How Contracts and Enforcement Explain Transaction Outcomes

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Abstract

This study considers the influence of contracts on enforcement and the subsequent performance impact of aligned and misaligned enforcement. We define enforcement as a corrective action aimed at remedying problems occurring in the transaction. First we explain the role of contracts and show that at the component level, contracts can both increase and decrease enforcement. Building on an alignment perspective and accounting for the endogeneity of enforcement, we use these contractual components and variables related to enforcement to predict the occurrence of enforcement. We use such predictions to show that aligned enforcement results in higher performance. We also show that the performance impact of misaligned enforcement is relatively greater for transactions where enforcement is not expected. We conduct the study using a unique dataset reporting on 971 business transactions across a wide range of industries.

Keywords: Enforcement, Contracts, Business Marketing, Governance
1. Introduction

Enforcement is a corrective action aimed at remedying problems (Antia, Bergen, Dutta, & Fisher, 2006). Taking such corrective action requires firms to balance the benefits of enforcement against its costs. The key benefit is that it may curb or reverse violations of contractual agreements (Antia et al., 2006). Enforcement may also reduce or reverse behaviors such as suppliers not remedying product breakdowns or providing limited or inadequate service. Thus, enforcement may help suppliers resolve problems (Wuyts, 2007). On the other hand, exchange partners stung by enforcement may react through further acts, such as protracted conflicts, retaliation, or even relationship termination (Antia & Frazier, 2001). As such, firms need to understand when to enforce and the potential consequences of enforcement.

The role of contracts on enforcement is little understood. One perspective is that having explicit contractual agreements *ex ante* can facilitate or even trigger enforcement *ex post*. In fact prior literature, predominantly taking an agency perspective, assumes that enforcement is automatically triggered when contracts are violated (cf. Bergen, Heide, & Dutta, 1998). Another perspective is that such explicit contractual agreements may reduce transaction problems or promote cooperation, thereby reducing the need for enforcement (Mooi & Ghosh, 2010). Recent work acknowledges the role of contracts in enforcement but has conceptualized contracts as monolithic governance devices (cf. Kashyap, Antia, & Frazier, 2012). A more fine-grained analysis of the effects of contracts on enforcement is needed to advance our understanding of whether and how contracts impact enforcement.

We also know little about the performance consequences of enforcement. Recent work correlated enforcement with outcomes but found no effects (Kashyap et al., 2012). Taking a discriminating alignment position may help uncover performance consequences as enforcement
is likely best used when matched to circumstances. Based on governance theories, such as transaction cost economics (TCE), the discriminating alignment view argues that governance (enforcement in our case) that is aligned (expected or called for, as based on transactional attributes) may help performance while malaligned enforcement is detrimental to performance. Such an alignment approach to enforcement has, however, not been examined conceptually and empirically. Moreover, the performance implications of misalignment are not well understood. Specifically, comparing the differential performance of aligned enforcement with misaligned enforcement provides insight into the cost of mistakes. Such analyses are rare, yet valuable, as they provide evidence of the importance of carefully choosing governance (Masten, 1993).

The goal of this paper is to study the effects of contracts on enforcement, to understand the performance effects of aligned enforcement, and to understand the performance consequences of misaligned enforcement. In doing so we make three contributions.

Our first contribution is to describe the role of contracts in enforcement. In this light, Bergen et al. (1998) suggest that the assumption is often made that once contracts are in place, the ex post management task is trivial. We demonstrate that enforcement is not automatic and different contractual components can both increase and decrease the use of enforcement. As such, we also show that contracts are not monolithic governance structures. To support this contribution, we argue that terms in the contract that support the parties’ relationship (e.g., joint management, nondisclosure) reduce enforcement, while terms designed to protect the transaction increase enforcement.

Our second contribution is to test the importance of alignment between these contractual components, transactional attributes, and enforcement. By comparing the outcomes of aligned (predicted) versus nonaligned (not predicted) enforcement, we account for the little-researched
issue of the benefits of aligned governance in an enforcement context (Geyskens, Steenkamp, & Kumar, 2006). We consider performance consequences in terms of *satisfaction with problem resolution*, which is the satisfaction of the buyer with how problems regarding the product have been resolved. Satisfaction is fundamental to understanding interfirm relationships (Geyskens & Steenkamp, 1999).

A third related contribution is to provide understanding of the performance consequences of *misalignment*. Prior work has found interesting asymmetries regarding the circumstances under which misalignment has the most severe (negative) performance implications (Ghosh & John, 2009). Specifically, such work suggests that under greater hazards, misalignment has the most severe consequences. Addressing this issue in an enforcement context helps us understand where the risks are in making enforcement choices and helps managers make informed decisions.

We conduct our investigations by using the External Management of Automation dataset, access to which is provided by the Steinmetz Archive. This unique dataset reports in detail on 971 randomly selected transactions executed between information technology (IT) buyers and suppliers. It includes a broad spectrum of firms from industries such as logistics, parts production, and wholesaling.

This paper proceeds by discussing theory on enforcement in Section 2. We develop arguments on the structure of contracts and the expected effects of different contractual components on enforcement in 2.1. We continue by building hypotheses on why aligned enforcement results in better performance in 2.2. In 2.3 we argue that relative performance loss is higher when buying firms mistakenly enforce.

### 2. Theory and hypotheses
Enforcement is an important governance mechanism in economics, contract law, and marketing (Crocker & Masten, 1991; Williamson, 1996). Despite the importance of enforcement, little work in marketing considers enforcement. Exceptions include Dutta, Bergen, and John (1994), Antia and Frazier (2001), Gilliland and Bello (2002), and Kashyap et al. (2012). Despite these efforts, the role of contracts in enforcement is little understood, as are the performance consequences of (mis)aligned enforcement. We focus on buyers’ informal (or private) enforcement and not on public enforcement, such as via courts.

To clarify the process by which enforcement takes place, we turn to an example. Frequently, buying firms postpone payments as an enforcement behavior. Bungee Loyalty Programs LLC (http://www.bungeeloyaltyprograms.com) is a US-based firm that provides loyalty programs through the integration of complex software. Bungee Loyalty Programs had agreements with its supplier on the delivery of such software. When substantial problems arose in a software purchase, the firm saw a need to postpone payments as a direct result of perceived problems. Once the payments were postponed, the supplier resolved problems, and Bungee Loyalty Program’s satisfaction with the resolution of the problems was much improved.

The generalizable insight from this example is of an ordered series of events as depicted in Figure 1. Specifically, after the deal and contract are decided on, problems may occur in the transaction. Buying firms may then enforce or may refrain from enforcement. As enforcement is a corrective action aimed at remedying problems, some or even complete problem resolution is likely. Enforcement is consequently reflected in the buyers’ satisfaction with problem resolution.

Insert Figure 1 about here

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2 Interview with the CEO of Bungee Loyalty Programs LLC, August 7th, 2012.
Governance theory provides several perspectives on enforcement. We define enforcement as a corrective action aimed at remedying problems occurring in the transaction. Various types of enforcement exist. These typically follow a pattern where less severe actions precede more severe actions (Rooks & Snijders, 2001). Less severe actions include seeking resolution of problems by referring to or renegotiating the original agreement (Hart & Moore, 1988). If these actions do not result in acceptable outcomes, more severe actions may be administered in the form of delaying payments (Zbaracki, Ritson, Levy, Dutta, & Bergen, 2004). The type of enforcement studied in this paper is important because it is severe, yet more common than legal action, such as seeking sanctions, mediation, or arbitration.3

2.1 How do contracts impact enforcement?

We believe that different components of the same contract can increase and decrease the likelihood of enforcement as contractual components serve different functions (Anderson & Dekker, 2005). Past work has suggested multiple components are present in contracts. For example, Argyres and Mayer (2007) suggest that specific components are written into contracts to protect and delineate relations, such as communication, roles, and responsibilities, while other terms protect the specific transaction. Related work in the contracting literature suggests the existence of contract components designed to safeguard the specific relationship, as well as to define the terms of the transaction (Anderson & Dekker, 2005; Chen & Bharadwaj, 2009).

As such, we expect contracts to have multiple components. Relational safeguards are components written into a contract that are designed to protect the parties’ interests in

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3 Of the 971 transactions included in our dataset, only two transactions resulted in a court case. Prior work suggests such court cases are rare, likely because courts are not reliable enforcers for various reasons, including equivocality in wording and other uncertainties (Crocker & Masten, 1991). Moreover, taking legal action involves costs, such as legal expenses.
maintaining the relationship with one another for an extended period of time. Such components include intellectual property rights, joint management during the relationship, and how provisions in the contract are updated. Because these components are negotiated into the contract to protect the relationship we describe these components as relational safeguards (Poppo & Zenger, 2002). Such relational safeguards are meaningful in determining future behaviors (Ring & Van de Ven, 1992). Transactional safeguards are designed to protect the specific transaction by countering undesired or opportunistic behaviors (Carson, Madhok, & Wu, 2006). Typical transactional safeguards include sanctions on late payment, supplier liability, and arbitration clauses. Service and warranties safeguards outline service and warranty terms, thus protecting the buyer from faulty service provision. Finally, product and price safeguards concern determination of the technical specifications and prices or changes in price levels, thereby allowing the buyer to be confident in associated costs of the transaction. The argument for this structure of four components is rooted in the control system design literature (Jensen & Meckling, 1992). These four components map well with the control framework. Our first component, relational safeguards, relates closely to the “decision rights and responsibilities” component, which considers maintenance of the relationship. Our second component, transactional safeguards, maps onto Jensen and Meckling’s notion of “rewards and punishments” for maintaining or breaking the transaction. Our other two components, service and warranties, and product and price, address the “performance measures” of the control framework.

The incomplete contracting approach suggests that buying firms emphasize drafting the contract to protect various elements of the transaction (e.g., terms of delivery, payment terms, product support, and warranties; see Anderson & Dekker, 2005; Kern & Willcocks, 2000) by clarifying what is and what is not allowed. Such clarity easily identifies violations, and prior
work implicitly assumes that any violations covered in the contract result in application of enforcement (Bergen et al., 1998). Thus, the presence of contractual components designed to protect specific elements of the transaction should result in a greater likelihood that enforcement is applied. Moreover, when such clauses are included, firms may trigger enforcement to protect their reputations (Carson et al., 2006). The components of the contract that specify details of the transaction, service and warranties, or product and price provide a minimum baseline for performance (Anderson & Dekker, 2005). Such baselines help judge performance by identifying when contract execution falls short of specification, which could trigger enforcement. Therefore, we expect that:

H1a: Contractual components designed to protect specific transaction details, such as transactional safeguards, service and warranties, and product and price, increase the likelihood of enforcement.

Prior literature attributes different roles to contracts protecting specific transaction details and contracts codifying relationships (e.g. Lusch & Brown, 1996; Ring & Van de Ven, 1992). We expect that contractual components designed to protect specific elements of the relationship decrease the likelihood of enforcement. Emphasizing relational safeguards that protect the relationship allows issues to be resolved informally since guidelines on how to interact are in place (Ring & Van de Ven, 1992). Thus, we contend that terms designed to insulate the actors from conflict (via relational safeguards) will result in less need to enforce the transaction. Moreover, emphasizing relational elements likely results in a “shadow of the future” between transacting parties because both parties have to consider how they codify future cooperation.
(Heide & Miner, 1992). Such a shadow of the future helps cooperation and a prudent buyer may, therefore, wish to exercise restraint in enforcement to avoid damaging such future expectations. Thus, we hypothesize:

H1b: Contractual components designed to protect specific elements of the relationship, such as relational safeguards, decrease the likelihood of enforcement.

2.2 What are the performance consequences of aligned enforcement?

Governance includes elements of establishing and structuring exchange relationships, as well as aspects of enforcement (Heide, 1994). Governance and resultant outcomes are often explained based on a discriminating alignment view. The key aspect of discriminating alignment is that the relation between governance and performance cannot be accurately assessed without inclusion of the factors that lead transacting parties to adopt one form of organization over another (Masten, 1993). Alignment occurs if the factors governance theories suggest parties to make governance choices are also predictive of such choices. For example, in a make-or-buy context, factors such as asset specificity and uncertainty are argued to predict make rather than buy. Parties heeding such predictions should have superior performance. Thus governance choices are not superior per se (i.e. make is always better than buy). It is the alignment between transaction attributes and governance choice that results in superior performance. This selectivity in choice is discriminating alignment. This discriminating alignment perspective is not specific to TCE as is evident from recent work that adopts broader governance perspectives on alignment (e.g. Bercovitz, Jap, & Nickerson, 2006).
Empirically, the critical issue when testing for discriminating alignment is that predicted governance choices lead to better performance than non-predicted choices. Such analysis requires comparing performance for the predicted enforcement choice (enforce or not) against the actual choice. This results in four scenarios (see Table 1 for an overview of comparison points): a buying firm may make an enforcement (or no enforcement) choice that is aligned to circumstances (Situations 1a and 2a in Table 1). A buying firm may also make a misaligned choice (Situations 1b and 2b in Table 1).

If alignment occurs (i.e., the model-predicted choice is the actual choice), discriminating alignment suggests more satisfactory outcomes than when no alignment occurs (Sampson, 2004). No enforcement, when aligned or predicted, could help the buyer and seller informally resolve problems, thereby enhancing satisfaction. Enforcement not called for (misaligned) could lead to literal interpretation, opportunism, conflicts, or retaliation (Wathne & Heide, 2000; Williamson, 1991). Another reason why alignment should help satisfaction is that behaving according to governance predictions should provide legitimacy. Acting in accordance with what other firms do enhances legitimacy as these behaviors are accepted (Deephouse, 1996). In the face of this conferred legitimacy, the buyer is less likely to experience retaliation due to the buyers’ enforcement, thus helping satisfaction. Past work suggests that aligned governance minimizes the joint costs of governance (such as formalizing the relationship too much) and opportunism, thereby promoting collaborative benefits (Sampson, 2004). In turn, such benefits should enhance satisfaction, compared to situations where these benefits are not realized. In line with this work, meta-analytical evidence suggests that governance choices, when properly aligned with transaction attributes, enhance outcomes including satisfaction (Geyskens et al., 2006). Thus, we posit:
H2: Higher satisfaction with problem resolution occurs when enforcement is aligned (compared to when enforcement is misaligned).

2.3 What are the performance consequences of misaligned enforcement?

Hypothesis 2 argues that aligned governance results in better outcomes than misaligned governance. This hypothesis compares absolute levels of satisfaction with problem resolution. There are two cases of misalignment: misaligned enforcement and misaligned non-enforcement (Situations 1b and 2b in Table 1, respectively). Taking a perspective relative to the aligned choice, we argue that the drop in satisfaction with problem resolution is greater for misaligned enforcement. We argue that a situation where enforcement is not expected, yet chosen, results in a greater relative loss of satisfaction than situations where enforcement is expected, yet not chosen. This corresponds to comparisons of Situation 1a against 1b and 2a against 2b in Table 1. Specifically, we argue that the difference in satisfaction with problem resolution between 1a and 1b is greater than between 2a and 2b.

There are arguments why this is expected. First, in a situation where the circumstances (e.g. transaction problems, contracts in place, and complexity of the deal) suggest that enforcement should not be used, unexpectedly enforcing may foster reactance (Brown, Lusch, & Nicholson, 1995). Such reactance is unlikely to be helpful in enhancing buyer satisfaction with the deal. In fact, past work suggests that such reactance may create opportunism as the party punished by enforcement wishes to assert its independence (Brown, Dev, & Lee, 2000). Second, not choosing to enforce may help maintain existing trust between parties. Jeffries and Reed (2000) suggest that trust helps reduce problems through adaptation, thereby increasing
satisfaction. The downside risk of choosing enforcement in such a situation is likely much higher compared to situations where the relationship is not functioning well and where enforcement may be expected, yet is not chosen. Thus, we expect:

H3: The decrease in satisfaction with problem resolution is greater for misaligned enforcement than for misaligned non-enforcement.

3. Method

3.1 Data

We analyze our research questions using the External Management of Automation dataset developed by the Department of Sociology of Utrecht University, The Netherlands, and made available by the Steinmetz archive.4 The dataset was collected in 1995 using surveys with the goal of examining how buying firms manage their IT transactions. It contains detailed information on 971 transactions of information technology products and services (Buskens, Raub, & Weesie, 2000). Because the data were collected in 1995, one could question if the findings from such data still apply today; however, it is very likely they do since our variables and theory relate to concepts applicable today. Empirical evidence also suggests that IT problems are still pervasive. Approximately 70% of current IT transactions do not deliver on their promises (Laudon & Laudon, 2010); a figure that is very close to the number of transactions reporting (74.06%) problems in our data.

The sampling frame was obtained from the Cendris/Directview database, which contains annually updated information on 100,000 companies, spanning 80% of all Dutch small and medium firms. The study used a 3 * 3 * 4 stratified sampling design, based on three levels of embeddedness (low, medium, high), buyer IT expertise (low, medium, and high), and four IT product categories (standard hardware, standard software, complex hardware, and complex software) to select firms. The study includes at least 15 randomly selected firms per cell. Further, the study deliberately oversampled complex hardware and software transactions, which increases the precision of the estimates for those types of transactions.5

From the sampling frame, 1798 purchasing companies were contacted by phone to identify a sufficiently knowledgeable informant who could provide information on the IT transactions conducted by the firm during the past five years. From these transactions, one random transaction per firm was selected that met the aforementioned stratification criteria and that was completed and independently purchased. This resulted in 1325 usable firms that were the subsequent focus of the study.

Potential participants were subsequently contacted and asked to respond to a survey on the randomly chosen transaction. There were 788 participants, resulting in a favorable net response of 59%. At 547 of the companies, a qualified interviewer administered the survey on-site while 241 companies self-administered the questionnaire after receiving it in the mail. In 183 cases, the informants were willing to answer a second survey on a separate (but also randomly selected) transaction. This resulted in 971 total observations.

The data collected appear to originate from highly competent informants; about 95% of all informants had, on average, 10 years of tenure at their company. The buying firms belong to a

5 The sampling process is described in further detail by Buskens and Batenburg (2000).
wide spectrum of industries, such as logistics, manufacturing, and wholesaling. Over 95\% of the responses originated from firms with 66 to 100 employees.

A formal study was conducted to assess non-response by comparing key characteristics of respondent and non-respondent firms, such as location, size, industry, and satisfaction with the transactions of respondents and non-respondents. No significant differences were found, suggesting non-response issues are of little concern.\(^6\) The different methods of data collection (on-site versus mail) were compared and no systematic patterns of differences were observed. Finally, the original stratification criteria were matched with the post hoc data to check the original design goals. The results indicate that the stratification goals were reached.

3.2 Measurement

We now discuss how our variables were measured. Table 2 includes measurement items and scales. Tests for common method bias were executed prior to using this dataset and were found satisfactory. Moreover, reliability and convergent validity were assessed and were also found to be satisfactory (cf. Mooi & Ghosh, 2010).

Insert Table 2 about here

3.2.1 Dependent variables

Enforcement is a corrective action aimed at remedying problems (Antia et al., 2006). Consistent with this theoretical definition, we operationalize enforcement as the buyer’s intentional withholding of payments in response to buyer perceptions of problems occurring in the product. It is measured using a binary item asking whether the buyer postponed payments as a response to problems occurring in the product. Descriptive statistics show enforcement is

\(^6\) Issues of (non) response are described in further detail by Buskens and Batenburg (2000).
relatively prevalent, occurring in 20.49% of the transactions included in the sample. It is important to note that the participant responded to the enforcement item only if transaction problems were reported (see the description of Transaction problems for further details).

*Satisfaction with problem resolution* is measured using a single item asking informants how satisfied they were with the way in which problems with this product were solved. This question was also put to the participant only if problems were reported, and followed the enforcement question. Satisfaction, a frequently used measure of interorganizational performance (Geyskens & Steenkamp, 1999), is a useful measure to study alignment because it provides an evaluation of performance. Satisfaction is useful because the range of frictions created due to transaction costs should be lower when alignment occurs, thus resulting in higher satisfaction as compared to when alignment is absent.

3.2.2 Independent variables
In addition to these two endogenous variables, our analysis includes a set of antecedent and control variables explaining enforcement and/or satisfaction with problem resolution.

*Contract terms*: the dataset contains a 24-item scale that measures whether certain contractual terms were present (or not) in the original written contract. These 24 terms, generated by IT managers and lawyers who specialize in contracting, reflect typical contracting practices (see Rooks, Raub, & Tazelaar, 2006). Two senior legal scholars who specialize in business contracting verified this. These 24 terms pertain to the financial, legal, and operational elements used to specify terms of trade and management of the transaction. All individual terms are included in Table 3. The three most commonly included terms relate to price level, payment
terms, and warranties. Typically, studies on contracts focus on the overall level of contract completeness or on individual terms. In this paper, we use the same dataset as Anderson and Dekker (2005) and, similar to their approach, we conduct an analysis of the structure of the contract to understand terms commonly used in combination. Using components has distinct benefits. A single summated scale ignores the complexity and interrelatedness of the terms present in the contract. On the other hand using 24 separate terms ignores that individual terms are commonly used together to reduce transaction hazards, create understanding, and delineate the deal.

Insert Table 3 about here

Transaction problems are measured as follows: the informant marked if, and to what degree, 11 possible problems occurred in a specific transaction. Using a 5-point scale, the 11 possible problems are weighted by the respondent for their severity. The possible problems include exceeding the quoted price, product and service issues, and implementation issues. The three most common problems were incomplete or unclear documentation, slow or late adjustments and adaptations for implementation, and inadequate support throughout the purchasing, installation, and training process. This variable is a measure of nonperformance and is weighted for the severity of the problems occurring in the transaction on a five-point scale ranging from very little to very much. Of the sample, 241 transactions (25.94%) report no problems being present. Because of the aforementioned routing (questions on enforcement and satisfaction with problem resolution were only put to the respondent if transaction problems were

7 Note that for each term the percentage of times it is included in a contract never falls below 5% nor exceeds 95%. Tetrachoric correlation coefficients are sensitive to highly skewed distributions. This does not occur in our data.
reported), 74.06% of transactions could report on enforcement or satisfaction with problem resolution.

Transaction complexity is measured with two indicators. The first is a simple count of the number of products and services covered by the transaction out of 18 types of hardware, software, and services. The second indicator is a scale consisting of five categories that represent products and services that require greater coordination and interaction between the buyer and seller. The scaling is included in brackets behind each item in Table 2. The measurement of transaction complexity is identical to Anderson and Dekker (2005). The Software and Hardware item indicates whether the transaction included only software or hardware components. This measure is identical to Vanneste and Puranam (2010). Measurement ambiguity represents the degree of difficulty in defining ex ante and verifying ex post the products and services for which the parties are contracting. We use a three-item scale that taps into the difficulty faced by the buyer in judging the quality of the product/service at the time of delivery, in comparing the focal product/service with other products, and in judging the price/quality ratio of potential suppliers’ products/services (Mooi & Ghosh, 2010). Buyer lock-in is the difficulty faced by the buyer in switching or replacing products or suppliers (Dutta, Bergen, Heide, & John, 1995). We measure it using a four-item scale that looks at the magnitude of costs, in time and money, the buyer would incur if the focal supplier’s product were to be replaced. These damages and costs relate to purchasing another product, (re) training the buyer’s personnel, new data and information entry, and idle production. Transaction importance reflects the value of the transacted products or services to the buyer. Two items measure the buyer’s perceptions of the importance of the products/services to the automation and profitability of the buying organization (Mooi & Ghosh, 2010). Competition is measured using two items focusing on the number of potential suppliers
and the number of alternative products at time of purchase. *Buyer dependence* is a single item measuring the buyer’s perception of dependence on the supplier prior to commencing the transaction. *Relationship length* accounts for the possible development of relational elements between the buyer-supplier, learning effects, and to generally account for temporal effects (Mayer & Argyres, 2004; Vanneste & Puranam, 2010). It is measured as the numbers of years the buyer and supplier have done business with each other. *Buyer and supplier size* indicate the number of employees working for the buyer and supplier, respectively.

Table 4 includes correlations, means, and standard deviations for the variables used in this study. These descriptive statistics are calculated for the sample for which there are no missing observations jointly (n=497).

Insert Table 4 about here

### 4. Empirical approach

#### 4.1 How do contracts impact enforcement?

We empirically answer how contracts impact enforcement using a confirmatory analysis of the contract structure, followed by a Probit model to estimate the effects of contractual components on our binary enforcement variable.

We conduct a confirmatory analysis in the form of principal component analysis (PCA) to assess the fit with the component structure expected (Anderson & Dekker, 2005). Specifically, we use PCA to reduce the complexity of the items measuring the various contract choices, while accounting for the fact that contract terms are commonly used together. Because of the binary nature of the contract terms, we calculated a tetrachoric correlation matrix and subjected this to PCA. Our data appear suitable for such analysis as the Kaiser-Meyer-Olkin measure of sampling
The adequacy of .93 indicates. The analysis resulted in four components according to the Kaiser Criterion (Eigenvalue > 1). Because the Kaiser Criterion may overestimate the number of components extracted, we also used Horn’s Parallel Analysis (Zwick & Velicer, 1986). This analysis also suggests four components. These four components represent 69% of the total item variance. We applied the oblique rotation method, Promax, because we expect the resultant components to be correlated and because we are interested in obtaining theoretically meaningful components rather than data reduction (Hair, Black, Babin, Anderson, & Tatham, 2005). We show all item and component loadings in Table 3. Note that the use of PCA is a joint test of the unidimensionality of the contract terms and, therefore, the appropriateness of summing all contract terms. Our results indicate that the 24 contract terms represent four interpretable components, thereby rejecting the idea that our contract items represent a single dimension. These findings are consistent with Anderson and Dekker (2005).

We describe the four components. Relational safeguards protect the parties’ abilities to work with one another. These terms define the constraints placed on the interaction of the buyer and seller and include items related to intellectual property and the continued use of the product. Transaction safeguards are mostly focused on the supplier and protect it and the specific transaction from, for instance, cancellation, unforeseen circumstances, and liabilities. Service and warranties establish expectations for product performance and product maintenance. Finally, product and price define the technical specifications, the compensation made in return, and how potential changes in compensation are dealt with.

Nomological validity is established by inspecting the correlations among these four contractual components and known transaction attributes, such as transaction complexity and

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8 The structure and assignment of items is identical when factor analysis is used.
measurement ambiguity. TCE predicts that, as transaction complexity and measurement ambiguity increase, contracts become more complete (Geyskens et al., 2006; Rindfleisch & Heide, 1997). Table 4 shows these correlations and, as expected, positive and significant correlations are present, supporting nomological validity.

We also calculated the Kuder-Richardson Formula 20 (KR-20) for each component. The KR-20 is a measure of internal consistency for binary items. The KR-20 coefficients in Table 3 (ranging from .70 to .82) indicate acceptable consistency.

We use the four contractual components and a set of control variables to explain enforcement using a Probit model. Past work based on the same dataset (cf. Anderson & Dekker, 2005; Mooi & Ghosh, 2010; Vanneste & Puranam, 2010) provides an extensive set of variables to explain governance choices. Relying on previously used predictors should reduce omitted variable bias or other model misspecification issues. We discuss these in turn. Transactional problems are a key reason why buyers choose to enforce transactions. Enforcement may be chosen because the buyer expects it will remedy problems that might otherwise not be resolved. Transaction complexity increases the need for coordination between the buyer and seller. Through enforcement, buyers may signal to sellers that coordination efforts need to be undertaken. In the context of IT, transactions that consist of only software or hardware components might be easier to coordinate than transactions that require a combination. Measurement ambiguity causes a performance evaluation problem for buyers that could cause opportunistic behavior on the part of the seller, which buyers might counter through enforcement. An alternative view is that measurement ambiguity makes it more difficult to assign cause and effect or blame, thus reducing the ability of the buyer to enforce the transaction. Buyer lock-in implies a greater difficulty switching to an alternative supplier or product, thereby
making enforcement aimed at a particular supplier more complicated. When *importance of the transaction* is higher, buyers more likely choose enforcement because important transactions typically affect important outcomes, such as profitability. If greater *competition* is present, enforcement may be easier because alternatives are available for future transactions. *Buyer dependence* on the supplier could reduce the likelihood of buyer-imposed enforcement due to the risks of supplier retaliation. A longer *relationship length* may have fostered elements of experience, trust, or relational exchange that help buyers resolve issues based on dialog (Sheng, Brown, Nicholson, & Poppo, 2006). *Buyer and supplier size* are proxies for the power of the two respective sides to the transaction. We include all of these controls in our model and estimate our Probit model as follows:

\[
Y_i = 1 \text{ if the seller delays payments and } \Phi \text{ represents the cumulative normal distribution.}
\]

\[\text{Prob } (Y_i = 1) = \Phi(X_i \beta)\]

\[Y_i\] is explained by a vector of aforementioned explanatory variables, \(X_i\), and their weights, \(\beta\). As our dataset includes 183 buyers that report on two transactions, we use a cluster-robust estimator for our Probit model to account for intra-firm correlations (Wooldridge, 2002). We use this estimator because unobserved firm-specific factors, such as corporate standards and management experience, may cause correlated enforcement practices within firms. The results of the estimation process are included in Table 5.

Insert Table 5 about here

The Probit model resulting from the aforementioned estimation setup is highly significant. The parameter estimates suggest that transaction safeguards \((p < .05)\) and service and
warranties \( (p < .05) \) increase the likelihood of enforcement, consistent with H1a. We find no effect of product and price on enforcement. Relational safeguards reduce the likelihood of enforcement \( (p < .05) \), consistent with H1b.

We also estimate all possible interaction effects between our contracting components, as well as interactions between our contracting components and transaction characteristics, but no pattern of significant interactions \( (p > .05) \) appears.

4.2 What are the performance consequences of aligned enforcement?

We investigate if buying firms correctly enforce by answering what the outcomes of enforcement are in the form of satisfaction with problem resolution, and to what degree selective enforcement matters.

Our context and approach for testing discriminating alignment raises two issues that make OLS a poor analysis tool. The first issue is that, based on TCE considerations, we expect buyers to make an enforcement choice based on resultant outcomes. This means that enforcement should be endogenized, rather than treated as an exogenous variable.\(^9\) The second issue is that we only observe outcomes for choices made but not for choices not made. That is, we compare outcomes for different buyers for different transactions, instead of comparing outcomes for the same buyer, for the same transaction. Thus, in econometric terms we face issues of endogeneity in explaining enforcement. Endogeneity yields biases whose size and

\(^9\) A critical question is whether contracts are endogenous to enforcement. We conduct the Smith-Blundell test (Smith & Blundell, 1986) to consider the presence of such endogeneity. Following the simultaneous use of the four contractual components in Models 1 and 2 we specify the test to consider the potential endogeneity of the four contractual safeguards simultaneously. As instruments, we use complexity, software, hardware, uncertainty, lock-in, importance, competition, and power. An assumption is that these instruments are exogenous, which seems reasonable given that past work (e.g. Anderson and Dekker 2005) has relied on these being exogenous. The outcome of this test results in a \( \chi^2 \) value of 8.40, which at 4 degrees of freedom is insignificant at the traditional .05 level \( (p=.0779) \). This suggests endogeneity of contracts with regard to enforcement is not a significant concern.
direction are difficult to predict (See Chapter 9 of Maddala, 1983 for a proof) and potentially leads to faulty conclusions. Heckman (1979) addresses this problem using a single Probit model (the choice equation, as introduced previously) to endogenize the choice, followed by a single OLS regression model that includes a correction term—the inverse Mills ratio—to deal with potential endogeneity by correcting the outcome. We use a modification of the Heckman approach with two outcome equations because there is no theory to assume a priori that satisfaction is influenced by the same antecedents to the same degree for enforcement versus no enforcement. This modification to the Heckman approach, which uses two outcome models, is the endogenous switching regression model. This model has been applied to situations where binary choices impact performance (see for example Carson et al., 2006; Leiblein, Reuer, & Dalsace, 2002).

The correction terms to account for endogeneity are the inverse Mills ratios and are constructed from the predictions of the enforcement model (see Table 5). Following Heckman (1979) we compute the following ratios:

\[ \lambda_{\text{no enforcement}} = \frac{-\phi(\beta'X_i)}{1-\Phi(\beta'X_i)} \]

\[ \lambda_{\text{enforcement}} = \frac{\phi(\beta'X_i)}{\Phi(\beta'X_i)} \]

where \( \phi \) is the standard normal probability function and \( \Phi \) is the standard normal cumulative density function. The two \( \lambda \) terms are entered into the outcome models to control for endogeneity. As we estimate two \( \lambda \) terms, we can separately interpret the strength and direction of endogeneity for buyers who choose to enforce and those who choose not to. Note that we exclude relationship length and buyer/supplier size to identify the model, since there is no clear expectation why these variables should influence satisfaction with a particular product per se. An
inspection of the correlations also shows that these variables do not correlate significantly with satisfaction with problem resolution. Even though endogenous switching regression models are identified without exclusion restrictions through the non-linearity of the Probit model, this tends to result in multicollinearity and inflated standard errors (Bushway, Johnson, & Slocum, 2007). When excluding identifying variables, our results indicate that the variance inflation factors are well below 5, which suggests multicollinearity is of little concern.

Insert Table 6 about here

Table 6 shows the results of estimating the outcomes of enforcement. In these models, the two Mills ratios are included, as are all contractual components and control variables; relationship length and buyer and supplier size are excluded for the aforementioned identification purposes. Even when controlling for all these variables, the two Mills ratios are significant ($p < .05$), thereby indicating endogeneity issues are a concern and our approach (accounting for endogeneity) is appropriate. Because both Mills ratios are significant, the unobserved reasons to enforce also influence the outcome. More specifically, because of their negative signs (suggesting higher satisfaction as the inverse Mills ratio is used), buyers have, on average, self-selected into the choice that is most favorable, given the circumstances (Leiblein et al., 2002; Shaver, 1998). Next to this, transaction complexity ($p < .05$) increases satisfaction with problem resolution but only for observations with no enforcement.

4.3 *What are the performance consequences of misaligned enforcement?*

Having established that endogeneity is an issue and affects outcomes, we now discuss to what degree selective enforcement matters. What is required to answer this question is to
contrast observed choices with the alternatives for the same buyer. The difference between these choices is the foregone satisfaction with problem resolution due to a misaligned choice. Using the endogenous switching regression model, we investigate this foregone satisfaction to shed light on the normative effects of enforcing. That is, when buyers choose to enforce, would their performance have been worse had they chosen not to enforce and vice-versa? We refer to these alternative outcomes as ‘counterfactuals’ (i.e., the outcome a buyer would have achieved had it made the alternative choice). The difference between the observed choice and counterfactuals informs on the costs of misaligned enforcement and are, therefore, of substantive importance. We calculate these counterfactuals following Maddala’s (1983) approach. This approach requires the calculation of four scenarios across two dimensions that conform to Table 1: enforcement (versus no enforcement) and when model predictions are aligned (versus when they are misaligned). Thus, comparisons are made between a buyer’s levels of satisfaction with problem resolution when these are predicted correctly to enforce transactions versus when they are incorrectly predicted to enforce. Another comparison is between a buyer’s levels of satisfaction with problem resolution when these are predicted correctly not to enforce transactions versus when they are incorrectly predicted not to enforce. We calculate these four predictions as follows (\(\hat{S}\) indicating predicted satisfaction with problem resolution; indicators in brackets referring to situations in Table 1):

\[
\begin{align*}
(4) \quad \hat{S}(1a) & = \beta_x \lambda_{no\text{ enforcement}} + \beta'X \\
(5) \quad \hat{S}(1b) & = \beta_x \lambda_{no\text{ enforcement}} + \beta'X \\
(6) \quad \hat{S}(2a) & = \beta_x \lambda_{enforcement} + \beta'X \\
(7) \quad \hat{S}(2b) & = \beta_x \lambda_{enforcement} + \beta'X
\end{align*}
\]
Regarding the performance consequences of aligned enforcement, buyers who were predicted to enforce and chose to do so (i.e., an aligned situation) experienced an average satisfaction of 3.81. Of the buyers who enforced but were predicted not to enforce, this drops to 3.67. This difference is significant at \( p < .05 \) (for details see Table 7). Thus, buyers who were predicted to enforce (aligned), experienced higher satisfaction than if they misaligned by not enforcing, suggesting that aligned enforcement pays off in this condition for the buyer. For the situation where buyers did not enforce, conform to predictions (aligned), the average level of predicted satisfaction with problem resolution is 4.59. This drops to an average predicted level of 3.82 for buyers who did not enforce as predicted (difference significant at \( p < .05 \) – for details see Table 7). These findings support H2, since the differences between the aligned and misaligned choice are both significant (\( p < .05 \)) for the enforcement and no enforcement scenarios.

Regarding the performance consequences of misaligned enforcement, our data suggest there are substantial costs to making mistakes. Specifically, these costs are relatively highest when enforcement is not expected (per the model), yet chosen. The drop of 0.77 points (on a five-point scale) is significantly (\( p < .05 \)) larger than when enforcement is expected, yet not chosen (0.14 points). Thus, our findings support H3, which stated that the decrease in satisfaction with problem resolution is greater for misaligned enforcement than for misaligned non-enforcement. The implications of these findings are discussed in Section 5.

5. Discussion
5.1 How do contracts impact enforcement?

Regarding our first contribution to describe the role of contracts on enforcement, we find that the four components differentially impact enforcement. If the relationship itself is protected by contractual components focusing on the relation (such as provisions concerning intellectual property), enforcement is less likely to be chosen (ceteris paribus). If, on the other hand, the contractual components protect the transaction itself (such as provisions concerning liability of the supplier), enforcement is more likely. This suggests an interesting insight: the use of contracts designed to support relational elements of the deal reduces the likelihood of enforcement. It is likely that when more relational safeguards are present, recourse is sought in other ways, such as voicing problems to the supplier or by sharing information to remedy problems. When more relational elements are present, these elements could help cooperation and avoid the types of problems that trigger enforcement. Therefore, drafting clauses that safeguard the relationship could be a very effective governance mechanism.

That these components work differently on enforcement suggests that future research on the role of contracts vis-à-vis enforcement should explicitly take into account the different components of contracts. This has interesting implications for the study of contracts. Often contracts have been implicitly assumed to be monolithic by considering a single attribute (such as completeness). Others have studied the presence of one or more distinct contractual items. Our findings, however, suggest a role for a middle ground: several items typically converge (reducing the need to study these separately) whereas contracts appear not the monolithic governance structures they have often been assumed to be. This finding implies that testing for unidimensionality should be an explicit part of the measurement process as it helps understand how contracts are drafted.
Our empirical findings of enforcement suggest that contracts only partially explain enforcement. The correlations with enforcement are relatively small (see Table 4) and product and price does not significantly relate to the enforcement choice. This suggests that contracts may not be the mechanically enforced documents that economic theory often considers them to be (Crocker & Masten, 1991). Interestingly, we find that transaction problems and contracts are the key drivers of enforcement and that transactional attributes play little role. An explanation for this is that the concerns drafted in these specific contractual components already reflect transaction attributes.

5.2 What are the performance consequences of (mis)aligned enforcement?

Regarding our second and third contributions, we build on an endogenous switching regression model to unravel some of the complexities associated with explaining the outcomes of enforcement. Our results show that alignment of enforcement with transactional attributes and contractual components matters because it enhances satisfaction with problem resolution. The two significant inverse Mills ratios clearly suggest that endogeneity is a key concern. Specifically, we find that the unobserved reasons that lead firms to enforce (or not) are those that also help firms avoid lower satisfaction with problem resolution. Thus, firms tend to enforce when this is most beneficial to them. In an enforcement context, we provide evidence that alignment is critical to enhance performance.

The negative and significant correlation between enforcement and satisfaction ($r = -0.28$) might be interpreted as an indication that enforcement reduces satisfaction. Seemingly, this suggests that choosing enforcement is not a rational choice. However, the adopted method accounts for endogeneity and suggests a more subtle and rational explanation: although
enforcement may result in poor outcomes, not choosing to enforce when this is expected results in even worse outcomes. Our findings suggest that the adopted method is critical and allows us to obtain new insights not allowed by traditional linear modeling. We also note that calculating the costs of aligned versus misaligned governance through a “what if” analysis that compares a predicted choice against alternatives is helpful in understanding outcomes. Such an analysis allows calculating the “governance effect” of predicted and mistaken (or unpredicted governance) for the same firm and thereby provides normative insight into the value of governance carefully chosen to reflect transaction attributes. Specifically, we find that buying firms that enforce when predicted to do so fare better than those that do not follow such predictions. Buying firms that act conservatively by not enforcing, even if circumstances would likely lead to such an expectation, also appear to not serve their best interests. The signal sent by not enforcing may lead to the seller not remedying problems, since the buyer appears to be able to “get away” by shirking and evading obligations. Suppliers may simply not put in the effort, as there are costs to remedying problems that, in the absence of enforcement, may deter the supplier from remedial actions.

We take our analysis beyond the scope of much of the previous governance work as our adopted method allows us to understand asymmetries in misalignment; that is, is the foregone satisfaction of misaligned enforcement and misaligned non-enforcement the same? Understanding asymmetries is helpful given that decision makers typically weight losses and gains differently. We find that there are substantial costs to misaligning the choice to enforce. In fact, the relative drop in satisfaction is greatest when buying firms enforce when this is misaligned. Acting aggressively in situations where enforcement is not expected, yet chosen, carries a loss in satisfaction. Likely, such aggressive action engenders much reactance by the
seller and sours the relationship. Misaligned enforcement may also create additional problems such as retaliation, mistrust, and erosion of good will.

These asymmetries, both in their absolute and relative effects imply that buying firms that discriminately enforce fare best in terms of the degree to which transaction problems are satisfactorily resolved.

6. Limitations and further research

One limitation is that our study only considers transaction problems prior to enforcement. Enforcement may create new transaction problems, such as the seller refusing to honor warranties. Future research on the problems that may surface following enforcement would be interesting.

Another limitation is that our satisfaction measure relies on a single survey item. Having multiple items could help validity and allow calculating reliability indicators, such as Cronbach’s Alpha. Adopting other outcome measures of enforcement, such as the likelihood of choosing a supplier for repeat business following enforcement, appear interesting research topics.

Finally, our study focuses on a single enforcement action. It is possible that multiple enforcement actions occur. Investigating the reasons for multiple enforcement actions and their outcomes are interesting avenues for further research. Specifically, future research on how private enforcement leads to public enforcement would help the understanding of enforcement substantially as it would help bridge the private enforcement approach often adopted in management and marketing literature with the public enforcement view commonly adopted in the legal literature.
7. Conclusion

A dilemma for buying firms facing transaction problems is whether they should take action to remedy problems. We find that the drafted contracts set the stage for enforcement. Relational safeguards reduce the likelihood of enforcement while transaction safeguards increase it. We also suggest that enforcement, through delaying payment to the supplier, could be helpful to the buyer. However, enforcement is only useful when it aligns with the contract in place and the transaction problems that surface, and is thereby expected. Thus, enforcement is a tool that should be selectively used.
References


Table 1: Enforcement situations and hypotheses

<table>
<thead>
<tr>
<th>Buyers’ actual choice</th>
<th>No enforcement</th>
<th>Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>No enforcement</td>
<td>Situation 1a: No enforcement (aligned)</td>
<td>Situation 1b: Enforcement (misaligned)</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Situation 2b: No enforcement (misaligned)</td>
<td>Situation 2a: Enforcement (aligned)</td>
</tr>
</tbody>
</table>

For H2 to hold, the satisfaction with problem resolution of Cell 1a should be significantly higher than that of 1b. Similarly, the value of 2a should significantly exceed 2b.

For H3 to hold the difference between 1a and 1b should significantly exceed the difference between 2a and 2b.
Table 2: Measurement

<table>
<thead>
<tr>
<th>Construct</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction problems</td>
<td>Listed below are some potential problems that could arise regarding the product, its delivery, and its service. Please indicate how severe the problems were for each of these items.</td>
</tr>
</tbody>
</table>
| 5-point scale (1 = very little; 5 = very much) | 1. went over delivery schedule  
2. went over price / budget  
3. product incomplete  
4. product too slow / limited  
5. deviations from specifications made  
6. incompatibility with other IT products  
7. installation too hurried / sloppy  
8. support too slow / late  
9. service too slow / late  
10. necessary adjustments and customization too slow / limited  
11. incomplete / unclear documentation |

Enforcement

Binary yes/no response format

Did your firm postpone payments as a response to problems regarding this product?

Satisfaction with problem resolution

5-point scale (1 = almost never; 5 = almost always)

Generally, have problems regarding this product been resolved to the satisfaction of your company?

Contract components

See Table 3.

Transaction complexity

Binary yes/no response format and five categories representing increasing demands for coordination and interaction (scaling included in brackets behind each item)

What are the different kinds of products/services procured under this agreement? (Multiple answers possible):

1. standard software (1)  
2. personal computers (1)  
3. work-stations (1)  
4. peripherals (1)  
5. cabling (1)  
6. network configuration (2)  
7. mini-computer (2)  
8. mainframe (2)  
9. computer driven machines (2)  
10. industry specific software (3)  
11. education (3)  
12. instruction/training (3)  
13. documentation (3)  
14. support (4)
| 15. | specialized software (4) |
| 16. | consulting (4) |
| 17. | design (5) |
| 18. | customized software (5) |

**Software and Hardware**
Does the transaction include only software or hardware components (taken from the transaction description)?

**Measurement ambiguity**
Cronbach’s α=.80
5-point scale (1 = very easy; 5 = very difficult)

1. How difficult was it to judge the quality of the product/service at the time of delivery?
2. How difficult was it to compare this product/service to similar products?
3. How difficult was it to compare the price/quality ratio of potential suppliers’ products/services?

**Buyer lock-in**
Cronbach’s α=.76
5-point scale (1 = very small; 5 = very large)

If the product failed and had to be replaced, what would be the loss, in terms of time and money, associated with:
1. purchasing a new product;
2. training your personnel;
3. data and information entry;
4. stoppage at production departments.

**Transaction importance**
5-point scale (1 = not important; 5 = of great importance)

How important was this product for:
1. The IT in your company?
2. The profitability of your company?

**Competition**
5-point scale (1 = very small; 5 = very large)

1. Number of potential suppliers at time of purchase
2. Number of alternative products at time of purchase

**Buyer dependence**
5-point scale (1 = very small; 5 = very large)

How great was the estimated dependence of your firm on the supplier before the purchase?

**Relationship length**
How many years did your company do business with this supplier prior to this transaction?

**Buyer size**
Number of employees working for buyer at time of purchase

**Supplier size**
5 categories (1=5 employees; 5= more than 50 employees)
Number of employees working for supplier at time of purchase
Table 3: Contract components

<table>
<thead>
<tr>
<th>Terms \ Components</th>
<th>Relational safeguards</th>
<th>Transactional safeguards</th>
<th>Service and warranties</th>
<th>Product and price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Binary Yes/No Response Format</strong></td>
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<tr>
<td>intellectual property (50%)</td>
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<td>piracy protection (29%)</td>
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<td>restrictions on product use (32%)</td>
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<td>non-disclosure (14%)</td>
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<td>reservation of spare-parts (18%)</td>
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<td>updating (45%)</td>
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<td>calculation of R&amp;D costs (19%)</td>
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<td>joint management during transaction (22%)</td>
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<td>sanctions on late payment (26%)</td>
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<td>liability supplier (55%)</td>
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The frequency of occurrence of each term is listed in brackets behind the name of each term. N=971
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<td>1. Enforcement</td>
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<tr>
<td>12. Buyer lock-in</td>
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<td>0.29</td>
<td>0.27</td>
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<td>13. Transaction importance</td>
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<td>14. Competition</td>
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<td>-0.20</td>
<td>-0.23</td>
<td>-0.16</td>
<td>-0.06</td>
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<td>-0.17</td>
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<td>15. Buyer dependence</td>
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<td>-0.24</td>
<td>-0.17</td>
<td>-0.16</td>
<td>-0.02</td>
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<td>-0.18</td>
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<td>16. Relationship length</td>
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<td>-0.05</td>
<td>-0.04</td>
<td>0.03</td>
<td>0.01</td>
<td>-0.05</td>
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<td>-0.08</td>
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<td>17. Buyer size</td>
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<td>0.01</td>
<td>0.05</td>
<td>0.08</td>
<td>0.16</td>
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<td>0.21</td>
<td>0.00</td>
<td>0.02</td>
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<td>0.03</td>
<td>0.07</td>
<td>0.08</td>
<td>-0.05</td>
<td>0.01</td>
<td>0.08</td>
<td></td>
<td></td>
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<tr>
<td>18. Supplier size</td>
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<td>-0.01</td>
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<td>0.29</td>
<td>0.29</td>
<td>0.26</td>
<td>0.13</td>
<td>-0.07</td>
<td>0.03</td>
<td>0.10</td>
<td>0.16</td>
<td>0.14</td>
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<td>-0.06</td>
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<td>2.12</td>
<td>2.55</td>
<td>4.42</td>
<td>9.14</td>
<td>0.21</td>
<td>1.22</td>
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<td>11.5</td>
<td>6.46</td>
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<td>Standard deviation</td>
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<td>2.21</td>
<td>2.01</td>
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<td>1.50</td>
<td>4.23</td>
<td>0.41</td>
<td>0.32</td>
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<td>1.57</td>
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<td>1.19</td>
<td>5.43</td>
<td>0.98</td>
<td>1.39</td>
</tr>
</tbody>
</table>

\(^a\) The correlations in these columns are with binary variables and, therefore, indicative only.

\(^b\) These variables were reported on only if at least one transaction problem occurred, which is the case for 74.06% of our observations.

Correlations > |. 10| are significant at \( p < .05 \), two-tailed

\( n=497 \)
Table 5: Drivers of enforcement

 Parameter estimates with standard
errors in parentheses

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-4.415</td>
<td>.639</td>
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<tr>
<td>Transaction safeguards</td>
<td>.094</td>
<td>.044</td>
</tr>
<tr>
<td>Service and warranties</td>
<td>.120</td>
<td>.068</td>
</tr>
<tr>
<td>Product and price</td>
<td>.013</td>
<td>.054</td>
</tr>
<tr>
<td>Relational safeguards</td>
<td>-.150</td>
<td>.042</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transaction problems</td>
<td>.101</td>
<td>.009</td>
</tr>
<tr>
<td>Transaction complexity</td>
<td>.017</td>
<td>.022</td>
</tr>
<tr>
<td>Software</td>
<td>.179</td>
<td>.204</td>
</tr>
<tr>
<td>Hardware</td>
<td>-.267</td>
<td>.226</td>
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<tr>
<td>Measurement ambiguity</td>
<td>.029</td>
<td>.028</td>
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<tr>
<td>Buyer lock-in</td>
<td>.036</td>
<td>.021</td>
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<tr>
<td>Transaction importance</td>
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<td>.043</td>
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<td>Competition</td>
<td>.006</td>
<td>.035</td>
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<tr>
<td>Buyer dependence</td>
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<tr>
<td>Relationship length</td>
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<td>.013</td>
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<td>Buyer size</td>
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<td>.070</td>
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<tr>
<td>Supplier size</td>
<td>.049</td>
<td>.052</td>
</tr>
</tbody>
</table>

Model fit

Wald $\chi^2 = 103.06, p < .000$

McFadden’s $R^2 = .32$

Estimation method

Probit, with cluster-robust standard errors, n=703

* $p < .05$

All tests are two-tailed
Table 6: Performance implications of enforcement

<table>
<thead>
<tr>
<th>Variables</th>
<th>Satisfaction with problem resolution</th>
<th>Satisfaction with problem resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No enforcement condition</td>
<td>Enforcement condition</td>
</tr>
<tr>
<td>Constant</td>
<td>.871(.2.351)</td>
<td>4.377(1.080) *</td>
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<tr>
<td>Inverse Mills ratio</td>
<td>-1.097(.539) *</td>
<td>-1.214(.602) *</td>
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<tr>
<td>Transaction safeguards</td>
<td>.090(.049)</td>
<td>.038(.052)</td>
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<tr>
<td>Service and warranties</td>
<td>.093(.071)</td>
<td>.048(.064)</td>
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<tr>
<td>Product and price</td>
<td>.050(.038)</td>
<td>.066(.066)</td>
</tr>
<tr>
<td>Relational safeguards</td>
<td>-.086(.066)</td>
<td>-.069(.072)</td>
</tr>
<tr>
<td>Transaction problems</td>
<td>.009(.043)</td>
<td>-.011(.037)</td>
</tr>
<tr>
<td>Transaction complexity</td>
<td>.050(.015) *</td>
<td>.006(.021)</td>
</tr>
<tr>
<td>Software</td>
<td>.204(.149)</td>
<td>.207(.189)</td>
</tr>
<tr>
<td>Hardware</td>
<td>-.215(.182)</td>
<td>-.189(.320)</td>
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<tr>
<td>Measurement ambiguity</td>
<td>.009(.027)</td>
<td>.013(.034)</td>
</tr>
<tr>
<td>Buyer lock-in</td>
<td>.030(.021)</td>
<td>.003(.026)</td>
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<tr>
<td>Transaction importance</td>
<td>.008(.029)</td>
<td>.015(.053)</td>
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<tr>
<td>Buyer dependence</td>
<td>.059(.043)</td>
<td>.002(.068)</td>
</tr>
<tr>
<td>Competition</td>
<td>.017(.021)</td>
<td>-.011(.044)</td>
</tr>
</tbody>
</table>

Model fit

Estimation method: Ordinary Least Squares using cluster-robust standard errors, $n=553$ and $n=150$

$R^2 = .30$ and $R^2 = .44$

* $p < .05$
Table 7: Performance implications of aligned and misaligned enforcement

<table>
<thead>
<tr>
<th>Buyers’ actual choice</th>
<th>No enforcement (n=553)</th>
<th>Enforcement (n=150)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No enforcement</td>
<td>Situation 1a: 4.59 (.02)</td>
<td>Situation 1b: 3.82 (.03)</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Difference with misaligned cases significant, p &lt; .05.</td>
<td></td>
</tr>
<tr>
<td>No enforcement</td>
<td>Situation 2b: 3.67 (.06)</td>
<td></td>
</tr>
<tr>
<td>Enforcement</td>
<td>Situation 2a: 3.81 (.05)</td>
<td>Difference with misaligned cases significant, p &lt; .05.</td>
</tr>
</tbody>
</table>

All values are predicted, average, levels of satisfaction with problem resolution
All probabilities are two-tailed
Observed average across all observations is 4.17
Figure 1: Timeline of enforcement events

Contract → Problems arise → Enforcement/no enforcement → Problem resolution → Satisfaction with problem resolution

Time