The Japanese Economic Review (2023) 74:333–354
https://doi.org/10.1007/s42973-023-00132-7

ARTICLE

What do contracts do to facilitate relationships?

Hideshi Itoh[1]

Received: 12 December 2022 / Revised: 31 March 2023 / Accepted: 5 April 2023 /
Published online: 10 May 2023

Abstract

I demonstrate that transacting parties may expend resources on ex ante contracting, which may not be legally enforceable, to help build and maintain their long-term relationships. I first introduce three legal concepts, namely *scaffolding*, *managerial provisions*, and *formal relational contracts*, which highlight the recent trend towards more detailed contracts. These concepts indicate that the role of detailed contracts is not to improve judicial contract enforcement, but to enhance clarity and alignment of interests and to reduce renegotiation costs, which ultimately support the parties' relationships. I then proceed to present and analyze a simple reduced-form model, which demonstrates that the parties' efforts for ex ante contracting are not necessarily monotonic with the level of alignment of their interests. Furthermore, I discuss recent contracting practices in Japan and attempt to provide an explanation for the lack of change observed in these practices.

Keywords Ex ante contracting · Costly contracting · Relational contracting · Scaffolding · Managerial provisions · Formal relational contracts · Long-term relationships

JEL Classification D86 (Economics of Contract: Theory) · K12 (Contract Law) · L14 (Transactional Relationships; Contracts and Reputation · Networks)

This paper is based on the presidential address at the JEA Autumn Meeting held at Keio University on October 15, 2022. I thank Shingo Ishiguro, Shintaro Miura, Zenichi Shishido, and an anonymous referee for helpful comments and suggestions. Financial support from JSPS KAKENHI Grant Numbers 18H03650 is greatly appreciated. Part of the paper is based on my unpublished work (Itoh, 2011).

✉ Hideshi Itoh
hideshi.itoh@waseda.jp

[1] Graduate School of Business and Finance, Waseda University, Tokyo, Japan

1 Introduction

Contract is "a written or spoken agreement, especially one concerning employment, sales, or tenancy, that is intended to be enforceable by law."[1] Contracts abound in the economy. The gains from business transactions, both domestic and international, and employment relationships are generated and divided among relevant parties by voluntary agreements.

Why do trading parties need a contract? The main economic "rationale for contracting is to lock in a commitment *ex ante* that one or both parties would otherwise not wish to honor ex post... The use of a contract to establish such commitment is undermined,..., if the contract will not be enforced in the way the parties anticipate (Hermalin, Katz, & Craswell, 2007, p. 99)." And the definition in the dictionary given above suggests that the enforcement of contracts is usually expected to be provided by courts.

As Djankov et al., (2003, p. 454) argue and convincingly show, economists "have been generally most optimistic about courts as the institution securing property and enforcing contracts." Textbook economic theories of contracts assume that (i) legal enforcement is all-or-nothing—while contractual terms contingent on verifiable states and actions are perfectly enforced by courts, those contingent on unverifiable states or actions are never enforced by courts; and (ii) the verifiability of actions or states is exogenously given. Although research based on these assumptions has contributed to our understanding of optimal contracts, they are also extreme. Judicial enforcement depends on contract law and courts' discretion (they fill gaps, interpret terms, supply default remedies, replace contractual terms with their terms, and so on), the parties' ex post costly action (e.g., submit evidence), and parties' ex ante costly contracting (e.g., costs of thinking of future contingencies and specifying events, actions, transfers, and other terms into written documents)

Past years economists in the field of contracts and organizations attempted to relax the standard but extreme assumptions and incorporated some of these features into formal analysis. For example, Krasa & Villamil (2000), Ishiguro (2002), and Bull & Watson (2004) study ex post costly verification and obtain conditions for state-contingent transfers or actions to be implemented along with appropriate evidence disclosure. Shavell (2006), Anderlini et al. (2007, 2013), and Schwartz & Watson (2013) study active courts who may decide when to uphold a contract and when to void it, as well as interpret the contract and change the parties' obligations. These papers have shown that the courts' expertise and behavior significantly affect the contracting parities' ex ante behavior as well as their welfare. The economic literature on costly contracting has introduced ex ante costs of either thinking ahead about contingencies (Bolton & Faure-Grimaud, 2010; Tirole, 2009) or writing contracts (Dye, 1985; Anderlini & Felli, 1994, 1999; Battigalli & Maggi, 2002; Schwartz & Watson, 2004). While increasing ex ante costs raises the likelihood of

[1] Google's English dictionary, that is provided by Oxford Languages.

learning states, contingencies, obligations, and legal enforcement, the optimal contract is typically incomplete (endogenous incomplete contracts).

Contracts can be enforced not only by judicial ordering but also by private ordering, such as relational contracting under long-term, ongoing relationships. The parties abide by the agreements voluntarily if a certain condition (*the self-enforcing condition* or *the dynamic enforcement condition*) is satisfied.[2] Such an informal enforcement mechanism is important in developing or transition economies where legal protections are limited or unreliable (Dixit, 2004), but it is also prevalent in economies with well-developed legal systems (Djankov et al., 2003; Macaulay, 1963). A classic paper Macaulay (1963, p. 60) argues that even in the US, "the opportunity for good faith disputes during the life of the exchange relationship often is present." Hence law suits are rare and disputes are frequently settled without reference to the written documents. "The upshot is that private ordering is central to the performance of an economy whatever the conditions of lawfulness (Williamson 2005, p. 2)."

Formal contracts (in the sense of those judicially enforced) still play a role when informal relational enforcement mechanisms are at work. Baker et al. (1994), Schmidt & Schnitzer (1995), Pearce & Stacchetti (1998), Bernheim & Whinston (1998), and Itoh & Morita (2015) analyze under what conditions formal contracts and relational contracts become complements in the sense that the self-enforcing condition is easier to satisfy along with formal contracts than without them. While in these studies writing a formal contract is costless and hence its legal enforceability is exogenously determined, Sobel (2006), Battigalli & Maggi (2008), and Kvaløy & Olsen (2009) have demonstrated that formal contracts and relational contracts can co-exist when more costly contracts are more detailed and more likely to be legally enforced.

What if costly contracts are not legally enforceable? Is there any reason to write such a contract? The focus of this paper is to explore the potential functions of ex ante costly contracting beyond the realm of legal enforcement. An influential article by a legal scholar Llewellyn (1931) in fact argues that "official aid on the contract side consists most commonly not in what we know as enforcement but rather in an official declaration—or merely official recognition...—that an obligation is owed and forfeit (p. 711)." According to him, the main role of legal contracts is to provide an adjustable framework that "almost never accurately indicates real working relations, but which affords a rough indication around which such relations vary, an occasional guide in cases of doubt, and a norm of ultimate appeal when the relations cease in fact to work (p. 737)."

Writing a contract that is not legally enforceable is not an unrealistic possibility. In fact, Macaulay (1963, p. 60) highlights several instances where parties have written contracts that are not legally enforceable, despite his emphasis on non-contractual business relationships:

[2] For theoretical overview, see Malcomson (2013).

> ..., it is likely that businessmen are least concerned about planning their transactions so that they are legally enforceable contracts. For example, in Wisconsin requirements contracts—contracts to supply a firm's requirements of an item rather than a definite quantity—probably are not legally enforceable. Seven people interviewed reported that their firms regularly used requirements contracts...None thought that the lack of legal sanction made any difference... Three of these people were house counsel who know the Wisconsin law before being interviewed. Another example of a lack of desire for legal sanctions is found in the relationship between automobile manufacturers and their suppliers of parts. The manufacturers draft a carefully planned agreement, but one which is so designed that the supplier will have only minimal, if any, legal rights against the manufacturers. The standard contract used by manufacturers of paper to sell to magazine publishers has a pricing clause which is probably sufficiently vague to make the contract legally unenforceable. The house counsel of one of the largest paper producers said that everyone in the industry is aware of this because of a leading New York case concerning the contract, but that no one cares.

Goldberg (2008) argues that the manufacturing agreement in the 1919 contract between Fisher Body and General Motors, which is one of the best-known contractual provisions in the field of organizational economics (Klein et al., 1978; Klein, 1988), was legally unenforceable.

> Nothing precluded Fisher from selling some, or all, of its body production to Ford (p. 1076). ... That is, if Fisher is free not to supply auto bodies if it so decides, then GM, despite the specific promises made in the contract, has no obligations; it is free to buy auto bodies from other suppliers (p. 1078).

Goldberg (2008) further points out that their counsel should have known when drafting the agreement that it would not be enforceable. He concludes by suggesting that "the unenforceable agreements can be effective...If, as I suspect, such agreements are fairly common, any serious theory of the organization of economic activity will have to take this mechanism into account. (p. 1082)"

While I find no quantitative study of legally unenforceable contracts beyond specific case studies, Ryall & Sampson (2009, p. 923) state, based on their analysis of a sample of more than fifty joint technology development contracts in telecommunications and microelectronics industries that "some contracts are entirely unenforceable in a court of law because the partners waive their rights to court adjudication of disputes."

Why write contracts that are not legally enforceable is an important question because recent legal studies literature shows a trend towards more detailed ex ante contracts, whose roles are somewhat independent of legal enforcement. They propose new concepts such as *scaffolding* (Bozovic & Hadfield, 2016), *managerial contract provisions* (Bernstein & Peterson, 2022), and *formal relational contracts*

(Frydlinger et al., 2019, 2021; Frydlinger & Hart, 2022).[3] The common thread running through these concepts corresponds to the statement made by Ryall & Sampson (2009, p. 923): "partners who deal with each other repeatedly may find it worthwhile to write a detailed agreement,..., not due to their usefulness in court, but instead, their usefulness in maintaining a smoothly functioning relational contract."

In Sect. 2, I explain three concepts and demonstrate that all three indicate the importance of initial contracts in mitigating the *clarity problem* identified by Gibbons & Henderson (2012). The clarity problem refers to the need for parties in a long-term relationship to establish a shared understanding of the terms of the relational contract, in addition to making promises credible, to build and refine effective relational contracts. The three concepts also suggest that ex ante contracting reduces ex post renegotiation costs, or that the more detailed the initial contract is, the more aligned the parties' interests become.

Motivated by these studies, in Sect. 3, I present a simple two-period model of costly ex ante contracting based on the "moral hazard in teams" model of communication by Dewatripont & Tirole (2005).[4] The parties exert costly efforts that jointly determine the probability that they will succeed in incorporating detailed terms (scaffolding, managerial provisions, or formal relational contracting process) into an initial contract. I study three roles that the contract plays ex post, namely improvement in clarity, improvement in congruence of interests, and reduction in renegotiation costs, at the time when problems arise.

I show that the parties' efforts for ex ante contracting are not monotonic in their alignment of interests. When their interests are not sufficiently congruent, they are motivated to write a contract to avoid unconditional termination of the relationship. However, if their alignment of interests is beyond a threshold, they no longer bother to spend resources on ex ante contracting. This result holds even if the alignment itself rises or the cost of ex post renegotiation is reduced by an increase in effort for ex ante contracting.

The model and analysis are preliminary because I take a reduced-form approach and ignore the enforcement issue of the contract. Note, however, that costly ex ante contracting in my model is independent of court enforceability and hence can be distinguished from existing literature analyzing the effects of writing costs on relational contracts (Sobel, 2006; Battigalli & Maggi, 2008; Kvaløy & Olsen, 2009). The literature on costly contracting that studies the costs of thinking ahead about contingencies (Bolton & Faure-Grimaud, 2010; Tirole, 2009) is more related because, in their models as well as in mine, spending more resources ex ante increases the likelihood of learning the true state when there occurs an irregular event. However, their focuses are different from mine. The main focus of Bolton & Faure-Grimaud (2010) is satisficing contracts where the parties do not waste time resolving all

[3] Gilson et al. (2009, 2010) are the important related work preceding these three recent studies, and develop related concepts. I will briefly explain their work in Sect. 2, along with these three concepts.

[4] "Moral hazard in teams" is the title of a classic paper in the field of contract theory by Holmstrom (1982). In the context of Dewatripont & Tirole (2005), it highlights the idea that the quality of communication is a team output that depends on the unobservable efforts of *both* the sender *and* the receiver of the messages.

future contingencies and instead leave many decisions to be determined later, and their dynamics toward more detailed contracts. In their model, there is no cognitive effort, and the only cost of thinking arises from the discount factor. Tirole (2009) mainly studies ex ante planning and ex post holdup due to asymmetric information. Neither of them features the "moral hazard in teams" problem in contracting.

In Sect. 4, I discuss the contracting practices of Japanese manufacturers. Since the seminal works by Asanuma (1989, 1992), the long-term relationships between Japanese manufacturers and their suppliers in the electronics and automobile industries have been extensively studied. A remarkable feature of these relationships is that their contracts are simple and highly incomplete, and this feature appears to persist to this day. In this section, I provide several reasons for the limited changes in contracting practices, particularly the equilibrium explanation based on my analysis.

Section 5 concludes the paper.

2 Three new concepts from legal studies

In this section, I will discuss three recent legal studies that propose interesting new concepts and point towards trends of more detailed initial contracts. The main role of these contracts is not necessarily to improve legal enforcement, but rather to facilitate ongoing relationships.

2.1 Scaffolding

Bozovic & Hadfield (2016) conducted semi-structured interviews with thirty California-based businesses to investigate the critical relationships between customers and suppliers, focusing on their nature, history, risks, mechanisms for managing relationships, and recent dispute resolution. Before each interview, the interviewee was asked whether their business could be classified as "innovative". The main finding of the study is that the roles of ex ante written contracts differ significantly between innovation-oriented and non-innovation-oriented relationships.

Non-innovative relationships tend to rely on verbal agreements or emails rather than written contracts to initiate transactions, paying little attention to written contract terms when problems arise. Instead, respondents in these relationships rely on industry and relational norms to adapt to contingencies and informal enforcement mechanisms to resolve disputes.

The innovation-oriented relationships also rely on informal enforcement mechanisms. However, "These businesses told us they invested significant time and resources to explicitly and carefully plan and generate formal contracts dealing with obligations and contingencies (p. 996)." Furthermore, the documents are frequently consulted to avoid misunderstandings about the parties' obligations, and to help them settle disputes if they arise during the course of their relationships.

Note that innovation-oriented relationships are likely to make both initial contracts and relational contracts harder to enforce than non-innovation-oriented ones. It is more difficult to anticipate and provide for future contingencies ex ante so as to

enable courts to enforce. The respondents from the innovation-oriented businesses in fact "emphasized the ambiguity and incompleteness of their formal written agreements (p. 1006)." Innovation-oriented businesses also imply that the outcomes from the parties' actions are highly affected by uncertainty and their information becomes asymmetric, which fact in turn makes it more difficult for their relational contracts to satisfy the self-enforcing condition.

Bozovic & Hadfield (2016) distinguish between formal contracting and formal contract enforcement, and emphasize that formal contracting has a role that is independent of its legal enforceability. Based on the interviews, the study argues that the initial contract serves as a role "to provide a common knowledge basis for classification of actions ex post as breach or not breach (p. 1012)" and ex ante contracting is used for *scaffolding* informal enforcement of relational contracts. They also suggest that the presence of scaffolding reduce ex post renegotiation costs due to ambiguity, asymmetric information, delay, and so on.

2.2 Managerial contract provisions

Bernstein & Peterson (2022) conducted a study to examine the contracting practices of over one hundred firms and conducted interviews with buyer and supplier personnel. Their research findings reveal that modern outsourcing relationships are governed by a set of highly detailed written contractual provisions, which they refer to as *managerial provisions*. They are mainly designed to "administer the contract, facilitate the flow of information between the transactors, coordinate the joint efforts of buyers' and suppliers' employees (to induce them to act as if they are employees of the same firm), and facilitate adjustments in light of the parties' changing needs (p. 3)." These provisions, along with the mechanisms developed to implement them, "can be found in supply contracts, purchase orders, statements of work, supplier handbooks (or quality manuals), and supplier scorecards (p. 6)."

Bernstein & Peterson (2022) observe that the inter-firm provisions closely resemble management techniques used to increase productivity within firms, particularly intra-firm management practices measured and studied by the World Management Survey (WMS).[5] Building on a survey instrument initially developed at McKinsey, WMS gathers reliable comparable data of management practices of manufacturing enterprises around the world in four areas[6]: (i) operations, such as introduction, motivation, improvement, and documentation of lean management techniques; (ii) target setting, such as breath, balance, interconnection, time horizon, and stretch of targets; (iii) performance monitoring, such as indicators, regularity, frequency, communication, quality, and consequences of performance tracking; and (iv) people management, such as priority for talent management, identifying good or bad performers and rewarding or removing them adequately, attracting, developing, and retaining talent. Research using the WMS dataset shows that higher scores of

[5] For an overview of the project, see the project website (https://worldmanagementsurvey.org/) as well as Bloom et al. (2014) and Scur et al. (2021).

[6] They also gather data for hospitals, schools, and retails.

the management practices are associated with "better" management, in particular, higher productivity and profitability.

The authors explain how these practices are integrated into buyer-supplier relationships through the managerial provisions, which not only facilitate the adoption of value-enhancing practices but also support cooperation and trust building between firms in long-term relationships. The managerial provisions help prevent inefficient breakdowns of cooperation due to misunderstanding and misperception by making key information observable, clarifying outcome classification, creating opportunities for intense communication, and so on.

Furthermore, Bernstein & Peterson (2022) note that most managerial provisions are not legally enforceable in a lawsuit for breach of contract. Instead, they are supported by informal future punishment, such as the threat of termination, reduced order size, loss of good reputation, etc. The written managerial provisions are meant to facilitate smooth relationships rather than increase the likelihood of formal contract enforcement.

2.3 Formal relational contracts

> *Honestly, this book is ahead of any economic theory I know in suggesting how parties might build and maintain the kind of shared understanding that is of course crucial for many collaborations."* Robert Gibbons, in Praise for Frydlinger et al. (2021)

A *formal relational contract* is defined as a "legally enforceable written contract establishing a commercial partnership within a flexible contractual framework based on social norms and jointly defined objectives, prioritizing a relationship with the continuous alignment of interests before the commercial transactions (Frydlinger et al., 2021, p. 104)." While the definition explicitly states that it is legally enforceable, the primary role of the written contract is to help build and maintain relationships. To date, more than fifty-seven companies have adopted a formal relational contract (Frydlinger & Hart, 2022, p. 5).

Without a written contract, the formal relational contract corresponds to a standard relational contract based on informal agreements via "handshake" deals. The main difference is that parties invest in significant time and effort to discuss the objectives for the relationship, the principles they will apply when unforeseen contingencies arise, the governance structures to keep the parties' expectations and interests aligned, and to include them in a written document.

An essential part of the concept is a formal relational contracting process, which consists of five steps. The first step is to "lay the foundation for a partnership" by emphasizing the focus on the relationship instead of the deal. The three fundamental building blocks of a relationship, namely trust, transparency, and compatibility, are emphasized. The second step is to "co-create a shared vision and objectives" for the relationship, promoting a partnership rather than an arms-length relationship.

The third step is to "adopt guiding principles for the partnership." It is essential to discover and agree on social norms for the success of relational contracting, and six

social norms are drafted and documented as guiding principles.[7] These norms are reciprocity, autonomy, honesty, loyalty, equity, and integrity. These principles set the expectations for how the parties intend to behave throughout the life of their agreement. "Following these six social norms enables the parties to align interests and expectations in a fair and balanced manner not only during contract development but also well after the contract is signed (Frydlinger et al., 2021, p. 193)."

The fourth step is to "align expectations and interests, architecting the deal point." Based on a shared vision and objectives, parties negotiate and agree on deals such as the goods or services delivered, pricing, metrics for success, and so on. The final step is to "stay aligned" by establishing a governance structure to manage change and uncertainty that the parties will face during the relationship.

2.4 Tentative summary

All three studies examined the distinct roles of written contracts that are separate from court enforcement. Bozovic & Hadfield (2016) specifically distinguished between formal contracting and formal contract enforcement, arguing that formal contracting serves as scaffolding for informal and dynamic enforcement. They emphasized the ex post classification function of contracts after events occur, and noted that scaffolding reduces ex post renegotiation costs.

Similarly, Bernstein & Peterson (2022) suggested that while the managerial provisions in written contracts are unlikely to be enforced by legal sanctions, they may still be valuable for building trust and maintaining cooperation. Like Bozovic & Hadfield (2016), they argued that initial contracts with managerial provisions offer various channels for communication and clarification, reducing the likelihood of relationship breakdown due to misperception.

In contrast, Frydlinger et al. (2021) emphasized the legal enforceability of formal relational contracts, but also noted that enforceability is only one part of why contracts are written. They focused more on the role of contracts in aligning the beliefs and objectives of the parties when unforeseen events occur. The five-step process of formal relational contracts suggests roles similar to scaffolding and managerial provisions, with shared vision and objectives and guiding principles of equity and loyalty implying that parties' interests are more aligned with formal contracts than without them. In fact, Frydlinger & Hart (2022) offer the first theoretical analysis of the formal relational contracting approach based on the contracts-as-reference-points model of Hart & Moore (2008), and assume that the adoption of a formal relational contract makes parties' preferences more other-regarding.

All three studies address the importance of ex ante contracting in mitigating what Gibbons & Henderson (2012) call the *clarity problem*. Gibbons & Henderson (2012) argue that building and refining relational contracts (or more generally strategies in repeated-game models) requires answering two questions: whether parties

[7] The advocates for the formal relational contract argue that it is legally enforceable because a duty of "good faith" exists across most jurisdictions and these principles essentially guide what exactly "good faith" means to the parties.

should believe the promise being made (the *credibility problem*), and whether there is a shared understanding of the promise between parties (the clarity problem). They argue that the clarity problem is much less studied in both theory and evidence than the credibility problem.

The relation with the clarity problem is obvious in scaffolding and managerial provisions, and Frydlinger & Hart (2022, p. 4) state that "One can understand the discussions surrounding the adoption of a formal relational contract as attempting to achieve clarity, among other things." Furthermore, according to Gibbons & Henderson (2012, p. 1352), "the imperfect alignment of interests underlying the credibility problem creates significant new impediments to the communication necessitated by the clarity problem." These common features behind the new legal concepts motivate me to do some formal analysis in the next section.[8]

3 Preliminary analysis

In this section, I provide a preliminary analysis of costly ex ante contracting, focusing on its roles that are distinct from raising the likelihood of formal enforcement. In my model, two transacting parties exert costly efforts, such as time and other resources, for ex ante contracting. Their efforts jointly increase the likelihood that they reach an agreement and incorporate the detailed terms discussed in the previous section into a written contract. I study three roles that the initial contract plays ex post: improvement in clarity, improvement in alignment of interests, and reduction in renegotiation costs. Improvement in clarity is a commonly shared feature of all three concepts, as explained above. While improvement in alignment of interests and reduction in renegotiation costs are most explicit in formal relational contracts and scaffolding, respectively, these two roles are also shared by the other concepts at least implicitly.

I refer to my analysis as "preliminary" for two reasons. First, I do not model the specific content of initial contracts but rather assume that agreeing with and drafting a contract directly changes clarity, alignment, and renegotiation costs. How these changes are made by the contract is not explicitly modeled. Second, since I take a reduced-form approach to modeling ex ante contracting, I also ignore the enforcement problem.

[8] Earlier work Gilson et al. (2009, 2010) develops related concepts, *contracting for innovation* and *braiding*. Their work is motivated by trends toward vertical disintegration, particularly in rapidly innovating industries. A contract for innovation is a legal instrument that facilitates inter-firm collaboration in such industries, and braiding is a process that combines formal and informal methods of enforcement. I also interpret the main role of these concepts as that of mitigating the clarity problem as the following phrase suggests:

"We focus on the fact that contracting parties can and do agree on formal contracts for exchanging information about the progress and prospects of their joint activities, and that these same information exchanges provide the foundation for raising the existing level of trust. It is this information-sharing regime that braids the formal and informal elements of the contract, endogenizes trust, and thereby supports the informal enforcement of the parties' substantive performance (Gilson et al., 2010, p. 1384)."

3.1 The basic model

Consider transactions between two parties A (she) and B (he). For simplicity, they trade for two periods $t = 1, 2$. The period-t payoffs to parties A and B are denoted by u_t and v_t, respectively. In the first period, their transaction generates total value $s > 0$, and they agree to divide s by $u_1 = u > 0$ to party A and $v_1 = v \equiv s - u > 0$ to party B.

In the second period, there are two possibilities. With probability $1 - \pi$ the business is as usual and everything is the same as in period 1. With probability π, however, the parties observe that an irregular event happens and influences their relationship. If they choose to adapt to the event, the payoff to party A is either $u_2 = h > 0$ with probability α (congruent state) or $u_2 = -\ell < 0$ with probability $1 - \alpha$ (conflicting state). For simplicity I assume that the payoff to party B is unaffected and is constant $v_2 = v$. If they do not choose to adapt but instead to terminate the relationship, their payoffs are zero. If they trade without adaptation, the payoffs are $-\infty$, and hence the parties either adapt or terminate. They adapt if both agree to do so, and terminate, otherwise. With probability q they can make the adaptation decision after observing the state. With probability $1 - q$, however, they have to make the decision without knowing the true state.

Parties A and B choose efforts $x \in [0, 1]$ and $y \in [0, 1]$, respectively, and I assume $q = q(x, y) = xy$, that is, the parties' efforts exhibit complementarities. They incur costs $C(x)$ and $D(y)$, which are twice-continuously differentiable, $C'(x) > 0$, $C''(x) > 0$, $D'(y) > 0$, $D''(y) > 0$, $C'(0) = D'(0) = 0$, and $C'(1) = D'(1) = +\infty$. I allow fixed costs so that $C(0) \geq 0$ and $D(0) \geq 0$.

The timing is as follows. At the beginning of the first period, the parties simultaneously and independently choose efforts, and then trade to enjoy payoffs (u, v). At the beginning of the second period, an irregular event happens with probability π and no such event with probability $1 - \pi$. If there is no event, the parties continue to trade and enjoy (u, v). When the event occurs, the state is observable with probability $q(x, y)$ and unobservable with probability $1 - q(x, y)$. Based on the information the parties independently decide whether to adapt or terminate.

3.1.1 Interpretation of the model

The basic model is essentially the same as that of Dewatripont & Tirole (2005), who analyze the "moral hazard in teams" problem in communication between a sender and a receiver. The sender corresponds to party B with less stake on the event ($v_2 = v$) and the receiver party A with more stake ($u_2 = h$ or $u_2 = -\ell$) in my model. While the sender must spend time and resources to convey his knowledge (whether the receiver's payoff is h or $-\ell$) effectively, the receiver also needs to work hard to attend to and understand the meaning of the message. With probability $q(x, y)$ the sender's knowledge is successfully communicated to the receiver in the sense that she assimilates his knowledge. Otherwise, the sender's message is a cheap talk and its substance is not figured out by the receiver (she cannot understand the value of u_2).

My interpretation of the model is as follows. The efforts exerted by the parties correspond to significant time and resources invested to "plan and generate formal contracts dealing with obligations and contingencies (Bozovic & Hadfield, 2016, p. 996)," design detailed sets of terms "to govern, manage, and preserve the transactors' relationship during the performance stage of their contracts (Bernstein & Peterson, 2022, p. 49)," and "engage ex ante in lengthy discussions about the principles they will apply when unanticipated contingencies arise (Frydlinger & Hart, 2022, p. 4)." Then with probability $q(x, y)$, the parties succeed in incorporating scaffolding features, managerial provisions, or those explained in the five-step formal relational contracting process into an initial contract. This is also a "moral hazard in teams" problem, and I assume, as Dewatripont & Tirole (2005) do, that their efforts exhibit complementarities. With probability $1 - q(x, y)$, they trade without such detailed terms (only with verbal agreements, handshake deals, and so on).

In the model, drafting a contract with the detailed terms enables the parties to have a common understanding concerning whether adaptation benefits both parties or just one of them. Without the contract, at least party A cannot know either adaptation or termination is optimal for her. While I simply model this difference as whether or not the state is observable, a slightly different model that may be closer to what Bozovic & Hadfield (2016) call the classification function of scaffolding is as follows. After the irregular event hits the relationship, party B observes the state and chooses adaptation. Party A decides after observing party B's action. Without an initial contract, party A cannot distinguish between party B's action for adaptation in the congruent state and his action in the conflicting state, and hence makes the decision based on the expected payoff. The initial contract enables party A to classify party B's adaptation action in the congruent state as not breach and his action in the conflicting state as breach, and hence to decide whether or not to adapt contingent on the true state. The analysis is unaffected by this modification.

I should also note that the model does not fully explain why the initial contract must be a written document. How come thinking hard about future is not enough for the parties' agreement to function as scaffolding, managerial provisions, or a formal relational contracts? The reduced-form approach taken in this paper is not appropriate to answer this question. Itoh (2011) offers several answers to this question, along with formal analysis.[9]

[9] In Itoh (2011), there is a large population of principals and agents, a principal and an agent are randomly matched and engage in transaction, and at the end of each period, they can choose to continue or terminate the current partnership. Written contracts are never legally enforced. Itoh (2011) then shows that writing a contract can help relational contracting between principals and agents more enforceable than relying on tacit understanding of their agreement for three reasons: (i) ink costs of writing a contract make a new match more costly; (ii) the existence of a written document, with signatures of a principal and an agent, helps parties in the matching pool to identify (some of) those who reneged in the previous transaction; and (iii) the existence of a written document can raise motivation to engage in prosocial behavior (e.g., go to court to punish reneging parties).

3.2 Analysis of the model

To solve the model backwards, suppose that an irregular event happens. With an initial contract, the parties adapt to the event if $u_2 = h$, and terminate if $u_2 = -\ell$. If no formal contract is written, party A chooses to adapt if and only if $Eu_2(\alpha) \equiv \alpha h - (1-\alpha)\ell \geq 0$, or

$$\alpha \geq \alpha^* \equiv \frac{\ell}{h+\ell}.$$

(I assume that party A chooses to adapt if indifferent between adaptation and termination.)

Back to the beginning of the first period, suppose first $\alpha < \alpha^*$. Then party A chooses x to maximize her two-period expected payoff U, which is given by

$$U = u + \delta\pi q(x,y)\alpha h + \delta(1-\pi)u - C(x),$$

and party B chooses y to maximize his two-period expected payoff V, which is given by

$$V = v + \delta\pi q(x,y)\alpha v + \delta(1-\pi)v - D(y),$$

where $\delta \in (0,1]$ is the discount factor. In the second period, an irregular event realizes with probability π, and parties A and B receive h and v, respectively, with probability $q(x,y)\alpha$, that is, if there is an initial contract and the congruent state ($u_2 = h$) is observed. Otherwise, they terminate and receive zero.

Note that there always exists a trivial equilibrium effort pair $(x,y) = (0,0)$. Positive equilibrium efforts, if they exist, satisfy the first-order conditions:

$$\delta\pi y\alpha h = C'(x) \tag{1}$$

$$\delta\pi x\alpha v = D'(y) \tag{2}$$

I focus on the highest effort pair satisfying (1) and (2) and denote it by $(x^*(\alpha), y^*(\alpha))$. I sometimes abbreviate the argument and denote it by (x^*, y^*). It is increasing in δ, π, and α. The parties spend more resources for ex ante contracting as future trade is more important, an irregular event is more likely, or their interests are more aligned. The effects of δ and π are consistent with the finding of Bozovic and Hadfield (2016) that under the innovation-oriented transactions the parties spend significant time and resources to write contracts and consult the documents during the course of the relationships. Since $U(x^*(\alpha), y^*(\alpha))$ and $V(x^*(\alpha), y^*(\alpha))$ are increasing in α, define $\underline{\alpha}$ as the lowest α that satisfies both $U(x^*(\alpha), y^*(\alpha)) \geq 0$ and $V(x^*(\alpha), y^*(\alpha)) \geq 0$, and assume $\underline{\alpha} < \alpha^*$. Then $(x^*(\alpha), y^*(\alpha))$ is the nontrivial equilibrium effort pair for $\alpha \in (\underline{\alpha}, \alpha^*)$.

Next, suppose $\alpha \geq \alpha^*$. Since the parties choose to adapt even without an initial contract, their expected payoffs become

$$U = u + \delta\pi[q(x,y)\alpha h + (1 - q(x,y))Eu_2(\alpha)] + \delta(1-\pi)u - C(x),$$

and

$$V = v + \delta\pi[q(x, y)\alpha v + (1 - q(x, y))v] + \delta(1 - \pi)v - D(y).$$

Obviously party B has no incentive to exert a positive effort, and hence $(x^*, y^*) = (0, 0)$ is the unique equilibrium effort pair. Since the parties' interests are sufficiently well aligned, party B decides to save the cost of ex ante contracting, and hence party A's effort becomes useless. Her expected payoff drops down at $\alpha = \alpha^*$, and then rises again because $Eu_2(\alpha)$ is increasing in α.

A main insight from this exercise is that the parties' equilibrium efforts for ex ante contracting are not monotonic in their alignment of interests. When the alignment is relatively low, they are motivated to write an initial contract in order to avoid unconditional termination of the relationship. The more aligned their interests are, the more likely adaptation is and hence the stronger their motivation for ex ante contracting becomes. However, if their interests are aligned enough to adapt to the event even without a contract, the party with less stake (party B) no longer bothers to spend resources to think hard and draft a contract ex ante, and the party with more stake also finds it not worthwhile to exert any effort.

3.3 Introducing other roles

In the basic model, the initial contract enables the state to be observable before the adaptation decision. In this subsection, I introduce two other roles ex ante contracting may play, those of increasing the alignment of interests between the parties, and of reducing renegotiation costs.

3.3.1 Alignment of interests

Suppose that ex ante contracting changes how the parties' interests are aligned as well as the observability of the state. With probability $q(x, y)$, the initial α increases to $\overline{\alpha} > \alpha$, and with probability $1 - q(x, y)$, α does not change.

Remember that when the initial alignment satisfies $\alpha < \alpha^*$, the parties do not adapt without a contract. If $\overline{\alpha} \leq \underline{\alpha}$ holds, $(x^*, y^*) = (0, 0)$ is the only equilibrium effort pair. If the improved alignment satisfies $\overline{\alpha} > \underline{\alpha}$, the nontrivial equilibrium effort pair increases from $(x^*(\alpha), y^*(\alpha))$ to $(x^*(\overline{\alpha}), y^*(\overline{\alpha}))$, which is defined by (1) and (2) with α replaced by $\overline{\alpha}$: The parties are even more strongly motivated to choose efforts for ex ante contracting.

However, when $\alpha \geq \alpha^*$, party B still has no incentive to exert a positive effort even though the initial contract raises the alignment of interests between him and party A. The unique equilibrium is thus $(x^*, y^*) = (0, 0)$ as in the case where the initial contract does not affect the parties' alignment.

In short, when the initial alignment is low, the alignment effect of ex ante contracting provides the parties with additional incentives to exert efforts. However, when the initial alignment is high, whether or not ex ante contracting has the alignment effect does not matter: No contract is written.

This conclusion continues to hold even if the only role of ex ante contracting is to increase the alignment of interests. Suppose that the state is unobservable whether or not an initial contract is written.[10] I analyze three cases separately.

First, suppose $\alpha < \overline{\alpha} < \alpha^*$. Since the relationship is always terminated after the irregular event, the parties have no interest in investing for ex ante contracting, and hence $(x^*, y^*) = (0, 0)$ is the unique equilibrium effort pair.

Second, suppose $\alpha < \alpha^* \leq \overline{\alpha}$. The parties adapt to the event if and only if a contract is written. The expected payoffs to parties A and B are, respectively,

$$U = u + \delta\pi q(x, y)Eu_2(\overline{\alpha}) + \delta(1 - \pi)u - C(x),$$

and

$$V = v + \delta\pi q(x, y)v + \delta(1 - \pi)v - D(y).$$

The first-order conditions yield

$$\delta\pi yEu_2(\overline{\alpha}) = C'(x) \tag{3}$$

$$\delta\pi xv = D'(y) \tag{4}$$

Since $\overline{\alpha} > \underline{\alpha}$ holds, $x^* > 0$ and $y^* > 0$, and it is increasing in $\overline{\alpha}$.

Finally, suppose $\alpha^* \leq \alpha < \overline{\alpha}$. The parties always adapt to the event. Although party A has an incentive to exert effort to increase from $Eu_2(\alpha)$ to $Eu_2(\overline{\alpha})$, party B has no interest in choosing a positive effort, and hence $(x^*, y^*) = (0, 0)$ is the unique equilibrium effort pair.

3.3.2 Renegotiation costs

I next introduce renegotiation costs into the basic model. To this end, I assume that renegotiation is feasible whether or not an initial contract is written. It is natural to assume that renegotiation costs are smaller with a detailed initial contract than without it. Suppose that if an irregular event happens, the parties decide simultaneously whether or not to renegotiate. There is renegotiation if and only if both parties choose to do so, and then each of them incurs renegotiation cost $\gamma > 0$ without a contract. For simplicity, suppose that this cost is reduced to zero with a contract.

Renegotiation enables the parties to observe the state before making the adaptation decision. However, without renegotiation they have to decide whether to adapt or terminate based on the expected payoff. I assume that observing the state requires renegotiation even if an initial contract is written.[11] I also assume for simplicity that there is no fixed cost of ex ante contracting ($C(0) = D(0) = 0$). I denote by $(\hat{x}, \hat{y})$ the nontrivial equilibrium effort pair.

[10] The case where the state is always observable is less interesting: α^* does not play any role and (x^*, y^*) is monotonically increasing in $(\overline{\alpha} - \alpha)$.

[11] This assumption is not crucial. The result does not change when writing a contract enables the state to be observable without renegotiation.

In this setting, it is easy to see that if $\alpha \geq \alpha^*$, there will be no renegotiation and $(\hat{x}, \hat{y}) = (x^*, y^*) = (0, 0)$ is the unique equilibrium effort pair. For $\alpha < \alpha^*$, I prove the following claim in Appendix: There exists $\underline{\gamma} > 0$ and $\hat{\alpha} \in (0, \alpha^*)$ such that the following hold:

(a) If $\gamma < \underline{\gamma}$, then $(\hat{x}, \hat{y}) = (x^*, y^*)$ for $\alpha < \hat{\alpha}$ and $(\hat{x}, \hat{y}) \ll (x^*, y^*)$ for $\alpha \in (\hat{\alpha}, \alpha^*)$;[12]
(b) If $\gamma \geq \underline{\gamma}$, then $(\hat{x}, \hat{y}) = (x^*, y^*)$ for all α.

If the renegotiation cost is sufficiently large as in case (b), then the parties do not renegotiate without a contract, and hence the equilibrium effort pair coincides with that under no renegotiation. On the other hand, if the cost is sufficiently small as in case (a), there will be renegotiation without a contract for the intermediate interval of the alignment parameter, and the parties invest in ex ante contracting in order to save the renegotiation cost. However, this is the case where the renegotiation cost is small ($\gamma < \underline{\gamma}$), and hence their effort incentives are lower-powered and the contract is less likely to be written than when there is no renegotiation ($(\hat{x}, \hat{y}) \ll (x^*, y^*)$).

4 Implications for recent contracting practices in Japan

Since the seminal work by Asanuma (1989, 1992), the practices of the relationships between Japanese manufacturers and their suppliers in electronics and particularly automobile industries have been extensively studied by economists in association with firm boundaries (Holmström & Roberts, 1998) and relational incentive contracts (Malcomson, 2013). Baker & Gil (2013, p. 198), who discuss clinical studies (stories) in organizational economics,[13] evaluate Asanuma's work as follows:

> The evidence in Asanuma's paper is some of the earliest on the impact of relations on business practices and economic outcomes. As the Fisher Body and General Motors story did with make-or-buy theories, Asanuma's study inspired many to pursue theory on the nature and consequences of relational contracting.

A remarkable feature of the long-term relationships between Japanese automakers and suppliers is in their contracts. While written basic contracts exist, they "are short and remarkably imprecise, essentially committing the parties only to work together to resolve difficulties as they emerge (Holmström & Roberts, 1998, p. 81)." Kinoshita (2022) states that the author, working at the legal department of a large IT equipment manufacturer in Japan during 2010s, was surprised to find that the

[12] I denote $\hat{x} < x^*$ and $\hat{y} < y^*$ by $(\hat{x}, \hat{y}) \ll (x^*, y^*)$.

[13] According to Baker & Gil (2013, p. 195), "A clinical study is essentially a detailed account, often involving a combination of qualitative data, anecdotal evidence, and sometimes quantitative data of a specific situation or phenomenon."

procurement contract of the company had been essentially what Holmström & Roberts (1998) described as above for more than twenty years. Motivated by this observation, Kinoshita (2022) investigated procurement contracts in automobile and IT equipment industries in Japan at the time of around 1990 and today, to conclude that while the number of terms is increasing, the standard features of contracts in Japan persist.

Why do the contracting practices change little in Japan? First, differences in legal doctrines may matter. In the US, *entire agreement clauses* are often included in the standard forms of contracts. An entire agreement clause "asserts that the contract constitutes the whole agreement between the parties and seeks to prevent the parties from relying on any preceding agreements, negotiations or discussions that have not been set out in the agreement."[14] This clause tends to increase the terms in the contract and make it longer and more complicated. In Japan, memorandum that describe what have been negotiated, discussed, and agreed, and even verbal agreements may be legally enforceable. If these written and verbal agreements are included in the contract in Japan, then the contractual differences may not be as large as they look. Interestingly, Asanuma (1989, p. 3, emphasis added) states that "Instead of a single contract..., there are a set of contracts, *documents that function as contracts*, and well-established practices. Assembly of these pieces in a coherent way gives a contractual framework, by which recurrent-type transactions of parts are regulated in Japanese industries." Relatedly, there is *the doctrine of continuous transaction contracts* in Japan that restricts termination of long-term contractual relationships.

However, the legal differences do not seem to be the whole story. Milgrom & Roberts (1997) describe the relationship between Toyota Motor Manufacturing, USA, Inc.(TMM) and Johnson Control Inc.(JCI). In 1985, Toyota located its U.S. facility in Georgetown, Kentucky, and JCI was selected as the sole seat supplier for the initial 1988 model of Camry. The contract between them is described as follows:

> No detailed contract was signed between TMM and JCI, however. The assumption was that the relationship was to be a long-term, ongoing one in which the two firms would work together for their mutual benefit and would seek to deal cooperatively with problems and potential conflicts as they arose (p. 16).

The description is quite similar to the contract in Japan. Aoki & Lennerfors (2013, p. 110) report, based on interviews and data gathered during 39 visits to auto plants and 192 visits to parts makers in Japan and overseas, that the contracting practice follows the traditional model: "Contracts governing the relationships are ambiguous, consisting of general statements and nonbinding targets."

My preliminary analysis in the previous section suggests that this may be an equilibrium phenomenon. It is reasonable to suppose that the transacting parties' interests are well aligned in Japan, corresponding to the case $\alpha \geq \alpha^*$ in the model. This also seems to hold for the relationships between Japanese automakers and their suppliers in the U.S. as Liker & Choi (2004, p. 4) write, "suppliers said that Toyota and

[14] https://www.taylorwessing.com/synapse/commercial_agreementclause.html.

Honda were better communicators, more trustworthy, and more concerned about suppliers' profitability than other manufacturers were." Then they do not bother to spend time and resources to engage in ex ante contracting but "work together to resolve difficulties as they emerge." Note, however, that this practice may lead to inefficient adaptation ex post if $v - \ell < 0$, that is, if they adapt despite the negative total payoff.

Costly ex post renegotiation does not change the result for $\alpha \geq \alpha^*$. If congruence is not so high ($\alpha < \alpha^*$), the parties will exert efforts for ex ante contracting and renegotiate ex post even without an initial contract. Note, however, that this is the case if their interests are sufficiently aligned in this interval ($\alpha > \hat{\alpha}$), and the renegotiation cost is sufficiently low. Hence their incentives to exert efforts are still low-powered.[15]

5 Concluding remarks

While I show that costly ex ante contracting plays important roles not directly related with legal enforcement, more work remains to be done. The model is reduced-form, and does not explain why a contract must be written, how it is informally enforced, and how it helps the parties reach a shared understanding and avoid misperception. There is plenty of room where communication theory and behavioral theory will elaborate on interactions between ex ante contracting and relational contracting.[16]

Empirical work is still scarce. In this respect, close collaboration with legal and management scholars will be fruitful. Inter-firm contract studies by legal and management scholars are growing (Ben-Shahar & White, 2006; Ryall & Sampson, 2009; Weber et al., 2009). I hope this paper will contribute to motivating more economists to enter the field and promoting interdisciplinary research on contracts.

Appendix

I prove my claim concerning renegotiation costs in Sect. 3.3.

[15] There are other alternative equilibrium explanations. Offering an unambiguous contract may serve as a signal of distrust (Kinoshita, 2022) This reminds me of the signaling explanation of incomplete contracts (Spier, 1992). Tirole (2007) shows in his application of cognitive costs to relational contracting that there exists a pooling equilibrium in which opportunistic sellers mimic honest sellers by complying with the spirit of the contract (no ex post holdup), and hence the buyers do not incur cognitive costs (interpreted as incomplete contracts). According to Aoki and Lennerfors (2013, p. 110), Toyota in the U.S. believes "spelling out specifics would encourage partners to do only what they were instructed to, and nothing more." This aspect may be understood as the strategic ambiguity explanation of incomplete contracts (Bernheim & Whinston, 1998).

[16] For example, Blume and Board (2013) and Giovannoni & Xiong (2019) formulate a situation where different people use language in distinct ways (what they call "language barriers") as a communication game between players whose abilities to use and understand messages are their private information, and study how language barriers affect their communication and welfare. Ex ante contracting may be modeled as an instrument to mitigate their language barriers.

Suppose first $\alpha \geq \alpha^*$. When an irregular event occurs, party B can secure payoff v by not renegotiating since party A then chooses to adapt ($Eu_2(\alpha) \geq 0$). Hence party B chooses $y = 0$ at the beginning of period 1, and $(x, y) = (0, 0)$ is the unique equilibrium effort pair.

Next suppose $\alpha < \alpha^*$. When the parties write an initial contract, they enjoy expected payoffs $\alpha h > 0$ to party A and $\alpha v > 0$ to party B by costless renegotiation. Since the payoffs are (0, 0) without renegotiation, they choose to renegotiate. When they renegotiate without a contract, their expected payoffs are $\alpha h - \gamma$ for party A and $\alpha v - \gamma$ for party B. Hence they will not renegotiate if $\alpha < \hat{\alpha} \equiv \gamma/z$ where z is defined by $z = \min\{h, v\}$. Then γ does not affect their ex ante efforts, and $(\hat{x}, \hat{y}) = (x^*, y^*)$ holds for $\alpha < \alpha^*$.

If $\alpha \geq \hat{\alpha}$, then the parties will renegotiate. Since I'm assuming $\alpha < \alpha^*$, the following condition must hold.

$$\frac{\gamma}{z} \leq \alpha < \frac{\ell}{h + \ell}. \tag{A1}$$

This interval is nonempty if

$$\gamma < \underline{\gamma} \equiv \frac{z\ell}{h + \ell}. \tag{A2}$$

Given conditions (A1) and (A2), the expected payoff to party A is

$$U = u + \delta\pi[q(x, y)\alpha h + (1 - q(x, y))(\alpha h - \gamma)] + \delta(1 - \pi)u - C(x),$$

and the expected payoff to party B is

$$V = v + \delta\pi[q(x, y)\alpha v + (1 - q(x, y))(\alpha v - \gamma)] + \delta(1 - \pi)v - D(y).$$

The nontrivial equilibrium effort pair $(\hat{x}, \hat{y})$ must satisfy the following first-order conditions:

$$\delta\pi\hat{y}\gamma = C'(\hat{x}) \tag{A3}$$

$$\delta\pi\hat{x}\gamma = D'(\hat{y}) \tag{A4}$$

Note that $(\hat{x}, \hat{y})$ is independent of α, and $\hat{x} < x^*$ and $\hat{y} < y^*$ hold for almost all $\alpha \in [\hat{\alpha}, \alpha^*)$ since $\gamma < \alpha h$ and $\gamma < \alpha v$ for $\alpha > \hat{\alpha}$.[17]

Finally, if (A2) fails to hold (that is, $\gamma \geq \underline{\gamma}$), then the parties do not renegotiate without a contract, and hence the nontrivial equilibrium effort pair coincides with (x^*, y^*) for $\alpha < \alpha^*$ as well.

[17] An equality holds at $\alpha = \hat{\alpha}$ for one of $\hat{x}$ and $\hat{y}$. For example, if $z = h < v$, then $\hat{x} = x^*$ and $\hat{y} < y^*$ at $\alpha = \hat{\alpha} = \gamma/z$.

References

Anderlini, L., & Felli, L. (1994). Incomplete written contracts: Undescribable states of nature. *Quarterly Journal of Economics, 109*, 1085–1124.

Anderlini, L., & Felli, L. (1999). Incomplete contracts and complexity costs. *Theory and Decision, 46*, 23–50.

Anderlini, L., Felli, L., & Postlewaite, A. (2007). Courts of law and unforeseen contingencies. *Journal of Law Economics and Organization, 23*, 662–684.

Anderlini, L., Felli, L., & Postlewaite, A. (2013). Active Courts and Menu Contracts. In *Research Handbook on Economic Models of Law*, ed. by Baker, M., & Miceli, T., p. 13. Edward Elgar.

Aoki, K., & Lennerfors, T. T. (2013). The new, improved Keiretsu. *Harvard Business Review, 91*(9), 109–113.

Asanuma, B. (1989). Manufacturer-supplier relationships in Japan and the concept of relation-specific skill. *Journal of the Japanese and International Economies, 3*, 1–30.

Asanuma, B. (1992). Japanese manufacturer-supplier relationships in international perspective: the automobile case. In P. Sheard (Ed.), *International Adjustment and the Japanese Firm* (pp. 99–124). Allen & Unwin: St. Leonards, Australia.

Baker, G. P., & Gil, R. (2013). Clinical papers in organizational economics. In *The Handbook of Organizational Economics*, ed. by Gibbons, R. & Roberts, J., chap. 5, pp. 193–212. Princeton University Press, Princeton NJ.

Baker, G., Gibbons, R., & Murphy, K. J. (1994). Subjective performance measures in optimal incentive contracts. *Quarterly Journal of Economics, 109*(4), 1125–1156.

Battigalli, P., & Maggi, G. (2002). Rigidity, discretion, and the costs of writing contracts. *American Economic Review, 92*, 798–817.

Battigalli, P., & Maggi, G. (2008). Costly contracting in a long-term relationship. *Rand Journal of Economics, 39*, 352–377.

Ben-Shahar, O., & White, J. J. (2006). Boilerplate and Economic Power in Auto Manufacturing Contracts. *Michigan Law Review, 104*, 953–982.

Bernheim, B. D., & Whinston, M. D. (1998). Incomplete Contracts and Strategic Ambiguity. *American Economic Review, 88*, 902–932.

Bernstein, L., & Peterson, B. (2022). "Managerial Contracting: A Preliminary Study." mimeo.

Bloom, N., Lemos, R., Sadun, R., Scur, D., & Van Reenen, J. (2014). JEEA-FBBVA Lecture 2013: The New Eompirical Economics of Management. *Journal of the European Economic Association, 12*, 835–876.

Blume, A., & Board, O. (2013). Language Barriers. *Econometrica, 81*(2), 781–812.

Bolton, P., & Faure-Grimaud, A. (2010). Satisficing Contracts. *Review of Economic Studies, 77*, 937–971.

Bozovic, I., & Hadfield, G. K. (2016). Scaffolding: Using Formal Contracts to Build Informal Relations in Support of Innovation. *Wisconsin Law Review, 2016*(5), 981–1032.

Bull, J., & Watson, J. (2004). Evidence Disclosure and Verifiability. *Journal of Economic Theory, 118*, 1–31.

Dewatripont, M., & Tirole, J. (2005). Modes of Communication. *Journal of Political Economy, 113*, 1217–1238.

Dixit, A. K. (2004). *Lawlessness and Economics: Alternative Modes of Governance*. Princeton NJ: Princeton University Press.

Djankov, S., La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (2003). Courts. *Quarterly Journal of Economics, 118*(3), 453–517.

Dye, R. A. (1985). Costly Contract Contingencies. *International Economic Review, 26*, 233–250.
Frydlinger, D., & Hart, O. (2022). "Overcoming Contractual Incompleteness: The Role of Guiding Principles." mimeo.
Frydlinger, D., Hart, O., & Vitasek, K. (2019). "A New Approach to Contracts." *Harvard Business Review*.
Frydlinger, D., Vitasek, K., Bergman, J., & Cummins, T. (2021). *Contracting in the New Economy*. Springer International Publishing.
Gibbons, R., & Henderson, R. (2012). Relational Contracts and Organizational Capabilities. *Organization Science, 23*, 1350–1364.
Gilson, R. J., Sabel, C. F., & Scott, R. E. (2009). Contracting for Innovation: Vertical Disintegration and Interfirm Collaboration. *Columbia Law Review, 109*(3), 431–502.
Gilson, R. J., Sabel, C. F., & Scott, R. E. (2010). Braiding: The Interaction of Formal and Informal Contracting in Theory, Practice, and Doctrine. *Columbia Law Review, 110*(6), 1377–1447.
Giovannoni, F., & Xiong, S. (2019). Communication under Language Barriers. *Journal of Economic Theory, 180*, 274–303.
Goldberg, V. P. (2008). Lawyers Asleep at the Wheel? The GM-Fisher Body Contract. *Industrial and Corporate Change, 17*, 1071–1084.
Hart, O., & Moore, J. (2008). Contracts as Reference Points. *Quarterly Journal of Economics, 123*, 1–48.
Hermalin, B. E., Katz, A. W., & Craswell, R. (2007). "Contract Law." In *Handbook of Law and Economics*, ed. by Polinsky, A. M., & Shavell, S., vol. 1, chap. 1, pp. 3–138. North-Holland, Amsterdam.
Holmstrom, B. (1982). Moral Hazard in Teams. *Bell Journal of Economics, 13*, 324–340.
Holmström, B., & Roberts, J. (1998). The Boundaries of the Firm Revisited. *Journal of Economic Perspectives, 12*, 73–94.
Ishiguro, S. (2002). Endogenous Verifiability and Optimality in Agency. *Journal of Economic Theory, 105*, 518–530.
Itoh, H. (2011). "Writing Legally Unenforceable Contracts to Facilitate Relationships." mimeo.
Itoh, H., & Morita, H. (2015). Formal Contracts, Relational Contracts, and the Threat-Point Effect. *American Economic Journal: Microeconomics, 7*(3), 318–346.
Kinoshita, K. (2022). "Procurement Transactions and Contracts Between Japanese Finished Product Manufacturers and Its Suppliers Affected by the Architecture of Finished Product (in Japanese)," Ph.D. thesis, Graduate School of International Corporate Strategy (Business Law), Hitotsubashi University.
Klein, B. (1988). Vertical Integration as Organization Ownership: The Fisher Body-General Motors Relationship Revisited. *Journal of Law Economics and Organization, 4*, 199–213.
Klein, B., Crawford, R., & Alchian, A. (1978). Vertical Integration, Appropriable Rents, and the Competitive Contracting Process. *Journal of Law and Economics, 21*, 297–326.
Krasa, S., & Villamil, A. P. (2000). Optimal Contracts When Enforcement is a Decision Variable. *Econometrica, 68*, 119–134.
Kvaløy, O., & Olsen, T. E. (2009). Endogenous Verifiability and Relational Contracting. *American Economic Review, 99*(5), 2193–2208.
Liker, J., & Choi, T. Y. (2004). Building Deep Supplier Relationships. *Harvard Business Review, 12*, 104–113.
Llewellyn, K. N. (1931). What Price Contract?–An Essay in Perspective. *Yale Law Journal, 40*, 704–751.
Macaulay, S. (1963). Non-Contractual Relations in Business: A Preliminary Study. *American Sociological Review, 28*(1), 55–67.
Malcomson, J. M. (2013). "Relational Incentive Contracts," in *Handbook of Organizational Economics*, ed. by Gibbons, R. & Roberts, J., chap. 25, pp. 1014–1065. Princeton University Press.
Milgrom, P., & Roberts, J. (1997). "Johnson Controls, Inc.— Automotive Systems Group: The Georgetown, Kentucky Plants," Stanford Graduate School of Business Case No. BE-9.
Pearce, D. G., & Stacchetti, E. (1998). The Interaction of Implicit and Explicit Contracts in Repeated Agency. *Games and Economic Behavior, 23*, 75–96.
Ryall, M. D., & Sampson, R. C. (2009). Formal Contracts in the Presence of Relational Enforcement Mechanisms: Evidence from Technology Development Projects. *Management Science, 55*, 906–925.

Schmidt, K. M., & Schnitzer, M. (1995). The Interaction of Explicit and Implicit Contracts. *Economics Letters, 48*, 193–199.
Schwartz, A., & Watson, J. (2004). The Law and Economics of Costly Contracting. *Journal of Law Economics and Organization, 20*, 2–31.
Schwartz, A., & Watson, J. (2013). Conceptualizing Contractual Interpretation. *Journal of Legal Studies, 42*, 1–34.
Scur, D., Sadun, R., Van Reenen, J., Lemos, R., & Bloom, N. (2021). The World Management Survey at 18: Lessons and the Way Forward. *Oxford Review of Economic Policy, 37*(2), 231–258.
Shavell, S. (2006). On the Writing and the Interpretation of Contracts. *Journal of Law Economics and Organization, 22*, 289–314.
Sobel, J. (2006). For Better or Forever: Formal versus Informal Enforcement. *Journal of Labor Economics, 24*, 271–297.
Spier, K. E. (1992). Incomplete Contracts and Signalling. *Rand Journal of Economics, 23*(3), 432–443.
Tirole, J. (2007). "Bounded Rationality and Incomplete Contracts." mimeo.
Tirole, J. (2009). Cognition and Incomplete Contracts. *American Economic Review, 99*, 265–294.
Weber, L., Mayer, K. J., & Wu, R. (2009). "The Future of Interfirm Contract Research: Opportunities Based on Prior Research and Nontraditional Tools." In *Economic Institutions of Strategy*, ed. by Jackson, A. N., & Brian, S. S., vol. 26 of *Advances in Strategic Management*, pp. 123–145. Emerald Group Publishing Limited.
Williamson, O. E. (2005). The Economics of Governance. *American Economic Review Papers and Proceedings, 95*, 1–18.