

Relationship Governance Dynamics: The Roles of Partner Selection Efforts and Mutual Investments

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Abstract

The article studies interfirm governance in the context of supplier–reseller relationships. Using a longitudinal study, the authors examine the roles of supplier selection efforts and mutual specific investments with respect to (1) motivating a supplier to make incremental investments and (2) safeguarding these investments from supplier ex post transaction costs. The authors also examine the joint effects of selection efforts and mutual investments on supplier ex post transaction costs. From a practical standpoint, the findings suggest guidelines for channel strategy. Theoretically, they provide new insights into relationship dynamics, including evidence regarding the effects of a firm’s governance choices over time.

Keywords

channel relationships, governance, mutual investments, selection efforts, transaction cost economics

Channel relationships are cornerstones of firms’ marketing strategies (Anderson and Coughlan 2002; Ghosh and John 2012). However, productive relationships between suppliers and resellers do not simply emerge on their own. Rather, they result from relationship governance arrangements that promote value creation and minimize transaction costs (e.g., Geyskens, Steenkamp, and Kumar 2006; Kashyap, Antia, and Frazier 2012). Williamson (2010), building on early institutional economics research by Commons (1934), defines governance as “the means by which to infuse order, thereby to mitigate conflict, and realize mutual gain” (p. 674). As evidenced by a large and growing body of research, this definition comprises some different phenomena, including specific governance actions or mechanisms that can be purposely deployed (Anderson and Weitz 1992) but also governance structures that emerge over time in a relationship (Heide and John 1988). For the current study, we capture the former as a supplier’s initial efforts to select a reseller with particular characteristics, using purposeful qualification efforts (Antia, Mani, and Wathne 2017; Bergen, Dutta, and Walker 1992). We assess the latter as the parties’ mutual transaction-specific investments (Williamson 1983). Although selection efforts and mutual investments work in different ways and address different sources of transaction costs, they both can create “order,” in the sense of Williamson’s (2010) definition, and thus contribute to value creation in a distribution channel.

In this article, we take a supplier’s perspective and examine how its governance choices play two different roles. First, we

posit that its reliance on selection efforts and mutual investments motivate incremental investments by the supplier in the reseller relationship. Despite the important role of specific investments for realizing particular value propositions and achieving positions of competitive advantages (Ghosh and John 1999), our understanding of them remains incomplete. Perhaps most notably, prior governance research tends to capture specific investments cross-sectionally, as an aggregate stock of assets, without accounting for the manner in which they accumulate. By focusing on incremental investments, we address how the supplier’s willingness to augment its existing stock of assets follows from its prior selection efforts and pre-existing patterns of specific relationship investments.

Second, we explore how partner selection efforts and mutual investments might safeguard the supplier’s incremental investments over time from efficiency losses due to supplier ex post transaction costs. Specific investments have significant value-creation potential (Ghosh and John 1999), but they cannot be

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easily redeployed, so they also involve considerable risk for the investor (Williamson 1985). This general safeguarding problem is well documented (e.g., Heide and John 1988), but it is less clear whether firms' governance choices, once made, have properties that extend over time. For example, do the benefits of selection efforts, applied at the outset of a relationship, remain manifest in later periods? Do mutual investments, once committed, have ongoing governance effects? With some notable exceptions (e.g., Klein 1996), past research has paid little attention to such questions of governance dynamics. An implicit assumption in the existing literature is that a given governance arrangement, once in place, continues to exert its effect over the course of a relationship. This assumption, however, has rarely been tested empirically. From a practical perspective, governance dynamics have important potential implications: Evidence of ongoing effects would suggest that a governance arrangement is associated with governance economies, whereas a lack of such persistent effects would suggest that continued reliance on a focal arrangement is risky for the firm.

We seek to make two specific contributions. First, we respond to calls for greater attention to the dynamics of relationship governance (e.g., Jap and Anderson 2003; Rindfleisch et al. 2010). We consider two aspects of dynamism, namely, whether a firm's prior governance choices (1) motivate incremental investments and (2) serve as buffers against supplier ex post transaction costs. Theoretically, these aspects evoke two different questions. The former relates to how prior governance choices affect a supplier's willingness to invest, whereas the latter describes the ability of the relevant choices to provide a safeguard against reseller actions. Second, in practice firms rely on larger menus of governance arrangements (Bradach and Eccles 1989; Poppo and Zenger 2002), yet the specific consequences of such a "plural governance" approach are not fully understood. Cao and Lumineau (2015) suggest there has been insufficient attention to the unique properties of individual governance variables and to how they interact to determine performance. We therefore examine a specific interaction scenario to determine if a firm's initial selection efforts support the effects of mutual investments in the relationship. Theoretically, selection efforts should identify the reseller's abilities, which are necessary for mutual investments to have their predicted motivational effects on transaction costs (Williamson 1983). This idea suggests that transaction costs originate from the juxtaposition of partner ability and motivation. Practically, firms' governance choices explicitly must address both dimensions. Because partner selection efforts support other governance arrangements, their governance benefits should go beyond a simple screening of partners and their abilities per se.¹

¹ Agency theory indicates that selection has an initial effect (Bergen, Dutta, and Walker 1992), by mitigating adverse selection problems that arise ex ante. However, these effects may have limited range; in theory, selection does not serve as a safeguard against ongoing moral hazard (Kirmani and Rao 2000). Our results suggest instead that selection efforts have ongoing governance properties, by virtue of their interactions with mutual investments.

To test our hypotheses, we rely on a two-wave survey of supplier–reseller relationships. Such a research design is rare; it puts us in a unique position to ascertain the relationships among our theoretical constructs and shed light on the underlying dynamic processes, including how assets accumulate over time and which effects of prior governance arrangements persist. In addition, this design overcomes some common sources of method bias. In the next section, we present our theoretical framework and research hypotheses, before we describe the research method, including our longitudinal survey design. Finally, we discuss the implications of our findings, some study limitations, and topics for further research.

Theoretical Framework

We anchor our discussion in a distribution channel context where a supplier markets its products through independent resellers. We consider how the supplier's initial reseller selection efforts and the parties' existing stock of mutual investments together enable the supplier to make incremental investments in the relationship with the reseller. Drawing on the motivation–ability framework (Grewal, Comer, and Mehta 2001; Merton 1957), we argue that selection efforts help identify a reseller with appropriate abilities, and the parties' mutual investments shape the reseller's motivation to maintain the relationship. Both selection efforts and mutual investments thus may promote incremental supplier investments. Once in place, selection efforts and mutual investments also may suppress the supplier's ex post transaction costs, which follow from its incremental investments. Finally, we consider the joint effect of selection efforts and mutual investments on supplier ex post transaction costs. The conceptual model corresponding to our research hypotheses is in Figure 1.²

Antecedents of Supplier Incremental Investments

Past research (e.g., Heide 1994) suggests that the manner in which a channel relationship is initiated has ongoing governance implications. Such arguments are rooted in the idea that "selective play" with partners who possess particular abilities promotes value creation. Sociological accounts of relationships indicate that stringent selection efforts allow the firm to identify and acquire a "bundle of partner traits" (Stovel and Fountain 2009, p. 505) that then determine a particular reseller's "fit" (Heide and Wathne 2006, p. 94) and ability to perform. Xerox, Dell, and Home Depot all rely on formal qualification programs to evaluate potential partners on

² Our theoretical focus is the time-related effects of a supplier's initial governance arrangements on its incremental investments and transaction costs. Empirically, we capture the relevant constructs through a two-wave survey, where selection efforts and mutual investments are captured at time 1 and incremental investments and transaction costs are captured at time 2. In our initial (time 1) survey, we asked the supplier informants to consider their original reseller selection efforts (technically, at time 0, before the relationship began). Thus, our conceptual framework actually comprises three points in time (0, 1, and 2), which we explicitly account for in our analyses.

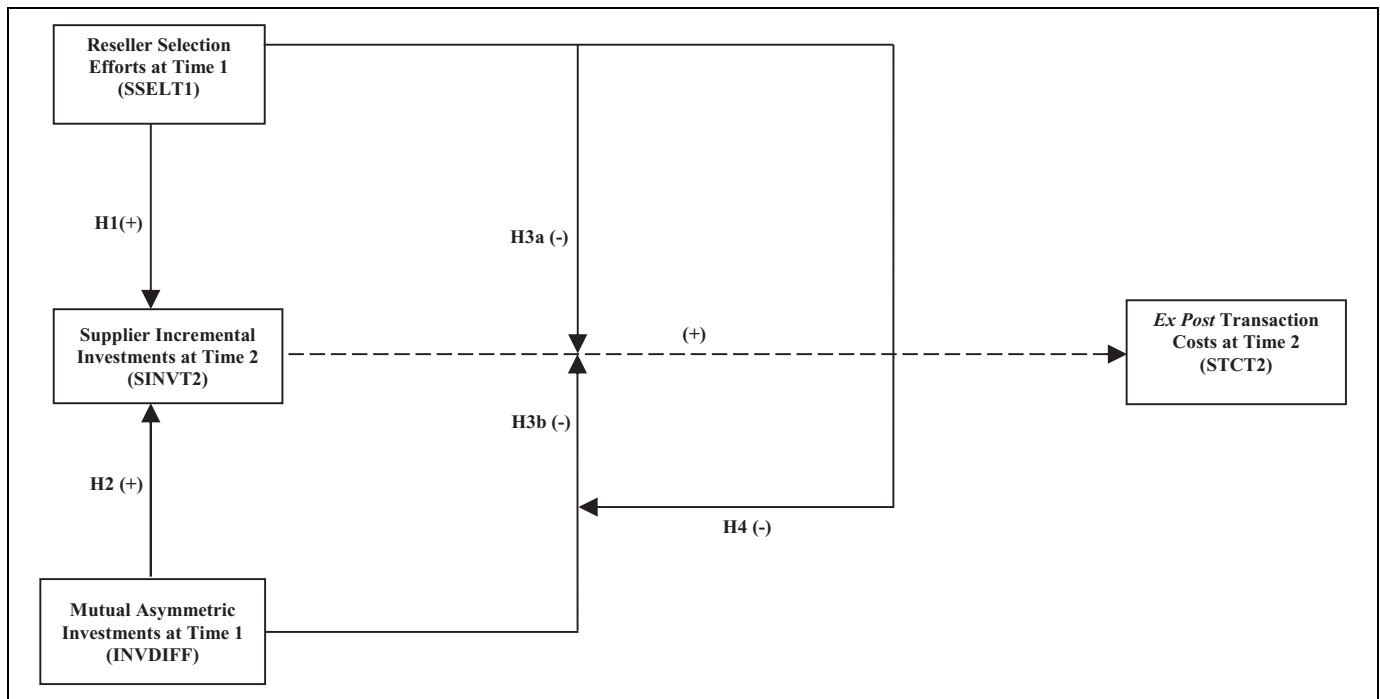


Figure 1. Conceptual framework.

Note: Solid lines represent hypothesized effects and dotted lines represent non-hypothesized but expected baseline effects.

criteria such as physical facilities, human resource capabilities, and financial strength. Berry (1999) describes the extraordinary effort by Chik-fil-A to select potential store operators; such efforts are foundational to its overall marketing strategy. Selection efforts may focus on preexisting secondary information or firsthand observations in a formal qualification process.

To the extent that stringent selection efforts enable the supplier to identify a reseller with appropriate abilities, they minimize the likelihood of costly reseller errors and thus the need for corrective supplier action or subsequent renegotiations. Initial reseller selection efforts in turn should increase the supplier's willingness to make incremental investments in reseller-specific assets in subsequent time periods. For example, a supplier might continue to make investments in training the reseller or developing dedicated logistics systems (Weiss and Kurland 1997). Such investments have the potential to create value, as Ghosh and John (1999) predict in their "governance value analysis." At the same time, because they have little value for alternative uses (Anderson and Weitz 1992), such investments also make the supplier vulnerable to the reseller. Specifically, a poorly qualified reseller may lack the skills required to fully realize the value that resides in the supplier's investments. Instead, such a reseller may cause value-claiming difficulties, due to the need for corrective action and ongoing haggling (Ghosh and John 2005). Some such difficulties may stem from honest disagreements (Alchian and Woodward 1988), yet stringent selection efforts still may reduce their incidence and magnitude, regardless of their cause. In turn, selection efforts give the supplier a foundation on

which to make subsequent investments. As a specific example, Liker and Choi (2004, p. 107) describe how Toyota's partner selection process serves as "scaffolding" for its specific investments. Toyota "filters in" partners that are capable of delivering on its task requirements, which motivates Toyota to make value-enhancing investments in those partners. The initial selection efforts promote subsequent investments in specific assets. Formally,

H₁: More stringent initial reseller selection efforts promote incremental investments by the supplier.

In contrast with sociological and agency theory accounts of selection, transaction cost economics (TCE) largely ignores partner ability. Oxley and Silverman (2008, p. 219) specifically note that TCE historically has been "silent concerning the question of with whom to ally." Rather, its main focus is on how governance structures shape a party's motivation to support a given relationship (Lindenberg 2013). Consider again a supplier who is contemplating making incremental specific investments in the ongoing relationship with a particular reseller. As noted previously, such investments create supplier vulnerability to the reseller's actions due to the resulting lock-in. The reseller may exploit the situation, by renegotiating terms with the supplier or demanding extra services and features without any additional compensation (Rokkan, Heide, and Wathne 2003; Williamson 1985). According to TCE, a farsighted investor can mitigate this vulnerability if the relationship's governance structure reduces the partner's motivation to exploit the lock-in condition. Specifically, Williamson's (1983) hostage model suggests that preexisting or initial

specific investments on the reseller's part may serve such a purpose. To the extent that the reseller faces lock-in due to its own specific investments, it creates a self-enforcing agreement (Telser 1980) that motivates the reseller to engage in behaviors to maintain the relationship and prevent termination. In turn, the supplier can make incremental investments without excessive fear of exploitation.

Williamson's (1985) original hostage model also has been extended to bilateral exchanges, in which both parties place assets at risk. In our study context, a supplier may make initial specific investments that create lock-in with the reseller. However, the general hostage model does not reflect the particular nature of a bilateral relation, in which the specific pattern of parties' investments affects their decisions. McEvily, Zaheer, and Kamal (2017) suggest that, for the purpose of explaining a supplier's investment decision, the key aspect of bilateral investments is their degree of asymmetry, or whether the reseller's investments are greater than the supplier's. In line with this argument, we posit that the motivational effect of a reseller hostage requires the overall stock of mutual investments in the relationship to be asymmetric and in the supplier's favor. The condition of asymmetry provides governance benefits for the supplier and serves as a safeguard that encourages incremental investments.

It is noteworthy that the notion of asymmetry similarly underlies a large body of marketing literature pertaining to interfirm dependence (e.g., Kumar, Scheer, and Steenkamp 1995), which indicates that asymmetry reduces the vulnerability that otherwise resides in a dependence condition. Thus, in parallel to H_1 , we predict that a preexisting governance structure promotes incremental investments by the supplier.³

H₂: Greater asymmetry in initial mutual investments in the supplier's favor promotes incremental investments by the supplier.

Consequences of Supplier Incremental Investments on Supplier Ex Post Transaction Costs

In predicting the supplier's investment decision, we thus posit that preexisting governance arrangements encourage the supplier to make incremental investments in the reseller relationship. The predictions in H_1 and H_2 are parallel but also conceptually different, in that they focus on the supplier's effort or action (selection) to identify the appropriate reseller and ensure the availability of certain abilities, versus the structure of the relationship (mutual asymmetric investments) that motivates the reseller. Both elements should be able to promote supplier incremental investments, as we predict in H_1 and H_2 .

We now consider the transaction cost consequences of the supplier's incremental investments, according to whether

selection efforts and mutual asymmetric investments have governance properties and serve as ongoing buffers against efficiency losses. As we noted, a supplier's incremental investments can give rise to transaction costs, because the resulting lock-in condition creates vulnerability to the reseller's actions (Ghosh and John 1999; Williamson 1985). Anderson and Jap (2005, p. 78) go so far as to call specific investments the "poison" that triggers relationship conflict. We present this effect in Figure 1 as a positive relationship between supplier incremental investments and supplier ex post transaction costs. However, to the extent that the supplier has undertaken efforts to select a reseller with appropriate abilities and the initial pattern of mutual investments motivates the reseller to maintain the relationship, the likelihood that the supplier's incremental investments produce transaction costs diminishes. These prior governance arrangements address two distinct sources of supplier ex post transaction costs: insufficient partner ability and motivation, respectively. Although selection efforts and mutual investments are unlikely to eliminate supplier transaction costs completely ex post (Bergen, Dutta, and Walker 1992), the lock-in problem that follows from incremental investments in specific assets may be mitigated.

This argument adds a dynamic dimension to the standard safeguarding logic from TCE. We examine whether initial governance arrangements have ongoing governance properties, in that they affect transactional outcomes later in the relationship. If so, governance arrangements, once in place, would represent "stocks" with qualities of persistence (Bruderl and Schussler 1990; Freeman, Carroll, and Hannan 1983). Organizational theories of duration dependence specifically indicate that initial structures represent sources of efficiency and can serve as buffers against subsequent relationship difficulties (e.g., Fichman and Levinthal 1991). However, if a governance arrangement does not exhibit dynamic qualities, it implies time-related boundary conditions. From a practical standpoint, continued reliance on existing governance arrangements in these conditions increases the risk for the supplier, because its incremental investments are not protected by appropriate, safeguards. We propose:

H₃: Both (a) more stringent initial reseller selection efforts and (b) greater asymmetry in initial mutual investments in the supplier's favor weaken the positive effect of supplier incremental investments on supplier ex post transaction costs.

Joint Effects of Selection Efforts and Mutual Investments

Selection efforts and mutual investments possess different properties, and they reflect different theoretical perspectives on relationship governance. However, some evidence also supports the theoretical integration of these perspectives. For example, sociologists cite "mixed courses of action" (Granovetter 2005, p. 35), which combine different governance arrangements within a single relationship. Economists also have called for theory and evidence regarding governance combinations (Kreps 1997). In response to such theorizing, as well as to observations of industry practice (Bradach and Eccles

³ Symmetric, preexisting investments also arguably might help promote the supplier's incremental investments. Conceivably, symmetry protects the reseller from exploitation by the supplier and thus promotes its cooperation. However, we predict that when it comes to supplier incremental investments, asymmetry in the supplier's favor (i.e., the reseller makes greater investments than the supplier) serves a unique safeguarding function.

1989), studies in marketing (Wuyts and Geyskens 2005) and other fields (Poppo and Zenger 2002) explore the effects of governance combinations. The idea that governance combinations determine transactional outcomes may seem intuitive, yet the specific theoretical rationale remains unclear (Cao and Lumineau 2015). We seek to shed light on this question. Specifically, we posit that initial reseller selection efforts and mutual asymmetric investments, in combination, exert interactive effects on transaction costs.

Recall from our prior discussion that mutual asymmetric investments in the supplier's favor should reduce the supplier's vulnerability to reseller actions (McEvily, Zaheer, and Kamal 2017; Telser 1980; Williamson 1983), because the reseller is motivated to maintain the relationship. To the extent that the reseller also possesses the necessary abilities to cooperate and prevent termination, in line with the premise of a self-enforcing agreement (Klein 1996), mutual investments should have the expected (transaction cost-reducing) effect. However, it is not given that all resellers possess these necessary abilities (Dekker 2008). A poorly qualified reseller could possess a generally cooperative motivation, due to initial investments, but its lack of technical skills still would create transactional difficulties and require ongoing renegotiations by the parties. These arguments suggest the key role of partner selection efforts to identify resellers with appropriate abilities, who are in a position to enact the specific behaviors that can ensure relationship continuity.

In general, initial reseller selection efforts, whose primary purpose is to ascertain ability, in combination with mutual asymmetric investments, whose primary purpose is to ensure reseller motivation, should further suppress the supplier's ex post transaction costs due to incremental investments (H_3). This prediction is consistent with the ability-motivation framework (Merton 1957) and its central premise that "both firm motivation and ability should be present to affect organization behavior" (Grewal, Comer, and Mehta 2001, p. 22). As such, the governance benefits of partner selection efforts are far reaching and go beyond screening, so we predict:

H₄: More stringent initial reseller selection efforts and greater asymmetry in initial mutual investments in the supplier's favor jointly weaken the positive relationship between supplier incremental investments and supplier ex post transaction costs.

Summary of Hypotheses

Our hypotheses are based on the assumption that value creation, broadly speaking, is compromised by a lack of reseller ability or motivation. This situation creates a need for relationship governance, in the form of partner selection efforts (which ensure reseller ability) and mutual specific investments (which ensure the reseller's motivation to maintain the relationship). We expect these governance choices to serve the dual roles of (a) motivating a supplier to make incremental investments (per H_1 and H_2) and (b) mitigating the transaction cost implications of these incremental investments over time (per H_{3a} and H_{3b}). Finally, we expect their juxtaposition to have additional

transaction cost implications, because prior selection efforts can reinforce the motivational effect of mutual asymmetric investments (H_4).

Research Method

Empirical Context

We conducted the empirical study in the context of a conventional distribution channel involving relationships between manufacturers (suppliers) of building materials and their independent distributors (resellers). This choice of context reflects two key considerations, namely, achieving sufficient variation in the study variables and capturing independent (i.e., nonintegrated) supplier-reseller relationships. Extensive interviews with suppliers and resellers revealed substantial variation in the focal variables. For example, supplier investments range from generic logistics systems to tailored systems specific to the requirements of a particular reseller. In addition, industry statistics show that independent resellers sell more than 75% of building materials. To confirm the independence of the parties in question, we also conducted personal interviews with each potential study participant. The unit of analysis is the relationship between a supplier and a reseller of a particular building product, such as roofing or concrete items.

To separate the measures of our independent variables (e.g., governance arrangements) from the dependent variables (e.g., transaction costs) and minimize potential method bias, we adopt a longitudinal survey design, involving matched supplier-reseller dyads. The temporal separation between the measurements of the independent and dependent variables reduces potential method bias (measurement context effects) that could stem from assessing both sets of variables at the same time in the same instrument. Collecting data from both the supplier and the reseller further minimizes method bias. Consistent with previous governance research (e.g., Dahlstrom and Nygaard 1999), we used a 3-year lag to leave sufficient time to allow the effects of the initial governance arrangements to manifest. In turn, we examine the relationships between ex ante governance (reseller selection efforts and mutual asymmetric investments) and ex post outcomes (incremental investments and supplier ex post transaction costs). Despite many calls in prior literature for longitudinal studies, which offer strong inferential benefits, such studies are rare due to the "tremendous difficulty" of collecting "longitudinal data in a dyad-matching survey" (Vosgerau, Anderson, and Ross 2008, p. 209).

Data Collection

Considering the lack of readily available, valid, secondary measures of our focal constructs (Mayer 2009), we collected primary data through surveys of key informants. The sampling frame was a national mailing list containing names of managers of independent suppliers of building materials. Initially, we drew a random sample of 1,300 names from the list and

contacted each manager by telephone to identify a suitable key informant. These presurvey telephone contacts enabled us to locate 550 managers who met the criteria of being knowledgeable and willing to communicate with a researcher, and who represented companies judged appropriate for the study (of 700 eligible suppliers 150 declined to participate). Each key informant who agreed to participate received a mailed questionnaire packet, including a cover letter, prepaid envelope, and the questionnaire itself. To maximize response rates and ensure a sufficiently large pool of informants for the second wave of data collection (time 2), we offered each informant the opportunity to participate in a telephone interview that paralleled the survey. We asked the managers to select and describe a particular relationship in which the exchange partner was the third largest reseller of a certain product (annual sales). Thus we avoid the risk of self-selection and ensure that the relationships are important enough to be salient to the informants (Anderson and Narus 1990).

In the first data collection wave (time 1), we obtained 342 completed questionnaires (47% of the sample of 700). To check for systematic differences between questionnaires administered by telephone ($n = 129$) and mail ($n = 213$), we test a null hypothesis of no mean differences between the two groups with respect to our study variables. We find no significant differences except for reseller investments ($p < .05$), which we discuss subsequently. In addition, we compare our sample of suppliers with the initial sampling frame on two demographic variables, company size and annual revenue, but find no significant differences.

We used a similar procedure to identify informants in the reseller firms. Specifically, each informant from the supplier firm provided the name of a person in the reseller firm who was knowledgeable about the relationship with the supplier. Of the 281 names provided by the suppliers, 226 agreed to participate in the study. In total, we obtained 111 questionnaires completed over the telephone and 95 returned by mail, for a total response rate of 73% (of the 281 names provided). In similar post hoc tests, we find no significant differences between the two modes of data collection for our focal variables.

Three years later, we contacted the same companies for a second data collection wave. We gave key informants the name of the partner (reseller or supplier) and the product description from the first wave. We achieved a final sample of 105 questionnaires across times 1 and 2; with the exception of 5 cases with significant missing data for the focal study variables, we included all these responses in the analyses. Considering the inherent difficulties of a longitudinal survey design, our overall response rate (15% of 700) is comparable to that of other studies of interfirm relationships (see Kriauciunas, Parmigiani, and Rivera-Santos 2011). Again, we test for systematic differences between questionnaires administered by telephone and mail, and we compare the final sample of suppliers with the initial sampling frame with respect to the firm demographics. We find no significant differences. Finally, we compare the final sample of suppliers and resellers that participated in both waves with those that only participated in the first wave and find no

significant differences in our study variables, again with the exception of reseller investments ($p < .05$).

Key Informant Checks

In addition to the steps taken to ensure proper informant selections, we administered a formal test, as part of the survey instrument (Kumar, Stern, and Anderson 1993). On the basis of a seven-point scale to assess informant knowledge, we eliminated three supplier informants with scores lower than 4 at time 1. The average knowledge score for the remaining informants was 6.5 (SD = .75) for suppliers and 6.4 (SD = .78) for resellers.

One of the potential difficulties with collecting data from the same company at two different points in time is attrition due to informant turnover. Therefore, we subjected each new informant to a telephone assessment to confirm that they met the established study criteria. In addition, each survey sent to new informants included a post hoc check of these focal informants' knowledge about the specific nature of the relationship over the previous 3 years. Only one case had to be eliminated on the basis of this check. The average knowledge score was 6.1 (SD = 1.14) for suppliers and 6.3 (SD = .95) for resellers, which indicates that the informants are highly qualified to report on their firms' channel relationships.

Measures

All focal constructs are measured using multi-item reflective scales. For each construct, we detail the abbreviation used in the regression models, whether the construct is measured at time 1 or 2, and whether it has been collected from the supplier or reseller in this section. For all multi-item scales, we use latent factor scores that account for measurement error. The Appendix lists the specific items and response formats, and the key descriptive statistics are in Table 1.

Supplier ex post transaction costs (STCT2, Time 2, Supplier). This scale captures the ex post bargaining, monitoring, and maladaptation costs incurred by the supplier in the relationship with the reseller for a specific product. The items are derived from Dahlstrom and Nygaard (1999) and Buvik and John (2000).

Supplier incremental investments (SINVT2, Time 2, Supplier). This scale measures the ex post incremental investments made by the supplier, dedicated to the relationship with the focal reseller. We requested that informants specifically indicate the investments made during the 3 years following the first wave of data collection. The items are based on measures used by Anderson and Weitz (1992).

Supplier investments at time 1 (SINVT1, Time 1, Supplier). This scale describes the investments made by the supplier at time 1 dedicated to the relationship with the focal reseller. The items are based on those used by Anderson and Weitz (1992), and measure the "aggregate stock" of specific assets at the time of data collection.

Table 1. Key Descriptive Statistics.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Ex post transaction costs, STCT2 | .85 | | | | | | | | | | | | | | | | |
| Supplier incremental investments, SINVT2 | .27 | .72 | | | | | | | | | | | | | | | |
| Reseller incremental investments, RINVT2 | .25 | .49 | .77 | | | | | | | | | | | | | | |
| Supplier investments at time 1, SINVT1 | .02 | .24 | .35 | .55 | | | | | | | | | | | | | |
| Reseller investments at time 1, RINVT1 | .25 | .49 | 1.00 | .35 | .67 | | | | | | | | | | | | |
| Reseller selection efforts at time 1, SSELTI | -.01 | .38 | .38 | .31 | .38 | .81 | | | | | | | | | | | |
| Supplier selection efforts at time 1, RSELTI | .02 | .12 | -.07 | .05 | -.07 | -.12 | .82 | | | | | | | | | | |
| Type of agreement | -.20 | .11 | .19 | .33 | .19 | .24 | .02 | — | | | | | | | | | |
| Concentration of sales | .09 | -.04 | -.11 | .06 | -.11 | -.10 | .12 | .18 | — | | | | | | | | |
| Supplier replaceability | -.07 | .12 | -.01 | .13 | -.01 | .20 | -.07 | .08 | .01 | — | | | | | | | |
| Order unpredictability | -.01 | -.07 | -.17 | -.01 | -.17 | -.07 | -.13 | -.27 | -.31 | .04 | — | | | | | | |
| Demand unpredictability | -.06 | -.01 | -.16 | -.05 | -.16 | -.07 | -.19 | -.18 | -.17 | .02 | .74 | — | | | | | |
| Demand uncertainty | .27 | .12 | -.09 | -.09 | -.09 | -.15 | -.13 | -.36 | -.14 | -.18 | .24 | .22 | — | | | | |
| Supplier competition | -.03 | -.04 | .11 | .14 | .11 | .00 | .14 | .38 | .15 | -.04 | .07 | .06 | -.07 | — | | | |
| Reseller competition | .05 | .17 | .12 | .15 | .12 | .28 | .05 | .23 | -.07 | .12 | .14 | .02 | -.13 | .08 | — | | |
| Relative size | .19 | .14 | .19 | -.20 | .19 | -.11 | .00 | -.09 | -.13 | -.10 | .06 | .09 | .00 | .07 | -.17 | — | |
| Supplier size | .13 | .22 | .25 | .18 | .25 | .18 | .08 | .36 | .14 | .06 | -.13 | -.13 | -.04 | .29 | .14 | .26 | — |
| Mean | 1.73 | 2.85 | 2.20 | 3.07 | 2.20 | 3.95 | 4.66 | 1.56 | 2.47 | 2.92 | 3.86 | 3.70 | 3.58 | 5.13 | 5.98 | .20 | 3.53 |
| Standard deviation | .75 | 1.65 | 1.26 | 1.63 | 1.26 | 1.49 | 1.19 | .50 | 1.30 | 1.74 | 1.68 | 1.64 | 1.71 | 1.54 | 1.14 | .40 | 1.25 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | .00 | 1.00 |
| Maximum | 3.86 | 6.67 | 5.75 | 6.33 | 5.75 | 7.00 | 7.00 | 2.00 | 6.00 | 7.00 | 7.00 | 7.00 | 7.00 | 7.00 | 7.00 | 1.00 | 5.00 |

Notes. Correlations of $|r| > .20$ are significant at $p < .05$ (two-sided).

All values for the multi-item scales are based on raw scores (i.e., means of the items). $N = 100$.

Reseller investments at time 1 (RINVT1, Time 1, Supplier). This scale describes the investments made by the reseller at time 1 dedicated to the relationship with the focal supplier. The items are based on those used by Anderson and Weitz (1992), and measure the “aggregate stock” of specific assets at the time of data collection.

As we discussed previously, our focus is on the asymmetry in the parties’ investments. Specifically, it is the level of investments made by the reseller relative to that of the supplier that safeguards the supplier and induces cooperation by the reseller. To capture this asymmetry, we subtract supplier investments from reseller investments at time 1 and label the measure INVDIFF.⁴ Larger values of INVDIFF indicate increasingly larger mutual asymmetric investments in the supplier’s favor. We control for the level of supplier investments (SINVT1), so INVDIFF captures the investment differential after accounting for the absolute level of supplier investments.

Reseller selection efforts (SSELTI, Time 1, Supplier). This scale describes the selection efforts undertaken by the supplier to

verify the qualities of the focal reseller at the time the relationship was first established.⁵ Specifically, it measures the extent to which the supplier undertook formal qualifications of the reseller’s ability attributes. The items are based on those used by Wathne and Heide (2004).

Control variables. In addition to the focal theoretical variables, we include an extensive set of control variables. Specifically, we control for reseller incremental investments at time 2 (RINVT2, *Time 2, Supplier*), as well as the selection efforts undertaken by the reseller reported at time 1 (RSELTI, *Time 1, Reseller*). To capture the relationship’s power structure, we include measures of relative firm size, exchange concentration, and supplier replaceability. We also address two measures of uncertainty experienced by the reseller: demand unpredictability (i.e., uncertainty faced by the reseller in its downstream market) and order unpredictability (i.e., reseller’s difficulty in predicting orders from the upstream supplier). In addition, we use measures of supplier perceived competition, reseller perceived competition, the number of supplier and reseller

⁴ Thus, INVDIFF = (reseller investments at time 1 – supplier investments at time 1). For this computation, we use latent factor scores of the supplier and reseller investment variables at time 1.

⁵ As we noted in Footnote 2, technically this value refers to selection efforts undertaken at time 0, before the relationship formally began. We account for this point in our empirical test.

employees, the type of agreement (a dummy variable, indicating if individual orders or a sourcing agreement form the basis of the relationship), and demand uncertainty (i.e., difficulty faced by the supplier in forecasting sales to the focal reseller).

Construct Validity

We subject all the reflective multi-item scales to assessments of their internal consistency and unidimensionality. First, we evaluate each item set with exploratory factor analyses to determine the interitem and item-to-total correlations. Second, we check the psychometric properties of all the scales simultaneously in a single confirmatory factor analysis. Due to the size of the overall item set (37), we employ a partial disaggregation model, grouping the theoretically most similar items (i.e., those worded most closely alike) in parcels, following the recommendation of Bagozzi and Heatherton (1994).

To evaluate the factor model, we use a combination of absolute fit indices (χ^2 and root mean square error of approximation [RMSEA]) and incremental fit indices (comparative fit index [CFI] and Tucker–Lewis index [TLI]). The fit indices indicate acceptable model fit ($\chi^2 = 258.46$ (168 df), $p < .05$, RMSEA = .07, CFI = .945, TLI = .93).

Next, we calculate the composite reliabilities (CR) and average variance extracted (AVE) for each multi-item construct using the procedure outlined by Fornell and Larcker (1981), and we assess convergent validity by inspecting the factor loadings and their associated t values (Gerbing and Anderson 1988). All of the factor loadings are large ($>.78$) and significant (t values > 2), and the CR and AVE for all constructs meet or exceed the thresholds recommended by Fornell and Larcker (1981). The AVEs are on the diagonal of Table 1; we report the CRs for each scale in the Appendix.

We also establish discriminant validity by calculating the shared variance between all possible pairs of multi-item constructs, which is lower than the AVE for each multi-item construct. The highest shared variance, calculated as the squared correlation between each construct pair, is .48 (RINVT1 and RINVT2). This result suggests limited construct overlap; the value of .48 is lower than the AVEs for either construct (.67 and .77, respectively), in support of discriminant validity (Fornell and Larcker 1981). The correlation matrix for the variables and descriptive details is in Table 1.

Finally, our independent and dependent variables are separated by 3 years in time, so we minimize the possibility of common method bias by design. However, we apply Lindell and Whitney's (2001) marker test, in which the lowest positive pairwise correlation provides a valid indicator of common method variance. Then, we calculate a new correlation matrix adjusted for this lowest positive correlation. None of the previously significant correlations lost significance, suggesting that common method variance is unlikely to affect our results. We also conduct the test of common method bias implemented by Verhoef and Leeflang (2009). Specifically, we check the correlation of informant involvement, measured on the seven-point scale, with the focal constructs. They should be

theoretically unrelated, but empirically they might correlate if common method bias is an issue. The observed correlations ($p > .10$) disprove this hypothesis and suggest the absence of common method bias.

Hypotheses Tests

Our data and hypotheses require us to account for (1) the need to estimate multiple equations simultaneously, (2) heteroskedasticity, (3) potential endogeneity in the investment variables, and (4) a relatively small sample size, due to the complexity of the research design. To address these requirements, we rely on seemingly unrelated estimation (SUEST), which combines robust estimates of multiple regression models.⁶ The mutual investment variable is temporally lagged, relative to the dependent variables, so potential endogeneity concerns rest on the firm's investment decisions, based on expectations about future transaction costs (in this case, 3 years later). As we discussed previously, mutual asymmetric investments (INVDIFF) is not a deliberate governance mechanism purposely deployed by a focal firm but rather constitute an emergent governance structure (e.g., Heide and John 1988; Williamson 1985). Still, we formally check, using the larger sample available at time 1, for endogeneity in both INVDIFF and the initial investments, using the Durbin–Wu–Hausman test, as recommended by Davidson and MacKinnon (1993). Specifically, we predict each investment variable and retain their residuals in the outcome equation. We omit demand unpredictability and relative size for instrumental purposes (Table 2), consistent with Garen's (1984) approach and as implemented in recent governance research (e.g., Butt et al. 2018; Chakravarty, Kumar, and Grewal 2014; Kashyap and Murtha 2017). The results ($p > .10$) suggest the absence of endogeneity among INVDIFF, SINVT1, and RINVT1. We follow the same procedure for the incremental investment variables (SINVT2 and RINVT2) using the smaller sample size available at T2, again retaining their residuals. The final model consists of the following three regression equations:⁷

$$1. \text{STCT2}_i = \beta_1 + \beta_2 \text{SINVT2}_i + \beta_3 \text{RINVT2}_i + \beta_4 \text{SINVT1}_i + \beta_5 \text{INVDIFF}_i + \beta_6 \text{SSELT1}_i + \beta_7 \text{RSELT1}_i + \beta_8 \text{SINVT2} * \text{SSELT1} + \beta_9 \text{SSELT1} * \text{INVDIFF} + \beta_{10} \text{SINVT2} * \text{INVDIFF} + \beta_{11} \text{SINVT2} * \text{INVDIFF} * \text{SSELT1} + \beta_{12} \text{Type of agreement} + \beta_{13} \text{Concentration of sales} + \beta_{14} \text{Supplier replaceability} + \beta_{15} \text{Order unpredictability} + \beta_{16} \text{RES_SINVT2} + \beta_{17} \text{RES_RINVT2} + \text{error}.$$

⁶ Because SUEST combines parameter estimates and associated (co)variance matrices from several regression equations in one model, while allowing for robust errors, this approach is particularly well-suited to modest sample sizes.

⁷ Because mutual asymmetric investments (INVDIFF) represent a linear combination (difference) of reseller investments (RINVT1) and supplier investments (SINVT1), we exclude RINVT1 from the model. The substantive results remain the same when we exclude SINVT1 (instead of RINVT1), but because we take the supplier's perspective throughout, we include SINVT1 in the model specification.

Table 2. SUEST Estimates of Drivers of Incremental Investments and Ex Post Transaction Costs.

| Independent Variables | STCT2 | | SINVT2 | | RINVT2 | |
|--|--------------------------|----------|------------------------|----------|-------------|----------|
| | Coefficient | RSE | Coefficient | RSE | Coefficient | RSE |
| Supplier incremental investment t2, SINVT2 | .87 | (.52)* | | | | |
| Reseller selection efforts t1, SSELT1 | -.23 | (.11)** | H ₁ (+) .16 | (.04)*** | .22 | (.06)*** |
| Mutual asymmetric investment t1, INVDIFF | -.63 | (.56) | H ₂ (+) .54 | (.17)*** | 1.54 | (.26)*** |
| SINVT2 × SSELT1 | H _{3a} (-) -.10 | (.05)** | | | | |
| SSELT1 × INVDIFF | -.01 | (.08) | | | | |
| SINVT2 × INVDIFF | H _{3b} (-) -.08 | (.16) | | | | |
| SINVT2 × INVDIFF*SSELT1 | H ₄ (-) -.13 | (.06)** | | | | |
| Control Variables | | | | | | |
| Reseller incremental investment t2, RINVT2 | .70 | (.25)*** | | | | |
| Supplier investment t1, SINVT1 | -.13 | (.41) | .63 | (.13)*** | 1.41 | (.21)*** |
| Supplier selection t1, RSELT1 | -.02 | (.07) | .02 | (.03) | -.04 | (.04) |
| Type of agreement | -.59 | (.36) | -.12 | (.25) | -.28 | (.32) |
| Concentration of sales | .50 | (.11)*** | -.01 | (.08) | -.16 | (.10) |
| Supplier replaceability | -.12 | (.09) | .07 | (.07) | -.02 | (.08) |
| Order unpredictability | .22 | (.10)** | -.04 | (.09) | -.10 | (.12) |
| Demand unpredictability | | | .14 | (.06)** | .00 | (.07) |
| Demand uncertainty | | | -.01 | (.08) | -.10 | (.10) |
| Supplier competition | | | -.04 | (.07) | .15 | (.10) |
| Reseller competition | | | .00 | (.10) | .12 | (.09) |
| Relative size | | | .20 | (.25) | .81 | (.24)*** |
| Supplier size | | | .02 | (.11) | -.05 | (.12) |
| Residual for SINVT2, RES_SINVT2 | -.87 | (.54) | | | | |
| Residual for RINVT2, RES_RINVT2 | -.35 | (.29) | | | | |
| Constant | -.76 | (.97) | -.13 | (.81) | .18 | (.78) |
| R ² | | .37 | | .41 | | .64 |

Notes. The significance levels are based on two-tailed tests, except where hypothesized. $N = 100$. RSE = robust standard error.

* $p < .10$. ** $p < .05$. *** $p < .01$.

- $$\text{SINVT2} = \beta_1 + \beta_2 \text{SINVT1}_i + \beta_3 \text{INVDIFF}_i + \beta_4 \text{SSELT1}_i + \beta_5 \text{RSELT1}_i + \beta_6 \text{Type of agreement} + \beta_7 \text{Concentration of sales} + \beta_8 \text{Supplier replaceability} + \beta_9 \text{Order unpredictability} + \beta_{10} \text{Demand unpredictability} + \beta_{11} \text{Supplier competition} + \beta_{12} \text{Reseller competition} + \beta_{13} \text{Relative size} + \beta_{14} \text{Supplier size} + \beta_{15} \text{Demand uncertainty} + \text{error}.$$
- $$\text{RINVT2} = \beta_1 + \beta_2 \text{SINVT1}_i + \beta_3 \text{INVDIFF}_i + \beta_4 \text{SSELT1}_i + \beta_5 \text{RSELT1}_i + \beta_6 \text{Type of agreement} + \beta_7 \text{Concentration of sales} + \beta_8 \text{Supplier replaceability} + \beta_9 \text{Order unpredictability} + \beta_{10} \text{Demand unpredictability} + \beta_{11} \text{Supplier competition} + \beta_{12} \text{Reseller competition} + \beta_{13} \text{Relative size} + \beta_{14} \text{Supplier size} + \beta_{15} \text{Demand uncertainty} + \text{error}.$$

Results

Table 2 displays the estimates and robust standard errors obtained from the SUEST estimation. First, the residuals (RES_SINVT2 and RES_RINVT2) are nonsignificant, suggesting that our parameter estimates are not biased (Davidson and MacKinnon 1993). Turning to the hypotheses, a supplier's reseller selection efforts (reported at time 1) have a significant and positive effect on supplier incremental investments in reseller-specific investments (time 2), in support of H₁

($\beta = .16, p < .01$). Similarly, greater initial mutual asymmetric investments in the supplier's favor (time 1) have a significant and positive effect on supplier incremental investments (time 2), in support of H₂ ($\beta = .54, p < .01$). Thus both of the preexisting governance arrangements exert the predicted effects, in terms of motivating the supplier to make incremental, reseller-specific investments.

We also predicted that when the supplier's initial reseller selection efforts and the mutual asymmetric investments in the supplier's favor are greater (time 1), the positive effect of a supplier's incremental investments on supplier ex post transaction costs would be weaker (time 2). To test H_{3a}, we consider the multiplicative effect of supplier incremental investments and reseller selection efforts on ex post transaction costs. As Table 2 shows, supplier incremental investments increase ex post transaction costs ($\beta = .87, p < .10$), but the joint effect of supplier incremental investments and reseller selection efforts is significant and negative ($\beta = -.10, p < .05$), in support of H_{3a}. To further explore H_{3a}, we present a surface plot in Figure 2 that depicts how supplier ex post transaction costs vary jointly with supplier incremental investments and reseller selection efforts. The downward sloping surface in (Figure 2) indicates that the joint effect of supplier incremental investments (SINVT2) and reseller selection efforts (SSELT1) on transaction costs is negative,

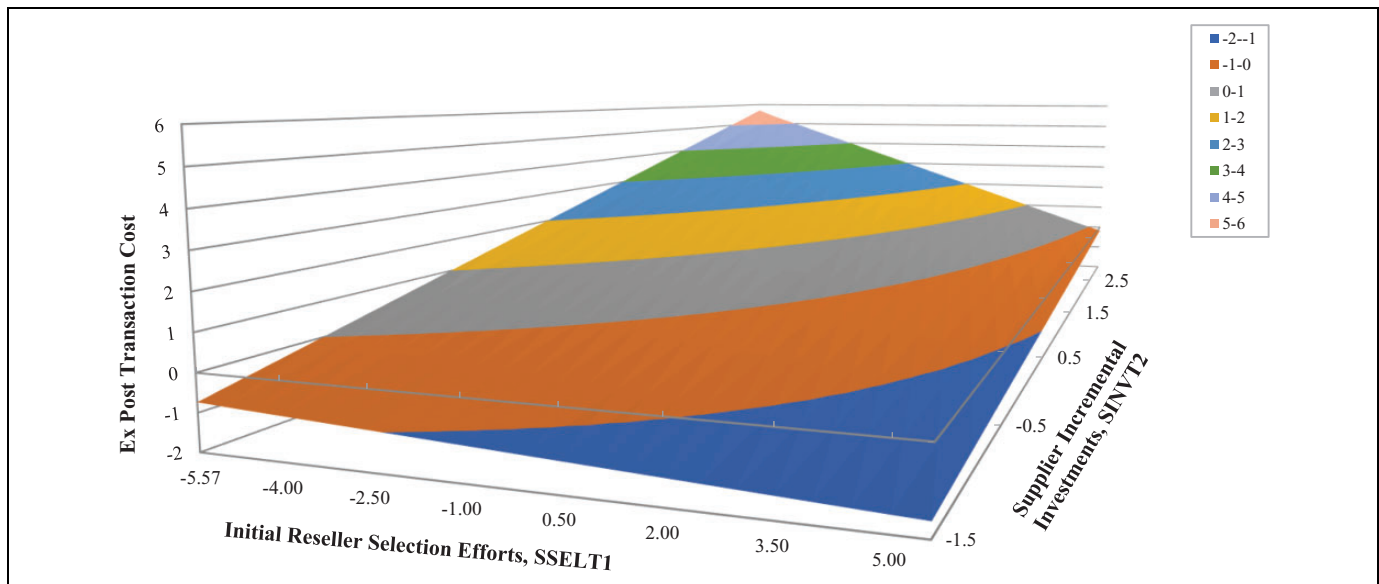


Figure 2. Surface plot for joint effects of incremental supplier investments (SINVT2) and initial reseller selection efforts (SSELT1) on ex post transaction costs (STCT2) (H_{3a}).

Notes: The vertical (Y) axis represents supplier transaction costs; horizontal (X) axis represents initial reseller selection efforts; depth (Z) axis represents supplier incremental investments. Colored boxes indicate different transaction costs. All focal dependent and independent variables are mean centered.

as we predict in H_{3a} . For a given level of supplier incremental investments (e.g., fixing SINVT2 to 2.5 units), costs are highest when reseller selection efforts are at their lowest depicted level (i.e., SSELT1 = -5.5 units). As reseller selection efforts increase, we move down the cost surface, then reach the lowest cost point when reseller selection efforts are at their highest depicted level (5.5 units).

To gather additional insight, we use latent scores to plot the slope of supplier incremental investments on supplier ex post transaction costs at five levels of reseller selection efforts, as a moderator: the mean level of the moderator (β_{Mean}), one standard deviation (SD) below and above the mean (β_{-1SD} , β_{+1SD}), and at the minimum and maximum values of reseller selection efforts (β_{Min} , β_{Max}) (Aiken and West 1991). The slope plot is in (Figure 3). The range of reseller selection efforts is (-5.57, 5.48), the mean is 0, and the standard deviation is 2.78. In Figure 3, the positive effect of supplier incremental investments on supplier ex post transaction costs weakens monotonically over the range of the moderator. Supplier investments increase ex post transaction costs most when reseller selection efforts are at their lowest level ($\beta_{Min} = 1.43$, $p < .01$), but this positive effect becomes progressively weaker as reseller selection efforts increase ($\beta_{+1SD} = 1.15$, $p < .05$) and even reaches complete insignificance at a maximum value of the moderator ($\beta_{Max} = .32$, $p > .1$). This pattern of effects further supports H_{3a} .

We also predicted a negative interaction effect between supplier incremental investments (time 2) and mutual asymmetric investments (time 1) on supplier ex post transaction costs. As we show in Table 2, the effect has a negative sign, as expected, but it is not significant (H_{3b} $\beta = -.08$, $p > .10$). We return to this finding in the discussion section.

In H_4 , we posited that reseller selection efforts (time 1), in combination with mutual asymmetric investments in the supplier’s favor (time 1), suppress supplier ex post transaction costs resulting from supplier incremental investments (time 2). We capture this effect by the three-way multiplicative term of supplier incremental investments (SINVT2), mutual asymmetric investments (INVDIFF), and reseller selection efforts (SSELT1) in Table 2; it is significant and negative ($\beta = -.13$, $p < .05$), consistent with our prediction. In addition, we plot the three-way interaction on a surface enveloped by the three-dimensional axes in Figure 4, namely, the effect (slope) of supplier incremental investments on supplier ex post transaction costs (vertical or Y-axis), mutual asymmetric investments (depth or Z-axis), and reseller selection efforts (width or X-axis). In Figure 4, for a given level of mutual asymmetric investments (e.g., fixing INVDIFF to 2 units), the slope reflecting the effect of the incremental investments on ex post transaction costs is highest (most positive) when reseller selection efforts are at their lowest level (i.e., SSELT1 = -5.5 units), depicted in gray at the center-top of the surface. Conversely, keeping INVDIFF fixed at the same level of 2 units, we find that the slope of incremental investments on ex post transaction costs is lowest (most negative) when reseller selection efforts are at their highest depicted level (SSELT1 = 5.5 units), depicted in dark blue on the bottom-right of the surface. Overall, this surface visually reveals how mutual, asymmetric investments and reseller selection efforts jointly reduce the positive effect of supplier incremental investments on supplier ex post transaction costs, as we predicted in H_4 .

To explore H_4 further, we use latent scores and plot the slope of supplier incremental investments on supplier ex post

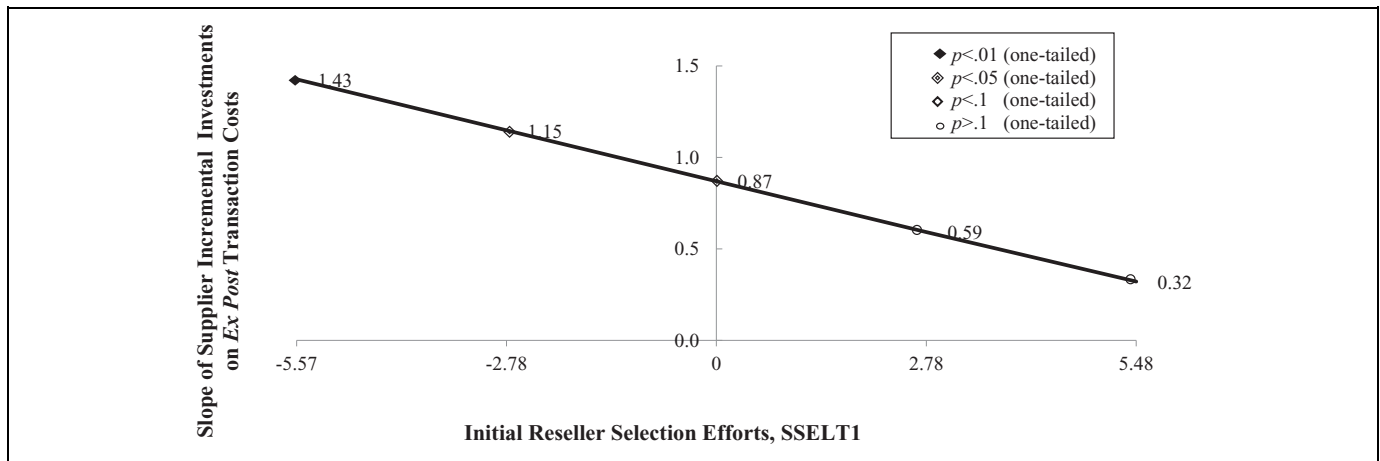


Figure 3. Slope of incremental supplier investments (SINVT2) on ex post transaction costs (STCT2) over the range of initial reseller selection efforts (SSELT1) (H_{3a}).

Notes: Slope coefficients for the effect of supplier incremental investments on transaction costs are displayed on the plot. These coefficients are plotted at the minimum (β_{Min}), $-1SD$ (β_{-1SD}), the mean (β_{Mean}), $+1SD$ (β_{+1SD}), and the maximum (β_{Max}) values of reseller selection efforts (SSELT1), which are, respectively, -5.57 , -2.78 , 0 , 2.78 , and 5.48 . All interacted variables are mean centered.

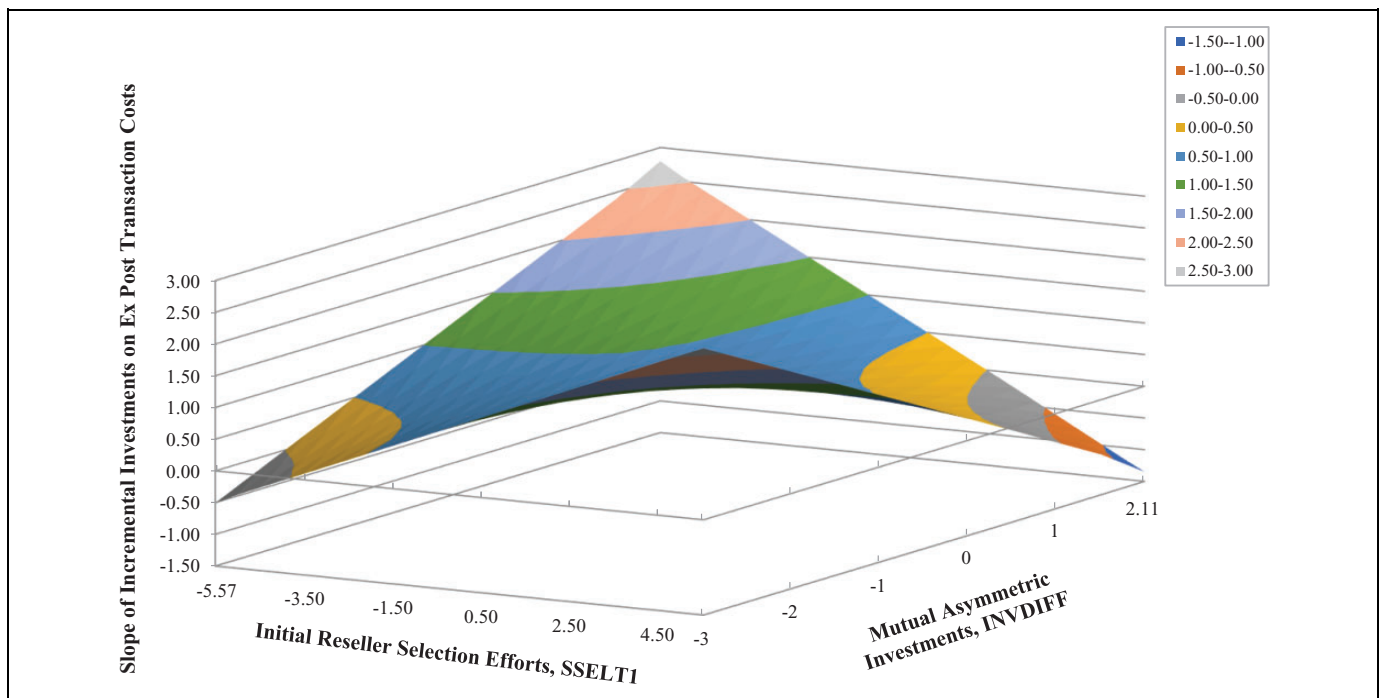


Figure 4. Surface plot for the three-way effect of incremental supplier investments (SINVT2), mutual asymmetric investments in the supplier's favor (INVDIFF), and initial reseller selection efforts (SSELT1) on ex post transaction costs (STCT2) (H_4).

Notes: The vertical (Y) axis represents the slope of supplier incremental investments on supplier transaction costs; depth (Z) axis represents mutual asymmetric investments in the supplier's favor; horizontal (X) axis represents initial reseller selection efforts. Colored boxes indicate different transaction costs. All focal dependent and independent variables are mean centered. Some values for transaction costs are negative due to mean centering.

transaction costs at five different levels of mutual asymmetric investments (INVDIFF): the minimum (β_{Min}), $-1SD$ (β_{-1SD}), the mean (β_{Mean}), $+1SD$ (β_{+1SD}), and the maximum (β_{Max}), shown as straight lines in Figure 5. Each slope lines indicates the result when we keep the value of reseller selection efforts fixed at specific levels (minimum, $-1SD$, mean, $+1SD$, and maximum of SSELT1). Collectively, they portray

the three-way interaction effect predicted in H_4 . According to the upward-sloping, green line, when we keep SSELT1 fixed at its minimum value, the effect of SINVT2 on costs becomes progressively more positive and significant as INVDIFF increases ($\beta_{Min} = -.51$, $p > .1$; $\beta_{-1SD} = .84$, $p > .1$; $\beta_{Mean} = 1.43$, $p < .01$; $\beta_{+1SD} = 2.01$, $p < .01$; $\beta_{Max} = 2.79$, $p < .01$). As portrayed by the red line in Figure 5, when

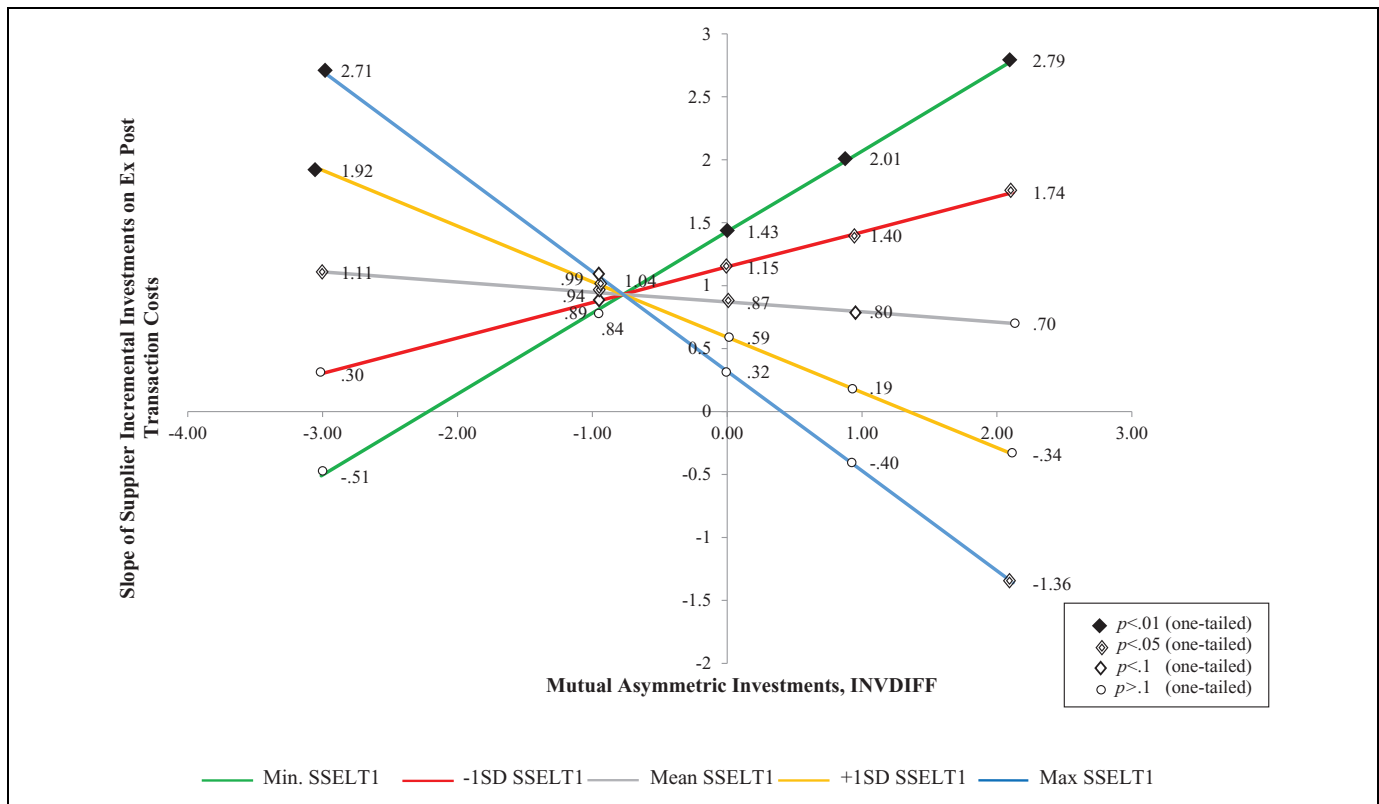


Figure 5. Slope of incremental supplier investments (SINVT2) on ex post transaction costs (STCT2), over the range of mutual asymmetric investments in the supplier’s favor (INVDIFF) at different levels of initial reseller selection efforts (SSELT1) (H₄).

Notes: Slope coefficients for the effect of supplier incremental investments on transaction costs are shown in this plot. The coefficients are plotted at the minimum (β_{Min}), $-1SD$ (β_{-1SD}), the mean (β_{Mean}), $+1SD$ (β_{+1SD}), and the maximum (β_{Max}) values of mutual asymmetric investments in the supplier’s favor (INVDIFF), for various fixed levels of initial reseller selection (SSELT1). The minimum, $-1SD$, mean, $+1SD$, and maximum values of INVDIFF at which the slope values are plotted are -3.01 , $-.91$, 0 , $.91$, and 2.11 , respectively. There are five different lines, one for each level of SSELT1. All interacting variables are mean centered. In the legends, Min. Sel. and Max. Sel. denote minimum and maximum values of reseller selection (SSELT1), respectively, and so on.

SSELT1 is fixed at $-1SD$, a similar, increasingly positive, and significant effect emerges for the slope of SINVT2 on costs across the range of INVDIFF. However, with the downward-sloping, yellow line, we find that when SSELT1 is fixed at $+1SD$, the positive effect of SINVT2 on costs weakens progressively over the range of INVDIFF ($\beta_{Min} = 1.92, p < .01$; $\beta_{-1SD} = .99, p < .05$; $\beta_{Mean} = .59, p > .1$; $\beta_{+1SD} = .19, p > .1$; $\beta_{Max} = -.34, p > .1$). A similar weakening trend of the (positive) effect of SINVT2 emerges at the maximum value of SSELT1, as pictured in the downward-sloping, blue line. Substantively, these slope plots suggest that as SSELT1 and INVDIFF increase, the positive effect of SINVT2 on costs weakens. Thus, consistent with H₄, we find that reseller selection efforts and mutual asymmetric investments jointly temper the transaction cost-increasing effect of supplier incremental investments.

Collectively, these results imply that though both selection efforts and mutual asymmetric investments at time 1 motivate supplier incremental investments at time 2 (H₁ and H₂), only reseller selection efforts have by themselves a transaction cost-reducing role at time 2 (H_{3a}). However, mutual asymmetric investments reduce the supplier ex post transaction costs (time 2) resulting from supplier incremental investments when

complemented by reseller selection efforts (H₄). We return to these results in the Discussion section.

Supplemental Analyses

Sample Attrition

A common concern with longitudinal designs is sample attrition or “survivor bias.” To assess if such a bias is present in our study, we use the sample selection model proposed by Heckman (1979). Specifically, we estimate a two-step maximum likelihood probit model. In the first step, we estimated the likelihood of an observation occurring only once or twice, using the set of independent variables at time 1. Then we use the residual retained from this step to explain ex post transaction costs, controlling again for the battery of independent variables collected at time 1. The parameter estimate of the sample selection effect ($p > .10$) suggests the absence of sample selection bias.

Multicollinearity

Collinearity occurs frequently in interaction models. To check for multicollinearity, we estimate the mean model variance inflation factor (VIF) and individual VIFs for the hypothesized

effects. A common rule is that VIFs of 10 or higher may be reason for concern (Hair et al. 2010). The mean VIF is 4.25, and the highest VIF among our hypothesized effects is 2.61 (effect of mutual asymmetric investments, H_2), well below the threshold. Among the interactions, the VIF for the three-way effect (H_4) is 2.01. We find higher VIFs for the non-hypothesized effects, including a high value of 29.08 for SINVT2. To check if it had any meaningful effect on our results, we first remove the three-way interaction from Equation 1 and reestimate the model. Then we reestimate the model with all two- and three-way interactions removed. Both estimations result in the same significance levels for the two-way (without the three-way interaction) and direct (without two-way or three-way interactions) effects. We thus conclude that collinearity has no meaningful impact on our results.

Drivers of Initial Investments

In an effort to validate our results, we estimate two additional models with the larger sample obtained from the first wave of data collection (time 1). Specifically, we examine drivers of supplier (SINVT1) and reseller (RINVT1) initial investments, using reseller and supplier selection efforts as key predictors (SSELT1 and RSELT1). Although the supplier's selection efforts serve as a significant predictor of both supplier and reseller initial investments ($p < .05$), no such effect is discernible for the reseller's own selection efforts. These findings are consistent with the significant, positive effect of reseller selection efforts (SSELT1) on supplier and reseller incremental investments (SINVT2 and RINVT2), as well as with the non-significant effects for supplier selection efforts (RSELT1) in Table 2.

Discussion

Channel relationship governance is an important part of a supplier's overall marketing strategy (Palmatier, Gopalakrishna, and Houston 2006). Governance is a means of infusing "order" (Commons 1934; Williamson 2010), and we consider how order follows from particular actions (purposeful selection efforts) and the relationship's governance structure (mutual asymmetric investments). In this section, we first discuss our empirical results, then highlight their specific managerial and theoretical implications. We close with a discussion of the study's limitations and topics for further research.

Our central theoretical argument is that a firm's governance choices, broadly defined, have two distinct roles in a channel relationship, namely, to promote incremental supplier investments in valuable assets (Ghosh and John 1999) and then to safeguard those assets, which are also vulnerable, from transaction costs due to reseller behavior. Reseller selection efforts take both roles; stringent selection efforts serve to both promote supplier incremental investments (H_1) and safeguard them ex post (H_{3a}). This pattern of results suggests that selection affects both the investor, which commits its specialized assets, and the recipient, whose behavior may create transaction costs. Mutual asymmetric investments do not exhibit such

a dual pattern though. When in the supplier's favor, they promote incremental investments by the supplier (H_2), but alone, they do not suppress ongoing supplier ex post transaction costs that result from these investments (cf. H_{3b}). Yet it is noteworthy that mutual asymmetric investments in combination with selection efforts significantly reduce the transaction cost implications of incremental investments (H_4). Our findings suggest that this result stems from the juxtaposition of high reseller motivation (induced by higher levels of asymmetric investments) with high reseller ability (due to careful selection efforts on the supplier's part). Specifically, mutual asymmetric investments in the supplier's favor, such that the reseller is more dependent on the supplier than vice versa, increases the reseller's motivation to maintain the relationship, consistent with the theory of self-enforcing agreements (Telser 1980). In such conditions, careful selection ensures that the reseller possesses abilities to enact appropriate behaviors that ensure relationship continuity and prevent relationship termination.

Although the particular constellation of variables that underlies H_4 involves joint increases in reseller motivation and ability, it also is useful to consider the supplier's ex post transaction costs, with three alternative scenarios. First, the combination of high reseller ability and low reseller motivation (i.e., low INVDIFF) has positive transaction cost implications (Figure 5). Substantively, highly qualified resellers that are less invested in the relationship with the supplier, such that their motivation for relationship maintenance is lower, are both able and willing to take advantage of the supplier's increased lock-in from its incremental investments. Second, with a combination of low reseller ability and high motivation (Figure 5), incremental investments lead to increased costs. Due to high asymmetric investments in the supplier's favor, the reseller gets locked in and motivated to maintain the relationship. Yet its low ability means that this reseller lacks the skills to realize the value that resides in the supplier's incremental investments. The supplier then suffers more reseller mistakes, which require costly interventions. Third, the combination of low reseller ability and low motivation does not seem to have a significant effect on supplier ex post transaction costs (Figure 5). We explain this effect according to the reseller's (1) generally lower motivation to realize the value that resides in the supplier's incremental investments (which reduces costly interventions) and (2) lower ability to exploit the supplier's increased vulnerability due to these investments. We do not mean to suggest that a low ability reseller cannot exploit supplier lock-in, but they are in a weaker position to do so. Thus, incremental investments still can increase supplier ex post transaction costs on average (i.e., positive main effect), but the effect is not significant in relationships with low ability resellers with low motivation to realize the value that resides in the relationship.

Theoretical Implications

We identify four theoretical implications of our findings. First, our test of the dual roles of a firm's governance choices

extends past TCE research, which has often looked only at ex post safeguarding concerns and paid less attention to the conditions that motivate investments in the first place. Both initial reseller selection efforts and preexisting mutual asymmetric investments promote incremental investments in a channel relationship, but prior asymmetric investments in themselves do not have a corresponding safeguarding quality. More generally, the incentives that result from prior investments have a more limited range of effects than partner selection efforts. However, in combination with selection efforts, mutual asymmetric investments can limit transaction costs, beyond the selection effect alone.

Second, our findings provide insights into two aspects of relationship dynamics. The observation that selection efforts both motivate supplier investments ex ante and help safeguard them ex post suggests that selection efforts have dynamic properties and serve as “stocks” with governance qualities that extend beyond the time of deployment. Furthermore, we add to the small body of literature that describes how firms augment their existing stocks of assets over time (e.g., Bensaou and Anderson 1999; Ghosh and John 2005). Although TCE-related research often treats specific investments as an aggregate stock, we specifically distinguish between a firm’s original and subsequent investments, and we highlight conditions that might motivate an investor to make incremental commitments to an existing relationship base.

Third, we shed new light on drivers of transaction costs. Standard TCE literature assumes that transaction costs are related to motivation, so much extant governance research focuses on how governance arrangements affect ongoing “motivational levers” (Gibbons and Roberts 2013). Such research is anchored in economic theories of governance, which devote limited attention to partner ability (Oxley and Silverman 2008). We augment this perspective with sociological and agency theory (Bergen, Dutta, and Walker 1992; Stovel and Fountain 2009), as well as with prior studies in marketing (Heide and John 1990; Wuyts and Geyskens 2005), to show that selection efforts that reveal partner abilities have important transaction cost implications. In general, our findings suggest that transaction costs have both motivation- and ability-related origins, so considering relationship governance strictly from the standpoint of managing partner motivation is too restrictive.

Fourth, our findings provide new insights into the “plural forms” thesis (Bradach and Eccles 1989, p. 97) by showing how “mixed courses of action” (Granovetter 2005, p. 35) determine transaction costs. Despite considerable enthusiasm for the general idea of governance combinations, there has been little theorizing about the specific ways individual governance variables combine to impact transaction costs. Our findings point to one particular scenario: Careful selection efforts, whose primary purpose is to ascertain reseller ability, in combination with mutual asymmetric investments, whose primary purpose is to ensure reseller motivation, serve to dampen transaction costs. Intuitively, we might speculate that mutual asymmetric investments would undermine selection effects or that the two serve as functional substitutes. Instead, our results suggest

complementarity between reseller ability (ascertained through selection) and motivation (induced by mutual asymmetric investments).

Managerial Implications

Our findings point to some important, heretofore unexplored differences among governance arrangements. The inability of mutual asymmetric investments to suppress transaction costs by themselves serves as a cautionary tale. That is, our finding that mutual asymmetric investments promote investments but fail to function as ongoing safeguards offers a warning to firms that consider such structures part of their menu of governance options.

Further, we showed that selection efforts have a greater range of effects than mutual asymmetric investments. Relationship researchers sometimes question the role of selection as a governance mechanism (e.g., Dacin, Reid, and Ring 2008). The well-documented prevalence of underperforming relationships and outright failures has caused speculation about whether firms make sufficient efforts to screen their partners in the first place, as well as whether formal selection efforts actually have governance implications. Our study suggests that selection is important; its role in a relationship goes beyond screening per se. However, such selection efforts also impose costs. For example, the supplier likely incurs costs in connection with data collection, interviews, and site visits (Liker and Choi 2004). Still, our results show that selection efforts pay off for suppliers, in several ways. As a governance strategy, selection efforts thus appear easy to justify.

Limitations and Further Research

The results of our study must be viewed against the backdrop of certain limitations. First, we tested our theoretical framework in a particular industry. Restricting our empirical test in this fashion enabled us to develop context-sensitive measures and eliminate alternative explanations for our findings, but caution should be used in extrapolating our results to other contexts. Our particular setting is a conventional distribution channel; a possible avenue for further research would be to test the theoretical predictions in other contexts.

Second, we tested the effects of two particular governance variables, selection efforts and asymmetric mutual specific investments. These two options clearly do not exhaust the pool of governance arrangements available to firms, and our current framework could be expanded to include a wider range. In addition, though our approach to capturing reseller selection efforts is consistent with existing literature (e.g., Antia, Mani, and Wathne 2017; Heide and John 1990; Wathne and Heide 2004), we do not explicitly model selection, in the sense of an actual choice (e.g., “Reseller A over Reseller B”). Exploring such a scenario would pose significant challenges for collecting primary data about the non-chosen resellers. However, studies that synthesize longitudinal, primary data collections with existing archival data could address this limitation.

Third, our results point to some inherent limitations of mutual asymmetric investments, tied to firm-level characteristics—namely, the lack of reseller ability undermines the motivational effect of mutual investments. Beyond firm-level characteristics, industry-level variables could serve as boundary conditions that determine the effects of mutual asymmetric investments. For example, rapid technological change poses the risk of asset obsolescence, which may decrease the value of the assets in question. Similarly, rapid change may make prior assessments of partner ability obsolete. Additional research could be directed toward examining the role of different governance arrangements in marketing relationships and the conditions that determine their effects.

Appendix

Response Formats and Scale Items

Ex Post Transaction Costs (STCT2, Time 2, Supplier)

(CR = .943)

“Please evaluate the following statements by circling the most appropriate number on the scale.” (Seven-point scale: “completely inaccurate description—completely accurate description”)

1. We spend considerable time making sure the customer does what we have agreed to.
2. We spend considerable time making sure the customer fulfills our agreements.
3. We spend considerable time monitoring the customer.
4. We spend considerable time making this customer respond to our requests for changes.
5. In this relationship, we spend considerable time on correcting customer mistakes.
6. We spend considerable time on re-negotiating terms with this customer.
7. We spend a substantial amount of time and effort on settling disputes with this customer.

Supplier Incremental Investments (SINVT2, Time 2, Supplier)

(CR = .899)

“These questions deal with investments made by your company DURING THE LAST THREE YEARS in the relationship with the customer. Please evaluate the following statements by circling the most appropriate number on the scale.” (Seven-point scale: “completely inaccurate description—completely accurate description”)

1. Training our employees to deal with this customer has involved substantial commitments of time and money over the past 3 years.
2. Our production systems have been changed over the past 3 years to satisfy the requirements of this customer.
3. We have made significant adjustments in our logistics systems to better serve this customer over the past 3 years.

Reseller Incremental Investments (RINVT2, Time 2, Supplier)

(CR = .909)

“These questions deal with investments made by the customer DURING THE LAST THREE YEARS in the relationship with your company. Please evaluate the following statements by circling the most appropriate number on the scale.” (Seven-point scale: “completely inaccurate description—completely accurate description”)

1. This customer has made significant investments in equipment dedicated to the relationship with our company.
2. This customer has made extensive internal adjustments in order to deal effectively with our company.
3. Training their employees to deal with our company has involved substantial commitments of time and money on the part of this customer.
4. The customer’s logistics systems have been tailored to meet the requirements of our company.

Supplier Investments at Time 1 (SINVT1, Time 1, Supplier)

(CR = .782)

“These questions deal with investments made by your company in the relationship with the customer. Please evaluate the following statements by circling the most appropriate number on the scale.” (Seven-point scale: “completely inaccurate description—completely accurate description”)

1. Training our employees to deal with this customer has involved substantial commitments of time and money.
2. Our production systems have been tailored to satisfy the requirements of this customer.
3. We have made significant adjustments in our logistics systems to better serve this customer.

Reseller Investments at Time 1 (RINVT1, Time 1, Supplier)

(CR = .883)

“These questions deal with investments made by the customer in the relationship with your company. Please evaluate the following statements by circling the most appropriate number on the scale.” (Seven-point scale: “completely inaccurate description—completely accurate description”)

1. This customer has made significant investments in equipment dedicated to the relationship with our company.
2. This customer has made extensive internal adjustments in order to deal effectively with our company.
3. Training their employees to deal with our company has involved substantial commitments of time and money on the part of this customer.
4. The customer’s logistics systems have been tailored to meet the requirements of our company.

Reseller Selection Efforts at Time 1 (SSELT1, Time 1, Supplier)

(CR = .926)

“Suppliers often undertake various qualification [i.e., selection] efforts PRIOR to establishing a customer relationship. Please consider the time when the relationship with this customer was FIRST established (for any product), and indicate the extent of such qualification efforts undertaken by your firm with respect to this customer in each area listed below.” (Seven-point scale: “minimal qualification effort–extensive qualification effort”)

1. Expertise (e.g., product knowledge)
2. Physical space
3. Financial strength
4. Personnel/Management resources
5. Price level
6. Relationship with other suppliers

Supplier Selection Efforts at Time 1 (RSELT1, Time 1, Reseller).

(CR = .931)

“Customers often undertake various qualification (i.e., selection) efforts PRIOR to establishing a supplier relationship. Please consider the time when the relationship with this supplier was FIRST established (for any product), and indicate the extent of such qualification efforts undertaken by your firm with respect to this supplier in each area listed below.” (Seven-point scale: “minimal qualification effort–extensive qualification effort”)

1. Product quality
2. Expertise (e.g., technical expertise)
3. Production capacity
4. Financial strength
5. Personnel/management resources
6. Price level
7. Relationship with other customers

Type of Agreement (Time 1, Supplier)

“Which of the following best describes the agreement between your company and the customer?” Dummy variable: “Individual orders (negotiation of terms for each shipment)” or “Some form of purchase agreement that extends beyond individual orders.”

Concentration of Sales (Time 1, Supplier)

“What percentage (0–100%) of total sales of this product is sold to this customer?” (Seven-point scale: 1 < 5%, 4 = 50%, 7 > 95%).

Supplier Replaceability (Time 1, Supplier)

“It will be easy for us to replace this customer, but difficult for the customer to replace us with another supplier.” (Seven-point scale: “completely inaccurate description–completely accurate description”)

Order Unpredictability (Time 1, Reseller)

“Please indicate how difficult it is to predict your company’s demand for this product (from this supplier).” (Seven-point scale: “easy to predict demand–hard to predict demand”)

Demand Unpredictability (Time 1, Reseller)

“Please indicate how difficult it is to predict your customers’ demand for this product.” (Seven-point scale: “easy to predict demand–hard to predict demand”)

Demand Uncertainty (Time 1, Supplier)

“Please evaluate the following statements by circling the most appropriate number on the scale.” (Seven-point scale: “completely inaccurate description–completely accurate description”)

1. It is difficult to forecast sales for this product to this customer.

Supplier Competition (Time 1, Reseller)

“Please rate the extent of competition in your industry.” (Seven-point scale: “limited competition–extensive competition”)

Reseller Competition (Time 1, Supplier)

“Please rate the extent of competition among the customers.” (Seven-point scale: “limited competition among customers–extensive competition among customers”)

Relative Size (Time 1, Supplier)

“With respect to last year’s sales volume (for all products), how large is your company relative to this customer?”

1. We are X times smaller than this customer.
2. We and the customer are equally large.
3. We are X times larger than this customer.

Supplier Size (Time 1, Supplier)

“Please specify the total revenues (excluding sales tax) for your business.”

Notes: CR = composite reliability.

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