diagnostic of the latter's motives and intentions toward itself. Taken together, these arguments suggest that the less powerful party will shift its attention toward the more powerful party for making inferences about trust.

It is important to note that the literature on power positions also suggests a change in the allocation of attention of the more powerful party away from the less powerful party. More powerful actors are argued to be primarily concerned with their own interests and outcomes, and at the same time less sensitive to those of others. Powerful parties have been shown to “anchor too heavily on their own vantage points” and ignore the perspectives of other less powerful parties (Galinsky et al. 2006: 1068). Since the more powerful are also in greater demand by those less powerful, “they may have little spare attentional capacity to allocate to monitor or ruminate about the activities of a specific [exchange partner]” (Kramer 1996: 227). As a result, the more powerful party is relatively more focused on itself. Thus, the convergence between the more and less powerful parties in the allocation of attention derives from both parties increasingly focusing their attention on the more powerful party.

We build on this theoretical insight by relating the idea of power position to differences in the effects of each party's exchange hazards on their trust in each other. Specifically, we argue that the

power-*dis*advantaged (supplier) firm will focus on the exchange hazards of the power-advantaged (buyer) firm, while the latter will continue to focus on its own exchange hazards. Accordingly, we suggest that the power-*dis*advantaged firm will base its trust on the exchange hazards of the power-advantaged firm to a greater degree than those of the power-*dis*advantaged firm. Counterintuitively, the power-advantaged firm will also base its trust on the exchange hazards it faces to a greater degree than those of the power-*dis*advantaged firm. We therefore expect that both the power-*dis*advantaged and the power-advantaged parties will both attend to the exchange hazards of the power-advantaged (buyer) party than the power-*dis*advantaged (supplier) party to a greater extent as the basis for their trust in each other, leading us to our final set of hypotheses:

Hypothesis 4: The power-advantaged (-*dis*advantaged) party's exchange hazards will have a stronger (weaker) effect than the power-*dis*advantaged (-advantaged) party's exchange hazards on both parties' trust in each other.

Hypothesis 4a: The buyer's exchange hazards will have a stronger effect than the supplier's exchange hazards on the supplier's trust in the buyer organization.

Hypothesis 4b: The buyer's exchange hazards will have a stronger effect than the supplier's exchange hazards on its own trust in the supplier organization.

RESEARCH METHODS

Research Design

Starting from the premise that there are mutual and exclusive features to exchange relationships, we argued that the antecedents of trust are likely to systematically vary across the dyad. To test our predictions we devised a dyadic research design that incorporated survey data from *both* the buyer and supplier organizations involved in a given exchange relationship. We rely on purchasing managers and supplier representatives to act as informants for their respective organizations and to report their assessments of key features of the interorganizational exchange relationship. The survey was designed to focus both the buyer and supplier on the sourcing of a specific component or sub-assembly, rather than report on the overall relationship, in order to capture the emphasis on the transaction as the level of analysis, consistent with transaction cost theory (Williamson 1985).

A key methodological strength of the dyadic research design is that it limits single-source bias (Podsakoff and Organ 1986) because our measures are drawn from different surveys. Nevertheless, we also implemented the Harman single factor test (Harman, 1976). Specifically, we performed two separate factor analyses, one for the buyer and one for the supplier, which included the dependent variable and all of the independent variables from the survey for each respective side of the dyad. The results of these analyses showed that the total variance explained by the single factor was 25.5 percent for the buyer side and 24.8 percent for the supplier side, both of which are well below the conventional threshold of 50 percent (Podsakoff and Organ 1986: 536).

In order to assess the influence of the sources of trust from each side of the dyad, we collected data using two separate questionnaires, one for the purchasing manager of the buyer firm and the other for the supplier representative of the supplier firm. By using parallel items in the surveys, we are able to capture the distinctions in trust antecedents and exchange hazards across the dyad.

Data Collection

We collected dyadic data on exchange relationships from electrical equipment manufacturers and their component suppliers using a mailed questionnaire. The sampling frame for the questionnaire consisted of purchasing managers in the “Electronic and Other Electrical Equipment and Components” industry (SIC 3600) who are members of the U.S.-based National Association of Purchasing Managers (NAPM). After contacting and conducting detailed interviews with 20 of these purchasing managers to gain a better understanding of the specific research context, we identified 1,050 NAPM members who were eligible to participate in our study. To be eligible a firm must deal directly with supplier firms from which they source a key component or sub-assembly and have purchasing relationships with at least six suppliers of different key components. We invited qualified NAPM members to participate in the study and to mail us the contact information for one specific supplier with whom they deal.

Given the potential for purchasing managers to select supplier relations that were uniformly positive, we used a randomizing procedure to lessen the potential for selection bias (Anderson and Narus 1990). We instructed purchasing managers to list their top six suppliers in terms of dollar amount of sales made in the past year and then we randomly selected a number between one and six, which was the number four. Next, we instructed purchasing managers to provide us with the name and address of one

specific contact person (i.e., supplier representative) they personally deal with from their fourth largest supplier. A total of 153 purchasing managers agreed to participate by returning information about a supplier.

Testing for Non-response Bias. The participation rate of roughly 15 percent (i.e., 153/1,050) raised the possibility that our sample of respondents systematically differed from the broader population of firms. To assess the likelihood of non-response bias, we conducted a follow-up telephone survey with 100 randomly selected firms that did not respond to the invitation to participate in the study. We found no significant differences between participating and non-participating firms in terms of size ($t = 1.10$), the length of the business relationship with the supplier firm ($t = -0.81$), or satisfaction with the buyer-supplier relationship ($t = -0.56$), supporting the representativeness of our sample.

Next, we mailed questionnaires to the 153 purchasing managers and the 153 supplier representatives they identified. After several rounds of follow-up communication (Dillman 1978), we received 240 completed questionnaires (120 buyers and 120 suppliers) for a final response rate of 78 percent (i.e., 240/306). Although we received an equal number of responses from buyer and supplier organizations, not all of the questionnaires were matched within a given dyad because some of the buyer responses were for dyads for which we did not receive supplier responses (and vice versa). We obtained responses from both the buyer and supplier organization for a given dyad in 82 cases (i.e., 164 total questionnaires).

Measures

We used information obtained from the initial interviews and previous research to guide the development of our measures. We pretested a preliminary set of measures with local purchasing managers from the same industry and incorporated their feedback into a revised set of measures included in the final questionnaire.³ The details of the measurement items and scales included in the final questionnaire are provided in an online appendix. Table 1 reports descriptive statistics, the zero-order correlations among constructs, and the Cronbach's alpha reliability values for each measure.

³ Responses from the pretest were not included in any subsequent analyses.

 Insert Table 1 about here

The wording of the measures included in the buyer and supplier versions of the questionnaire is identical with the exception of the referent firm identified (i.e., Customer X vs. Supplier X). Each set of measures captures the exchange partners' views of the interorganizational relationship from their own perspective.

Dependent Variables. We used the five-item measure reported in Zaheer et al. (1998) to operationalize *Trust in the Partner Organization*.⁴ The measure has been replicated in several studies of inter-organizational trust and consistently shown to have strong construct validity (e.g. Gulati and Sych 2007, Poppo et al. 2008).

Independent Variables. Consistent with our conceptualization, we operationalize *Exchange Hazards* in terms of the interaction of asset specificity and uncertainty (Anderson and Schmittlein 1984). *Asset Specificity* was measured with three items, reflecting the extent to which specialized investments were made in the production system, tools, and equipment using a measure adapted from Heide and John (1990). To measure *Uncertainty* we used a four-item measure developed by Noordewier et al. (1990). The *Uncertainty* measure differs slightly between the buyer and supplier questionnaires in that it solicits information about the buyer's sourcing market (i.e., the market for the component sourced by the buyer from the supplier), rather than each firm's own sourcing market.

Power Imbalance. As noted previously, we operationalize power based on the extent to which one party is more invested in assets specific to the relationship than the other, indicating a greater level of dependence on the counterpart, than vice versa. Building on this, our measure of power imbalance is the

⁴ In order to estimate the extent to which the purchasing manager's trust in the supplier is shared by other members of the buyer organization, we gathered data from a second knowledgeable informant identified by the purchasing manager. The second informants completed a questionnaire containing the same items as the purchasing manager's questionnaire to measure trust in the focal supplier. We assessed the degree of convergence in reports of trust by examining the correlation between the two informants' responses. The positive and highly significant correlation of 0.706 ($t = 4.27, p < 0.01$) provides strong support for the convergent validity of our measure. We evaluated the second informant's competency (Kumar et al. 1993) to report on the buyer-supplier relationship by including the following item: "I am familiar with most aspects of our business relationship with Supplier X." Of the 82 second informants surveyed, 77 (94%) circled four or higher on a scale from one (strongly disagree) to seven (strongly agree). We excluded all second informants responding three or lower. A total of 68 of the 77 qualified second informants had matching questionnaires from purchasing managers.

ratio of relationship-specific assets of each partner, which is the inverse of the dependence of one exchange partner on the other. More formally, as Emerson (1962) suggests,

$$\begin{aligned} P_{ab} &= D_{ba} \\ P_{ba} &= D_{ab} \end{aligned}$$

where P_{ab} is the power of a over b and D_{ba} is the dependence of b on a (and vice versa).

Mathematically, this yields the following equivalence

$$P_{ab} / P_{ba} = D_{ba} / D_{ab}$$

where D_{ba} = relationship-specific investments of the supplier and D_{ab} = relationship-specific investments of the buyer.

Our measure of *power imbalance* is precisely D_{ba} / D_{ab} .

While power imbalance and exchange hazards share the common element of asset specificity, they are nevertheless distinct constructs. Whereas exchange hazards combines asset specificity with uncertainty, power imbalance is based solely on asset specificity and, more importantly, captures the *relative difference* between exchange partners in relationship specific investments. In this way, the ratio of asset specificity captures the relative degree of dependence of each party on the other. Likewise, the inverse captures the relative power of one party over the counterpart. In contrast, exchange hazards reflects the potential costs and risks that are unique to each party in the exchange relationship.

Control Variables. Other factors undoubtedly influence expectations about the trust of a partner organization. Previous research has shown that interpersonal (i.e., the contact person) and interorganizational (i.e., the partner organization) trust are related (Zaheer et al. 1998). Whereas the *Trust in the Contact Person* (i.e., Purchasing Manager/Supplier Representative) captures trust at the interpersonal level, *Trust in the Partner Organization* (Buyer/Supplier) captures the counterpart's trust at the interorganizational level. We control for both forms of trust in our analyses. For instance, in our model predicting purchasing managers' trust in supplier organizations we control for purchasing managers' trust in individual supplier representatives and for supplier representatives' trust in buyer organizations. The measures for interpersonal and interorganizational trust are based on those reported in Zaheer et al. (1998).

Previous research has also shown that tenure in the organization is related to trust (Perrone et al. 2003). Boundary spanners with longer tenure are often more powerful because such individuals acquire influence and knowledge as their tenure increases (Pfeffer 1982, Pfeffer 1992). Long-tenured boundary spanners are viewed as more reliable as they are able to use their influence and knowledge to guarantee their organization is able to execute the relationship according to their counterpart's expectations. We operationalized *Tenure* as the number of years the boundary spanner has been working for their respective organization.

We further control for other antecedents on which prior research has converged (Ganesan 1994, Gulati and Sytch 2007, Poppo et al. 2008). According to this stream of research, in addition to the current risks (i.e., exchange hazards) associated with the relationship, trust is based on past experience with the other party as well as a forward-looking assessment of expected behavior. Specifically, we control for the past duration of the relationship and the shadow of the future. Although we collected independent reports of the *Past Duration of the Relationship* from both buyers and suppliers, since the responses were highly correlated ($r = 0.73, p < 0.01$) we averaged the two responses to create a single measure. We operationalized *Shadow of the Future* with a three-item measure developed by Heide and Miner (1992).

ANALYSES

Central to our hypotheses is distinguishing the more from the less powerful party in an exchange relationship. Clearly, which party (buyer versus supplier) is more powerful is likely to vary across exchange contexts. Accordingly, we take the approach of identifying the relative power of exchange partners by empirically observing the general pattern of power distribution in the specific field setting for our study. To do so, we rely on two distinct proxies for power: relative levels of industry concentration ratios and relative levels of asset specificity.⁵

First, we empirically validated the difference in power between buyers and suppliers by collecting four-firm, four-digit primary SIC code concentration ratio data. An extensive line of research in industrial

⁵ As an additional check, we also compared the average size of buyer and supplier organizations, as previous research has identified size as a basis of power (Haveman 1993, Pfeffer and Salancik 1978). We observed that buyers are on average significantly larger than the suppliers in terms of number of employees ($t=2.60, p < 0.01$) and sales volume ($t=4.82, p < 0.001$). While size by itself may not necessarily be a precise indicator of power, in conjunction with asset specificity it does provide a more comprehensive understanding of relative power than either indicator alone.

organization economics (Demsetz 1973) and strategy (McGahan and Porter 1997) demonstrates that firms in more concentrated industries enjoy greater pricing, bargaining, and market power vis-à-vis firms in less concentrated industries. If a supplier industry, for example, contains a single firm (i.e., a monopoly) while the buyer industry contains several firms, the balance of power resides with the supplier. Conversely, if the buyer industry contains a single firm (i.e., a monopsony), the balance of power would reside with the buyer. More generally, if an industry has fewer firms than the industry to which it is supplying a product, or from which it is buying a product, the firms in that industry are more powerful.

In the context of this study, since all of the buyer firms are in the same four-digit primary SIC code, there is no variation among buyers and, therefore, the concentration ratio of the buyer industry is fixed. The supplier firms, in contrast, belong to 30 different four-digit primary SIC codes. For the purposes of determining power advantage, we compare the concentration ratio of the buyer industry to those of the supplier industries. We confirmed that in all cases the buyer industry is more concentrated (i.e., more powerful) than those of the suppliers. On average, the difference in concentration ratio between the buyer and supplier industries is 24 (on a scale from 0 to 100), with a median of 24 and the first and last quartiles equal to 18 and 35, respectively.⁶ These analyses indicate that in the market context of our study, buyer firms are more powerful.

Second, we also empirically validated the difference in power between buyers and suppliers based on the extent to which each party has invested in assets specific to the relationship. Specifically, we examined the relative levels of asset specificity for buyer and supplier organizations. Based on this approach, we found that the supplier organizations in our data, on average, tended to have significantly higher levels of asset specificity than the buyers. The difference in asset specificity is statistically significant ($t = 7.65, p < 0.001$), and roughly 80 percent of supplier organizations showed higher levels of asset specificity than buyer organizations.⁷ Recall that since we hypothesize the effect of power imbalance, we explicitly incorporate this effect into our empirical models. Thus, we not only establish that in our sample buyers tend to be more powerful than suppliers, but also incorporate the exact degree

⁶ We find that the results reported below are robust to the inclusion of the difference in concentration ratios as a further control (results available upon request).

⁷ In a separate set of analyses (results available upon request) we also include a dummy variable to control for the 20 percent of cases where the supplier faces fewer exchange hazards than the buyer. The results reported below are materially unchanged and the dummy variable is non-significant, suggesting that this set of cases does not influence our results.

of power imbalance in each particular exchange relationship between a given buyer and supplier. Taken together, we believe the concentration ratio and asset specificity data supports our approach of treating the buyer as the more powerful party in the exchange relationship.

Since we are primarily interested in evaluating the influence of the antecedents of trust given the relative power of exchange partners, we assess the validity of our hypotheses by estimating two parallel sets of models—one for the less powerful suppliers (Supplier Models) and another for the more powerful buyers (Buyer Models). While, in principle, it is possible to combine both buyers and suppliers into a single model and estimate the effects of exchange hazards and power on trust, doing so would necessitate including a dummy variable for the more/less powerful party, a dummy variable for buyer/supplier role, and a series of interaction terms, including potentially a four-way interaction (uncertainty x asset specificity x power dummy x role dummy) term and all of the lower-order interaction terms. Such a modeling approach would obscure the very dyadic effects and comparisons we seek to highlight, which is why we have opted instead to split our data into separate buyer and supplier models. The Supplier Models estimate the effects of the antecedents on the supplier representative's trust in the buyer organization as the dependent variable (Supplier Models, Table 2) and the Buyer Models estimate the effects of the antecedents on the purchasing manager's trust in the supplier organization as the dependent variable (Buyer Models, Table 3). The advantage of the parallel-model approach is that it is more closely aligned with addressing our core research question regarding the extent to which exchange hazards influence trust, in different ways, and to differing degrees, on both sides of the dyad.

Insert Tables 2 and 3 about here

An important implication of our matched dyad research design is that the error terms in the Supplier and Buyer models are not independent. As a result, fitting separate ordinary least-squares regression models will not produce efficient estimates. For this reason, we instead treated our models as a system of equations and estimated them using seemingly unrelated regression (Zellner 1962). Seemingly unrelated regression is estimated using a two-step procedure. In the first step, ordinary least-squares regression models are fitted and the residuals from these models are used to estimate the covariance

matrix. The second step computes generalized least-squares regression models based on the estimated covariance matrix from the first step.

RESULTS

Our primary interest is in evaluating the extent to which the antecedents of interorganizational trust are exclusive to either side of the dyad. To do so, we evaluate the antecedents of trust in a stepwise fashion by first estimating the effects of controls followed by the cross-dyad effects (H1-H2: H1a/b-H2a/b), power imbalance effects (H3: H3a/b), and power position effects (H4: H4a/b) in both the Supplier Models and the Buyer Models. While we report the stepwise results in the tables, for the purposes of evaluating the validity of the hypotheses we concentrate on the fully specified models (i.e., including all variables). Lastly, in order to ensure that we have not misspecified the effects of power in our models, we also explored additional interaction effects of the predictor and control variables with power imbalance and found no statistically significant effects.

Controls

As shown in the first models, the control variables account for a significant amount of variance explained for both the Supplier Model (Table 2, Model 1, $R^2 = 0.24$) and Buyer Model (Table 3, Model 1, $R^2 = 0.28$). In both models, trust in the individual contact person and the counterpart's trust in the focal organization are positively and statistically significantly related to the focal party's trust in the partner organization (Table 2, Model 1, $b = 0.293$, $p < 0.01$; Table 3, Model 1, $b = 0.174$, $p < 0.05$). The effect of the counterparts' trust in the focal organization in both the Supplier Models and the Buyer Models is consistent with the traditional view that trust is mutual and reciprocal in exchange relationships. Interestingly, the effect is the largest single influence on trust in both models (Table 2, Model 1, $b = 0.589$, $p < 0.01$; Table 3, Model 1, $b = 0.573$, $p < 0.01$).

The remainder of the control variables show mixed effects across the dyad. Whereas the past duration of the relationship is positively and marginally statistically significantly related to the supplier representative's trust in the buyer organization, it is negatively but not statistically significantly related to the purchasing manager's trust in the supplier organization (Table 2, Model 1, $b = 0.218$, $p < 0.10$; Table 3, Model 1, $b = -0.133$, *n.s.*). Tenure of the purchasing manager, but not that of the supplier representative, is also statistically significantly related to trust in the partner organization for both buyers

and suppliers. Interestingly, the direction of the effect varies across the dyad with a negative effect on the supplier representative's trust in the buyer organization and a positive effect on the purchasing manager's trust in the supplier organization (Table 2, Model 1, $b = -0.028$, $p < 0.10$; Table 3, Model 1, $b = 0.039$, $p < 0.01$).⁸ Along the same lines, buyer shadow of the future is negative and marginally statistically significant in the Supplier Models and positive and statistically significant in the Buyer Models (Table 2, Model 1, $b = -0.109$, $p < 0.10$.; Table 3, Model 1, $b = 0.114$, $p < 0.05$). In contrast, supplier shadow of the future is statistically significant only in the Buyer Models, and the sign is negative rather than positive (Table 2, Model 1, $b = 0.043$, *n.s.*; Table 3, Model 1, $b = -0.125$, $p < 0.05$). The overall pattern of results is consistent with our general thesis of differences in the antecedents of trust between the more and less powerful parties to a relationship, and with our specific argument that attention shifts to the more powerful party for making inferences about trust. More generally, we believe the variables provide a parsimonious and robust means of controlling for other influences on trust.

Cross-Dyad

Our first set of hypotheses (H1-H2) predicted that exchange hazards would have opposite effects on trust across the dyad—a firm's own exchange hazards will be *negatively* related to its trust in the counterpart and *positively* related to the counterpart's trust in the focal firm. Specifically, in this research context the supplier representative's trust in the buyer organization will be negatively related to its own exchange hazards (H1a) and positively related to the buyer organization's exchange hazards (H2b). As noted previously, transaction cost theory emphasizes the combination of asset specificity and uncertainty as indicative of the hazard of exchange. Thus, we consider the interaction effect of asset specificity and uncertainty as the primary test of these hypotheses. Overall, the results strongly support both hypotheses.

In the fully specified Supplier Models, the interaction effect of the supplier's asset specificity and uncertainty is negative and marginally statistically significant (Table 2, Model 4, $b = -0.100$, $p < 0.06$) while the interaction effect of the buyer's asset specificity and uncertainty is positive and statistically significant (Table 2, Model 4, $b = 0.180$, $p < 0.01$). For the Buyer Model, we predicted that the purchasing manager's trust in the supplier organization will be negatively related to its own exchange

⁸ Although tenure of the supplier representative is initially marginally statistically significant in the Buyer Model (Table 3, Model 1, $b = -0.029$, $p < 0.10$), this effect is not robust to the inclusion of the predictor variables (Table 3, Model 4, $b = -0.016$, *n.s.*).

hazards (H1b) and positively related to the supplier organization's exchange hazards (H2b). The results provide partial support for these hypotheses. In the fully specified Buyer Model, the interaction effect of the buyer's asset specificity and uncertainty is negative and statistically significant (Table 3, Model 4, $b = -0.128, p < 0.05$), whereas the interaction effect of the supplier's asset specificity and uncertainty is positive but not statistically significant (Table 3, Model 4, $b = 0.070, n.s.$).⁹

To visually represent the combined effects of exchange hazards we have plotted the significant interactions in Figure 2.¹⁰ Each of these plots clearly show that the effects of asset specificity on trust are contingent upon uncertainty, as indicated by the change in the slope of the high versus lower uncertainty lines. Specifically, in the first diagram, "DV: Supplier Trust in Buyer," for only those suppliers facing high uncertainty (i.e., downward sloping dotted line), the higher the supplier asset specificity the lower the trust in the buyer; for suppliers facing low uncertainty (horizontal solid line), the level of trust in the buyer is materially indifferent to the level of supplier asset specificity. Likewise, as shown in the second diagram, for just the buyers facing high uncertainty (i.e., upward sloping dotted line) does the level of the trust in the buyer vary with the level of buyer asset specificity; for buyers facing low uncertainty (horizontal solid line), the level of trust in the buyer is relatively constant across levels of buyer asset specificity. On the other side of the dyad, as shown in the third diagram "DV: Buyer Trust in Supplier," we similarly observe that for just those buyers facing high uncertainty (i.e., downward sloping dotted line), the higher the buyer asset specificity the lower the trust in the supplier, whereas for buyers facing

⁹ Moreover, the main effect of supplier asset specificity is negative and statistically significant (Table 3, Model 4, $b = -0.347, p < 0.01$). A possible explanation for this result is that investment in dedicated assets by suppliers could be interpreted as an erosion of buyer power when such investments require a similar investment in dedicated assets by the buyer. Such co-specialization (Teece 1986) does appear to have occurred in the dyads we studied, as evidenced by the positive and statistically significant zero-order correlation between buyer and supplier asset specificity (Table 1, $r = 0.27, p < 0.01$). At the same time, how the purchasing manager interprets the supplier's investment in dedicated assets and whether it will create the prospect of holdup may also depend on the interpersonal relationship between boundary spanners. In particular, purchasing managers who view the supplier representatives with whom they deal as trustworthy may be less inclined to see supplier asset specificity and co-specialization as a form of holdup, but rather view such an investment as a commitment to the relationship. To investigate this possibility we examined the interaction of purchasing manager trust in the supplier representative with supplier asset specificity on the purchasing manager's trust in the supplier organization. The results of this exploratory analysis revealed a positive and statistically significant interaction effect ($b = 0.27, t = 2.79, p < 0.05$). We recognize that these inferences are speculative, but we believe they are informative for future research nonetheless.

¹⁰ Since the Supplier Asset Specificity x Supplier Uncertainty interaction in the Buyer Trust in Supplier model is not statistically significant, we do not plot this effect.

low uncertainty (horizontal solid line), the level of trust in the supplier is invariant across the level of buyer asset specificity.

 Insert Figure 2 about here

Power Imbalance

Our second set of hypotheses predicted that power imbalance would be differentially associated with trust across the dyad. In particular, for the power-disadvantaged supplier, power imbalance should decrease the supplier representative's trust in the buyer organization (H3a). Conversely, for the power-advantaged buyer, power imbalance should increase the purchasing manager's trust in the supplier organization (H3b). To test these hypotheses, we include the measure of power imbalance (defined as the ratio of supplier to buyer asset specificity) in both Supplier and Buyer Models. In both models, the coefficient for power imbalance is statistically significant, and as predicted in opposite directions (Supplier Model, Table 2, Model 4, $b = -0.494$, $p < 0.01$; Buyer Model, Table 3, Model 4, $b = 0.367$, $p < 0.01$). These results provide strong support for Hypotheses 3a and 3b. In terms of practical significance, a one-standard deviation increase in power imbalance decreases the supplier representative's trust in the buyer organization by 49%. In contrast, a one standard deviation increase in power imbalance increases the purchasing manager's trust in the supplier organization by nearly 37%.

Power Position

Our last set of hypotheses predicted that both the power-disadvantaged and the power-advantaged parties will attend to the exchange hazards of the power-advantaged party to a greater extent as the basis for their trust in each other. Specifically, we expect the buyer's exchange hazards to have a stronger effect than the supplier's exchange hazards on both the supplier representative's trust in the buyer organization (H4a) and the purchasing manager's trust in the supplier organization (H4b). To test these hypotheses, which predict that the parameter estimates for the buyer's exchange hazards will be larger than the parameter estimate for the supplier's exchange hazards, we use a Wald test. In the Supplier Models, the difference

between buyer and supplier exchange hazards is 0.28 ($p < .01$), thereby supporting Hypothesis 4a. In other words, a one standard deviation change in the buyer's exchange hazards results in a 28% greater effect on trust than the same change in the supplier's exchange hazards (Table 2; Model 4). In the Buyer Models, the difference between buyer and supplier exchange hazards is 0.197 ($p < .05$), supporting Hypothesis 4b. Again, in practical terms this means that a one standard deviation increase in buyer exchange hazards yields a 20% greater effect on trust than the same change in the supplier's exchange hazards (Table 3; Model 4). Taken together, the results support the prediction that the buyer's exchange hazards have a stronger effect than those of the supplier on both the supplier representative's trust in the buyer organization and the purchasing manager's trust in the supplier organization.

Additional Analyses

A question may be raised regarding the extent to which the dyadic models we developed provide additional explanatory power above and beyond the traditional approach of treating the antecedents of interorganizational trust as mutual and reciprocal. To evaluate the relative impact of adopting a dyadic view, we compared the R^2 from the models discussed above to those from one-sided models (e.g., the Supplier's controls and exchange hazards on the Supplier's trust in the Buyer, results available upon request). When we estimate the one-sided models for each party and compared the R^2 we observed a statistically significant decrease relative to the dyadic models (Suppliers' Trust in Buyers, Table 2, Model 4, $\Delta R^2 = -0.15$, $p < .01$; Buyers' Trust in Suppliers, Table 3, Model 4, $\Delta R^2 = -0.19$, $p < .01$). We additionally estimated the corresponding one-sided models from the opposite side of the dyad (e.g., the Buyer's controls and exchange hazards on the Supplier's trust in the Buyer). When we estimate these "opposite-sided" models for each party and compared the R^2 we again observed a statistically significant decrease relative to the dyadic models (Suppliers' Trust in Buyers, Table 2, Model 4, $\Delta R^2 = -0.12$, $p < .01$; Buyers' Trust in Suppliers, Table 3, Model 4, $\Delta R^2 = -0.19$, $p < .01$). Based on these results, we believe that adopting a dyadic perspective provides additional explanatory power for understanding the antecedents of interorganizational trust.

DISCUSSION

Starting from the premise that trust is an inherently relational concept (Lewis and Weigert 1985, Zaheer et al. 1998), research has predominantly approached interorganizational trust as a mutually held and

reciprocally determined phenomenon. Our approach differs by viewing the sources of trust from a dyadic perspective, thereby recognizing both the mutual and exclusive features of the exchange relationship. By doing so, we emphasize and highlight the value of explaining and predicting trust in ongoing exchange relationships based on a common set of antecedents that also vary in their influence across the dyad. Specifically, we show that each party's exchange hazards affect not only its own trust in the counterpart, but also the counterpart's trust in it. Further, we observe that the degree of power imbalance in the relationship has a unique effect on trust for each side of the dyad. And, we demonstrate that the magnitude of effects of exchange hazards differ based on the power position of each party. Taken together, the findings from this study suggest a fundamental reconceptualization of the nature of trust in interorganizational exchange relationships.

Our focus on recognizing and teasing out asymmetries in the trust relation echoes and builds upon emerging conceptual and qualitative research that is fundamentally challenging the foundational underpinnings of trust. In contrast to the typical view of interorganizational trust as mutually held and reciprocally determined, Korsgaard et al. (2015) highlight asymmetries in levels of trust across the dyad. In the same vein, Graebner (2009) shows how trust levels vary between buyers (acquirers) and sellers (target firms). We complement the work of these scholars by theorizing about the asymmetries in the *sources* of trust across the interorganizational dyad and by empirically validating the extent to which the sources of trust are the same or different between exchange partners.

Our dyadic view lends a distinct interpretation to the antecedents of interorganizational trust. Indeed, the prevailing relational view (e.g., Dyer and Singh 1998) would construe exchange hazards as having the same effect, to the same degree, on each party's trust in the other (Poppo et al. 2008). Conversely, central to our dyadic view is the notion that exchange hazards represent both a threat and a signal, the precise meaning of which varies depending on the side of the dyad from which it is viewed and whose assets are at stake (own versus other). From one side of the dyad, exchange hazards constitute a threat of opportunism, whereas from the other side the same exchange hazards are seen as a signal of commitment to the relationship. Such dual effects of exchange hazards, which are only apparent when adopting a dyadic view, stands in stark contrast to the mutual and reciprocal effects derived from the conventional view.

Drawing from our dyadic view, we see a number of significant implications for furthering the literature on interorganizational trust. At a most basic level, a dyadic approach suggests the need to systematically incorporate, and explicitly distinguish between, the separate attributions (own versus other) each party makes of their exchange relationship. We would argue that what appears to be a mutual and reciprocal set of effects on trust are, in fact, composed of unique construals for the power-advantaged versus disadvantaged parties. Rather than the two parties attending equally to the antecedent conditions on both sides of the dyad, a disproportionate shift in attention occurs to the power-advantaged party.

Accordingly, to arrive at a more precise understanding of interorganizational trust we maintain that it is essential to accurately identify the power positions in the relationship. Perhaps most fundamental to a dyadic view is the recognition that power positions exist in relation to each other and define the extent of power imbalance in the dyad. We submit that imbalance directs attention to an additional element, the relative dependence in the relationship, which highlights the misalignment of exchange hazards as reflecting the extent to which the risk of opportunism is attenuated by the signal of commitment. Taken together, our dyadic view demonstrates the value of disaggregating interorganizational trust into its constituent components of the two party's distinct attributions, unique construals, and relative dependence. By doing so, we call into question the basic premise of conceptualizing interorganizational trust as *de facto* mutual and reciprocal. Rather, we would advocate for evolving the notion of interorganizational trust to reflect a more comprehensive treatment of the dyad as encompassing not only shared, but also separate and disproportionate antecedents.

An interesting observation arising from our dyadic approach is the extent to which trust is equally malleable by both parties of the dyad. In particular, our study suggests that it may be more difficult for the power-disadvantaged party to influence trust because its power-advantaged counterpart largely overlooks it. For instance, the supplier would appear to be unable to induce the buyer to trust it by signaling its commitment through its investments in specific assets. In fact, rather than enhancing trust, the suppliers' asset specificity actually has a deleterious effect on the buyer's trust in the supplier (Table 3, Model 4, $b = -0.300, p < 0.01$). More generally, our findings indicate that influencing trust involves attending to a separate set of antecedents across the dyad, which affect trust in distinct and opposing ways. Equally important, as the imbalance in power between parties grows, our results suggest that the disparity in effects across the dyad become more pronounced.

Our results also speak to research on power and trust, which has largely evolved as two independent literatures (Bachmann 2006). Both power and trust have been seen as playing important roles in shaping the governance of interfirm exchange. Whereas power and trust have traditionally been viewed as alternative means of governing relationships (Luhmann 1979), recent research has argued that the effects of power and trust are complementary (e.g., Gulati and Sytch 2007). Nevertheless, these incipient efforts to empirically validate the link between power and trust have yet to support the predicted relationship. The results reported here provide initial evidence of the generally complementary, but nuanced, relationship between power and other antecedents of trust. Power imbalance is complementary in the sense that it strengthens the effects of buyers' exchange hazards for both parties, but the complementarity is nuanced because the directions of those effects are opposite (positive for the supplier and negative for the buyer). In this way, we take a critical step toward advancing scholarly understanding of how power and trust are linked in interorganizational exchange relationships.

Limitations

While we believe our study has advanced research on trust and interorganizational exchange, it is not without its drawbacks. One limitation of the study is its cross-sectional design, raising the possibility that our results may be subject to reverse causality. In order to unambiguously determine the direction of causality between trust on the one hand and its antecedents on the other, a longitudinal research design is undoubtedly necessary. Nevertheless, we do not believe that reverse causality is fundamentally undermining the validity of the results reported in our study. For instance, while we have proposed that exchange hazards influence trust, the reverse causality argument would suggest that trust in the counterpart affects these antecedents. Specifically, the reverse causality argument would predict that as trust in the counterpart increases, so too should a firm's willingness to take risks as reflected by its own specific investment in the relationship (i.e., a positive relationship between a firm's trust in the counterpart and its own exchange hazards). However, when we examine the pattern of results reported in Tables 3 and 4 we find no support for this rival hypothesis. On the contrary, both from the buyer's and the supplier's perspectives a firm's own exchange hazards are *negatively* related to trust in the partner organization. Accordingly, we believe that the potential for our results to be explained by the rival

hypothesis of reverse causality may be less severe than in other cases, but of course cannot be definitively ruled out.

A further limitation of our study is that the research design may have resulted in selection bias toward stable long-term exchange relationships. Although we undertook measures to limit the extent of this possibility we cannot completely rule out the potential of selection bias. Nevertheless, to the extent that such a bias remains we believe that it would have the effect of restricting the range of our dependent variable. Such a range restriction would likely make it more difficult to observe statistically significant effects of the predicted variables. To be conservative our findings should be interpreted as most relevant to trust in ongoing relationships, with the relevance of the results to formative and younger relationships a question that remains to be explored.

An additional limitation of this research is that it observes the effects of power positions and power imbalance in a single industry context. As noted previously, the buyers in our study were more powerful than their supplier counterparts. Which party enjoys a power advantage, however, may vary from one setting to another. Thus, it would be valuable to ascertain the degree of variation in power between exchange partners in different contexts.

Future Directions

Our finding that both exchange partners primarily focus on the power-advantaged position, and pay less attention to the power-disadvantaged position, in making assessments of a counterpart's trust, raises a number of intriguing questions for future research. If in fact attention to trust-related information is so heavily skewed toward one side of the dyad, what does this imply for the stability and sustainability of trust as the exchange relationship changes and evolves? For instance, as the power-advantaged party's exchange hazards increase, it would see the counterpart as less trustworthy, while the opposite is true for the counterpart. Thus, the asymmetries in the antecedents of trust that we observed appear to suggest a divergence in trust between the exchange parties, which would eventually call into question the viability of the relationship and raise challenges for its ongoing governance (e.g. Lumineau and Malhotra, 2011; Malhotra and Lumineau 2011). Clearly, to explore dyadic dynamics such as these would require a longitudinal research design that captures the ebb and flow of exchange relationships along with how those changes are interpreted and construed by both exchange partners (Lewicki et al. 2006). More specifically, future research may wish to explicitly incorporate not only each party's view of its own

relative power in the relationship, but also each party's perception of the counterpart's power in the relationship. While some research designs have captured one party's view of its own and its counterpart's position in the relationship (Ganesan 1994, Gulati and Sytch 2007), research has yet to include *both* parties' perceptions of their counterpart's positions in the relationship. Accordingly, greater attention to not only measuring, but also modeling, the power dynamics in interorganizational relationships promises to advance scholarly understanding of dyadic nature of trust between exchange partners.

We would be remiss to not point out that although we have illustrated the dyadic nature of trust, the larger question of how additional antecedents, such as relationship stage or interorganizational context, may vary across the dyad remains unaddressed. For instance, in the early stages of a relationship when the parties have relatively little information about each other, the effects of power imbalance may be even greater. Along similar lines, extending our dyadic model to an interorganizational context where the roles and power positions are less obvious, such as in horizontal alliances, may further illuminate the role of power (and power imbalance) in influencing trust. For instance, we know of little research on horizontal alliances that explicitly explores the extent to which power influences the way that trust develops among partners (Young-Ybarra and Wiersema (1999) is a notable exception).

Concluding Remarks

Interorganizational trust is widely viewed as an inherently relational concept that is mutually held and reciprocally determined. We advance scholarly understanding in this area by proposing a dyadic theory to explain how the same set of antecedent conditions can have differential effects on the two parties to an exchange relationship. Our results show that adopting such a theoretical lens reveals the antecedents of interorganizational trust to be more nuanced and distinct between exchange partners than previously understood. In particular, we find that the two parties disproportionately attend to the firm in the position of power advantage and hold unique construals of their relationships based on the degree of power imbalance that exists. Given this, we see considerable promise in further elaborating the dyadic foundations of interorganizational trust.

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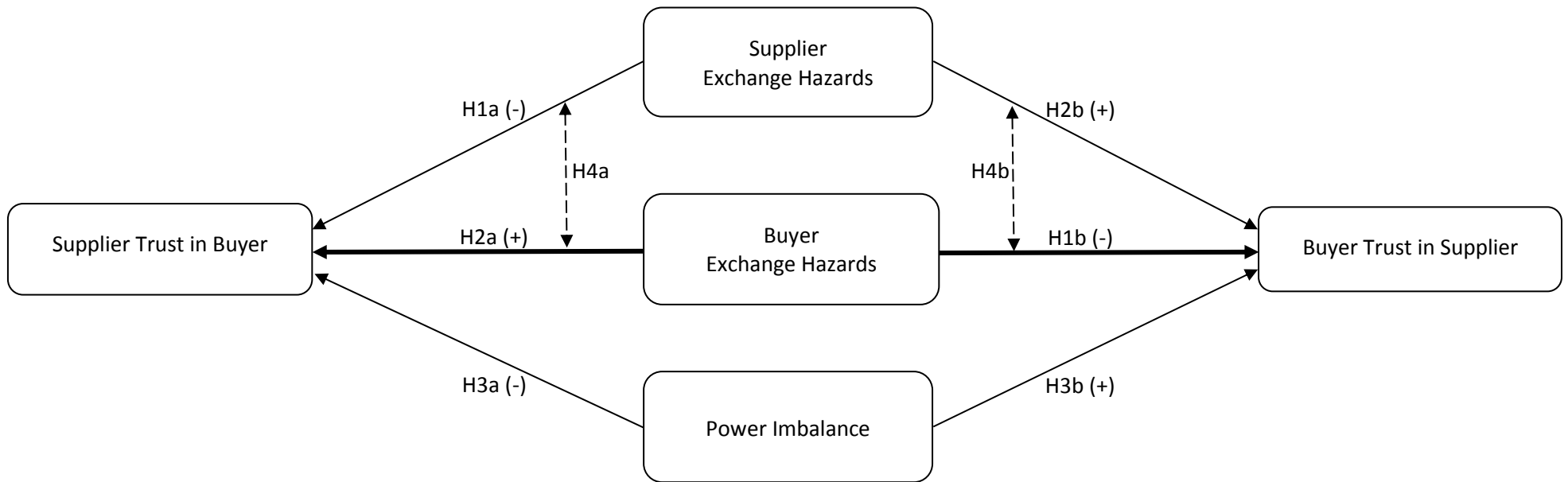
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FIGURE 1: THEORETICAL MODEL



Legend:




-  Directional Effect
-  Stronger Magnitude Effect
-  Comparison of Coefficients

TABLE 1
Descriptive Statistics and Zero-Order Correlations Among Constructs

	<i>Mean</i>	<i>S.D.</i>	<i>a</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>
Supplier																
1. Trust in Buyer Organization	5.51	0.99	0.73													
2. Uncertainty	3.31	1.12	0.79	-0.127												
3. Asset Specificity	4.37	1.51	0.74	-0.098	-0.075											
4. Trust in Purchasing Manager	5.41	0.99	0.74	0.411**	-0.105	0.029										
5. Future Duration	5.86	1.58	0.92	0.141	-0.007	0.115	0.448**									
6. Tenure of Supplier Representative	9.63	7.23	--	0.003	-0.099	0.041	-0.024	-0.024								
Buyer																
7. Trust in Supplier Organization	5.76	1.01	0.78	0.351**	-0.077	-0.353**	0.185†	-0.082	-0.145							
8. Uncertainty	2.85	1.07	0.70	-0.065	0.084	-0.094	-0.019	-0.049	0.008	-0.247*						
9. Asset Specificity	2.93	1.37	0.73	-0.101	0.144	0.265*	0.036	-0.003	0.260*	-0.297**	0.041					
10. Trust in Supplier Representative	5.45	1.27	0.88	0.165	0.023	-0.038	0.012	0.090	-0.044	0.337**	-0.12	-0.023				
11. Future Duration	5.74	1.70	0.95	-0.012	-0.027	-0.027	0.106	0.087	-0.096	0.206†	-0.285**	-0.030	0.262*			
12. Tenure of Purchasing Manager	7.81	6.87	--	0.109	-0.066	0.073	0.252*	-0.002	0.249*	0.214*	-0.051	-0.013	-0.058	-0.149		
Dyad																
13. Power Imbalance	1.94	1.29	--	0.247*	0.011	0.125	0.191†	0.046	0.209†	0.056	0.110	0.085	0.019	-0.020	0.263*	
14. Past Duration	1.76	0.83	--	-0.004	-0.175	0.380**	0.062	0.138	-0.205†	0.069	-0.148	-0.669**	0.018	-0.047	-0.011	-0.063

† $p < .10$; * $p < .05$; ** $p < .01$ (two-tailed test)

TABLE 2

Antecedents of Trust

Dependent Variable: *Supplier Representative Trust in the Buyer Organization*

<i>Independent Variables</i>	Model 1 <i>b</i> (<i>s.e.</i>)	Model 2 <i>b</i> (<i>s.e.</i>)	Model 3 <i>b</i> (<i>s.e.</i>)	Model 4 <i>b</i> (<i>s.e.</i>)
Controls				
Supplier Representative Trust in the Purchasing Manager	0.293** (0.11)	0.313** (0.11)	0.282** (0.10)	0.312** (0.10)
Purchasing Manager Trust in the Supplier Organization	0.589** (0.09)	0.556** (0.11)	0.593** (0.11)	0.650** (0.10)
Past Duration of Relationship	0.218† (0.12)	0.208† (0.12)	0.212† (0.12)	0.168 (0.11)
Supplier Representative Tenure in the Supplier Organization	0.013 (0.01)	0.011 (0.01)	0.007 (0.01)	0.008 (0.01)
Purchasing Manager Tenure in the Buyer Organization	-0.028† (0.02)	-0.028† (0.02)	-0.024 (0.01)	-0.033* (0.01)
Supplier Shadow of the Future	0.043 (0.07)	0.031 (0.07)	0.036 (0.06)	0.054 (0.06)
Buyer Shadow of the Future	-0.109† (0.06)	-0.104† (0.06)	-0.097† (0.06)	-0.140* (0.06)
Focal Firm Exchange Hazards (Supplier)				
Uncertainty		-0.051 (0.08)	-0.013 (0.08)	-0.001 (0.08)
Asset Specificity		0.045 (0.07)	0.037 (0.07)	0.295** (0.10)
Interaction (UxAS)			-0.084 (0.06)	-0.100† (0.05)
Counterpart Exchange Hazards (Buyer)				
Uncertainty		0.013 (0.09)	0.012 (0.09)	-0.03 (0.09)
Asset Specificity		0.002 (0.07)	0.048 (0.07)	-0.316** (0.14)
Interaction (UxAS)			0.132* (0.06)	0.180** (0.06)
Power Imbalance				
Asset Specificity Ratio ($AS_{Supplier}/AS_{Buyer}$)				-0.494** (0.16)
Constant	0.611 (0.75)	0.695 (1.10)	0.376 (1.07)	1.128 (1.045)
N	82	82	82	82
R ²	0.24	0.27	0.31	0.36
F-Statistic	8.12**	4.41**	4.47**	5.07**

† $p < .10$; * $p < .05$; ** $p < .01$ (two-tailed test)

TABLE 3

Antecedents of Trust

Dependent Variable: *Purchasing Manager Trust in the Supplier Organization*

	Model 1	Model 2	Model 3	Model 4
<i>Independent Variables</i>	<i>b</i> (<i>s.e.</i>)	<i>b</i> (<i>s.e.</i>)	<i>b</i> (<i>s.e.</i>)	<i>b</i> (<i>s.e.</i>)
Controls				
Purchasing Manager Trust in the Supplier Representative	0.174* (0.07)	0.177** (0.06)	0.167** (0.06)	0.147* (0.06)
Supplier Representative Trust in the Buyer Organization	0.573** (0.09)	0.440** (0.09)	0.474** (0.09)	0.528** (0.09)
Past Duration of Relationship	-0.133 (0.12)	-0.021 (0.11)	-0.033 (0.11)	-0.028 (0.11)
Purchasing Manager Tenure in the Buyer Organization	0.039** (0.01)	0.036** (0.01)	0.034** (0.01)	0.038** (0.01)
Supplier Representative Tenure in the Supplier Organization	-0.020† (0.01)	-0.02 (0.01)	-0.018 (0.01)	-0.016 (0.01)
Buyer Shadow of the Future	0.114* (0.06)	0.077 (0.05)	0.073 (0.05)	0.106* (0.05)
Supplier Shadow of the Future	-0.125* (0.06)	-0.098† (0.05)	-0.098† (0.05)	-0.118* (0.05)
Focal Firm Exchange Hazards (Buyer)				
Uncertainty		-0.157* (0.08)	-0.154† (0.08)	-0.104 (0.08)
Asset Specificity		-0.089 (0.07)	-0.105 (0.07)	0.160 (0.12)
Interaction (UxAS)			-0.048 (0.05)	-0.128* (0.06)
Counterpart Exchange Hazards (Supplier)				
Uncertainty		-0.011 (0.08)	-0.027 (0.08)	-0.031 (0.07)
Asset Specificity		-0.184** (0.06)	-0.177** (0.06)	-0.347** (0.09)
Interaction (UxAS)			0.056 (0.05)	0.070 (0.05)
Power Imbalance				
Asset Specificity Ratio ($AS_{Supplier}/AS_{Buyer}$)				0.367** (0.14)
Constant	1.899** (0.69)	4.001** (0.84)	3.976** (0.84)	2.785** (0.91)
N	82	82	82	82
R ²	0.28	0.44	0.45	0.47
F-Statistic	8.89**	7.32**	6.49**	6.74**

† $p < .10$; * $p < .05$; ** $p < .01$ (two-tailed test)

Figure 2
Interaction Plots of Exchange Hazards

