Overcoming Contractual Incompleteness: The Role of Guiding Principles

by

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Abstract: We consider a buyer and seller who contract over a service. The contract encourages investment and provides a reference point for the transaction. In normal times the contract works well. But with some probability an abnormal state occurs and the service must be modified. The parties expect each other to behave "reasonably", but given self-serving biases their views of reasonableness may not coincide, leading to aggrievement and deadweight losses. The adoption by the parties of guiding principles such as loyalty and equity in their contract can help. We provide supporting evidence in the form of case studies and interviews.

Key words: incomplete contracts, guiding principles, self-serving biases, reference points, aggrievement, shading, loyalty, equity

JEL codes: D23, D86, K12

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1. Introduction

It is generally recognized that long-term contracts governing complex transactions will be incomplete, potentially causing both ex ante and ex post inefficiency. It is simply too hard for the parties to anticipate and incorporate all the contingencies that may occur. The Covid-19 pandemic is just the latest example of an uncontracted-for contingency (for most people). But is there anything that can be done about contractual incompleteness or must the parties just live with it?

The economics literature has explored two possible solutions. First, a large literature has suggested that (vertical) integration can improve matters[1]. However, integration has its own costs and does not eliminate incompleteness since labor contracts are also incomplete. A second approach argues that the inability to anticipate all future contingencies can be circumvented through the use of ingenious mechanisms. Maskin and Tirole (1999) is the seminal paper in this area. However, there is no sign that parties are adopting the Maskin-Tirole approach in practice, and experimental evidence suggests that people are reluctant to use such mechanisms[2].

In this paper we explore a third solution[3], which one of us (Frydlinger) has been involved in developing and implementing, and which a number of organizations, including the Canadian Government, Dell, FedEx, Intel, PwC, Accenture, and the Swedish telecommunications operator Telia, have adopted with good results[4]. In this approach the parties adopt a "formal relational contract" that emphasizes shared goals, structured communication by the parties, and the adoption of guiding principles that the parties will apply if and when an uncontracted event occurs.[5] Examples of guiding principles are equity, loyalty, and honesty. Guiding principles can in

[1] See, e.g., Williamson (1975), Klein et al. (1978), and Grossman and Hart (1986).
[2] Aghion et al. (2018) find that revelation games do not work well in the lab. See also Fehr et al. (2018).

[3] The solution is based on research carried out at the University of Tennessee. See Vitasek et al. (2013).
[4] See, for example, Vitasek (2016) regarding Dell, Vitasek and DiBenedetto (2018a) regarding Island Health and Hospitalists (Canadian Government), Vitasek et al. (2017) regarding Intel, and Vitasek and DiBenedetto (2018b) regarding Telia Company.

[5] The contract is referred to as a "formal relational contract", since it is a formal, enforceable contract whose purpose is to lay the foundation for and continuously support a relationship characterized by trust and reciprocity.

fact be thought of as a simple mechanism. However, unlike Maskin-Tirole type mechanisms they are based on norms that are familiar in most if not all societies.

In one of the deals where the parties used this approach, Vancouver Island Health Authority contracted with South Island Hospitalists, a group of doctors in British Columbia, to provide inpatient care for patients. Prior to 2016, Island Health Authority and the Hospitalists had a conventional contract. In 2010, the service delivery model changed– consistent with practices across Canada – whereby family practitioners no longer cared for their patients in hospitals. Hospitalist workloads soared, leading to fatigue, and many felt that they could not devote adequate time to patients to provide safe, high quality care.

The hospitalists were not happy with the way Island Health Authority handled the situation. Some hospitalists eventually responded by refusing to admit patients from the emergency room, which was a requirement to facilitate flow into the hospital. This led to a heavy strain on the relationship and the administration took counter-actions. There was a lot of inefficiency and bad feeling. After 2016 the parties switched to a formal relational contract, which included guiding principles, and this improved matters considerably. The parties also report that they have been able to meet the challenges posed by the Covid-19 pandemic, not least by relying on the guiding principles.

The goal of this paper is to develop a model that can explain why a formal relational contract works. The model is in the spirit of Hart and Moore's (2008) work on contracts as reference points. As in Hart and Moore, frictions arise if a party feels that an outcome is unfair or unreasonable. In such a situation a party becomes "aggrieved", which in turn leads to "shading" and deadweight losses: the aggrieved party punishes the other party by withholding cooperation[6]. An important role of a contract is to align parties' views about what is reasonable. However, whereas in Hart and Moore (2008) it is the specific provisions in the contract that align views, in the current paper communication processes and guiding principles play a central role in addition to the written contract.

Our model is very simple but richer than Hart and Moore's in that we allow a key variable, cost, to be verifiable. A buyer B purchases a service from a seller S. S's cost is verifiable, but S has an

[6] For some experimental support, see Fehr et al. (2011), (2015).

effort decision that affects cost (but not the buyer's value). Thus, to solve the moral hazard problem, it is efficient to make S bear the cost (both parties are risk neutral). However, such a contract leads to a conflict of interest if an uncontracted-for event occurs and the service needs to be modified. The buyer wants a modification that maximizes value while the seller wants a modification that minimizes cost. There is symmetric information throughout and so under standard assumptions the parties would renegotiate away their differences. However, under behavioral assumptions, if the parties disagree about what is a reasonable outcome, there will be aggrievement, shading, and deadweight losses[7].

We argue that the parties can reduce deadweight costs by adopting a formal relational contract, including guiding principles. We focus on one guiding principle, loyalty. By this we mean a principle that obliges each party to treat the other party's interest as having a comparable importance to their own[8]. We formalize this by supposing that through communication and discussion ex ante and ex post the parties can transform their payoffs so that each party puts weight λ on the other party's payoff, where $0 < \lambda < 1$[9]. However, communication and discussion are not costless. The higher λ is, the higher are the costs that must be incurred in discussion and communication.

We solve for the optimal contract under the loyalty principle. Since guiding principles help only in the uncontracted-for state, our analysis yields the plausible result that adopting guiding principles is worthwhile only if the uncontracted-for state is somewhat likely. To put it another way, in routine situations where uncontracted-for events are rare, a standard contract suffices.

We also show that guiding principles do not obviate the need for standard elements of a contract, such as a specification of quantity, quality and price. Rather, guiding principles and

[7] The model is similar to Bajari and Tadelis (2001), with the important difference that they rely on asymmetric information rather than behavioral elements to explain ex post inefficiency.

[8] Some might suggest that equity is a better word to describe this principle than loyalty. We use the word loyalty, not least because it is the term used in the formal relational contracting literature. We use equity to refer to something else. See Section 6.

[9] A similar formulation can be found in Hart and Zingales (2017) and Broccardo et al. (2020). For a discussion of how the adoption of social preferences can increase efficiency when parties cannot write fully contingent contracts, see Chassang and Zehnder (2016).

standard specifications are complements: used in combination they lead to a better outcome than either alone.

The deals referred to above, where organizations have adopted formal relational contracts, are, of course, much more complex than the simple model. In addition, those deals involve several other components than the guiding principle of loyalty. We believe, however, that our model captures an essential reason why the organizations have been able to reduce deadweight losses. We elaborate on these points in Section 5, where we report on some case studies and interviews.

It is useful to consider whether a "nonbehavioral" model could explain why guiding principles are effective. We think that this would be challenging. First, equity and loyalty do not have any centrality in standard models. It is true that, in a model where parties are reluctant to invest because of hold-up problems or where ex post inefficiencies arise from bargaining under asymmetric information, aligning parties' preferences can potentially reduce inefficiency. However, this leads to the second difficulty. Standard models, whether they are based on symmetric information or (ex post) asymmetric information, are subject to the mechanism design critique that incompleteness can be overcome if one allows a general class of contracts or mechanisms[10]. Thus it is hard to explain both why guiding principles are used and why revelation mechanisms are not. Models based on aggrievement and shading do not suffer from this problem[11].

One might ask whether guiding principles can be understood using repeated game models (see, e.g., Baker et al. (1994) or Malcomson (2013) in the contracting context). One of the guiding principles is reciprocity, which, of course, resonates with repeated game ideas. However, it is less clear why equity and loyalty matter in a repeated game model. Also we will see from the cases that uncontracted-for events often correspond to a major shock to a relationship, with the implication that the gains for opportunistic behavior by one party may far exceed any punishment that can be credibly imposed by a counter-party.

[10] For a further discussion, see Hart (2017). Contractual incompleteness could be the result of ex ante asymmetric information, as in, for example, Spier (1992) or Hartman-Glaser and Hebert (2020). In this case neither mechanisms nor guiding principles are likely to solve the problem.

[11] We should acknowledge that a question raised by our approach is why a mechanism could not become a guiding principle. We discuss this in Section 6.

The paper is organized as follows. In Section 2, we set up the model and describe the optimal contract under standard assumptions of rationality and self-interest. In Section 3 we explain why we do not think that the standard solution will work in practice, given the parties' behavioral biases. In Section 4 we analyze how adoption of a loyalty principle can help. In Section 5 we describe some interviews and case studies that provide some support for our analysis. In Section 6 we discuss the use of complementary principles, such as equity. Section 7 describes other work on norms and communication and Section 8 concludes. In an appendix we consider how things change if B purchases S's operations and turns S into an employee.

2. Model

We use a musical example. Buyer B is putting on a concert, seller S is providing the band. B and S contract at date 0 and the concert takes place at date 1. There is no discounting, and the parties are risk neutral and wealth unconstrained.

There are two states of the world, which we refer to as "normal" and "abnormal." The normal state N is contracted for and the abnormal state *A* is not. In state N,which occurs with probability $1-\pi$, the usual trumpeter, Eve, is available to play in the band. B's revenue $= v$ and S's cost $= c$. In state *A*, which occurs with probability π, Eve is unavailable because she has broken her finger. There are two alternative trumpeters, Adam and George. Since these are late replacements, it is reasonable to suppose that they are more expensive than Eve and of worse quality. Denoting incremental cost and value by $\Delta c, \Delta v$, respectively, we have:

	Cost relative to Eve	Value relative to Eve
Adam	$\Delta\, c_a > 0$	$\Delta\, v_a < 0$
George	$\Delta\, c_g > 0$	$\Delta\, v_g < 0$

After Eve has been replaced, B's revenue = $v + \Delta\, v_i$ and S's cost= c+$\Delta\, c_i$, where i= a or g.

The following numerical example is useful: Δv_a=−10, Δc_a=8, Δv_g=−14, $\Delta c_g = 6$.

Value and cost (v, Δv, $c, \Delta c$) are observable but only total cost (c in the normal state and $c + \Delta c$ in the abnormal state) is verifiable. The cost c depends on S's (nonverifiable) effort e,which has a personal cost equal to e. S's effort might represent time spent identifying and negotiating with appropriate musicians after the contract is signed and before the concert takes place: a high ex ante effort reduces ex post costs. We assume that $c(e)$ is decreasing in e and exhibits diminishing returns: $c' < 0,\ c'' > 0,\ c'(0) = -\infty,\ \lim_{e\to\infty} c'(e)$=0.

In contrast v, Δc, and Δv do not depend on e. As we shall see, this assumption implies that the hold-up problem is easily avoided in this model.

Note that without effort it would be efficient to transfer all the costs to *B*. There would then be no conflict at date 1 and the first-best would be achieved. For most of the paper we will focus on the case where, in order to solve the moral hazard problem, S is allocated all the costs. As we will see, S then chooses e efficiently, but there can be a conflict at date 1. However, in Appendix 2, we consider the case where B bears all the costs. There is then no conflict at date 1, but an inefficient choice of e[12].

We should highlight our assumption that, although final cost in the abnormal state $c + \Delta c$ is verifiable, the incremental cost Δc of hiring Adam or George rather than Eve is not. This is to rule out contracts of the form: S bears cost c, while B bears incremental cost Δc. One interpretation is that the final terms of Eve's contract have not yet been settled when she breaks her finger, and so the cost of having her (what S's cost would have been if it was not necessary to replace Eve) can never be established. A similar assumption is made by Bajari and Tadelis (2001).

Later in the paper we will introduce some further ("shading") actions that B and S can engage in, which will affect costs and benefits. Since these actions play no role under the classical assumptions of this section, we postpone discussion of them.

[12] It would be easy to generalize the analysis to the case where value *v* is verifiable but there is moral hazard on the buyer's side.

We suppose that it is still worth going ahead with the concert in the abnormal state: $v - c(0) + Max(\Delta v_a - \Delta c_a,\ \Delta v_g - \Delta c_g) > 0$.

Figure 1 provides a time-line.

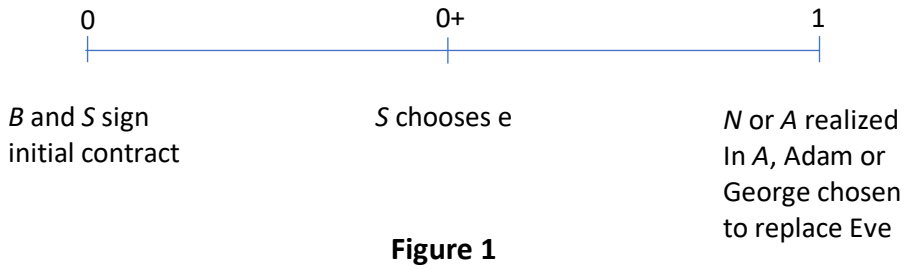

Figure 1

Without loss of generality assume that George is cheaper than Adam: $\Delta c_g < \Delta c_a$. The interesting case is where there is an ex post conflict of interest, given that *S* bears all the costs: $\Delta v_g < \Delta v_a$.

To simplify the exposition, we will confine our attention throughout to the case where Adam is more efficient than George, $\Delta v_a - \Delta c_a > \Delta v_g - \Delta c_g$. The analysis where George is more efficient than Adam is very similar (although less interesting).

Assume $(*)$: $\Delta v_a - \Delta c_a > \Delta v_g - \Delta c_g$.

Note that $(*)$ is satisfied in our numerical example.

<u>The first-best</u>

A social planner chooses Eve's replacement in state A in an efficient manner, that is, she selects Adam; and chooses e to maximize expected (net) surplus. Expected surplus is given by

(2.1) $v - c(e) - e + \pi(\Delta v_a - \Delta c_a)$.

The planner maximizes (2.1) with respect to e. The first-order condition is

(2.2) $c'(e) = -1$.

Denote the solution by e_{FB}. Note that since the abnormal state affects value and cost independently of e, the probability π of the abnormal state does not affect the first-best effort level.

Substituting e_{FB} in (2.1), we can write the first-best level of surplus as

(2.3) $v - c(e_{FB}) - e_{FB} + \pi(\Delta v_a - \Delta c_a)$.

A simple contract that achieves the first-best under classical assumptions

In what follows we will suppose that state A cannot be contracted on: Eve's unavailability is only one of many things that can go wrong[13]. We will also assume that choosing Eve's replacement qualifies as a "residual control right" in the sense of Grossman and Hart (1986), and that S has this right (B and S are separate entities). In Appendix 2 we consider the case where B purchases S's operations, acquiring residual control rights.

In spite of the fact that the parties cannot contract on state A, there is a simple way to achieve the first-best under "classical" assumptions that the parties are self-interested and rational: write an incomplete contract and renegotiate if state A occurs.

Proposition 1. Under classical assumptions, a contract that specifies the price of band services, and that S will bear all the costs, and that permits renegotiation ex post, achieves the first-best.

Proof: Let B and S agree on a price p for the band and that S will bear all of the costs, $c(e)$ in state N and $c(e) + \Delta c$ in state A (which recall are verifiable). In state N everything proceeds smoothly: Eve plays in the band and B pays p. The payoffs are given by:

(2.4) B's payoff in state $N = v - p$, S's payoff in state $N = p - c(e) - e$.

In state A, S must replace Eve. S's incentive is to choose George since he is cheaper. However, since Adam is more efficient than George, the parties will renegotiate (there is symmetric

[13] We do not model why state A cannot be contracted on. For analyses of this, see, e.g., Anderlini and Felli (1994), Bolton and Faure-Grimaud (2010), and Tirole (2009).

information and so renegotiation is costless). Assume (without loss of generality) that the parties have equal bargaining power. Then in state A, the payoffs are given by:

(2.5) B's payoff in state $\mathrm{A} = v - p + \Delta v_g + \frac{1}{2}\left(\Delta v_a - \Delta c_a - (\Delta v_g - \Delta c_g)\right)$,

(2.6) S's payoff in state $A = p - c(e) - e - \Delta c_g + \frac{1}{2}\left(\Delta v_a - \Delta c_a - (\Delta v_g - \Delta c_g)\right)$.

S's expected payoff is therefore

(2.7) $p - c(e) - e + \pi\left[-\Delta c_g + \frac{1}{2}\left(\Delta v_a - \Delta c_a - \Delta v_g + \Delta c_g\right)\right]$.

Under rational expectations, S will choose e to maximize (2.7), which yields the first-order condition

(2.8) $c'(e) = -1$.

The first-best is achieved. Q.E.D.

Throughout the paper we will assume that there is a competitive market for sellers at date 0. The price p will therefore be chosen so that the expected return for a seller equals her reservation utility, $\overline{U}$.

3. Why we think that the classical contracting solution will not work in practice

In this section we explain why the simple contract of Section 2 is unlikely to work in practice. In our view a key factor is that the parties may disagree about what is a fair or reasonable outcome in the abnormal state. We think that this is likely to be a problem given that the abnormal state is a *bad* state, in the sense that Eve's breaking her finger leads to lower surplus whoever replaces her. Note that our position is slightly different from Hart and Moore (2008), who suppose that disagreement is a problem even in a good state[14].

To be specific, we suppose that each party has a reference payoff based on the probability distribution of payoffs under the contract (as in Kőszegi and Rabin (2006)). When a party is

[14] For a discussion of the idea, and some supporting evidence, that disagreement can be more serious in a bad state, see Lando (2019).

below his reference payoff, he becomes sensitive to the actions of the other party, expecting the other party to behave "fairly", and being disappointed or aggrieved if this does not happen. Aggrievement will lead to the withdrawal of (noncontractible) cooperation, or "shading" in the language of Hart and Moore (2008), with consequent deadweight losses.

In our context, examples of shading might be B not providing beer for the band members during the interval, not cleaning or heating the changing room adequately, or being slow to pay; or S refusing to play an encore, being rude to customers, or turning up late[15]. We will suppose that such shading actions always exist.

Since A is an unusual state (we think of the case where π is low), the parties' reference payoffs will be weighted toward their payoffs in the normal state N. To simplify we suppose in the body of the paper that the parties' reference payoffs *equal* their ex post payoffs in state N.[16]

We should emphasize that we suppose that the event "Eve breaks her finger" is exogenous and not something that either party could have controlled or prepared for. (In this sense, it is like the Covid-19 pandemic.) Thus, we take the view that neither party will blame the other for the fact that A has occurred. For this reason a party does not feel aggrieved about the fact that the abnormal state has occurred per se. Rather, because the party is below his (or her) reference payoff, he expects the other party to behave in a fair manner and will shade if he feels that the other party does not.

Our basic position is that absent communication and the adoption of guiding principles at date 0 the parties may have different views of what is fair. In fact we suppose that a party below his reference point has an extreme self-serving bias (as in Hart and Moore (2008)): he feels entitled to the best outcome under the existing contract as long as that does not put him above his reference payoff. In Section 4 we will discuss how communication can be used to align the parties' preferences.

As in Hart and Moore (2008), we suppose that a party who feels entitled to a payoff s but receives a payoff $s' < s$, will be aggrieved by $s - s'$ and will retaliate by shading on performance in such a way that the other party's payoff falls by $\theta(s - s')$, where $0 < \theta < 1$ is an exogenous

[15] Although some of these actions could in principle be contracted on, at least ex post, in practice they are often discretionary.

[16] In Appendix 1 we consider the case where reference payoffs equal *expected* payoffs.

parameter. The party doing the shading neither gains nor loses from shading: the only effect is on the party who is the recipient of the shading. Shading is noncontractible.

Note that, since $0 < \theta < 1,$ it never pays one party to hand over money to the other party to reduce shading: a transfer of t reduces shading by θt but costs t> θt.

In what follows the contract will continue to provide S with first-best effort incentives and so we will set $e = e_{FB}$ and write $c(e_{FB}) = c$.

Since parties' reference payoffs equal their payoffs in state *N*,

(3.1) B's reference payoff $= \ v - p$, S's reference payoff $= \ p - c$.

If renegotiation proceeds as in Section 2, we know from (2.5) that

(3.2) B's payoff in state A $= v - p + \Delta v_g + \frac{1}{2}\big(\Delta v_a - \Delta c_a - (\Delta v_g - \Delta c_g)\big)$= $v - p +$ $\frac{1}{2}\big((\Delta v_a - \Delta c_a) + (\Delta v_g + \Delta c_g)\big)$,

and so B is below his reference payoff by

(3.3) $-\frac{1}{2}\big(\Delta v_g + (\Delta c_g - \Delta c_a) + \Delta v_a\big)$,

a positive amount since $\Delta v_g < 0, \Delta v_a < 0, \Delta c_g < \Delta c_a$. S may be below or above her reference payoff after renegotiation depending on the parameters.

In our numerical example, Δv_a=−10, Δc_a=8, Δv_g=$-14, \Delta c_g = 6$, B is below his reference payoff by 13.

Since B is below his reference payoff, he will feel that S should have chosen Adam in the first place to help him out. This would have put B $-\Delta v_a$ below his reference payoff. Thus, B will be aggrieved by $\frac{1}{2}\big(\Delta v_a - \Delta v_g + \Delta c_a - \Delta c_g\big)$, the difference between the loss he bears and the loss that he thinks he should have borne, and will shade by $\frac{1}{2}\theta\big(\Delta v_a - \Delta v_g + \Delta c_a - \Delta c_g\big)$.

In our numerical example, if S had chosen Adam directly, B would have been 10 below his reference payoff. Hence he is aggrieved by 3 and shades by 3θ[17].

But the situation may be worse than this. B may regard S's threat to hire George unless B agrees to renegotiate as coercive, particularly if S asks for more than the incremental cost of choosing Adam rather than George, that is, anything above $\Delta c_a - \Delta c_g$[18]. B may then refuse to renegotiate out of principle, leaving the outcome as George. In this case the deadweight loss includes the inefficiency from choosing George on top of shading costs.

In the rest of this section, we suppose that B *is* prepared to make the minimum payment $\Delta c_a - \Delta c_g$ necessary to persuade S to choose Adam rather than George, but no more. However, he will be aggrieved that he has to make this payment since he feels entitled to Adam with no payment, and will shade by $\theta(\Delta c_a - \Delta c_g)$. In our numerical example, B is aggrieved by 2 and shades by 2θ.

There is one small lacuna that needs to be dealt with. The above discussion implicitly assumes that

(**) $\Delta c_a - \Delta c_g > \theta(\Delta v_a - \Delta v_g)$.

(**) ensures that, absent a payment from B, S w*ill* choose George rather than Adam: the cost reduction from doing so exceeds the shading cost B would impose. We assume (**) in the rest of the paper.

To sum up, given the above assumptions, we may conclude that in state A the efficient outcome Adam will occur but B will have to pay $(\Delta c_a - \Delta c_g)$ to S , and will be aggrieved and will shade by $\theta(\Delta c_a - \Delta c_g)$.

We can now compute the parties' expected payoffs.

[17] At this stage, we rule out the possibility that parties feel entitled to price changes to make up for their losses; for example, S (resp., B)might feel entitled to a price increase (resp., price decrease) because her cost (resp., his value) has risen (resp., fallen) as a result of Eve's breaking her finger. But see Section 6.

[18] For evidence that price changes that do not reflect cost changes elicit disapproval, see Kahneman et al. (1986).

(3.4) B's expected payoff $= v - p + \pi(\Delta v_a - (\Delta c_a - \Delta c_g))$,

(3.5) S's expected payoff $= p - c(e) - e - \pi \Delta c_g - \pi\, \theta(\Delta c_a - \Delta c_g)$.

Since S maximizes (3.5), we can confirm that S will choose $e = e_{FB}$.

The price p adjusts so that S's expected payoff equals $\overline{U}$.

Finally, expected shading costs or deadweight losses are given by

(3.6) $L = \pi\theta(\Delta c_a - \Delta c_g)$[19].

In other words, contrary to the classical approach, the first-best is not achieved.

In Appendix 1, we extend the analysis to the case where each party's reference payoff is given by his or her *expected* payoff (as in Kőszegi and Rabin (2006))[20]. We show that qualitatively things do not change. Indeed for small π they do not change at all.

4. How communication concerning the adoption and application of guiding principles can help

In this section we suggest that B and S can improve matters by writing a contract that not only specifies the service and price but also includes a number of guiding principles that the parties commit to apply in case of uncontracted-for states. For simplicity, in this section, we will focus on one such principle, a principle of loyalty. In our general discussion in Section 6, however, we will consider also the role of other principles.

By a principle of loyalty, we mean a principle that obliges each party to treat the other party's interest as having a comparable importance to their own. Applying this principle could mean that a party should refrain from taking an action that costs the other party more than it

[19] As in Hart and Moore (2008), we suppose that the date 0 division of surplus is regarded as fair since it is determined in a competitive market, and so there is no aggrievement or shading at date 0.

[20] Of course, a critical question is why each party's reference payoff in state A does not equal his payoff in state A. In this case there would be no aggrievement or shading and the first-best would be achieved. It is a basic assumption of our analysis that a perfect state-contingent adjustment of reference points is (psychologically) infeasible.

benefits the first party. It could also mean that a party should bear a risk if that party is in the best position to avoid or mitigate it.

The loyalty principle, as we use this term, is a widely shared social norm[21], which can be 'activated'[22] to alter the parties' payoff preferences. Activation requires communication ex ante while use in case of uncontracted-for events requires communication ex post. Ex ante the parties can enter into discussions about what the principle means, how it applies in different private and professional situations, and whether using the principle would be beneficial for B and S in their relationship. Once the principle is 'activated', it can be incorporated into the formal contract as well.[23] Ex post, if an unanticipated event occurs, the parties can refer to the contract and re-activate the guiding principles to deal with the situation. We provide further details in Section 5 about the process parties use to adopt and apply guiding principles.

Assume that B and S agree on band services and price as before; but they also adopt the principle of loyalty (as defined above). What would happen if Eve breaks her finger and George and Adam are the available alternatives?

The loyalty principle asks each party to treat the other party's interest as having a comparable importance to their own. We formalize this is by supposing that each party's payoff becomes their own private payoff plus λ times the other party's payoff, where $0 < \lambda < 1$[24]. Note that under these conditions S will not be prepared to reduce the price since she prefers a dollar in her pocket to a dollar in B's, and for the same reason B will not agree to a price increase.

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[21] As an example, assume Alan wants to find a new job, closer to home. Having found an interesting job ad, he realizes that his friend Michele has also applied for this job. Michele is currently unemployed, and the job is very attractive to her. Alan has a job and just wants to work closer to home. The moral conflict that Alan (probably) will find himself in is due to the social norm of loyalty: as Michele's friend he has an obligation to take her interests into consideration and since it benefits Michele more to get the job than it costs Alan to not get it, Alan should, according to this principle, not apply.

This is an example of how the loyalty norm applies between friends, but, to a larger or smaller extent, the norm also applies in commercial contexts. It is also a legal norm, underlying for example the rule in many jurisdictions that employees have a loyalty obligation toward their employers.

[22] By "activating", we mean a process where the buyer and the seller are made aware of the principle and start to feel obliged to follow the norm toward one another. In many commercial contexts, social norms such as loyalty only have a weak presence, even though they are often present to some extent. To activate a social norm in a situation can be said to be the same as increasing its presence.

[23] We discuss enforceability below.

[24] In some contexts one could imagine λ>1. This could be the case if one party has agreed to be a fiduciary or trustee of another party. In the contracting context, this case seems less relevant.

Consistent with this, we maintain our assumption that neither party expects or feels entitled to a price change.

With each party putting weight λ on the other party's payoff,

(4.1) B's payoff in state $A = v + \Delta v - p + \lambda(p - c - \Delta c)$,

(4.2) S's payoff in state $A = p - c - e - \Delta c + \lambda(v + \Delta v - p)$.

As we have emphasized, adopting the loyalty principle is not costless. Extensive communication and discussion about what the principle means, how it will be applied, and how it will benefit the parties is required ex ante. We formalize this by supposing that achieving the weight λ costs an amount (in time and energy) at date 0 equal to $g(\lambda)$ where $g(0) = 0,\ g' \geq 0,\ g'' > 0,$ $\lim_{\lambda \to 1} g\ (\lambda) = \infty$. The assumption that $\lim_{\lambda \to 1} g\ (\lambda) = \infty$ captures the idea that it is prohibitively costly to make a party fully internalize another party's preferences. For simplicity, assume that the communication cost is borne entirely by B.

Note that the results of this section do not depend in an important way on the assumption that λ can be smoothly varied. An alternative formulation would be that there is a single value of the loyalty parameter λ and a fixed cost of implementing this, in terms of discussion and communication. The main parts of Propositions 2 and 3 will still hold under these conditions.

The timing is as follows. The parties meet and decide on their contract, which, among other things, specifies a (contractible) level of communication and discussion that will take place after the contract is signed; in effect they agree contractually on the level of λ[25]. Importantly, we suppose that loyalty preferences are not activated until after communication takes place. This assumption implies that each party evaluates the contract according to their pre-loyalty preferences. It is worth emphasizing this point. If we assumed that loyalty affected preferences before the contract was signed, then loyalty would increase the total surplus available even if

[25] The assumption that λ is contractible is strong but simplifies matters. It would be interesting to generalize the analysis to the case where one or both parties can choose not to communicate at the agreed-on level. We are grateful to Klaus Schmidt for suggesting this. See also footnote 28 on enforceability.

actions stayed the same. In contrast, in our formulation, loyalty affects surplus only because it changes behavior[26].

As we have emphasized above, in practice, aligning preferences is also likely to require communication (and the incurring of communication costs) ex post at date 1. For simplicity, we ignore this.

We will continue to suppose that reference payoffs equal payoffs in the normal state. Note that a similar argument to that in Appendix 1 shows that for small π nothing changes if we suppose instead that reference payoffs equal expected payoffs.

Consider state A. Whatever happens, B will be below his reference payoff. S's inclination previously was to choose George, while B wanted Adam. Now, however, with the payoff in (4.2), S will choose Adam directly as long as

(4.3) $\lambda\Delta v_a - \Delta c_a > \lambda\Delta v_g - \Delta\, c_g$,

that is,

(4.4) $\lambda > (\Delta c_a - \Delta\, c_g)/\left(\Delta v_a - \Delta v_g\right)$.

Under these conditions, renegotiation will not be required and there will be no aggrievement by B. On the other hand, if (4.4) is not satisfied, renegotiation will take place. B will have to pay S an amount m to make S indifferent between Adam and George: $\lambda(\Delta v_a - m) - (\Delta c_a - m) = \lambda\Delta v_g - \Delta\, c_g$, that is, $m = (\lambda\Delta v_g - \Delta\, c_g - (\lambda\Delta v_a - \Delta c_a))/(1-\lambda)$. Since B puts weight λ on S's payoff, paying m to S causes B to be aggrieved by $m(1-\lambda) = (\lambda\Delta v_g - \Delta\, c_g - (\lambda\Delta v_a - \Delta c_a))$ and B will shade by $\theta(\lambda\Delta v_g - \Delta\, c_g - (\lambda\Delta v_a - \Delta c_a))$.

It is worth rehearsing what the effect of loyalty is on aggrievement and shading. First, for high λ S picks Adam and shading is zero. Second, even if S is inclined to pick George the amount B needs to pay S to switch to Adam goes down, given that S puts some weight on $B's$ preferences. Finally, every dollar that B pays causes less aggrievement than before since B puts some weight on S's payoff.

[26] This assumption is similar to one made in Hart and Zingales (2017) and Broccardo et al. (2020).

We can combine the cases where (4.4) does and does not hold: In state A, B pays S

(4.5) $m = (\frac{1}{1-\lambda})Max\big(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0\big)$,

and shading equals

(4.6) $\theta\, Max(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0)$.

Expected shading costs or deadweight losses are given by

(4.7) $L = \pi\theta Max\big(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0\big)$.

It is easy to see that L is decreasing in λ and that, when $\lambda = 0$, $L=\pi\theta(\Delta c_a - \Delta c_g)$, as in Section 3.

Let us compute ex ante payoffs. As we have noted, each party evaluates the contract according to their pre-loyalty preferences. Thus, if B anticipates paying m to S at date 1, this gets full weight rather than weight $(1 - \lambda)$, and similarly for S. Hence

(4.8) B's expected payoff= $v - p + \pi\ (\Delta v_a - (\frac{1}{1-\lambda})[Max\big(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0\big)]) - g(\lambda)$,

and

(4.9) S's expected payoff= $p - c(e) - e - \pi(\Delta c_a - (\frac{1}{1-\lambda})[Max\big(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0\big)])$

$$- \pi\theta\big[Max\big(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0\big)\big],$$

from which we can confirm that S chooses $e = e_{FB}$. In a competitive market for sellers, p will adjust so that the right-hand side of (4.19) equals $\overline{U}$. B's expected payoff therefore equals

(4.10) $v - c(e_{FB}) - e_{FB} + \pi\ (\Delta v_a - \Delta c_a) - L - g(\lambda) - \overline{U}$.

So far we have taken λ to be exogenous. Since λ is contractible, in an optimal contract it will be chosen efficiently to minimize $L + g(\lambda)$, the sum of deadweight losses and communication costs. Thus, λ will be chosen to minimize

(4.11) $g(\lambda) + \pi\theta\, Max\big(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0\big)$.

Since Max $(\lambda\Delta v_g - \Delta c_g - (\lambda\Delta v_a - \Delta c_a), 0)$ is decreasing in λ, it follows from a standard revealed preference argument that the optimal value of λ is increasing in π . Also the optimal value of λ converges to zero as π converges to zero.

The first-order condition for (4.11) is

(4.12) $g'(\lambda) = \pi\,\theta\big(\Delta v_a - \Delta v_g\big)\; if\; 0 < \lambda < (\Delta c_a - \Delta\, c_g)/\big(\Delta v_a - \Delta v_g\big)$,

(4.13) $g'(\lambda) \geq \pi\,\theta\big(\Delta v_a - \Delta v_g\big)$ if $\lambda = 0$, $g'(\lambda) < \pi\,\theta\big(\Delta v_a - \Delta v_g\big)$ if $\lambda = (\Delta c_a - \Delta\, c_g)/\big(\Delta v_a - \Delta v_g\big)$.

It follows from (4.13) that, if we replace $g(\lambda)$ by $\alpha g(\lambda)$, where $\alpha > 0$ is sufficiently small , then the optimal value of λ >0. Proposition 2 sums up our results.

Proposition 2. The optimal value of λ is increasing in π and $\lambda \to 0$ as $\pi \to 0$. If we replace $g(\lambda)$ by $\alpha g(\lambda)$, where $\alpha > 0$, then, for sufficiently small α, the optimal value of λ >0.

Proposition 2 tells us that communication will be small if the abnormal state is unlikely. To put it another way, in routine situations where unexpected events are rare, a standard contract may suffice. Proposition 2 also tells us that $\lambda > 0$ if communication costs are small relative to the magnitude of the transaction .(Note that multiplying $g(\lambda)$ by α is equivalent to multiplying values and costs by $\frac{1}{\alpha}$.)

(4.12) sheds light on how conflicts of interest affect λ. Suppose that $\Delta v_a - \Delta v_g$ increases, that is, conflicts of interest about quality increase. Then the right-hand side of (4.12) rises, which suggests that λ will rise. However, it is also possible that we are at a corner solution: $\lambda = (\Delta c_a - \Delta\, c_g)/\big(\Delta v_a - \Delta v_g\big)$. In this case λ will fall. The intuition is that an increase in the amount by which B favors Adam makes it more likely that S will choose Adam for a given λ. Thus, it may be possible to reduce λ.

One caveat should be noted. We have derived Proposition 2 for the case where reference payoffs are payoffs in the normal state. If reference payoffs are expected payoffs, then λ is increasing in π only in a range. Once π becomes very high, the abnormal state becomes (approximately) the reference point and communication is not needed (see Appendix 1).

So far we have argued that communication can be a valuable supplement to a contract. An important question to ask is, would it ever make sense to rely on communication and loyalty alone and dispense with a contract altogether?

It is not completely obvious how to analyze the no contract case since we have assumed that reference points and payoffs are determined through the contract. One approach is to follow Hart and Moore (2008), and assume that absent a contract each party feels entitled to 100% of the ex post surplus from the transaction. Note that the loyalty principle will not change this since each party prefers a dollar in their pocket to a dollar in the other party's pocket, although other principles, such as equity, which we discuss in Section 6, could be important.

In the absence of a contract the parties will bargain over the gains from trade: $v - c$ in the normal state and $v - c + \Delta v_a - \Delta c_a$ in the abnormal state. If the parties have equal bargaining power ex post, they will compromise on a 50:50 split[27]. It follows that each party will be aggrieved by the half of the gains they do not get times (1−λ) and so will shade by θ times this amount. In the normal state this means that the deadweight losses from shading will be $\theta(1 - \lambda)\ (v - c)$, where c depends on S's choice of effort; and in the abnormal state they will be $\theta(1 - \lambda)(v - c + (\Delta v_a - \Delta c_a))$. Hence deadweight losses are given by

(4.14) $$L_{NC} = (1 - \pi)(1 - \lambda)\ \theta(v - c) + \pi(1 - \lambda)\ \theta(v - c + (\Delta v_a - \Delta c_a))$$

$$= \theta(1 - \lambda)[(\mathrm{v} - \mathrm{c}) + \pi\ \ (\Delta v_a - \Delta c_a)].$$

Modifying (2.14), we can see that S will choose her effort to maximize:

(4.15) $$\left(\frac{1}{2}v - \frac{1}{2}\ c(e)\right)(1 + \lambda - \theta(1 - \lambda)) + \frac{1}{2}\ \pi(1 + \lambda - \theta(1 - \lambda))\ (\Delta v_a - \Delta c_a) - e,$$

yielding

(4.16) $$\frac{1}{2}(1 + \lambda - \theta(1 - \lambda))c'(e) = -1.$$

[27] Experiments by Ellingsen and Johannesson (2004) suggest that a fair-minded B might be willing to grant S more than 50% of the ex post surplus to compensate S for her effort investment. In our setting this effect is likely to be mitigated since B does not observe S's effort.

Obviously, compared to the case where loyalty is combined with a contract, we have under-investment. But more than this, shading costs are greater for any level of e . To see this, compare the deadweight losses without a contract, L_{NC}, given by (4.14), with the deadweight losses with a contract, L_C, given by (4.7).

Lemma. Fix $\lambda < 1$ and e. Assume $v + \Delta v_g > c(0) + \Delta c_a$. Then $L_{NC} > L_C$.

Proof:

Let $S_{NC} = \frac{L_{NC}}{\theta}$, and $S_C = \frac{L_C}{\theta}$. It suffices to show that $S_{NC} > S_C$.

From (4.14),

$$(4.17) \quad S_{NC} = (1-\lambda)[(v - \mathrm{c}) + \pi\ (\Delta v_a - \Delta c_a)],$$

which is greater than

$$(4.18) \qquad (1-\lambda)\pi\ [(v - \mathrm{c}) +\ (\Delta v_a - \Delta c_a)].$$

Also, from (4.7),

$$(4.19) \quad S_C = \pi Max(\lambda \Delta v_g - \Delta c_g - (\ \lambda \Delta v_a -\ \Delta c_a), 0).$$

Hence, since the expression in (4.18) is positive, it suffices to show (dividing by π) that

$$(4.20) \quad (1-\lambda)\ [(v - \mathrm{c}) + (\Delta v_a - \Delta c_a\ )] >\ \lambda \Delta v_g - \Delta c_g - (\ \lambda \Delta v_a -\ \Delta c_a).$$

But we have assumed $v + \Delta v_g > c(0) + \Delta c_a \geq$ c+Δc_a. From this it follows that

$$(4.21) \quad v + \Delta v_a - \mathrm{c} - \Delta c_a > \Delta c_a - \Delta c_g.$$

But it can easily be seen that this implies (4.20).

Q.E.D.

Note that to prove the result we need an extra assumption, borrowed from Hart and Moore (2008, Section 4), that the value-cost intervals for Adam and George in the abnormal state overlap: $v + \Delta v_g > c + \Delta c_a$.

The intuition behind the lemma is that in the abnormal state, in the absence of a contract, the parties argue about the total surplus $v - c + (\Delta v_a - \Delta c_a)$, while in the presence of a contract they argue about the cost difference $\Delta c_a - \Delta c_g$, which is lower. The proof of the lemma is "brute-force" since it compares shading with and without a contract in the abnormal state. Given that, with a contract, shading is less in the normal state (it is zero), and effort is higher, there will be many situations where $v + \Delta v_g < c(0) + \Delta c_a$, and yet the conclusion of the lemma still holds.

The lemma implies the following. Start with a situation where there is no contract and let λ be optimal for this situation. Replace this with an optimal contract but keep λ fixed. Then e rises to the first-best level and deadweight losses fall by the lemma (note that L_C is independent of e). Now choose the optimal λ for the new situation. This can only improve matters. The conclusion is that a contract plus loyalty dominates loyalty alone. We state this as Proposition 3.

Proposition 3. The combination of a contract and an optimal choice of λ yields a strictly higher level of net surplus than the combination of no contract and an optimal choice of λ.

A natural question to ask is whether it is important for the parties to include the loyalty principle (or any other guiding principles) in a formal contract. Would it not be enough to make them part of an informal agreement? While we believe that informal agreements about guiding principles can be helpful, we want to emphasize the importance of formalization. The signing of a contract has significant symbolic meaning. Formalization is also useful in the eventuality that the people who negotiated the original deal are no longer the ones overseeing it ("the new sheriff in town"). Finally, even though it may be challenging to litigate over the breach of a guiding principle, we believe that the parties are more likely to abide by a guiding principle if it is formalized.[28]

[28] Although the answer to whether guiding principles can be enforced will vary between jurisdictions, we believe that in general they can be. The contract laws of most jurisdictions include some version of a "good faith" doctrine, which courts can and do apply when interpreting contracts, sometimes by including implied terms. An analysis of the more specific meaning of the term "good faith" shows that the term actually refers to a number of different norms, such as loyalty, honesty and autonomy. From this perspective, the adoption of guiding principles in the formal relational contract can be viewed as a way for the parties to specify in more detail what they mean by good faith. Note that in the context of our model it is not necessary that the courts can verify a particular value of λ but only that they can establish whether communication and discussions occurred in the agreed-upon manner and if they did not who was responsible. In practice, it is likely that the courts would (with the specific method depending on the

5. Connecting the model to commercial deals

The concert example, which forms the center-piece of our paper, is quite special in the sense that the deal has low complexity and (realistically) a relatively low likelihood of an abnormal state. Further, the deadweight losses in the model – shading behavior by not providing beer during the interval, not cleaning or heating the changing rooms, refusing to play an encore, being rude to customers, or turning up late, and so on– are rather innocuous. Finally, the model describes a one-shot situation, whereas the outsourcing and supply chain deals that we are really interested in are multi-shot.

In this section we argue that the deadweight losses can be much larger in complex commercial settings such as outsourcing or supply chain deals, where the probability of an abnormal state occurring at some point is quite high and shading can be more serious [29].

jurisdiction), (i) establish, based on the guiding principles, what rights and obligations the parties have in the particular situation, (ii) attempt to obtain some information (depending on who has the burden of proof) about the relative benefits and costs of Adam and George, and (iii) make a reasonable judgement about whether the loss allocation was consistent with the obligations established under (i). However, to understand how the courts can carry out tasks (ii) and (iii), we would have to relax our assumption that relative benefits and costs are unverifiable.

It should be noted that the good faith doctrine also has found its way into jurisdictions where it traditionally has been viewed as being absent, such as the UK and Canada. A notable example is a number of decisions by the High Court of England, which now has said that while a *general* duty of good faith does not exist under the laws of England, such a duty does exist in contracts that can be referred to as "relational contracts" (see not least *Alan Bates and Others vs. Post Office Limited, 16 December 2019*). While a contract can be viewed as a relational contract even though it has not been the parties' explicit intention to form such contract, there can be little doubt that *if* the parties intend to form such a contract, the courts will now have to treat it as one. We know of no example of a contract where the parties have used the approach described in this paper that has been subject to a court decision. Nevertheless, based on the above, we view it as likely that the courts in most jurisdictions would be able to enforce such a contract, including the guiding principles used.

[29] In Appendix 1, we consider the case where reference payoffs are given by expected payoffs. Under these conditions, if the probability of an abnormal state is close to 1, aggrievement and shading are low because the abnormal state becomes the new reference point. However, this conclusion is obtained under the assumption that payoffs in the abnormal state are always the same. The conclusion will not hold if there is uncertainty about payoffs in the abnormal state, which is very likely to be the case.

Before doing so, we should point out that our notion of shading is quite narrow and variants may be important in reality. A party who feels badly treated by his counter-party may cut back on noncontractible cooperation not just to punish the other party, but to recover some of his lost profit ("shirking"). In other situations, one party may spend time and resources to placate the other party in order to forestall shading, or a party who is aggrieved and cannot shade may have to "eat" the aggrievement.

In applying the model to the real world, we will therefore interpret deadweight losses broadly.

As mentioned in the introduction, there are companies and organizations that have implemented the formal relational contracting model, which includes the adoption of guiding principles such as loyalty and equity, in order to overcome contractual frictions.[30] Below we report on three case studies and two other deals about how the formal relational contracting approach has worked. But first we describe the approach in more detail.

Organizations adopting the approach use a structured step-by-step process entering into commercial relationships, in which the parties sit in face-to-face meetings[31] and jointly create their deal and contract one step at a time. The process starts by the parties adopting a shared vision for their relationship. Both parties must make a conscious effort to create an environment of trust—one in which they are transparent about their high-level aspirations, specific goals, and concerns. The parties also commit to six guiding principles: loyalty, equity, honesty, integrity, autonomy, and reciprocity[32]. (For modelling reasons we have focused on loyalty in our analysis, but we discuss the equity principle in Section 6.)

The guiding principles serve many functions. They will steer the parties throughout the rest of the process, they provide a framework for resolving potential misalignments when uncontracted-for circumstances occur, and they help the parties when changes to the contract are needed. The parties further break down their shared vision into more concrete strategic goals or desired outcomes, and detailed objectives. Having set the foundation for the relationship in the first steps, the parties hammer out the terms of the deal—for example,

[30] See Vitasek at al. (2013).
[31] During the Covid-19 pandemic, these meetings have been held digitally, via tools such as Zoom or Microsoft Teams. This has proved to work very well also.
[32] The importance of integrity has also been emphasized by Erhard et al. (2009), although not in the contracting context.

responsibilities, metrics and pricing. It is crucial that all terms and conditions of the formal relational contract are aligned with the guiding principles. With the right mindset, the development of the contract becomes a joint problem-solving exercise rather than an adversarial contest. As a final step, the parties agree on structures and processes to govern the relationship over time, involving well-defined communication processes to ensure continuous alignment of interests and expectations.

All the components, from vision and guiding principles to the pricing model and governance processes, are documented in the written and enforceable contract, together with more traditional contractual clauses such as limitation of liability, indemnification, confidentiality, etc., all of which are, however, aligned to the adopted guiding principles.

The formal relational contracting model and the contracts-as-reference-points theory were developed in parallel and the case studies were not written with the concepts of aggrievement and shading in mind. For this reason, we conducted a follow-up interview with participants in one of the cases. For various reasons, we chose not to obtain interviews in the other two cases,[33] but instead conducted interviews with customers and suppliers in two deals where formal relational contracting was adopted at some point, but that are not yet case studies. In the interviews we looked for examples of shading and other deadweight losses prior to the adoption of the collaborative approach and the guiding principles, and evidence as to how these deadweight losses were reduced after the guiding principles were adopted.[34] In summary the interviews involve (1) Canada's Vancouver Island Health Authority and South Island Hospitalists, regarding a contract on professional labor services (this deal has been written up as a case); (2) Accenture and ISS regarding facilities management services in Holland; (3) PwC and ISS also regarding facilities management in Holland. The case studies where we did not carry out interviews involve Dell and FedEx, and Telia and Veolia.

[33] As regards the Dell-FedEx deal referred to below, this deal was originally made in 2012, which led us to believe that the parties would not have a clear memory of problems prior to and after their formal relational contracting deal. As regards the Telia-Veolia deal referred to below, Veolia was one of twenty suppliers prior to the deal, while it was the sole supplier after the deal. Thus the deal does not permit an "apples to apples" comparison.

[34] The interviews were conducted in June 2019 together with Kate Vitasek, a faculty member of the University of Tennessee.

Vancouver Island Health Authority and South Island Hospitalists[35]

We already mentioned this deal in the introduction, but here we provide a little more detail. Vancouver Island Health Authority contracted with South Island Hospitalists, a group of doctors in British Columbia, to provide inpatient care for patients. A hospitalist is a physician who works solely in a hospital and cares for patients with medical problems that are too complicated for many family physicians. Prior to 2016 Island Health Authority and the Hospitalists had a conventional contract, but it was not working well, and the relationship was severely strained. One issue was how to manage variation in the demand for health services (numbers of patients cared for by Hospitalist physicians on any given day). The contract included provisions on how volume changes would affect the hours allocated for Hospitalist services. In 2010, the service delivery model changed – consistent with other hospitals across Canada – whereby family practitioners no longer cared for their patients in hospitals. On top of this, there was a shortage of family physicians in many communities, and an increasing number of patients who were admitted to hospital did not have a family physician. As the Hospitalist model grew, and fewer family physicians were involved in hospital care, and more patients were admitted without family physicians, the Hospitalists were put under a great deal of pressure. Since they were not able to respond quickly by hiring additional staff, at times workloads soared and many felt that they could not devote adequate time to patients to provide safe, high quality care.

Hospitalists became fatigued. Although it was never statistically established, it was believed that discharges became slower and admissions lasted longer (both from conscious and unconscious actions), reducing the throughput of patients.

Some hospitalists eventually responded by refusing to accept the responsibility for admitting some patients from the emergency room, which was a requirement to facilitate flow into the hospital. This led to a heavy strain on the relationship, and the administration eventually temporarily suspended the privileges of three hospitalists.

Our interpretation of this incident is the following. Although the contract did not preclude the Health Authority's decision from reducing the use of community doctors (and remember this

[35] We conducted an interview with Jean Maskey, a doctor with South Island Hospitalists, and Kim Kerrone, Island Heath Authority's Vice-President, Chief Financial Officer, Legal Services & Risk. For a more extensive discussion of this case and how the formal relational contracting model improved matters, see Frydlinger et al. (2019).

was not solely a health authority decision and reflected a trend across Canada; also most family physicians no longer wanted to provide inpatient care), the Hospitalists felt that the decision was imposed unilaterally. The Health Authority did not engage with the Hospitalists on how their increased workload could be managed or whether more hospitalists could be hired, if not immediately then soon, to help matters. (In the context of the model, the Hospitalists regarded the Health Authority's action as choosing George rather than Adam.) The Hospitalists responded with a shading/shirking action: by not agreeing to take patients from the emergency room they relieved their stress, and also avoided ethical issues arising from not being able to devote adequate time to patients (a doctor can ethically decline to accept new patients if he or she cannot provide an expected and consistent standard of care both to these new patients and existing patients). On the other hand, the Health Authority expected the Hospitalists to take care of the patients and at the same time deal with volume changes, even significant ones, as they felt that there was enough flexibility in the contract. The result was that the Authority was frustrated by the Hospitalists' actions. Both sides reacted in ways that they would not have if everything was going well, and there were large consequent deadweight losses.

After 2016 the parties switched to a formal relational contracting model. The parties report that the guiding principles have provided them with a common language and a 'platform' on the basis of which upcoming problems – unexpected events – can be discussed and dealt with in a fair manner. The contract specified a "two in a box" communication approach in which an administrator was teamed with a hospitalist. Much of the tension that existed before seems to have disappeared. Jean Maskey of the Hospitalists said: "I think the guiding principles are at the root of why our relationship is no longer contentious. We are now talking about tough issues in a tight fiscal environment in a healthy and more productive way. We work together toward mutual benefits in an open and honest manner so that solutions are beneficial for the Health Authority, hospitalists, and most importantly for the patients we care for. The guiding principles provide a 'Home Base'. Because of trust in the relationship, the administration are clearly giving the Hospitalists autonomy and we're both being honest and respectful about our limitations and best practice for excellent patient centered care." The parties report that they frequently bring out their statements of the guiding principles, discussing them and, in our language, re-activating them.

One example of how the formal relational contracting model helped the parties to surmount challenges occurred when a Canadian law legalizing medical assistance in dying went into effect. The joint Sustainability Team, which focuses on recruiting and retention of Hospitalists and their workloads and scheduling, was put to the test[36]. At the time the contract was developed in 2016

[36] For more on this, see Frydlinger et al. (2019).

and 2017, the legislation had just been passed and there were too many unknowns about how it would be implemented to incorporate it in the contract. When the uncertainty was resolved, the sustainability team came up with a pilot project to help the parties to incorporate this new scope of work fairly into their schedule and pricing model. In the past there would have been battles about whether or not the new services were within the scope of the existing contract, in the sense that they were assumed to be part of the overall workload. Now there was a spirit of how can we fairly solve for this given our statement of intent? And how can we do this in a respectful manner for the benefit of the patients and the system in which we work?

In the spring of 2020, the Covid-19 pandemic hit. The contract did not contain language on how to deal with a pandemic[37]. Island Health was suddenly faced with an interesting dilemma in the workload mix. Patient count dropped 60% on the one hand, yet on the other hand physicians needed to manage higher risk Covid patients. The impact on budget and workload was drastic. Questions such as who would get to work what hours and who would have to work in the new high-risk Covid ward were front and center.

Island Health administrators and the Hospitalist turned to their formal relational contract to work out what to do in a fair and flexible manner. Using the guiding principles as the backdrop for decisions, the parties found an effective way to rethink schedule allocations to reduce Hospitalist hours while keeping all physicians employed. Part of the process also 'banked' hours which can be used for future surges.

Accenture and ISS[38]

Accenture is a multinational professional services company that provides services in strategy, consulting, digital, technology and operations. ISS is a workplace experience and facility

[37] The following is based on an interview with Jean Maskey and Kim Kerrone. For further discussion, see Frydlinger et al. (2020).
[38] We conducted interviews with Boudewijn Hamersma from Accenture and Vivian van Eijsden from ISS.

management service provider. Accenture contracted with ISS to look after management of its Dutch facilities. Among other things ISS provided catering services for Accenture.

Prior to entering their formal relational contract, the parties had a performance-based contract whereby ISS was compensated according to whether it met key performance indicators (KPIs). The contract was incomplete in the sense that it gave ISS some discretion in performance – only minimum requirements were set out in the contract – and Accenture some discretion in deciding whether the KPIs were met. This led to tension in the relationship. Based on the interviews conducted, it seems as if, in ISS's view, Accenture used its discretion opportunistically. (They chose George rather than Adam.) Accenture tended to give more negative scores on the KPIs if ISS did not perform above the requirements set out in the contract. Accenture also made life difficult for ISS by requiring ISS to get quotes from several suppliers for incremental work, even for small things. According to our interviewees, ISS responded to Accenture's actions by "gaming the system," that is, by ensuring high performance during the periods when the KPIs were assessed.

From Accenture's perspective, it was ISS that was being opportunistic by performing only at minimum levels set out in the contract. The interviewees felt that the tit-for-tat behavior by Accenture and ISS was frustrating and quite inefficient.

A further incident caused problems. The number of customers eating meals increased. According to the contract ISS was entitled to a larger payment (the number of "tickets" had risen). Accenture felt that it was unreasonable for ISS to receive more, since they believed that ISS's costs had not increased. ISS disagreed. This led to a further round of tit-for-tat behavior.

In 2017 both parties agreed to adopt the formal relational contracting model. Both parties report that the guiding principles have given them "a language" to talk about and deal with upcoming challenges. The guiding principles have facilitated communication. And they have helped the parties to build trust, which has decreased the tension levels. Boudewijn Hamersma from Accenture reports that "having the guiding principles we jointly agree on together focuses on what we think is really important for a healthy relationship and how you should do your business or have each other's business in mind". Vivian van Eijsden from ISS reports: "For me the biggest change in moving to a formal relational contracting model is the way we interact with each other; now they trust … that I can be responsible for the money of Accenture. I no

longer have to defend myself on every little thing. For example, they just trust when we get quotes from subcontractors we're spending their money wisely. That is a big thing." Both quotes indicate, importantly for this paper, how the parties are taking each other's interest into account and how this facilitates communication and solving of problems. The gaming of KPIs and insistence on multiple quotes for even the smallest items seem to be things of the past.

PwC and ISS[39]

PwC is a global network of firms delivering assurance, tax and consulting services. PwC contracted with ISS to manage its facilities in Holland. Among other things ISS provided catering and hospitality services for PwC meetings. The meeting services yielded a high margin for ISS and were consequently expected to be a large source of profit for them. At some point during the course of the contract, PwC needed to cut costs and decided to reduce the number of meetings. (They chose George rather than Adam.) ISS was given very short notice about this. Obviously, this was very bad news for ISS: an important generator of profit was going to be eliminated. Things were made worse for two reasons. First, Dutch law made it impossible for ISS to lay off workers quickly. Second, ISS had recently negotiated with PwC to expand the services provided through the addition of extra hosts. The parties had agreed to split the cost of this 50:50, with much of the return coming from an anticipated high volume of meetings, which now would not materialize.

As with the Health Authority and the Hospitalists, PwC was within its contractual rights to make the changes. But it is clear from conversations with participants that there was a great deal of unhappiness/aggrievement on the ISS side. PwC eventually agreed to pay ISS's share of the cost of the extra hosts, but they did not make up for ISS's lost profit. We could not find any sign that ISS reciprocated negatively, although they probably had the ability to do so. So the source of the deadweight loss in this example was ISS's aggrievement, which ISS had to "eat." One factor that may have stopped ISS from retaliating is that the parties agreed to a formal relational contracting model shortly after this event (partly because of the event).

[39] We conducted interviews with Kyrsa de Bruine from ISS and Marjolein Kurstjens from PWC.

One interviewee highlighted the following as an example of how formal relational contracting improved matters. ISS subcontracted some security services to a security firm (SF). The contract allowed the price charged by SF to rise by up to 2% a year if SF's costs increased. However, as a result of a country-wide collective bargaining agreement SF's costs increased by more than 2%. SF asked for a greater than 2% price increase and ISS agreed (even though its contract with SF was not a formal relational contract), but only if it could pass on the increase in turn to PwC. PwC accepted the pass-through and our interviewee attributed this to the fact that the PwC-ISS contract was a formal relational one. If it had not been, she thought that the price increase would not have been possible. The consequence might well have been that ISS or SF would have found ways to recover some of their lost profit by "shirking."

We turn now to two case studies where we did not get interviews.

Dell and FedEx

Dell and FedEx (originally Genco) entered into a contractual relationship regarding return and repair processes in 2005[40]. While quite successful, the parties had a strained relationship, not least because Dell constantly pushed for lower prices while at the same time demanding innovations and investments from FedEx. In 2011, both parties were ready to leave the relationship. But instead, they renegotiated their contract, using the formal relational contracting model. Three years into the term of the new contract, Dell's costs had been reduced by about 44 percent, quality levels were at a record high, and repair expenditures were at record lows. At the same time, the contract was very profitable for FedEx. The parties report that these results came about as a result of using the collaborative process and approach to contracting[41].

Dell and FedEx did not deliberately discuss and activate guiding principles such as loyalty, the simple reason being that adopting such principles was at the time not an integral part of the formal relational contracting model. But it seems that an important explanation for their success is indeed that such principles were activated through the process. A FedEx executive said that

[40] Under this contract, FedEx is responsible for transporting and repairing defective Dell products.
[41] See Vitasek (2016).

earlier Dell and FedEx had not had transparent dialogues, looking out for each other's interests. "But now, we at FedEx Supply Chain truly have a vested interest in the success of Dell—and vice versa."[42]

Telia and Veolia

In the deals described so far, an existing contract was replaced by a new one. The deal between the Swedish telecommunications operator Telia Company and Veolia, a facilities management company, was different. Telia was looking for someone to manage its facilities, and Veolia was chosen as a result of a competitive bidding process, which in the context of the formal relational contracting model is called a Request for Partner process.[43] The process was preceded by a pre-study, in which Telia realized that their existing facility management suppliers were not at all satisfied with their relationships, that Telia was heavily micromanaging them, and that there was no focus on innovation, which was an important matter for Telia. Telia decided to adopt the collaborative approach described above, incorporating the guiding principles, and used the approach to enter into a contract with Veolia as the so-called prime contractor. Again, both Telia and Veolia report significantly better results, with cost savings above budget, improved quality and increased innovation, and higher margin levels for Veolia[44]. The parties came to a point where they started to view their deal as a joint, virtual, enterprise, to which they even gave a name – OneTech – suggesting that the loyalty principle has enabled the parties to adopt one another's view and look out for one another's interests.[45]

One example of this is the way they view the economics of their deal. Outsourcing deals typically have two structural components: a standard set of services provided on a continuous basis and separate projects, which are agreed on a case-by-case basis in what is called a change

[42] Vitasek et al. (2017), p. 21
[43] In the Request for Partner process, suppliers are assessed not only on offered solutions and price but also on "softer" factors such a cultural compatibility and willingness to act in accordance with the guiding principles. In the typical process, the customer initially selects a few suppliers, with which a number of workshops are held where the parties, among other things, adopt a shared vision and the guiding principles, in addition to discussing scope and how the customer's needs can be met. Also, the suppliers are asked to provide indicative cost levels, which are made part of the customer's overall assessment. Thereafter, the customer chooses one or sometimes two suppliers with which the rest of the formal relational contracting methodology is implemented, after which contracts are signed. For a more detailed description of this approach, see Vitasek et al. (2019).
[44] Vitasek and DiBenedetto (2018b), p. 25.
[45] Vitasek and DiBenedetto (2018b), p. 25.

management process. These change management processes proceed through negotiations which are often not smooth Coasian bargains, but instead are rife with friction and frustration.[46] Telia and Veolia have been able to move beyond this common challenge in outsourcing deals. One representative of Veolia said: "Shifting to formal relational contracting means both Telia and Veolia now look at the financials across the whole portfolio of business together and not just the price of individual projects or services. We are now making much smarter and collaborative business decisions that ultimately motivate Veolia to make investments that will have a high ROI (return on investment) for *both* (our italics) parties."[47] This again seems to be the loyalty principle in action, where the parties adopt one another's view and look out for one another's interests when managing their virtual entity.

<u>One other example</u>

During the Covid-19 pandemic we also interviewed a representative from a global pharmaceutical company, which had implemented the formal relational contracting model[48]. When the pandemic forced the pharmaceutical company to send employees home, the need for facilities services such as cleaning and dining services virtually disappeared. The decrease in volume was a windfall for the pharmaceutical company because it reduced expenditures. However, the service provider was set to lose big because the lost work converted to lost revenue and furloughed employees.

Rather than behaving opportunistically, the parties worked in a highly collaborative manner using the guiding principles to find solutions that would balance the needs of both the pharmaceutical company and the service provider. Creativity – not conflict – emerged. The parties came up with dozens of ideas which could help them flexibly modify the workload. For example, one idea to prevent furloughing dining service employees was to redirect their efforts to provide tailored meal services for the scientists working around the clock on a Covid-19 vaccine. Other solutions were to pull forward required maintenance initiatives that had been

[46] See, for example, Deloitte (2016), where this change management process was reported as by far the most common challenge in the outsourcing deals covered by the report. See also Chakravarty and MacLeod (2009).
[47] Vitasek and DiBenedetto (2018b), p. 21.
[48] See Frydlinger et al. (2020).

budgeted but not scheduled yet. The result was that the parties achieved an efficient and equitable outcome for changed circumstances.

In summary, we have presented some evidence from several interviews (one of which was also a case study) and two case studies. Obviously, one should be careful about drawing strong conclusions based on such a small sample. But we believe that the reported results provide support for our claim that shading and other deadweight losses occur under standard contracting and that adopting guiding principles such as loyalty and equity (see Section 6) can mitigate these losses.

6. Other principles

In the examples described above, not only loyalty but also other guiding principles were adopted. For tractability reasons, we have focused on the principle of loyalty in our analysis, but we believe that other principles such as equity are also very important. A principle of equity means that costs and benefits should be allocated in proportion to each party's effort. Equity is therefore not just about equal splits of revenues or costs. Applying this principle could lead the parties to split the benefits of a joint investment according to how much each party has contributed to the investment.

A principle of equity seems particularly applicable in a situation where, contrary to our maintained assumption, value and incremental cost are verifiable. In our concert example, equity could come into play in a number of ways. Let us assume, for simplicity, that S and B agree, ex ante, on only the equity principle. How should the decreased value (Δv) and increased cost (Δc) be allocated? If we assume that it has taken no effort to find and hire Eve's replacement, B and S would most likely agree on a 50:50 split of the losses, $\Delta v - \Delta c$. Under these conditions there will be unanimity that the more efficient choice, Adam, should be made, and there will be no shading. The first-best is achieved.

If we assume, instead, that finding Adam on short notice required a lot of effort from S, an equitable split would take this into account, allocating a larger proportion of the losses to B.

Equitable splits are unlikely to proceed as smoothly under our assumption that value and incremental cost are observable, but not verifiable, and where subjectivity and self-serving

biases can come into play. Yet people are often able to find amicable solutions on how to allocate losses, and compensate for emotional damage and other problems, even if they would not be able to prove their case in court. Thus, the equity principle is probably relevant in our setting too. Incorporating the equity principle into the analysis is an interesting topic for future research.

There are also other principles that could be taken into consideration, for example a principle of reciprocity, obliging each party to return good actions in kind; or a principle of autonomy, obliging each party not to make threats or be coercive. An autonomy principle would apply not to the allocation of losses, but rather to the *process* for coming to a decision and the allocation of responsibilities. In the Island Health/Hospitalists case, one representative of the Hospitalists reported this principle to be of significant importance, giving them freedom from the previous micromanagement by Island Health.

In practice, then, B and S could adopt a number of principles ex ante which would come into play ex post to assist the parties in achieving outcomes that meet their reference points, thus avoiding shading.

A very important question that our analysis raises is, what is special about principles like loyalty or equity? Why could the parties not use other principles? For example, why couldn't the parties adopt the principle that in an abnormal state they will sort things out using the bargaining protocol underlying the first-best contract described in Section 2 (50:50 bargaining using side-payments). This bargaining outcome would become the new reference point and neither party would be aggrieved or would shade. The first-best would be achieved. Other possibilities would be that the parties agree that if something unexpected happens B will make a take-it-or leave-it offer to S about how to proceed, or the parties will play a Maskin-Tirole (1999) mechanism to make observable information verifiable.

Our tentative answer is that the principles of loyalty and equity are not just ad-hoc principles chosen by the parties. They rest on strong social norms and are thus better described as being 'activated' than 'chosen'. This makes them different from mechanisms such as take-it-or-leave-it offers or Maskin-Tirole revelation games, which have no motivating power in themselves. Making a promise to fulfill a social norm has more force than making a promise to apply a principle not based on a social norm, for example to receive a take-it-or-leave-it offer. We

should stress that this is a preliminary answer and understanding the difference at a deeper level is an important topic for future research.

7. Other Work on Norms and Communication

Our model rests on the belief that communication about social norms can help overcome contractual incompleteness. This relates to a number of studies in various disciplines.

Our emphasis on norms is related to the work of Macaulay (1963).[49] Macaulay (1963) showed that businesses often do not rely on their written contracts but instead on social norms and industry standards to overcome challenges posed by incomplete contracts. While Macaulay pointed to the importance of *informal* social norms for contracts, we suggest that the parties can gain from incorporating such social norms, in the form of guiding principles, in the written contract.

This shift from the informal to the formal resembles the trend shown by Hadfield and Bozovic (2016). Hadfield and Bozovic (2016) show that, while many organizations still rely on informal norms and mechanisms, there is also a growing reliance on the formal contract in what they call innovation-oriented commercial relationships, where the parties lack background support from social ties or reputational mechanisms. Using an expanded view of contracts-as-reference-points as compared to Hart and Moore (2008), they show, based on empirical studies, how the formal contract can help the parties to get on the same page not only regarding what the parties are explicitly entitled to under the contract but also, through ex post communication, concerning how unexpected events should be dealt with. Our approach is similar to theirs, but with the added element that the contracting parties can benefit by explicitly including social norms in the contract.

Our suggested approach for overcoming contractual incompleteness is also related to the work of Bernstein. In Bernstein (2015), evidence is put forward that, in outsourcing and supply chain

[49] It is also related to the work of Ian Macneil (1977, 1983). Macneil (1983) put forward the view of contracts as "instruments of social co-operation", by which he meant instruments to mitigate a tension between self-regarding and other-regarding preferences in commercial relationships. He specifically pointed to two important social norms – reciprocity and solidarity (with a similar meaning to what we here call loyalty) – serving this mitigation. The importance of such norms grows, according to Macneil, as a commercial relationship shifts on a continuum from discrete exchanges to relationships of longer duration and higher complexity.

relationships, organizations rely on the enforceability of contracts only to a limited extent to mitigate contractual risks, for example regarding hold-ups. Instead, other mechanisms are used, such as control over production in supplier plants and over supplier labor. In particular, Bernstein (2015) points to the use of governance and institutional mechanisms to generate conditions for cooperation, one of them being the creation of social capital based on trust and social norms. Our understanding is that the organizations studied have not explicitly included social norms such as loyalty or equity in their formal contracts, as we suggest here.

There is also evidence that social norms affect outcomes in economic transactions. First, it has been convincingly shown in the laboratory and elsewhere that people have not only self-regarding motives but also other-regarding motives[50]. Second, the extent to which they exhibit other-regarding motives will depend on the economic and social context. Fehr and Schmidt (1999) have shown that there is an important interaction between the distribution of preferences in a given population and the strategic environment: in some situations a minority of self-regarding players can hamper collaboration and in other situations a minority of other-regarding players can induce the self-regarding players to cooperate.

Also relevant are studies by Ostrom (1990) and Ellickson (1991). These authors show how groups of people can overcome social dilemmas in situations where people must engage in face-to-face discussions and negotiations on how to solve problems, for example on how to allocate costs and risks. Put in situations where they have to make decisions and argue their case, people are affected by social norms, and are led by those norms to efficient outcomes.

As regards the question of communication, it is a well-established fact that communication, not least face-to-face communication, can in many circumstances improve cooperation and reduce deadweight losses. An area of particular focus has been how communication can mitigate conflicts of interest in social dilemmas, starting with studies by Deutsch (1958, 1960) and Loomis (1959). In a 1995 meta-study, Sally (1995) analyzed over 100 studies and concluded, having tested a number of independent variables, that communication increases cooperation by 40 percent and was the variable having the strongest effect on cooperation. These results were

[50] See Charness and Rabin (2002), Fehr and Schmidt (1999), and Thaler and Dawes (1992).

confirmed in a later meta-study by Balliet (2010), who concluded also that face-to-face communication has a stronger effect than written communication.

Not only does communication as such have an effect; the *content* of the messages communicated matters. For example, Charness and Dufwenberg (2006) have shown in the laboratory that a statement of intent or promise can have a particularly strong effect on cooperation. We find this important, since our model builds on a scenario with ex ante communication where the parties exchange promises to follow certain guiding principles.

Communication has also been studied within the framework of contracts-as-reference-points. In a study related to Hart and Moore (2008), Brandts et al. (2016) (BCE) tested whether communication affects parties' reference points and thereby shading behavior. As noted by Hart and Moore (2008), an important consequence of the fact that contracts serve as reference points is that there is a tension between contractual rigidity and flexibility. Whereas a flexible contract is generally preferable, it can also lead to increased shading behavior since the flexibility gives more room for conflicting feelings of entitlement. In their experiment, BCE showed that free-form communication significantly reduced shading levels in flexible contracts, making them more profitable for both parties than rigid contracts. In particular, clarification of transfer plans, friendliness and promises helped the subjects align their expectations and resolve ambiguity, thereby reducing shading behavior.

To be sure, we are not claiming that communication is a solution in all situations. Fehr et al. (2015) obtain less optimistic results about communication although they do not allow for free-form communication. Also, Fehr et al. (2017) show that, under certain competitive conditions, communication, rather than being used by buyers for aligning expectations and improving cooperation, was instead abused for the purpose of influencing the activities of the seller. The distinction made by German social philosopher and sociologist Jürgen Habermas between communication in strategic actions, aimed at influencing others, and communicative action, aimed at reaching a common understanding, seems relevant in this context[51]. It seems plausible that the interaction between the distribution of preferences in a given population and the strategic environment, emphasized by Fehr and Schmidt in the context of social preferences, is highly relevant for communication as well. Communication can be a weapon in the pursuit of

[51] See Habermas (1984).

strictly self-regarding behavior, even though strong evidence also shows that communication can promote and be part of other-regarding behavior.

In summary, both social norms and communication have been shown to improve cooperation and reduce deadweight losses. Based on this, we find it plausible that ex ante and ex post communication *about* social norms should have important effects and be capable of aligning reference points.

8. Conclusions

Our paper explores a new approach for dealing with contractual incompleteness. The idea behind the approach is that parties can improve outcomes by committing as part of the contract to apply a number of guiding principles such as loyalty or equity in case of unexpected events, and to build in communication processes that will enable the application of these principles. These principles rest on strong social norms and are thus better described as being 'activated' than 'chosen'. We have provided a theoretical foundation for this approach and evidence that organizations are already using and benefiting from it.

We have focused on ex post deadweight losses and how the parties can reduce them through the use of guiding principles (but see Appendix 2). However, business people often describe a lack of innovation by suppliers as a serious problem in outsourcing deals, which is more of an ex ante problem. There is every reason to think that the analysis we have presented could be used to study this issue too. We believe that this is an interesting topic for future research.

Obviously, much more work needs to be done to explore the generality of our ideas. We believe that theory, empirical work, and experiments are all promising directions to pursue to clarify the role of guiding principles in overcoming contractual incompleteness[52].

[52] One topic in need of further research is the extent to which our suggested approach for overcoming contractual incompleteness works across cultures. It should be noted that the effect of "national cultures" on trading relationships is a complex topic, not least because the concept of culture is inherently vague. There may exist organizational cultures that are stronger than national cultures: for example, the former may emphasize maximizing leverage in commercial relationships whereas the latter may be more aligned to guiding principles such as loyalty and equity. Or vice versa. While we do not ignore the influence of national cultures, we suggest that our approach has general applicability since social norms such as

loyalty, equity and reciprocity seem to exist in most cultures and hence can be “activated” between two or more organizations, as we suggest here.

Appendix 1. Reference payoffs equal expected payoffs.

Consider what happens in the abnormal state when reference payoffs equal expected payoffs. As in Section 3, S is inclined to pick George but B will pay her $\Delta c_a - \Delta c_g$ to pick Adam. What changes is B's aggrievement. B's reference payoff is given by

(1) $v - p + \pi(\Delta v_a - \Delta c_a + \Delta c_g)$,

while his payoff in state A equals

(2) $v - p + (\Delta v_a - \Delta c_a + \Delta c_g)$.

Thus, in state A he is below his reference payoff by

(3) $-(1-\pi)(\Delta v_a - \Delta c_a + \Delta c_g)$.

Since B feels aggrieved only when he is below his reference point, B's aggrievement is capped by (3). Hence B's aggrievement, which was previously $(\Delta c_a - \Delta c_g)$, is now given by

(4) $Min(\Delta c_a - \Delta c_g, -(1-\pi)(\Delta v_a - \Delta c_a + \Delta c_g))$,

shading equals

(5) $\theta Min\left(\Delta c_a - \Delta c_g, -(1-\pi)(\Delta v_a - \Delta c_a + \Delta c_g)\right)$[53],

and expected shading equals

(6) $L = \pi\theta Min(\Delta c_a - \Delta c_g, -(1-\pi)(\Delta v_a - \Delta c_a + \Delta c_g)$[54].

One useful observation is that, as long as π is not too high, the more sophisticated treatment of reference points does not change anything. Deadweight losses will be $\pi\theta(\Delta c_a - \Delta c_g)$as long as

[53] This leads to the intuitive conclusion that if π is close to 1, shading in state A will be very low: basically, the abnormal state becomes the reference point.

[54] Note that L=0 if $\pi = 0$ or 1.

(7) $\pi < -\Delta v_a / (-\Delta v_a + \Delta c_a - \Delta c_g)$.

Appendix 2. Employment

So far we have supposed that S has residual rights of control and bears all the costs $c + \Delta c$. We can think of this as non-integration. Another possibility would be for B to acquire S's operations; B would then possess residual rights of control. We can think of this as vertical integration or employment. In this case it is natural to suppose that B bears 100% of the costs: S is on a fixed wage.

Of course, under both non-integration and vertical integration, cost-sharing is feasible since costs are verifiable. For simplicity we stick to the polar cases where S bears all the costs under non-integration and B bears all the costs under integration.

Under employment there is no conflict of interest ex post since B bears both the value and cost consequences of replacing Eve. However, under standard assumptions, S has no incentive to work since she bears none of the ex post costs: $e = 0$. Thus, under the classical assumptions of Section 2, employment (with B bearing all the costs) would never be optimal (recall that we saw in Section 2 that under classical assumptions a simple non-integration contract achieves the first-best).

However, employment can be attractive in the models of Sections 3 and 4. Suppose that the loyalty principle is adopted. Now S will choose e to maximize

(1) $\quad p - e + \lambda(v - p + \pi\,(\Delta v_a - \Delta c_a\,) - c(e))$.

The first-order conditions are

(2) $\quad \lambda c'\,(e) = -1$.

Denote the solution by $e(\lambda)$.

The expected net surplus under employment equals

(3) $\quad v - c\big(e(\lambda)\big) - e(\lambda) + \pi\,(\Delta v_a - \Delta c_a\,) - g(\lambda)$,

where recall that there are no shading costs since there are no ex post conflicts of interest.

From (3) it follows that under employment it is optimal to choose the level of communication λ to minimize

(4) $g(\lambda) + c(e(\lambda)) + e(\lambda)$.

Let λ^* be the solution of (4). Then the total deadweight costs under employment are

(5) $g(\lambda*) + c(e(\lambda*)) + e(\lambda*) - c(e_{FB}) - e_{FB}$.

To see whether employment is better than non-integration we must compare (5) with the optimized expression in (4.11). Some simple conclusions are immediate. Suppose that S's effort does not matter much: $c(e_{FB}) + e_{FB}$ is close to $c(0)$. Then employment with no communication $(\lambda = 0)$ achieves approximately the first-best (whereas non-integration typically does not).

Perhaps more interesting, suppose that we replace S's effort cost e by ke and the cost function $c(e)$ by $kc(e)$, where $k > 0$. Then the first-best effort level e_{FB} and the effort under employment $e(\lambda*)$ remain the same (the left-hand and right-hand sides of (2.2) and (2) are both multiplied by k). However, the deadweight cost from an inefficient choice of e is multiplied by k. Thus if k is large the deadweight costs from employment (in (5)) become very large, either because $e(\lambda*)$ is bounded away from e_{FB} or because $\lambda*$ is close to 1, in which case $g(\lambda*)$ is large (we have supposed that $\lim_{\lambda \to 1} g(\lambda) = \infty$). Thus, for large k, non-integration will dominate employment.

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