VU Research Portal

Your gain my pain? The effects of accounting information in uncertain negotiations

Essa, Samy A.G.; Dekker, Henri C.; Groot, Tom L.C.M.

published in

Management Accounting Research
2018

DOI (link to publisher)

[10.1016/j.mar.2018.02.002](https://doi.org/10.1016/j.mar.2018.02.002)

document version

Publisher's PDF, also known as Version of record

document license

Article 25fa Dutch Copyright Act

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Essa, S. A. G., Dekker, H. C., & Groot, T. L. C. M. (2018). Your gain my pain? The effects of accounting information in uncertain negotiations. *Management Accounting Research*, 41(December), 20-42.
<https://doi.org/10.1016/j.mar.2018.02.002>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

Your gain my pain? The effects of accounting information in uncertain negotiations

Samy A.G. Essa^{a,*}, Henri C. Dekker^b, Tom L.C.M. Groot^b

^a University of Twente, Netherlands

^b Vrije Universiteit Amsterdam, Netherlands

ARTICLE INFO

Keywords:

Buyer-supplier negotiations
Payoff uncertainty
Accounting information
Negotiation tactics
Negotiation outcomes

ABSTRACT

Prior studies on buyer-supplier negotiations show that refined accounting information can enhance negotiation processes and outcomes. We extend these studies by considering the influence of payoff uncertainty, which is commonly present in negotiations. Payoff uncertainty can increase friction between negotiators when it induces them to take different reference points, exacerbating the level of conflict. We theorize that refined accounting information, even when unrelated to the source of uncertainty, can help to limit the adversarial effects of payoff uncertainty on negotiation behavior and outcomes by enabling negotiators to identify mutually beneficial tradeoffs. We conduct an experiment in which 89 dyads of buyers and suppliers participate to test our expectations. Results show that payoff uncertainty reduces negotiators' use of integrative tactics relative to distributive tactics, which in turn negatively influences joint profit. Refined accounting information, however, weakens the negative impact of payoff uncertainty on behavior, mitigating the negative impact on joint profit.

1. Introduction

A common theme in the literature on interfirm relationships is that the likelihood of cooperative success increases when partner firms act in a collaborative way. The negotiation stage is considered critical to this end as the process of negotiation sets the stage for future behaviors and can be instrumental in the outcomes that partners achieve. While an extensive literature on negotiation research identifies conditions that influence negotiators' behaviors and outcomes, prior accounting studies have particularly considered the potential of accounting information in stimulating cooperative negotiation behavior (e.g., Chang et al., 2013; Coletti et al., 2005; Drake and Haka, 2008; Masschelein et al., 2012; Miller and Drake, 2016; Van den Abbeele et al., 2009).¹ Experimental studies indicate that particularly refined accounting information such as total cost of ownership (TCO) information can (but does not always) stimulate negotiators to act cooperatively, producing better joint outcomes. Total cost of ownership is a cost concept that includes all costs associated with the acquisition, use and disposal of a good or service over the lifetime of the purchase and as such more comprehensively measures the costs and benefits of a firm's relationships with its suppliers (Degraeve et al., 2005; Wouters et al., 2005).

Noticeable is that prior experimental studies typically take place in settings where the inputs and outputs to be negotiated are given (e.g., Van den Abbeele et al., 2009; Chang et al., 2013). In contrast, the

broader literature on interfirm relationships indicates that interfirm negotiations and contracting are often subject to significant uncertainty that complicates cooperation and can result in suboptimal outcomes (Anderson and Dekker, 2005; Krishnan et al., 2011). Similarly, prior experimental economics studies emphasize that uncertainty in negotiators' payoffs can substantially influence cooperative behavior and success (Church and Zhang, 1999; Roth and Murnighan, 1982). This raises the question whether and how uncertainty and accounting information interrelate in affecting negotiation behavior. Particularly, uncertainty may decrease confidence in the other's true intentions, increasing conflict between negotiators. Uncertainty may also reduce their willingness to (honestly) exchange accounting information that could enhance their exchange, as well as reduce their confidence in the information that is exchanged. On the other hand, uncertainty may stimulate negotiators to exchange information and seek better outcomes, which thus could mitigate negative behavioral effects. This would be particularly the case when negotiators possess refined information that enables them to identify mutually beneficial tradeoffs (Chang et al., 2013; Van den Abbeele et al., 2009).

In this study we experimentally examine buyer-supplier negotiations to analyze how payoff uncertainty that is inherent to a transaction interacts with accounting information in influencing negotiation behavior and outcomes. Following prior studies in experimental economics, we study a particular form of uncertainty, namely uncertainty

* Corresponding author.

E-mail addresses: samy.essa@gmail.com (S.A.G. Essa), h.c.dekker@vu.nl (H.C. Dekker), t.groot@vu.nl (T.L.C.M. Groot).

¹ Luft (2016) provides a more general review how management accounting can influence cooperative and competitive behavior.

in negotiators' payoffs (e.g., Church and Zhang, 1999; Roth and Murnighan, 1982). Such uncertainty can arise when at the outset of a potential transaction negotiators cannot precisely estimate the payoffs that the exchange will provide. Church and Zhang (1999), for instance, examine uncertain payoffs in the provision of professional services due to uncertain future liability claims, reputational losses or disciplinary action. Payoff uncertainty can also arise due to factors as unanticipated price changes, import duties or additional delivery costs. Disparity in expectations likely increases when payoff uncertainty increases (Riddell, 1981; Church and Zhang, 1999). While Church and Zhang (1999) examined effects of one-sided (seller) payoff uncertainty in single-item negotiations, we examine the common setting in which both negotiators in a multi-item negotiation face uncertainty. We theorize joint payoff uncertainty to increase the likelihood of conflict between buyers and suppliers as it induces them to take different reference points on the negotiated price interval.

Prior research on interfirm cooperation argues that accounting information has particular relevance to uncertain contexts as it may help reduce the conflict that uncertainty generates between exchange partners (e.g., Heide and John, 1992). Accounting studies emphasize how refined accounting information such as TCO information has the ability to improve outsourcing decisions and negotiation outcomes. The main argument is that refined accounting information enables negotiation partners to jointly find an optimal agreement. A second argument is more behavioral: refined accounting information supports 'integrative behaviors' that are characterized by joint problem solving and cooperation. These studies, however, also recognize the reservations that firms have in sharing such information because of concerns about distributive partner behavior, which can result in partners withholding information and forgoing potential gains (Chang et al., 2013; Dekker, 2003; Drake and Haka, 2008; Van den Abbeele et al., 2009). We extend prior literature by examining a setting in which both the buyer and the supplier face payoff uncertainty, while different sets of accounting information are available which are unrelated to the source of the pay-off uncertainty and do not directly help to reduce it. This is a common condition of negotiation settings influenced by changing market conditions, external competitive forces and business cycles. Payoff uncertainty influences buyers' and sellers' reference points in such a way that potential conflict is enhanced, which induces negotiators to use more competitive negotiation tactics. Refined accounting information cannot be used to directly reduce uncertainty, but is expected to stimulate cooperative negotiation tactics to identify tradeoffs that can mitigate the adverse effects of uncertainty and that may lead to higher joint profit.

Consistent with expectations, our findings show that when both negotiators face payoff uncertainty, this evokes a reduction of cooperative behavior (i.e., less use of integrative tactics relative to distributive tactics), which in turn results in lower joint profit. The presence of TCO information, however, mitigates the adversarial effect of payoff uncertainty on behavior and joint outcomes. Additional analysis of negotiation dynamics shows that the experimental conditions primarily drive initial negotiation behavior, which subsequently influences behavior in future negotiations. Individual-level tests further show that suppliers adapt their negotiation behavior to the type of information used by buyers, with TCO information inducing suppliers to use relatively more integrative tactics which primarily benefit the buyer while not leaving

the supplier worse off. Overall, our results thus lend support to the expectation that in interfirm negotiations, in particular those characterized by high payoff uncertainty, refined accounting information can help to achieve better outcomes by positively influencing negotiation behavior.

The key contribution of this study to the accounting literature is that we develop and experimentally test a model of how accounting information moderates the effects of payoff uncertainty in affecting negotiation behavior and outcomes. We provide experimental evidence of the value of refined accounting information in supporting interfirm negotiations, in particular when negotiations are subject to high uncertainty. We also provide evidence on how these effects on negotiation behavior persist in subsequent negotiations and outcomes, and how the conditions influence behavior and outcomes of individual negotiators. Since negotiations are at the core of decision making in outsourcing relations, we argue that to gain an adequate understanding of collaborative outcomes, it is imperative to understand partners' negotiation behavior and how this is affected by the conditions they face. The next section reviews the literature on interfirm negotiations, and in particular the effects of uncertainty and accounting information. Section 3 develops the research framework and hypotheses, and Section 4 covers the experimental methods used to test the hypotheses. Sections 5 and 6 discuss the data, results, and limitations of the study.

2. Literature review

In recent years, interfirm collaboration has received much attention in accounting research, in particular due to the recognition that accounting information and control mechanisms can contribute to the successful development and continuation of collaborative agreements. Interfirm relationships often expose exchange partners to significant risk (Anderson and Dekker, 2005; Krishnan et al., 2011). Economic theory in particular posits that the presence of uncertainty in interfirm exchange increases the likelihood of conflict and opportunism. While prior accounting studies have considered the implications for interfirm contract design and control, it is the negotiation stage that is first impacted by these exchange hazards (Anderson and Dekker, 2014).

Prior negotiation studies have combined economic theory with behavioral perspectives to gain understanding of negotiation behavior and outcomes (Chang et al., 2013; Coletti et al., 2005; Drake and Haka, 2008; Van den Abbeele et al., 2009). Social exchange theory (e.g., Walton and McKersie, 1965) has been used extensively in negotiation studies as it offers a theoretical foundation for incorporating social and behavioral factors into the analysis. This theory describes negotiation as a process that involves a series of interactions aimed at information exchange, joint problem solving, and persuasion. The outcomes of this process (e.g., an agreement or negotiators' payoffs) depend on the interplay between negotiator characteristics, situational characteristics, and the characteristics of the negotiation process. While we control for negotiator characteristics, we rely on both economic and social exchange theory to examine how payoff uncertainty and accounting information influence the negotiation process and its outcomes. In the following paragraphs, we first review the core constructs of this study, and in the subsequent section develop hypotheses how accounting information moderates the influence of payoff uncertainty on negotiation behavior. As summarized in Fig. 1, we expect that negotiation behavior

Fig. 1. Representation of the research model.

(in the form of negotiation tactics) mediates the influence of these two conditions on joint outcomes.

2.1. Payoff uncertainty

Economic theory views uncertainty as a critical condition in inter-firm exchange that generates contracting problems and potential conflict between exchange partners. In negotiating the conditions of exchange, negotiators acting on behalf of their firm are confronted with this uncertainty. Prior studies in experimental economics have examined how uncertainty affects negotiators' bargaining behavior and outcomes. Babcock et al. (1995), for instance, found that uncertainty about an opponent's reservation value decreases bargaining efficiency. A primary way in which studies have examined uncertainty is in the payoffs of either or both buyer and supplier (e.g., Church and Zhang, 1999). Game theoretic analyses of international agreements use the term *strategic uncertainty* to refer to incomplete information about the attributes of the other actor, and the term *analytic or model uncertainty* which amounts to uncertainty about the pay-off of both partners (Iida, 1993; Kolstad, 2005). Such uncertainty can arise when at the negotiation stage certain elements of an agreement that may affect payoffs cannot be well predicted (e.g., price fluctuations, unpredictable costs levels, future liability claims, reputational damage or penalties). A key expectation is that uncertain payoffs of negotiated agreements generate a greater degree of conflict between risk averse negotiators than certain payoffs do. In particular, payoff uncertainty can create concerns about potential losses (Church and Zhang, 1999), and induce negotiators to focus on different reference points to reduce the likelihood of unfavorable outcomes after a deal is closed. Church and Zhang (1999) found in a setting of repeated single-item negotiations that when sellers face payoff uncertainty, buyers make more concessions to compensate sellers for the uncertainty. In this study, we follow this approach by manipulating uncertainty in the payoffs of both buyer and supplier (see also Riddell, 1981). Exposing both to payoff uncertainty should provide greatest potential for conflict and disagreement. Under these conditions, the level of disagreement between negotiators rises, leading to longer bargaining time (Malouf and Roth, 1981). In particular, when payoff uncertainty causes negotiators to face the potential prospect of reduced or even negative payoffs, they are more likely to use distributive tactics to obtain more favorable terms that would limit the negative consequences of the payoff uncertainty. Arnold et al. (2014) propose that environmental risk increases the potential for negotiators to use different egocentric reference points to evaluate the fairness of a negotiation outcome, and that egocentric interpretations of fairness typically arise in ambiguous situations with respect to the interpretation of fair outcomes (cf. Thompson and Loewenstein, 1992). Thus, the likelihood of conflict is increased when the negotiation setting triggers greater differences regarding the appropriate benchmark for making comparisons (Babcock and Loewenstein, 1997).

2.2. Accounting information

Negotiation studies posit that when negotiators possess relevant information and use this actively during the bargaining process, this can help overcome exchange problems and promote collaborative behavior (e.g., Pruitt, 1981; Pruitt and Lewis, 1975). Prior literature has viewed information sharing as a process in which exchange partners voluntarily exchange information with each other (Heide and John, 1992). Accounting information in particular has the potential to stimulate cooperation, as relevant information such as about exchange partners' costs provides a basis for analysis and discussion, and can enable negotiators to identify, quantify and negotiate value enhancing opportunities in the supply chain (Baiman and Rajan, 2002; Chang et al., 2013; Dekker, 2003; Drake and Haka, 2008; Van den Abbeele et al., 2009).

To examine the influence of accounting information on negotiation

behaviors and outcomes, prior studies have distinguished 'coarse' and 'refined' accounting information, such as traditional cost (TC) information versus activity-based costing (ABC) or total cost of ownership (TCO) information (Drake and Haka, 2008; Van den Abbeele et al., 2009; Masschelein et al., 2012). TCO relates particularly to refined information that buyers possess about the costs associated with specific activities in the supply chain. For instance, this includes not only information about purchase price, but also about costs associated with buying at a certain supplier, such as relating to ordering, transportation, receipt, inspection, quality and administration (Wouters et al., 2005). When buyers possess such information, this is expected to result in different interactions with suppliers (who in prior experimental studies typically all have TCO information). Accordingly, as compared to the coarse and less informative traditional cost information, TCO information provides a better basis for identifying mutually valuable improvements and agreements.

Prior experimental studies have shown that information sharing contributes to improving joint negotiation outcomes (e.g., Pruitt, 1981; Pruitt and Lewis, 1975), and that buyer-supplier relations can become closer when negotiators or collaborators possess and share refined accounting information (Chang et al., 2013; Krishnan et al., 2011). On the other hand, Drake and Haka (2008) show that negotiators often are unwilling to share such information, as this would increase their exposure to opportunistic holdup. This limits the use of the information to jointly identify opportunities for efficiency improvements.² Thus, for information to have a positive impact on joint outcomes, negotiators need to overcome their concerns about sharing it.

2.3. Negotiation tactics

Negotiators use various tactics to promote their interests (Weingart et al., 1996). Social exchange theory (Walton and McKersie, 1965) broadly differentiates between two types of tactics: *integrative tactics*, which involve maximizing both own and others' gains, and *distributive tactics*, which involve maximizing only own gains, even if this comes at the expense of the other. Integrative tactics are viewed as a means by which parties make tradeoffs or jointly solve problems to realize mutual benefit (Walton and McKersie, 1965), and can be used in tasks with multiple issues that vary in importance to each party (Pruitt and Lewis, 1975).³ This allows to first enlarge the pie before dividing it. To the contrary, distributive tactics are seen as hard bargaining with the goal of obtaining a greater piece of the pie, given the size of it (Pruitt and Lewis, 1975).

De Dreu et al. (2006) found that in choosing negotiation tactics, negotiators need a good understanding of their task in order to realize higher joint profit. This requires them to acquire and share information. Experiments have shown that when negotiators exchange information about preferences and priorities, they are more likely to reach agreements with better economic payoffs (e.g., Pruitt, 1981). Similarly, prior studies conclude that joint outcomes improve when negotiators use more integrative and less distributive tactics (e.g., Chang et al., 2013; Pruitt and Lewis, 1975; Van den Abbeele et al., 2009). In the next section, we develop hypotheses on how payoff uncertainty and accounting information influence negotiation behavior and consequent outcomes.

² In line with these experimental findings, Schlotzer (2012) finds that supply chain partners increase the sharing of information when the potential for opportunistic holdup decreases and vice versa. Similarly, other field research finds that firms are hesitant to share accounting information, not only because of its sensitivity, but also because even if potential efficiency improvements would be identified, concerns arise about the distribution of costs and benefits of supply chain adaptations (Dekker 2003).

³ Walton and McKersie (1965) postulate several conditions for the use of integrative tactics: (a) several issues are considered simultaneously, (b) bargainers view the issues as problems to be solved, and (c) there is free exchange of information about preferences and needs.

3. Hypothesis development

Fig. 1 depicts the research model of this study, which predicts accounting information to moderate the influence of joint payoff uncertainty on the use of negotiation tactics. Inclusion of both moderation and mediation effects helps to explain when (moderation) and how (mediation) negotiation conditions affect outcomes (Van den Abbeele et al., 2009).⁴ The hypothesis development in this section represents initially unfamiliar negotiators, which mitigates the effects of pre-existing social and economic ties that may alter negotiation behaviors and outcomes.

As discussed in Section 2, when negotiators face uncertain payoffs this can increase the degree of conflict between them as it induces them to focus on different reference points. Accounting information has particular relevance to uncertain exchange settings, as it may help reduce the frictions between exchange partners that uncertainty generates and thus supports use of integrative behaviors (Krishnan et al., 2011). Indeed, a well-recognized effect of the exchange of refined information is that it can help exchange parties to cooperatively adjust to uncertain conditions (Heide and John, 1992). Prior negotiation research finds support for the value of information sharing under uncertainty. Haka et al. (2000), for instance, found that when negotiators face uncertainty, accounting information helps to reduce conflict in reaching agreements. This implies that when payoff uncertainty for both negotiators increases, refined accounting information can enable negotiators to use relatively more integrative tactics. This is particularly the case when negotiations involve multiple issues of varying importance to each negotiator, providing space for integrative agreements in which negotiators make concessions on different elements to reach an overall better deal (Pruitt and Lewis, 1975). Van den Abbeele et al. (2009), for instance, show how in multi-item negotiations refined accounting (TCO) information enables negotiators to find ways to jointly solve problems.

Prior research, however, also shows that negotiators have restraints in exchanging valuable information, which could increase their exposure to opportunistic holdup (Drake and Haka, 2008). Such concerns could be amplified by payoff uncertainty, which may reduce information exchange and limit confidence in the information that is exchanged. Yet, as in our setting both negotiators face payoff uncertainty, they require greater effort to convince the other to accept their proposed offer than would be the case under low uncertainty. Church and Zhang (1999) find that when in repeated negotiations buyers face suppliers with outcome uncertainty, they are more willing to make concessions to compensate for the supplier's uncertain outcomes. Our setting is different as both negotiators (instead of only one) face payoff uncertainty, influencing their reference points in such a way that potential conflict is enhanced (Arnold et al., 2014; Loewenstein and Babcock, 1997).⁵ Our setting also includes a multi-item instead of single-item negotiation, which is common in practice. In this setting, refined accounting information can be useful to negotiators to estimate the other's reference points and utility function, and potential mutual benefits (Luft et al., 1998). Refined accounting information supports negotiators in their interactions as it enables them to develop more convincing arguments and to identify potential tradeoffs to be made. This can result in more integrative agreements and therefore easier concessions by the counterpart. Thus, we expect that joint payoff uncertainty can induce the revelation of the available TCO information during the negotiations to come to mutually acceptable agreements. In contrast, the absence of refined information leaves negotiators empty

handed in providing credible arguments and to identify mutually beneficial tradeoffs, and therefore does little to help mitigate the negative effects of payoff uncertainty on negotiation behavior.

We build on this logic to argue that particularly when in a multi-issue negotiation both negotiators face payoff uncertainty, the exchange of refined accounting information enables them to identify ways to better trade off their interests. Important in this argument is that the accounting information is not directly related to or helps to reduce the uncertainty, but instead enables negotiators to better cope with the uncertainty by adapting their negotiation behavior.

These effects on negotiation behavior are also expected to affect economic outcomes. Early studies of Siegel and Fouraker (1960) and Kelley (1966), for example, identified the importance of integrative tactics for negotiators' joint profit, while subsequent research by Pruitt and Lewis (1975) shows how distributive tactics reduce joint profit. Later negotiation studies provide similar results (e.g., Clopton, 1984; De Dreu et al., 2006; Graham et al., 1992), and similarly recent accounting research finds that negotiation tactics mediate the effects of negotiation conditions on outcomes (e.g., Van den Abbeele et al., 2009). Accordingly, we expect that payoff uncertainty and TCO information will influence not only negotiation behavior, but through this behavior also negotiation outcomes.

Based on these arguments we provide three hypotheses on the main effect of payoff uncertainty on negotiation behavior, the moderating effect of TCO information, and the subsequent effects on negotiation outcomes:

H₁: Joint payoff uncertainty negatively affects negotiators' relative use of integrative tactics.

H₂: The presence of TCO information weakens the negative effect of joint payoff uncertainty on negotiators' relative use of integrative tactics.

H₃: Negotiation tactics influence joint profit such that greater use of integrative tactics relative to distributive tactics increases joint profit.

Jointly, these hypotheses provide an expectation of moderated mediation, in which the negative influence of joint payoff uncertainty on joint profit through negotiation behavior is weakened by the presence of TCO information. While we build on prior literature to develop these three hypotheses at the dyadic level for first-time negotiations, in the analyses we also examine how the effects unfold in repeated negotiations, and how they affect individual behaviors and outcomes. This allows us to assess how payoff uncertainty and TCO information influence negotiation dynamics, as well as buyers' and suppliers' individual negotiation behavior and payoffs.

4. Research method

4.1. Experimental design

The experiment that we designed consists of computerized negotiation games between buyers and suppliers using a completely randomized 2 × 2 full factorial design. The games closely resembled those used in previous bargaining studies that were based on Kelley (1966). Kelley argues that the process of negotiation is a matter of 'tension between information needs and information restraints, which constitutes the central motivational force for negotiators' behavior (p.58). The Kelley bargaining game is considered to simulate essential elements of real commercial negotiations well (e.g., De Dreu et al., 2006; Pruitt and Lewis, 1975; Van den Abbeele et al., 2009).

We recruited 178 students from graduate and undergraduate accounting courses of a Dutch university, which resulted in 89 dyadic observations.⁶ Upon arrival at the computer lab, participants were told

⁴ Van den Abbeele et al. (2009) combine moderation and mediation to better understand causal effects. They investigate the influence of TCO information and power on buyer-supplier negotiations, and also consider two stages in their model: (1) the direct and interaction effects of TCO information and power on negotiation outcomes, and (2) the mediation effects of negotiation tactics on these outcomes.

⁵ In this case, compensating for the other's uncertainty through price concessions would only reduce the negotiator's expected outcome.

⁶ Participants were enrolled in 3rd year BSc or in MSc-level management accounting courses, and included a significant proportion (54) practitioners enrolled in a part-time MSc program. We deleted two dyads (out of 91) as participants did not understand the instructions, or did not participate in a serious manner.

that they would participate in a negotiation task and received general instructions about their company, position and bargaining task. Participants were randomly assigned the role of buyer or supplier to negotiate multi-issue agreements in three games that contain variations on the negotiation setting.⁷ Using multiple games reduces the risk that observed behaviors and outcomes depend on the specific design of one game. This design also allowed participants to gain experience such that the data involve first-time and subsequent negotiations, enabling the analysis of negotiation dynamics. Participants were randomly matched as pair for all games, and were randomly balanced over the experimental conditions (see Table 1).⁸ Buyers and suppliers sat in different lab rooms to secure anonymity and to avoid interaction in any other way than through the computer. Negotiators exchanged all information (offers and messages) via their computer screen. Appendix A provides an abbreviated version of the negotiation scenario.

Each game suppliers made the first offer, consisting of a proposal on the three contract issues. As all suppliers had the same information, there should be no influence of the accounting information treatment on this first offer. Buyers, however, were provided with different information (TCO vs traditional cost), and their responses to the initial offer and subsequent interactions with the supplier are expected to differ.⁹ Subjects were informed to feel free to use the information they had to shape their bargaining situation and to provide arguments to strengthen their position. Each game ended when (i) an agreement was achieved, (ii) a negotiator decided to end the game, or (iii) an agreement had not yet been reached after 10 offers. In the last two situations, joint profit for the game was zero. Participants earned €3 for participating plus a bonus of 0.01% of their company's profit. The average payout was €8.60 (min. €3; max. €17).

We manipulated *payoff uncertainty* in a similar fashion as prior economic experiments that introduce uncertainty in the buyer's and/or supplier's payoffs which is expected to influence negotiators' probabilistic expectations about the terms of agreement (e.g., Church and Zhang, 1999; Roth and Murnighan, 1982). Variability in the payoff function can be expressed by adding a probabilistic modifier to the most likely outcome and by providing an interval of possible outcomes, with the most complete uncertainty description including a combination of probabilities and intervals (Teigen and Jørgensen, 2005). In our study, we used the combination of probabilities and pay-off intervals around expected values.

We used the payoff tables in Kelley (1966) to manipulate payoff uncertainty constructed probability-based intervals concerning the contract price, with a narrow interval for low uncertainty (maximum deviation of 1%) and a wider interval for high uncertainty (maximum deviation of 30%). More specifically, we introduced in the negotiation scenarios uncertain external factors beyond the negotiators' control, like variability in market conditions and product complexity that causes variability in the supplier's market price and that, after negotiators have reached an agreement, can cause a deviation from the agreed upon price (see also Haka et al., 2000). For instance, negotiators facing high uncertainty were told that the exact contract price could end up anywhere between €3400 and €4600, whereas under low uncertainty the interval would be between €3980 and €4020. With an equal expected value (€4000), the high uncertainty condition thus represented a maximum deviation of 30% (−15% to +15%) and the low uncertainty condition a maximum deviation of 1% (−0.5% to +0.5%; cf. Rode

Table 1
Number of observations per experimental cell.

Experimental condition		Payoff uncertainty	
		Low	High
Accounting information	TC	22	23
	TCO	22	22

et al., 1999).¹⁰ In the high uncertainty condition, negotiators' payoffs of the different negotiation options partially overlapped, which was not the case in the low uncertainty condition. All participants were explained that the exact price would not be known until the end of all negotiations.¹¹ Negotiators only faced uncertainty about the contract price, which was the most significant negotiation issue.

We manipulated *accounting information* by providing buyers with one of two types of cost information: traditional cost or TCO information (suppliers always had TCO information). Traditional cost information provided only the purchase price of a particular product and non-monetary (quantity) information for the other two negotiation issues. TCO information also accounts for costs that are caused by buying at a certain supplier, such as the costs of ordering, expediting, receiving, inspecting, quality and administration (Wouters et al., 2005). As in the experiment of Van den Abbeele et al. (2009), the payoff tables of Kelley's (1966) experiment were replaced by cost tables for buyers, and cost and income tables for suppliers. Buyers with TCO information had a payoff table expressing cost information of all three issues to be negotiated in monetary values, whereas buyers with traditional cost information had a payoff table showing the first issue (contract price) in monetary values, and the other two issues only in terms of relative importance (nonmonetary values). All suppliers received the same information regardless of condition; thus they always had TCO and full income information. Buyers and suppliers were not aware of each other's (type of) information. To incorporate the payoff uncertainty treatment, the contract price information was presented in intervals.

4.2. Experimental tasks and scenarios

4.2.1. The first game

Buyers and suppliers had to bargain about the purchase of a napkin tissue and pocket tissue machine. The instructions explained that maintenance and spare parts are needed to keep the machines running, and are part of the final contract. The negotiation options included five levels (contracts) labeled from "A" to "E" for each of the three issues: purchase price, level (or contract price) for maintenance, and level (or contract price) for spare parts. The supplier's information sheet for each contract option showed the price of the machine and costs for both maintenance and spare parts. In the TCO condition, the buyer's sheet showed for each contract option the cost of the machine, maintenance, and spare parts. In addition, it showed the buyer's expected income after renewing the machine. In addition, for each contract proposal received and sent, the negotiators would be provided with the expected profit range.

In the traditional cost information condition, the buyer's sheet showed for each contract option the price of the machine, the level of maintenance, the number of spare parts, and the expected income from renewing the machine. While suppliers for each contract proposal received and sent were shown the expected profit range, buyers received the numerical information about each negotiation issue and a message

⁷ To mitigate the use of end-game strategies, participants were informed that they would play three to five games, although in all cases the experiment stopped after three games.

⁸ Participants were not allowed to identify themselves through their messages. Inspection of all exchanged messages confirmed this did not happen.

⁹ We examined suppliers' first offer and indeed found no differences between the traditional cost and TCO information conditions in first offer negotiation tactics ($p = .947$) and expected profit of the offer ($p = .999$). Thus, any empirically identified effects of TCO information relate to buyers' use of this information in the negotiations and suppliers' responses.

¹⁰ We also used an interval in the low uncertainty condition to retain consistency in presentation format that otherwise could confound treatment effects.

¹¹ In order to enhance credibility of the treatment, participants were provided with a brief description that in previous negotiations the actual price often was a surprise by deviating from the predicted average, including examples of recent negotiations with below and above average price and outcomes.

that profit would be shown at the end of all negotiations.

Appendix B illustrates the machine prices and cost sheets provided to negotiators. In the experiment negotiators had only their own sheet, and were not shown their partner's information and payoff tables. Instead, they needed to get insights into their partner's payoffs through the exchange of offers and messages. The games contained one distributive issue (i.e., contract price), while the other two negotiations issues could be logrolling.¹² Distributive issues are purely fixed-sum issues, with gains for one party resulting in equal losses for the other. Logrolling issues instead are variable-sum, with gains for one party not resulting in equal losses for the other.

Buyers achieved the highest profit and suppliers the lowest profit when agreeing on the “A-A-A” contract. The opposite holds for the “E-E-E” contract. For buyers maintenance had the highest cost potential and spare parts the lowest, and the opposite held for suppliers.¹³ While specifically told that any combination of letters would be acceptable, often dyads approached the task by proposing the same or nearly the same contract level for all three issues (i.e., the middle contract ‘C-C-C’, which would yield a joint profit of €4000). As the profit schemes in Appendix C show, joint profit in excess of this level could only be achieved by means of a “diagonal” option where buyers and suppliers trade off maintenance cost and spare parts. The most integrative agreement was the diagonal contract C-A-E (joint profit = €4800, equally divided among the two partners), in which the distributive price issue is immaterial to joint profit, and the two other issues are fully traded off. Negotiators could only identify the optimal diagonal contract through making offers and counteroffers and exchanging information about their interests and costs.

4.2.2. The second game

Negotiators again negotiated on three issues, concerning a set of spare parts for a toilet tissue machine: price, delivery time and payment terms. Buyers were told that they preferred a short delivery time for the spare parts, and a long payment term. For each issue the negotiation included seven contracts levels labeled from “A” to “G”. The negotiators' sheets provided similar information as in the first game (see Appendix B), and each had only his or her own sheet. The most integrative agreement is found on the diagonal D-G-A, with a joint profit of €4000 (€2000 each; see Appendix C). This could be reached by setting the distributive issue (price) at the middle and trading off the two integrative issues (delivery time and payment terms).

4.2.3. The third game

Negotiators had to bargain about the purchase of a kitchen towel tissue machine including maintenance and spare parts. For each issue the negotiation included five contracts levels labeled “A” to “E”. The negotiators' sheets provided similar information as in the first game (see Appendix B), and each had only his or her own sheet. The most integrative agreement is found on the diagonal C-E-A, with a joint profit of €5.200 (€2.600 each; see Appendix C). This could be reached by setting the distributive issue (machine price) at the middle and trading off the two integrative issues (maintenance and spare parts).

¹² Pruitt (1981) identified several strategies for reaching integrative agreements, including logrolling, in which bargainers make tradeoffs between issues so that each party gets all or most of his or her preferred outcome on important issues, and compromise on issues of lesser importance.

¹³ As an example of an unlikely possibility, if a party would convince the other to accept his or her optimal terms (A-A-A for buyers, E-E-E for suppliers), then this party's expected profit would equal €5600 (low uncertainty ‘€5580 ~ €5620’, high uncertainty ‘€5000 ~ €6200’). The exchange partner would incur an expected loss of €1600 (low uncertainty ‘€-1620 ~ €-1580’, high uncertainty ‘€-2200 ~ €-1000’).

4.3. Measurement of the dependent variables

4.3.1. Joint profit

Prior negotiation studies typically capture economic negotiation outcomes in the form of joint profit (e.g., Pruitt and Lewis, 1975). At the end of each game, we established the dyad's joint profit (JP) by summing the profits of both negotiators.

4.3.2. Negotiation tactics

Similar to Chang et al. (2013) and Van den Abbeele et al. (2009) we allowed negotiators to send messages along with their offers and counteroffers. Analysis of actual communications between negotiators allows obtaining a rich understanding of negotiation behavior and to link these to outcomes (Wang and Tuttle, 2009). We therefore coded all messages to obtain detailed measures of negotiators' use of integrative and distributive tactics.

Integrative tactics involve the exchange of information about priorities, preferences, or numerical values, and is measured for each game. We coded use of these tactics separately for suppliers and buyers by focusing on their asking for and giving of information. This was captured by questions and statements such as about how negotiators prioritized issues (e.g., what is most important for you?; The payment term is more important to me than delivery time). The coding included the following categories with sub-dimensions for each (see Table 2 and Appendix D): exchange of information, creating a pleasant atmosphere, extending invitations to cooperate, and making constructive proposals (Chang et al., 2013; Van den Abbeele et al., 2009; Weingart et al., 1996). Two quotes from the experiment involving proposals to compromise and positive normative appeals illustrate the use of integrative tactics: (1) “If I am right you do not need a lot of maintenance. That is why I will agree with your machine price and lower the maintenance costs.”, and (2) “Thank you for your trust. Then this offer will be a compromise, since [...] the price can fluctuate for the both of us, causing it to be uncertain for the both of us. I trust you.” We provided a score of ‘1’ if a tactic was present in a negotiator's message, and summed the number of integrative messages per game observed to capture the dyad's use of integrative tactics.

Distributive tactics refer to tactics such as withholding information while using strategies to get information, offering minimally acceptable offers, sending positional commitments, being slow to give concessions, concealing feelings, and using persuasive arguments and warnings (Graham et al., 1992; Walton and McKersie, 1965; Pruitt and Lewis, 1975; Weingart et al., 1996). Table 2 exhibits the tactics and sub-dimensions used for coding distributive tactics, and Appendix D the operational definitions. Use of distributive tactics was scored and computed in the same way as integrative tactics. Two illustrative quotes from the experiment that include lies, threats and negative normative appeals are: (1) “I am afraid that I will have to look for another supplier since it will not work for me when I make a loss on the machine because of the high costs and go bankrupt because of it”, and (2) “I would like to make you the following offer since with the previous offer I will be making a loss and then I would rather not buy the machine since it will lead to a worse situation than I am in now [...] if you want to quit the negotiation process just let me know”. We compute our measure of use of integrative tactics relative to distributive tactics (ΔNT) as the difference in use. Positive values indicate use of more integrative than distributive tactics. If, for instance, in a game negotiators exchanged seven messages with two integrative and four distributive tactics, the score of -2 indicates a greater use of the latter.

The communications that were recorded during the experiment comprised 243 pages of messages. We used ATLAS.ti v.6.2 to code and analyze them. Coding was conducted independently by two raters (one of which was not involved in the study), and their inter-rater agreement was reasonable but also provided several differences (Cohen's Kappas of

Table 2
Summary of the negotiation tactics coding scheme.

Object	Integrative tactics	Distributive tactics
Information exchange	<i>Provision of information</i> NIE: numerical (33) PIE: Priority (112) SD: self-disclosure (192)	<i>Deceiving and withholding info.</i> LI: lies (224) RS: refusal to share information (2)
Creating atmosphere	<i>A pleasant atmosphere</i> REW: rewards (27) PNA: positive normative appeals (45)	<i>Unpleasant atmosphere</i> PU: punishment (38) NNA: negative normative appeals (151)
Willingness to cooperate	<i>Extending invitations</i> RC: request for cooperation (58) RI: request for information in integrative way (47)	<i>Posing limitations</i> COM: commitment (101) QU: request for information in distributive way (69) PD: putdown (210)
Making proposals	<i>Constructive</i> PR: promise (5) RE: recommendation (76) PC: propose to compromise (222)	<i>Compelling or compulsory</i> PA: persuasive argument (437) WA: warning (95) TH: threat (95)

Numbers between brackets are the frequency of use of tactics across the three negotiation games.

above 0.60).¹⁴ Review of the differences resulted in a consensus coding that can be considered sufficiently complete and reliable. As Table 2 shows, distributive tactics (particularly persuasive arguments, lies, putdowns and negative normative appeals) were used with greater frequency than integrative tactics (of which proposals to compromise and self-disclosures were most common).

To validate the coding measure of negotiation tactics, we asked negotiators after the games a question about how they would characterize the bargaining behavior of their partner, on a scale from one (competitive) to seven (cooperative). The average score across the negotiators correlates well and significantly ($r = 0.47$, $p < 0.01$) with the relative use of integrative tactics, supporting the validity of the content-based measurement. In addition, after the last game negotiators rated their and their partner's bargaining behavior on items concerning their problem solving orientation (Van den Abbeele et al., 2009). These items similarly correlate positively with relative use of integrative tactics, with negotiators focusing more on their joint instead of individual position, adjusting more to each other, being more honest and exchanging more objective (unbiased) information ($r = 0.21$; $r = 0.22$; $r = 0.16$; $r = 0.18$, all $p < 0.01$).¹⁵

4.4. Manipulation checks

After completing the negotiations, subjects filled out a questionnaire (identical for both roles) with questions about their motivation, understanding of the instructions, payoff tables and incentive scheme, time pressure to complete the negotiations, pleasure in conducting the experiment, and manipulation checks (see Appendix E).¹⁶ Mean scores on the questions indicate that subjects on average evaluated the negotiation as “interesting” (mean = 5.25; SD = 1.16), understood the instructions (mean = 5.44; SD = 0.94), were well motivated (mean = 5.02; SD = 0.85), and had sufficient time to complete the negotiations (mean = 4.60; SD = 1.27).

A variety of questions was designed to serve as manipulation checks, and the mean scores indicate the manipulations were successful. We

asked which value in the contract price interval the negotiator focused on during the negotiations (minimum, maximum or mean). Negotiators facing low uncertainty focused significantly more often on the mean of the interval than negotiators facing high uncertainty ($\chi^2 = 9.20$, $df = 2$, $p < 0.01$). When not focusing on the mean, suppliers most often focused on the minimum price, while buyers most often on the maximum price. A Wilcoxon test shows that this difference in focus on the price interval is significant ($p < 0.01$). These results are consistent with the idea that negotiators facing high payoff uncertainty take different reference points, increasing potential conflict. In the high uncertainty condition, negotiators also felt afterwards that they needed significantly more time to negotiate with their partner as compared to those in the low uncertainty condition ($F(1,88) = 5.08$, $p < 0.05$).

In evaluating the usefulness of the cost information they received, buyers with TCO information judged this to be more useful than buyers with traditional cost information ($F(1,88) = 19.31$, $p < 0.01$). Suppliers negotiating with a buyer with TCO information also evaluated their information as more useful ($F(1,88) = 2.93$, $p < 0.10$), even though all suppliers received the same information. This indicates that the perceived usefulness of the information depends on how it can be used in interaction, which in the TCO condition indeed also results in a better evaluation of the cost information at the dyadic level ($F(1,88) = 16.50$, $p < 0.01$). Responses to questions about information sharing during the negotiations (1 = keeping information; 7 = giving information) indicate that, on average, negotiators evaluated their bargaining strategies more to involve keeping information than to share this (mean = 3.42; SD = 1.17). This holds in particular for buyers with traditional cost information (mean = 3.12; SD = 1.13). Similarly, negotiators perceived their partners to keep more information than to share this (mean = 3.14; SD = 1.17), in particular suppliers who negotiated with buyers with traditional cost information (mean = 3.03; SD = 1.23).

5. Experimental results

5.1. Descriptive statistics and hypothesis tests

Table 3 shows summary statistics for the dependent variables over the three games across the four experimental conditions. The negative means for ΔNT indicate that on average negotiators made more use of distributive tactics than of integrative tactics. In 20 cases the

¹⁴ Some messages turned out to be difficult to code with the ex-ante developed coding scheme. To increase coding reliability, two additional raters recoded part of the messages, resulting in the creation of two new grounded codes: “refusal to share information” as distributive tactic and “proposal to compromise” as integrative tactic. All messages subsequently were re-coded by the first two coders.

¹⁵ When separating the perceptions of own and the other's behavior, we obtain similar results.

¹⁶ To avoid memory or common method effects, every survey question was presented in a separate screen.

Table 3
Descriptive statistics across experimental conditions.

Experimental Condition		Joint				Supplier				Buyer			
		Payoff uncertainty				Payoff uncertainty				Payoff uncertainty			
		Low		High		Low		High		Low		High	
		ΔNT	Profit	ΔNT	Profit	ΔNT	Profit	ΔNT	Profit	ΔNT	Profit	ΔNT	Profit
Accounting information	Traditional Info.	−1.76 (4.13)	3500 (1066)	−3.81 (5.62)	3354 (1334)	−0.20 (2.63)	1468 (782)	−1.99 (3.74)	1544 (848)	−1.56 (2.32)	2032 (903)	−1.83 (3.22)	1810 (917)
	TCO Info.	−1.62 (4.08)	3877 (902)	−1.80 (4.03)	3911 (925)	0.12 (2.64)	1627 (806)	−0.14 (2.91)	1857 (752)	−1.74 (2.81)	2250 (886)	−1.67 (2.86)	2054 (729)

Statistics are the cell mean and standard deviation (in parentheses) for the variables computed across the three games.

ΔNT is the difference in negotiators' joint use of integrative and distributive tactics. Measurement of negotiation tactics was based on coded exchanged messages between buyers and suppliers (Appendix D). Use of each of the specific tactics was coded '1' if the tactic was present in a message and '0' if not. For both integrative and distributive tactics, all scores of the buyer and supplier were summed to obtain overall construct scores. *Joint profit* is calculated as the sum of buyer and supplier profit across games.

For joint ΔNT and joint profit, Kruskal-Wallis tests indicate the differences across the experimental cells are significant at $p < 0.05$ and $p < 0.01$, respectively.

For supplier ΔNT and profit, Kruskal-Wallis tests indicate the differences across the experimental cells are significant at $p < 0.01$ and $p < 0.05$, respectively.

For buyer ΔNT and profit, Kruskal-Wallis tests indicate the differences across the experimental cells are insignificant ($p > 0.10$) for, and significant for profit at $p < 0.01$.

negotiation was stopped, resulting in zero JP.¹⁷ This causes the distribution of JP to be non-normal, and accordingly, to test for differences across the cells, we use non-parametric Kruskal-Wallis tests. Regarding negotiation tactics, the Kruskal-Wallis test shows that cells differ significantly from each other ($p < 0.05$). As initial support for H1, negotiators make relatively least use of integrative tactics when they face high payoff uncertainty, in particular when buyers are provided with traditional cost information. The provision of TCO information results in similar negotiation behavior as in the low uncertainty condition, which result is consistent with H2. JP on average is also lowest in the high uncertainty, traditional cost information condition, and the Kruskal-Wallis test again indicates that cells differ significantly from each other ($p < 0.01$). Across both low and high uncertainty conditions, negotiators who both had access to TCO information reached higher JP.¹⁸

The bivariate correlations in Table 4 show that supplier profit and buyer profit are negatively correlated, but also correlate positively with joint profit. This is consistent with the experiment not being a zero sum game, and the presence of integrative solutions. Negotiators' use of integrative tactics correlates negatively with their own profit, but positively with the other's profit, with the other's relative use of integrative tactics and with joint profit. These correlations support the idea that integrative behaviors and the related willingness to compromise can go at the expense of one's profit, but indirectly, through the partner's reciprocating integrative behaviors, result in higher own and joint profit. Payoff uncertainty is associated with less integrative supplier negotiation behavior, and is unrelated to buyer negotiation tactics. It also is positively correlated with supplier profit, negatively with buyer profit, and uncorrelated with joint profit. The presence of TCO

information is positively associated with supplier, buyer and joint profit.

Table 5 reports the results of ANOVA analyses of ΔNT and JP based on contrast coding ($-1/1$) for the treatment variables.¹⁹ The ANOVA reveals significant effects of payoff uncertainty ($p < 0.05$) and accounting information ($p < 0.05$) on ΔNT . Marginal effect estimates show that, consistent with the mean estimates in Table 3, payoff uncertainty induces a relatively lower use of integrative tactics (cf. H1), while TCO information does the opposite. The interaction effect on ΔNT is also significant ($p < 0.05$), and the marginal effect estimates support that TCO information mitigates the negative impact of payoff uncertainty on negotiation behavior (cf. H2). Fig. 2 plots the marginal effects on negotiation behavior, and shows that under high payoff uncertainty, negotiation behavior is more integrative when buyers receive TCO information. Under low payoff uncertainty negotiation behavior is similar across the accounting information conditions.

Table 5 also shows a significant effect of accounting information on JP ($p < 0.01$).²⁰ The marginal effect estimates in Fig. 3 show that negotiators reached higher JP when buyers had TCO information. The interaction between payoff uncertainty and accounting information, however, shows no significant effect on JP.

We hypothesized that negotiation tactics mediate the influence of the treatments on joint profit, based on the premise that negotiation behavior affects outcomes and thus carries the effects of the interacting treatments (i.e., 'moderated mediation'). Importantly, mediation can exist even in the absence of a direct relation between antecedent and dependent variables (Hayes, 2009). Given the expected mediation, we conduct a formal hypothesis test using structural equation modeling (SEM). SEM has the advantage that mediation effects can be tested simultaneously rather than testing the components in a piecemeal fashion (MacCallum and Austin, 2000).

We estimate the mediation model in Stata (v.14.1) using maximum likelihood estimation. Following recommendations of Hayes and Preacher (2004), and similar to the ANOVA tests, we use contrast coding ($1/-1$) for the treatment variables. Because the experimental data are of repeated nature, we compute clustered-robust standard errors for the repeated dyadic observations and additionally include as

¹⁷ Negotiators decided to end the game nine times in game 1, nine times in game 2 and two times in game 3. Twelve (eight) of these terminations were in the high (low) uncertainty condition, and fourteen (six) were in the traditional cost (TCO) condition. Nine of the twenty terminations involved both high uncertainty and a buyer with traditional cost information. Two dyads did not come to an agreement in any game, one dyad failed to reach an agreement in two of the three games, and the remaining twelve terminations relate to different dyads failing to agree only in one round. Terminations were made by both buyers and suppliers (8 vs. 12). While the sample mean for ΔNT is -2.26 , for the twenty terminations this is -7.40 , indicating substantial use of distributive tactics before terminating the negotiation. Noticeable is that only three terminations were due to negotiators not reaching agreement in round ten, and that the number of bids made and time used before termination are significantly less in the second and third game.

¹⁸ To support interpretation of the profit differences between cells, conditional on negotiators reaching an agreement, the average profit in game 1, 2 and 3 are €3594, €3639 and €3738, respectively.

¹⁹ Buckless and Ravenscroft (1990) demonstrate "that contrast coding provides greater statistical power than the conventional ANOVA without increasing Type I error rates" (p. 933).

²⁰ Given the non-normal distribution of JP, we also redo the analysis using the rank-order of JP (and later also of individual profit). This provides similar results and inferences.

Table 4
Spearman correlation matrix.

	Supplier profit	Buyer profit	Joint profit	ΔNT supplier	ΔNT buyer	ΔNT joint	Payoff uncertainty	TCO information
Supplier profit	1							
Buyer profit	−0.44***	1						
Joint profit	0.45***	0.39***	1					
ΔNT supplier	−0.15***	0.42***	0.21***	1				
ΔNT buyer	0.38***	−0.18***	0.13**	0.10	1			
ΔNT joint	0.11*	0.20***	0.24***	0.78***	0.64***	1		
Payoff uncertainty	0.14**	−0.15**	0.02	−0.13**	−0.01	−0.11*	1	
TCO information	0.13**	0.15**	0.39***	0.18***	−0.01	0.09	−0.01	1

Explanation of variables:

Profit is measured as the (joint or individual) game profit.

ΔNT is measured as the difference in use of integrative and distributive tactics.

Uncertainty: ‘−1’ for low uncertainty, ‘1’ for high uncertainty.

TCO information: ‘−1’ for traditional cost information, ‘1’ for TCO information.

Table 5
ANOVA of Negotiation Tactics and Joint Profit.

	ΔNT			Profit		
	Joint	Supplier	Buyer	Joint	Supplier	Buyer
Payoff uncertainty	4.39**	7.86***	0.08	0.18	2.45*	3.89**
TCO information	4.04**	8.82***	0.01	12.58***	5.86***	4.76**
Payoff uncertainty $\times$ TCO information	3.08**	4.40**	0.26	0.47	0.62	0.02
Game 2 dummy	5.15***	2.67**	3.35**	0.08	0.06	0.02
Game 3 dummy	22.69***	9.57***	17.69***	0.79	2.51	0.12
R ²	0.12	0.11	0.07	0.05	0.04	0.03

Note: Cell statistics are F-values. ***, **, * indicate significance at the 1%, 5%, 10% level (one-tailed), respectively.

Explanation of variables:

ΔNT is measured as the difference in use of integrative and distributive tactics.

Profit is measured as the joint and individual game profit for the buyer or supplier.

Uncertainty: ‘−1’ for low uncertainty, ‘1’ for high uncertainty.

TCO information: ‘−1’ for traditional cost information, ‘1’ for TCO information.

Game 2 dummy: indicator variable for game 2.

Game 3 dummy: indicator variable for game 3.

Fig. 2. Marginal effects on Negotiation Behavior.

Fig. 3. Marginal effects on Joint Profit.

Table 6
Parameter estimates on Negotiation Tactics and Joint Profit.

Variables	ΔNT	Total effect on JP
Intercept	– 3.78	3831.71
ΔNT	–	77.15***
Payoff uncertainty	– 0.56**	– 43.13**
TCO information	0.54**	41.37*
Payoff uncertainty $\times$ TCO information	0.47*	36.11*
Game 2 dummy	1.48**	114.43**
Game 3 dummy	3.11***	240.12***
R ²	0.12	0.10

This table reports the parameter estimates of a structural equation model that includes the main and interaction effects of the manipulated variables on joint negotiation tactics and joint profit.

N = 267. Cell statistics are the coefficient estimate. ***, **, * indicate significance based on clustered-robust standard errors (clustered by negotiation dyad) at the 1%, 5%, 10% level (one-tailed), respectively. The fit indices are $df = 5$, $\chi^2 = 9.94$ ($p < 0.10$), $\chi^2/df = 1.99$, CFI = 0.92, RMSEA = 0.061, and SRMR = 0.030.

Explanation of variables:

ΔNT is measured as the difference in negotiators' joint use of integrative and distributive tactics.

JP is calculated as the sum of buyer and supplier profit for each game.

Uncertainty: '– 1' for low uncertainty, '1' for high uncertainty.

TCO information: '– 1' for traditional cost information, '1' for TCO information.

Game 2 dummy: indicator variable for game 2.

Game 3 dummy: indicator variable for game 3.

control variables indicators for the game that observations relate to (i.e., game 2 and 3, with game 1 as reference category).²¹

Table 6 reports the results. We use multiple goodness-of-fit indices available in Stata to assess model fit (cf. Hu and Bentler, 1999), including the Chi-square statistic divided by the degrees of freedom (χ^2/df), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root-Mean Residual (SRMR). The following cutoff criteria were used to assess the model-fit: (χ^2/df) ratio less than 3; CFI greater than 0.90; RMSEA up to 0.08; and SRMR up to 0.06 (Hu and Bentler, 1999; Fan et al., 1999). Model fit can be considered adequate, as the fit statistics are within the recommended cutoff values.

Regarding the coefficient estimates, we report direct effects of the treatment variables on ΔNT and total effects on JP which allow to assess the indirect effects through negotiation behavior. As Table 6 shows, the results for the treatment variables are consistent with the results of the Kruskal-Wallis tests (see Table 3). In support of H1, payoff uncertainty is associated with a reduced use of integrative tactics relative to distributive tactics ($p < 0.05$). Consistent with H2, the provision of TCO information to the buyer mitigates this negative effect of uncertainty ($p < 0.05$). The estimates also show that the direct effect of TCO information on negotiation behavior is positive and significant, consistent with prior experimental research that shows that TCO information supports more cooperative negotiations (Van den Abbeele et al., 2009).

In support of the hypothesized mediation effect (H3), ΔNT has a positive effect on JP ($p < 0.01$), and the total effects show that through negotiation behavior, payoff uncertainty results in lower JP ($p < 0.01$), while the provision of TCO information mitigates this negative influence ($p < 0.05$).²² Overall, these results lend support for the expectation that

²¹ We also added indicators to control for the different types of students that participated (bachelor, full time master and part-time master students, with the last group including more experienced participants). While full-time students were on average more integrative in their behavior and part time students on average less integrative, the findings with respect to the treatment variables did not change. In addition, controls for risk preferences, gender, and the time of day and day of the week the experiments took place were insignificant and did not influence the results.

²² Separating integrative and distributive tactics shows that, as expected, JP is positively influenced by the first and negatively by the second (both $p < 0.01$) (untabulated). In unreported tests, we also observe that through influencing negotiation behavior, the treatment influence the efficiency of negotiations. Specifically, through affecting the

payoff uncertainty induces relatively less integrative negotiation behavior, resulting in lower joint outcomes. TCO information that helps negotiators in identifying mutually beneficial tradeoffs weakens the negative effect of payoff uncertainty on behavior and outcomes. The total effects further show a positive significant direct effect of TCO information, indicating that the more cooperative negotiations in the presence of TCO information also result in higher joint outcomes.²³

In addition to these results, the game indicators show that negotiators are relatively more integrative in the second and third game ($p < 0.05$ and $p < 0.01$), enhancing JP ($p < 0.05$ and $p < 0.01$). This finding is consistent with a relationship gradually developing during repeated interactions.²⁴

5.2. Negotiation dynamics

For our hypothesis tests, we aggregated data across the three repeated games. The experiment, however, also allows us to obtain a deeper understanding of negotiation dynamics over the games. For this purpose, we test a path model in which the experimental treatments influence behavior in the first game (ΔNT_1), which in turn influences behavior in the second (ΔNT_2) and third game (ΔNT_3), with ΔNT_2 also influencing ΔNT_3 . The expectation is that initial treatment-induced behavior will influence negotiation behavior in subsequent games, as prior research has found that early negotiation experiences influence cooperative behavior in later stages (Bazerman and Carroll, 1987; Neale and Northcraft, 1991; Albarracín and Wyer, 2000). We also estimate paths from ΔNT to JP to test how in each game negotiation behavior relates to outcomes and mediates the effects of the treatments. Fig. 4 summarizes the model.

Table 7 reports the estimation results. All coefficients are total effects that show how variables affect each other overall (i.e., though all specified mediating paths, cf. Fig. 4). The results show that, similar to Table 6, payoff uncertainty, TCO information and their interaction affect ΔNT_1 ($p < 0.10$, $p < 0.10$ and $p < 0.05$) and JP_1 ($p > 0.10$, $p < 0.10$ and $p < 0.10$), while ΔNT_1 also affects JP_1 ($p < 0.01$). They further show that ΔNT_1 affects ΔNT_2 ($p < 0.01$), which in turn affects JP_2 ($p < 0.05$). ΔNT_1 affects JP_2 ($p < 0.10$) through its effect on ΔNT_2 , indicating that current outcomes are influenced by prior behavior. Similarly, ΔNT_3 relates to ΔNT_2 and ΔNT_1 (both $p < 0.01$), indicating that initial behavior persists in the subsequent two games. JP_3 also relates to ΔNT_3 ($p < 0.01$) and through this behavior to the prior games ΔNT_2 ($p < 0.05$) and ΔNT_1 ($p < 0.05$). Notably, the effect of the payoff uncertainty-TCO information interaction is significant on ΔNT for each game and relates significantly to JP_3 ($p < 0.10$). This indicates that the relatively more integrative negotiation behavior of negotiators with high payoff uncertainty and TCO information persists over time, influencing not only initial but also subsequent outcomes.²⁵

(footnote continued)

choice of tactics, payoff uncertainty results in an increase in negotiation time ($p < 0.01$) and in the number of offers needed to come to an agreement ($p < 0.05$). TCO information weakens these effects of payoff uncertainty (both $p < 0.05$) and through its effect on behavior also directly reduces negotiation time and number of offers (both $p < 0.05$).

²³ As an alternative specification, we let the treatment variables and game indicators also directly affect JP. Inferences of this unreported model remain the same. Payoff uncertainty negatively affects ΔNT and through that JP (both $p < 0.01$). TCO information mitigates these effects (both $p < 0.05$). The estimates also show a positive direct effect of TCO information on JP ($p < 0.01$), indicating that, irrespective of negotiation behavior, this helps negotiators to close more profitable contracts.

²⁴ Separation of integrative and distributive tactics shows that negotiators become more efficient in the later games as they make significantly less use of both tactics (i.e. less messages exchanged). Similarly, in the later games negotiators needed significantly less time and offers to reach agreement than in the first game.

²⁵ Adding paths from game outcomes to next game behavior (i.e., $JP_1 \rightarrow \Delta NT_2$ and JP_1 and $JP_2 \rightarrow \Delta NT_3$) provides similar results and no significant coefficients for these paths. This indicates that negotiation behavior is more strongly influenced by prior behavior than by prior outcomes.

Fig. 4. Representation of the game-level model.

Table 7
Analysis of Negotiation Dynamics.

Variables	ΔNT1	ΔNT2	ΔNT3	JP1	JP2	JP3
Intercept	−3.76***	−1.72***	0.07	3908.55***	3790.42***	3803.97***
Payoff uncertainty	−0.81*	−0.13	−0.10	−66.96	−8.20	−9.85
TCO information	0.94*	0.15*	0.12*	78.26*	9.59	11.51
Payoff uncertainty × TCO information	1.35**	0.21*	0.17**	112.15**	13.75	16.49*
ΔNT1	–	0.16***	0.13***	82.84***	10.15*	12.18**
ΔNT2	–	–	0.16***	–	65.44**	15.66**
ΔNT3	–	–	–	–	–	96.57***
R ²	0.09	0.06	0.16	0.17	0.04	0.11

This table reports the parameter estimates of a structural equation model at the game level that includes the effects of the manipulated variables on joint negotiation tactics and joint profit.

Table 8
Parameter estimates on Individual Negotiation Tactics and Profit.

Variables	ΔNT Supplier	ΔNT Buyer	Supplier profit	Buyer profit
Intercept	−1.25***	−2.53***	1793.70***	2036.59***
ΔNT – Supplier	–	–	<i>Direct effects</i> −45.98**	<i>Direct effects</i> 124.09***
ΔNT – Buyer	–	–	115.78***	−39.78**
			<i>Total effects</i>	<i>Total effects</i>
Payoff uncertainty	−0.51**	−0.05	18.03	−61.59**
TCO information	0.54***	−0.01	−25.56	67.46**
Payoff uncertainty × TCO information	0.38*	0.09	−7.72	44.10*
Game 2 dummy	0.73*	0.75*	53.58	60.68
Game 3 dummy	1.38***	1.73***	136.80**	102.66*
R ²	0.11	0.06	0.17	0.19
Covariance ΔNT supplier and ΔNT buyer	1.26**			

This table reports the parameter estimates of a structural equation model that includes the main and interaction effects of the manipulated variables on negotiation tactics and individual profit.

N = 267. Cell statistics are the coefficient estimate. ***, **, * indicate significance based on clustered-robust standard errors (clustered by negotiation dyad) at the 1%, 5%, 10% level (one-tailed), respectively. The fit indices are $df = 11$, $\chi^2 = 19.98$ ($p < 0.05$), RMSEA = 0.055, CFI = 0.94, SRMR = 0.033. Total effect estimates are the effects of the independent variables through negotiation tactics.

5.3. Individual level analysis

Consistent with prior studies (e.g., Chang et al., 2013), we analyzed the data at the dyadic level. To provide insight into individual negotiators' behavior and outcomes, we also conduct analyses for buyers and suppliers separately. The right-hand columns of Table 3 report summary statistics. Kruskal-Wallis tests reveal significant cell differences in negotiation tactics used by suppliers ($p < 0.01$), but not by buyers. The ANOVA test in Table 5 confirms this result. Thus, while buyers' relative use of negotiation tactics appears to be similar across conditions, suppliers' responses differ. In particular, suppliers facing high payoff uncertainty and a buyer with traditional cost information use relatively less integrative tactics. In this case, buyers have little meaningful information to share that could change supplier behavior. Thus, the information content in buyers' communication seems to influence how suppliers respond in choice of negotiation tactics.

Table 3 also shows significant cell differences in individual profit of suppliers and buyers ($p < 0.05$ and $p < 0.01$). This result is consistent with earlier studies including symmetric bargaining tasks: although the buyer and supplier roles are identical under experimental conditions,

buyers tend to outperform sellers (Eliashberg et al., 1986; Neale and Northcraft, 1986). This may be caused by contextual framing, elicited by the roles assigned to subjects. A possible explanation for the performance differences between buyers and suppliers is a prospect theoretical framing effect: when in an experimental transaction a product or service of indeterminate value is being exchanged, negotiation partners focus mainly on the amount of money they give up (Neale et al., 1987). In our experimental setting, buyers perceive the negotiation in terms of losing resources (paying), inducing risk seeking behaviors, whereas sellers view the negotiation in terms of gaining resources (selling), leading them to be more risk averse. Negotiators that are more risk seeking claim a greater amount of resources and a higher premium for a negotiated settlement (Neale et al., 1987; Thompson, 1990). Suppliers earn least profit when buyers have traditional cost information, in which case the negotiators are limited in their means to seek tradeoffs through information sharing. Supplier profit is highest under high payoff uncertainty and when the buyer has TCO information. This is where the negotiators may share meaningful information to identify mutually beneficial tradeoffs and the uncertainty provides a stimulus to do so. Buyers earn most profit when they have TCO information and payoff uncertainty is low, allowing them

to best exploit the information. They earn least profit when having traditional cost information under high payoff uncertainty, which is when suppliers are least integrative. The ANOVA tests in Table 5 also show significant effects of the treatments on both buyer and supplier profit, but not for the interaction.

We again examine mediation effects by estimating a structural model in which the treatments influence supplier and buyer negotiations tactics, and through this each negotiator's profit (see Table 8). As negotiators respond to each other's bids and communications, we also specify a covariance between their use of tactics, expecting these will be reciprocated (Graham, 1983; Luft, 2016; Pfetsch and Landau, 2000; Putnam and Jones, 1982).

Model fit is adequate, as all fit statistics are within the recommended cutoff values. The estimates show that the treatments significantly influence suppliers' negotiation tactics, but not those of buyers. Suppliers use relatively less integrative tactics under high payoff uncertainty ($p < 0.05$), which influence is mitigated if the buyer has TCO information ($p < 0.05$). Buyer possession of TCO information also has a direct positive effect on supplier negotiation behavior ($p < 0.01$). These results again indicate that suppliers adapt their negotiation behavior in response to the type of information used by buyers, with TCO information inducing suppliers to use relatively more integrative tactics to obtain a mutually acceptable agreement.²⁶

The results also support the expectation of reciprocation of tactics, indicated by the positive covariance between supplier ΔNT and buyer ΔNT ($p < 0.01$), and that these tactics influence individual profit. Using integrative tactics has a negative direct effect on negotiators' own profit (because of the concessions they are willing to make), but a larger positive effect on the other's profit. Through reciprocation, individual and joint profit are increased (consistent with the sum of the coefficients and the overall positive effect on JP in Table 6). The total effect estimates show that through its negative influence on suppliers' behavior ($p < 0.05$), payoff uncertainty negatively affects buyer profit ($p < 0.05$). In contrast, having TCO information increases buyers' profit ($p < 0.05$), as suppliers become relatively more integrative ($p < 0.01$). In addition, the interaction coefficients indicate that TCO information reduces buyers' profit disadvantage of payoff uncertainty ($p < 0.10$) through the positive effect on supplier behavior ($p < 0.10$). Thus, the positive effects of TCO information on JP in Table 6 appear to accrue primarily to buyers, while suppliers, who respond relatively more integrative to buyers' use of the information, are not worse off.

6. Discussion and conclusion

This study aims to increase our understanding of the role of accounting information in interfirm negotiations that are characterized by significant payoff uncertainty. It does so by examining how under conditions of low and high uncertainty, the provision of refined accounting information influences negotiators' use of negotiation tactics and the resulting outcomes. Consistent with our expectations, we find that payoff uncertainty results in greater use of distributive tactics relative to integrative tactics, which in turn negatively impacts joint profit. Refined accounting (TCO) information reduces the adverse impact of uncertainty on negotiation behavior, which in turn positively influences joint outcomes. This effect holds in particular for the initial negotiation, for which we find negotiation behavior to influence not only focal outcomes, but also behavior and outcomes in subsequent negotiations with the exchange partner.

Our findings provide evidence for significant differences in negotiator behavior and outcomes across conditions and negotiating roles. In our setting, only buyers experience differences in accounting information and every round the supplier starts the negotiation with an initial offer. We find that payoff uncertainty and accounting information primarily impact suppliers' negotiation behavior. Our results provide support that (the changes in) suppliers' choice of tactics evokes reciprocating buyer negotiation behavior and vice versa. Overall, the results show that a negotiator's use of integrative (distributive) tactics negatively (positively) affects own results, but through this reciprocating partner behavior positively (negatively) affects own profit. Thus, while in our individual level analyses we observe mean differences in negotiators' behaviors and outcomes, the pattern of variation is largely consistent with dyadic negotiation analyses. In addition to these main results, the results show that negotiators become relatively more integrative in the second and third game, leading to greater joint profit. This finding is consistent with a relationship gradually developing in repeated interactions that enhances negotiators' ability to close contracts that provide better joint outcomes.

Our findings also offer managerial implications for the design of management accounting in buyer-supplier relations by showing that, particularly in uncertain contexts (which in outsourcing settings is more the rule than the exception), stimulating cooperative negotiations can contribute to better economic outcomes. Our findings indicate that refined accounting information has the ability to do so, even when the information itself is unrelated to the nature of the uncertainty.

Our study is subject to several limitations. For instance, as compared to a real life setting, our experiment lacks the effects of important variables such as reputation, information about negotiators' past behavior, other types of controls, and power differences. We also manipulated payoff uncertainty to be symmetric for both negotiators, while in many settings the degree and nature of uncertainty can differ between negotiators. Future research could also investigate whether our results also hold beyond buyer-supplier negotiations and when negotiators have a different role, such as in joint ventures and alliances. In the experiment, suppliers started the negotiations by making a first bid. This fixed ordering of negotiations may have influenced both negotiation tactics and outcomes. Negotiators also faced the same exchange partner for three rounds, and the question is how our manipulations in negotiations with mixed partners play out. Finally, by design this study did not examine the role and effects of trust building between negotiators, which can occur during repeated interactions. Social psychology research (e.g., Pruitt and Lewis, 1975) suggests that repeated ties can result in increasing trust that may involve reduced use of distributive tactics and greater use of integrative tactics. In particular how in negotiation settings emerging trust interacts within formal accounting information and control mechanisms is an important question for further research.

Acknowledgements

We are grateful to Andrea Drake, Martijn Schoute, Eelke Wiersma and Alexandra Van den Abbeele for their valuable feedback on earlier versions of this paper. We also thank seminar participants at VU University, and participants at the 2013 AAA Management Accounting Section midyear meeting and the 2012 IAAER conference for useful comments and suggestions on draft versions of the paper.

²⁶ A model that separates integrative and distributive tactics shows that payoff uncertainty induces suppliers to use more distributive tactics ($p < 0.01$), while buyers make more use of both distributive and integrative tactics (both $p < 0.05$), explaining the insignificant effect on the difference in use. When buyers possess TCO information, suppliers use less distributive and more integrative tactics (both $p < 0.05$), supporting the idea that the information content in buyers' communications influences how suppliers respond. Under high payoff uncertainty, buyer TCO information affects suppliers' negotiation behavior mainly through a reduction of distributive tactics ($p < 0.05$) while not significantly influencing use of integrative tactics.

Appendix A. Instructions and negotiation scenarios

This Appendix provides an extended summary of the instructions and negotiation scenarios provided to experimental participants. The text is based on the documentation provided to suppliers. Deviations in the text provided to buyers are presented between brackets. Note that the contract and payoff tables in the scenarios deviate from the tables that participants received during the game (see Appendix B), and were included to explain the negotiation process.

General instructions

Welcome to this interactive computer game. The game is a simulation of negotiations in practice between buyers and suppliers. By random assignment you have been given the role of supplier [buyer]. In this game you will be matched to a buyer [supplier] and presented with a number of negotiation scenarios. You engage in three to five negotiations with this buyer [supplier]. You have 10 min to read the instructions.

Each negotiation round ends when (1) you reach an agreement with the buyer[supplier], (2) you or the buyer [supplier] decide to end the negotiation, or (3) an agreement has not yet been reached after 10 rounds. You will earn €3 for your participation in this game and a bonus of 0.1% of the profit that you make for your company in each game. Your total result will be determined after the last game by adding up the results from each negotiation game.

Example: if you have made a profit of €9000, then you will receive a payment of €12 ($€3 + [€9000 \times 0.1\%]$). However, this will only happen if you fill out all of the online questions about the negotiations during and after the game seriously and genuinely

You [your supplier] will start the negotiations by sending an offer and your buyer receives [you receive] the offer with three options:

- Accept (in this case, you and your buyer [supplier] will earn a bonus for this game).
- Reject (in this case, your buyer [supplier] must provide a new offer, which you can accept or reject).
- Stop the negotiation (in this case, you and your buyer [supplier] will not get any profit and consequently any bonus for this game).

It is important to choose your negotiation tactics, like:

- Critically use information (ask questions, give information to get information, etc.).
- You can provide correct or wrong information about your profit and costs.
- You can ask your buyer [supplier] about his or her income and/or costs.

You are not allowed to open other applications or to communicate with other participants. You can communicate with the buyer [supplier] by writing messages, talking is prohibited.

Scenario of the first game: Selling/buying a napkin and pocket tissue machine

Suppliers received the following introduction

Assume that you are the representative of a supplier of **Carmen** Corporation which, provides new machines and spare parts for the tissue business, offering a unique opportunity for improving operations and profits for the tissue industry. Your buyer is the representative of **Flora** Company, which manufactures tissue paper. Once Flora's machines have to be renewed, Flora needs to purchase a napkin tissue and pocket tissue machine from your company.

Buyers received the following introduction: Assume that you are the representative of a buyer of **Flora** Company which manufactures tissue paper. And your supplier is the representative of **Carmen** Cooperation which provides new machines and spare parts for the tissue business, offering a unique opportunity for improving operations and profits for the tissue industry. Your firm needs to purchase a napkin tissue and pocket tissue machine from Carmen.

Negotiators were provided with a description of the tissue making process (details omitted), including that the production process is highly mechanized and that it is important that the production process will not be interrupted. Thus, proper maintenance and availability of spare parts are important to the machine. These issues need to be negotiated and considered as part of the final agreement. From the tissue making process viewpoint, maintenance and spare parts are needed to keep the machines running, and are part of the final contract. Consequently when you offer a buyer [when a supplier offers you] new machines, this must be accompanied by maintenance and spare parts.

Every contract that you negotiate thus consists of three components:

- The machine price contract. This generates income [cost] for your company, so the higher [lower] the better.
- The maintenance cost contract; the lower costs for you the higher costs for your buyer [supplier] and vice versa.
- The spare parts cost contract, same as maintenance contract, the lower costs for you the higher costs for your buyer [supplier] and vice versa.

[In addition to the costs of these contract components, you expect that the new machine will lead to an increase in income (sales) for you. This is presented as a fixed amount.]

The quality of soft paper from this machine does not differ from that of competitors and the profit of the firm is only determined by these three components: machine price, maintenance costs, and spare parts costs. The cost of each of these components will be shown by five contracts levels labeled "A" through "E" as illustrated in the table below.

Machine price				Maintenance (cost)		Spare parts (cost)	
	Low		High				
A	90	~	110	A	100	A	50
B	135	~	165	B	80	B	40
C	180	~	220	C	60	C	30
D	225	~	275	D	40	D	20
E	270	~	330	E	20	E	10

Buyers in the TCO condition received the following table:

Machine price (costs)				Maintenance (costs)		Spare parts (costs)	
Low		High					
A	90	~	110	A	20	A	10
B	135	~	165	B	40	B	20
C	180	~	220	C	60	C	30
D	225	~	275	D	80	D	40
E	270	~	330	E	100	E	50

Buyers in the traditional cost condition received the following table:

Machine price (costs)				Maintenance (number #)		Spare parts (number #)	
Low		High					
A	90	~	110	A	2	A	1
B	135	~	165	B	4	B	2
C	180	~	220	C	6	C	3
D	225	~	275	D	8	D	4
E	270	~	330	E	10	E	5

The buyer [supplier] has a sheet like you that includes the same five options, but with different values about his or her machine prices [income] and costs. It means that you and your buyer [supplier] have own information, and you are not shown the other's payoff table. However, you are able to get insight into your buyer's [supplier's] payoff table through the procedure of offers and the messages which you can send during the negotiations. Feel free to use part or all the information provided in shaping your bargaining situation and to create additional arguments to strengthen your position if you desire.

As a supplier you have [The supplier has] uncertainty about the market price for the tissue machine. Consequently the machine price agreed upon can fluctuate and the final price will fall within an interval with a minimum and maximum value. The exact price is not available until the end of all negotiations. The costs of maintenance and spare parts are fixed and thus are not subject to uncertainty. In your experience as a buyer, the uncertainty about the machine prices always seemed to be a surprise and the exact price in most cases deviated from the predicted average price. Thus, the final price of your last negotiation round, reached almost the maximum of the predicted price range, whereas the final price in the round before the last one ended up at the minimum of the predicted price range. In the negotiations it is therefore important to pay attention to this uncertainty during the negotiation process, because it can influence the final result as well as the bonus payment you receive. The costs of maintenance and spare parts are fixed and do not contain uncertainty. Note: if you take care of more maintenance and spare parts, the supplier [buyer] will have to do less of those things and your costs will increase. If you take care of less of those things, the supplier will have to do more and his/her costs will rise. The quality will remain the same in both cases.

While you are negotiating about these three parts in order to make acceptable price and cost contracts, it is important to consider them in relation to each other, with attention for the risks and uncertainties that you and the supplier have to deal with. You have to reach one agreement for the price contract, the maintenance contract and the spare parts contract and every combination of the three contracts is possible (for example: the offer A-C-B means price contract A, maintenance contract C and spare parts contract B. Hence you are making a 'package deal'. Therefore you can calculate your profit interval by:

Profit = machine price – maintenance cost – costs of spare parts.

As example, from the table above you can infer that the best agreement for you is "E-E-E" ($[270 \sim 330] - 20 - 10 = [240 \sim 300]$ profit), and the worst agreement is "A-A-A" ($[90 \sim 110] - 100 - 50 = [60 \sim 40]$ loss).

Buyers in the TCO condition received the following formula and example:

Profit = Income – machine price – maintenance cost – costs of spare parts.

Suppose the extra income of the machine is 400. From the table above you can infer that the best agreement for you is "A-A-A" ($400 - [90 \sim 110] - 20 - 10 = [280 \sim 260]$ profit), and the worst agreement is "E-E-E" ($400 - [270 \sim 330] - 100 - 50 = [80 \sim 20]$ loss).

Buyers in the traditional cost information condition received the following formula and example:

Profit = Income – machine price – costs for the amount of maintenance – costs for the number of spare parts).

Suppose the extra income of the machine is 400. From the table above you can infer that the best agreement for you is "A-A-A" ($400 - [90 \sim 110] - \text{the cost of two times maintenance} - \text{the cost of one spare part}$), and the worst agreement is "E-E-E" ($400 - [270 \sim 330] - \text{the cost of 10 times maintenance} - \text{the cost of 5 spare parts}$).

The following description was generic to all negotiators: During the negotiations you will see in your screen tables that show the consequences of offers and counteroffers, including the expected result (profit or loss interval). Your counterparty will see similar tables for his/her situation. An example for the agreement B-C-A is provided below.

Variables	Round 1		Round 2		Round 3		Round 4	
	Supplier	Buyer	Supplier	Buyer	Supplier	Buyer	Supplier	Buyer
Machine Price contract	B							
Maintenance contract	C							
Spare parts contract	A							
Your company result	2400 ~ 3000							

Buyers in the traditional cost information condition did not receive reference to “the expected result” nor the last line of the table.

Scenario of the second game: Selling/buying spare parts of toilet tissue machine

In this game you offer the buyer [the supplier offers you] spare parts for his/her [your] existing toilet tissue machine. The agreement for spare parts also includes agreements about delivery time and payment terms. In case your buyer prefers [you prefer] to improve the existing machine, the contract will consist of:

- The price for spare parts price (an income for you) [(a cost for you)].
- The delivery time cost contract. To obtain a short delivery time, you [the supplier] will have to incur more delivery cost, and vice versa.
- The payment terms contract. This follows the same principle as for delivery: the lower the cost for you, the higher the cost for the buyer [supplier] (and vice versa).

[In addition to the costs of these contract components, you expect that the new machine will lead to an increase in income (sales) for you. This is presented as a fixed amount.]

You can calculate your profit range with the following formula:

$$\text{Profit} = \text{price of spare parts} - (\text{delivery cost} + \text{payment cost}).$$

Buyers in the TCO condition received the following formula:

$$\text{Profit} = \text{Income} - (\text{costs of spare parts} + \text{delivery cost} + \text{payment cost}).$$

Buyers in the traditional cost condition received the following formula and example:

$$\text{Profit} = \text{Income} - (\text{costs of spare parts} + \text{cost for number of weeks for delivery} + \text{costs for number of weeks for payment}).$$

Scenario of the third game: Selling/buying kitchen towel tissue machine

In this game you offer the buyer [the supplier offers you] a new machine for kitchen towel tissues. This is similar to the first game, and you can follow same instructions of the first game.

Appendix B. Payoff tables of the two negotiations games

Game 1

Low uncertainty

Supplier	Machine price			Maintenance (cost)			Spare parts (cost)		
		Low	High						
A	1980	~	2020	A	1350		A	2250	
B	2980	~	3020	B	1050		B	1750	
C	3980	~	4020	C	750		C	1250	
D	4980	~	5020	D	450		D	750	
E	5980	~	6020	E	150		E	250	

Buyer

Income = 8000

	Machine price (cost)			Maintenance (cost)			Spare parts (cost)		
		Low	High						
TCO info.	A	1980	~	2020	A	250	A	150	
	B	2980	~	3020	B	750	B	450	
	C	3980	~	4020	C	1250	C	750	
	D	4980	~	5020	D	1750	D	1050	
	E	5980	~	6020	E	2250	E	1350	

	Machine price (cost)			Maintenance (#)			Spare parts (#)		
		Low	High						
Traditional info.	A	1980	~	2020	A	1	A	2	
	B	2980	~	3020	B	3	B	6	
	C	3980	~	4020	C	5	C	10	
	D	4980	~	5020	D	7	D	14	
	E	5980	~	6020	E	9	E	18	

High uncertainty

Supplier	Machine price			Maintenance (cost)			Spare parts (cost)		
		Low	High						
A	1400	~	2600	A	1350		A	2250	
B	2400	~	3600	B	1050		B	1750	
C	3400	~	4600	C	750		C	1250	
D	4400	~	5600	D	450		D	750	
E	5400	~	6600	E	150		E	250	

Buyer

Income = 8000

	Machine price (cost)			Maintenance (cost)			Spare parts (cost)		
		Low	High						
TCO info.	A	1400	~	2600	A	250	A	150	
	B	2400	~	3600	B	750	B	450	
	C	3400	~	4600	C	1250	C	750	
	D	4400	~	5600	D	1750	D	1050	
	E	5400	~	6600	E	2250	E	1350	

	Machine price (cost)			Maintenance (#)			Spare parts (#)		
		Low	High						
Traditional info.	A	1400	~	2600	A	1	A	2	
	B	2400	~	3600	B	3	B	6	
	C	3400	~	4600	C	5	C	10	
	D	4400	~	5600	D	7	D	14	
	E	5400	~	6600	E	9	E	18	

Game 2

Low uncertainty

Supplier	Spare parts price			Delivery time (cost)		Payments terms (cost)	
	Low		High				
A	2293	~	2307	A	1900	A	1250
B	2643	~	2657	B	1600	B	1050
C	2993	~	3007	C	1300	C	850
D	3343	~	3357	D	1000	D	650
E	3693	~	3707	E	700	E	450
F	4043	~	4057	F	400	F	250
G	4393	~	4407	G	100	G	50

Buyer**Income = 6700**

TCO info.	Spare parts price (cost)			Delivery time (cost)		Payments terms (cost)	
	Low		High				
A	2293	~	2307	A	50	A	100
B	2643	~	2657	B	250	B	400
C	2993	~	3007	C	450	C	700
D	3343	~	3357	D	650	D	1000
E	3693	~	3707	E	850	E	1300
F	4043	~	4057	F	1050	F	1600
G	4393	~	4407	G	1250	G	1900

Traditional info.	Spare parts price (cost)			Delivery time # weeks for delivery		Payments terms # weeks for payment	
	Low		High				
A	2293	~	2307	A	1	A	19
B	2643	~	2657	B	5	B	16
C	2993	~	3007	C	9	C	13
D	3343	~	3357	D	13	D	10
E	3693	~	3707	E	17	E	7
F	4043	~	4057	F	21	F	4
G	4393	~	4407	G	25	G	1

High uncertainty

Supplier	Spare parts price			Delivery time (cost)		Payments terms (cost)	
	Low		High				
A	2090	~	2510	A	1900	A	1250
B	2440	~	2860	B	1600	B	1050
C	2790	~	3210	C	1300	C	850
D	3140	~	3560	D	1000	D	650
E	3490	~	3910	E	700	E	450
F	3840	~	4260	F	400	F	250
G	4190	~	4610	G	100	G	50

Buyer**Income = 6700**

TCO info.	Spare parts price (cost)			Delivery time (cost)		Payments terms (cost)	
	Low		High				
A	2090	~	2510	A	50	A	100
B	2440	~	2860	B	250	B	400
C	2790	~	3210	C	450	C	700
D	3140	~	3560	D	650	D	1000
E	3490	~	3910	E	850	E	1300
F	3840	~	4260	F	1050	F	1600
G	4190	~	4610	G	1250	G	1900

Traditional info.	Spare parts price (cost)			Delivery time # weeks for delivery		Payments terms # weeks for payment	
	Low		High				
A	2090	~	2510	A	1	A	19
B	2440	~	2860	B	5	B	16
C	2790	~	3210	C	9	C	13
D	3140	~	3560	D	13	D	10
E	3490	~	3910	E	17	E	7
F	3840	~	4260	F	21	F	4
G	4190	~	4610	G	25	G	1

Game (3)

Low uncertainty

Supplier	Machine price (Income)							
		Low		High	Maintenance (cost)		Spare parts (cost)	
	A	2088	~	2112	A	2100	A	550
	B	2663	~	2687	B	1600	B	425
	C	3238	~	3262	C	1100	C	300
	D	3813	~	3837	D	600	D	175
E	4388	~	4412	E	100	E	50	
Buyer								
Income = 6500								
TCO info	Machine price (cost)							
		Low		High	Maintenance (cost)		Spare parts (cost)	
	A	2088	~	2112	A	50	A	100
	B	2663	~	2687	B	175	B	600
	C	3238	~	3262	C	300	C	1100
	D	3813	~	3837	D	425	D	1600
E	4388	~	4412	E	550	E	2100	
Traditional info.	Machine price (cost)							
		Low		High	Maintenance (#)		Spare parts (#)	
	A	2088	~	2112	A	2	A	2
	B	2663	~	2687	B	7	B	12
	C	3238	~	3262	C	12	C	22
	D	3813	~	3837	D	17	D	32
E	4388	~	4412	E	22	E	42	
High uncertainty								
Supplier								
	Machine price (Income)							
		Low		High	Maintenance (cost)		Spare parts (cost)	
	A	1755	~	2445	A	2100	A	550
	B	2330	~	3020	B	1600	B	425
	C	2905	~	3595	C	1100	C	300
	D	3480	~	4170	D	600	D	175
E	4055	~	4745	E	100	E	50	
Buyer								
Income = 6500								
TCO info	Machine price (cost)							
		Low		High	Maintenance (cost)		Spare parts (cost)	
	A	1755	~	2445	A	50	A	100
	B	2330	~	3020	B	175	B	600
	C	2905	~	3595	C	300	C	1100
	D	3480	~	4170	D	425	D	1600
E	4055	~	4745	E	550	E	2100	
Traditional info.	Machine price (cost)							
		Low		High	Maintenance (#)		Spare parts (#)	
	A	1755	~	2445	A	2	A	2
	B	2330	~	3020	B	7	B	12
	C	2905	~	3595	C	12	C	22
	D	3480	~	4170	D	17	D	32
E	4055	~	4745	E	22	E	42	

Appendix C. Profit Schemes for the three games

The tables below illustrate the joint profit scheme for various contract combinations for each of the three games.

Profit scheme for contract combinations in the 1st game

Contract	Average Joint profit	Sup. Av.	Buy. Av.	Low uncertainty interval			High uncertainty interval		
C-A-E ^a	4800	2400	2400	4780	~	4820	4200	~	5400
B-A-E	4800	1400	3400	4780	~	4820	4200	~	5400
D-A-E	4800	3400	1400	4780	~	4820	4200	~	5400
A-A-E	4800	400	4400	4780	~	4820	4200	~	5400

E-A-E	4800	4400	400	4780	~	4820	4200	~	5400
D-C-B	3800	2500	1300	3780	~	3820	3200	~	4400
A-A-A	4000	-1600	5600	3980	~	4020	3400	~	4600
B-B-B	4000	200	3800	3980	~	4020	3400	~	4600
C-C-C	4000	2000	2000	3980	~	4020	3400	~	4600
D-D-D	4000	3800	200	3980	~	4020	3400	~	4600
E-E-E	4000	5600	-1600	3980	~	4020	3400	~	4600
D-B-B	4000	2200	1800	3980	~	4020	3400	~	4600
D-A-B	4200	1900	2300	4180	~	4220	3600	~	4800
B-C-E	4400	2000	2400	4380	~	4420	3800	~	5000
C-E-A	3200	1600	1600	3180	~	3220	2600	~	3800

^aCooperative optimal joint profit for both supplier and buyer. Note that some combinations including A-E (maintenance and spare parts) yield the same expected joint profit (€4800), but with asymmetric division over negotiators.

Profit scheme for contract combinations in the 2nd game

Contract	Average Joint profit	Sup. Av.	Buy. Av.	Low uncertainty interval			High uncertainty interval		
D-G-A ^a	4000	2000	2000	3993	~	4007	3790	~	4210
A-G-A	4000	950	3050	3993	~	4007	3790	~	4210
B-G-A	4000	1300	2700	3993	~	4007	3790	~	4210
C-G-A	4000	1650	2350	3993	~	4007	3790	~	4210
E-G-A	4000	2350	1650	3993	~	4007	3790	~	4210
F-G-A	4000	2700	1300	3993	~	4007	3790	~	4210
G-G-A	4000	3050	950	3993	~	4007	3790	~	4210
A-A-A	3400	-850	4250	3393	~	3407	3190	~	3610
B-B-B	3400	0	3400	3393	~	3407	3190	~	3610
C-C-C	3400	850	2550	3393	~	3407	3190	~	3610
D-D-D	3400	1700	1700	3393	~	3407	3190	~	3610
E-E-E	3400	2550	850	3393	~	3407	3190	~	3610
F-F-F	3400	3400	0	3393	~	3407	3190	~	3610
G-G-G	3400	4250	-850	3393	~	3407	3190	~	3610
D-B-B	3400	700	2700	3393	~	3407	3190	~	3610
D-C-B	3500	1000	2500	3493	~	3507	3290	~	3710
F-A-B	3300	1100	2200	3293	~	3307	3090	~	3510
C-D-F	3200	1750	1450	3193	~	3207	2990	~	3410
D-A-G	2800	1400	1400	2793	~	2807	2590	~	3010

^aCooperative optimal joint profit for both supplier and buyer. Note that some combinations including G-A (delivery time and payment term) yield the same expected joint profit (€4000), but with asymmetric division over negotiators.

Profit scheme for contract combinations in the 3rd game

Contract	Average Joint profit	Sup. Av.	Buy. Av.	Low uncertainty interval			High uncertainty interval		
C-E-A ^a	5200	2600	2600	5188	~	5212	4855	~	5545
B-E-A	5200	2025	3175	5188	~	5212	4855	~	5545
D-E-A	5200	3175	2025	5188	~	5212	4855	~	5545
A-E-A	5200	1450	3750	5188	~	5212	4855	~	5545
E-E-A	5200	3750	1450	5188	~	5212	4855	~	5545
D-C-B	4075	2300	1775	4063	~	4087	3730	~	4420
A-A-A	3700	-550	4250	3688	~	3712	3355	~	4045
B-B-B	3700	650	3050	3688	~	3712	3355	~	4045
C-C-C	3700	1850	1850	3688	~	3712	3355	~	4045
D-D-D	3700	3050	650	3688	~	3712	3355	~	4045
E-E-E	3700	4250	-550	3688	~	3712	3355	~	4045
D-B-B	3700	1800	1900	3688	~	3712	3355	~	4045
D-A-B	3325	1300	2025	3313	~	3337	2980	~	3670
B-C-E	2950	1525	1425	2938	~	2962	2605	~	3295
C-A-E	2200	1100	1100	2188	~	2212	1855	~	2545

^aCooperative optimal joint profit for both supplier and buyer. Note that some combinations including E-A (maintenance and spare parts) yield the same expected joint profit (€5.200), but with asymmetric division over negotiators.

Appendix D. Negotiation tactics

Category	Explanation and Examples
Integrative tactics	
Numerical information exchange (NIE)	A statement in which a negotiator reveals any numerical values for each of the issues to be negotiated.
Priority information exchange (PIE)	A statement in which a negotiator reveals only the relative importance (nonnumeric values) for any of the issues to be negotiated.
Rewards (REW)	A statement by a negotiator which creates pleasant consequences for the exchange partner (e.g., I'm pleased with the compromise made thus far).
Positive normative appeals (PNA)	A statement in which a negotiator indicates that the exchange partner's tactics are or will be in conformity with social norms (e.g., your offer is fair and reasonable).
Request for cooperation (RC)	A statement in which a negotiator asks the exchange partner to cooperate (e.g., let us cooperate).
Promise (PR)	A statement in which a negotiator indicates the intention to provide the exchange partner with a reinforcing consequence, which the negotiator anticipates the exchange partner will evaluate as pleasant, positive, or rewarding (e.g., accept our offer, next time we will accept your offer).
Recommendation (RE)	A statement in which a negotiator indicates he/she will help his/her exchange partner on a certain issue if the exchange partner in return will accept the negotiator's position on another issue (e.g., considering that I am agreeing with your D spare parts contract, I think the maintenance contract should be B).
Request for information (RI)	A statement in which a negotiator asks for information in a cooperative way (e.g., to find a compromise, can you tell me about your costs of both maintenance and spare parts).
Self-disclosure (SD)	A statement in which a negotiator reveals information about himself, which is necessary for problem-solving (e.g., the middle way would logically be "DDD"; I think for the payment term contract "D" is reasonable as well).
Proposal to compromise (PC)	A statement in which a negotiator asks the exchange partner to forgo some of his or her aims in return for a mutually acceptable agreement (e.g., I can offer you the most favorable payment term of 4 weeks, in exchange for a better delivery time).
Distributive tactics	
Lies (LI)	A statement in which a negotiator deliberately provides the exchange partner with wrong information (e.g., accepting this offer will result in a big loss for me).
Warnings (WA)	A statement in which a negotiator predicts that the exchange partner may face an unpleasant consequence (e.g., first you will have to compromise with respect to spare parts, and only then will we talk about the machine price).
Persuasive arguments (PA)	A statement in which a negotiator aims to convince the exchange partner to accept a proposal (e.g., our offer is very good, and apart from that you can expect perfect service from us).
Threats (TH)	A statement in which a negotiator indicates the intention to provide the exchange partner with a reinforcing consequence that is thought to be noxious, unpleasant, or punishing (e.g., if you don't give me a better offer, I will leave and buy from another supplier).
Punishment (PU)	A statement by a negotiator that is thought to create unpleasant consequences for the exchange partner (e.g., your offer is completely unreasonable and unworthy of consideration).
Commitment (CO)	A statement by a negotiator that its future offers will not go below or above a certain level (e.g., this is the lowest I can go; unfortunately I cannot go any lower).
Putdowns (PD)	A statement by a negotiator indicating a negative affective reaction aimed at obtaining a better position (e.g., I don't accept that offer; you have to come up with something better).
Negative normative appeals (NNA)	A statement in which a negotiator indicates that the exchange partner's tactics are or will be in violation with social norms (e.g., I am disappointed by your previous offer, please try to be more reasonable).
Question (QU)	A statement in which a negotiator asks the exchange partner to find out about his or her utility function (e.g., let me know the margins on the different parts; can you inform me about your cost structure?).
Refuse to share information (RS)	A statement in which a negotiator refuses to respond to a request for information (e.g., you don't have to know about my costs).

Appendix E. Post-experiment questionnaire

Two questions were asked after each game:

- 1- What do you believe is the likelihood that your business partner seeks to cooperate with you?
Very unlikely 1 2 3 4 5 6 7 Very likely
- 2- How would you characterize the negotiation process with your business partner: as competitive or cooperative?
Competitive 1 2 3 4 5 6 7 Cooperative

After concluding the last game, the following questions were asked

- 1- What do you think of this experiment?
Boring 1 2 3 4 5 6 7 Interesting
- 2- What do you think of the instructions of the experiment?
Unclear 1 2 3 4 5 6 7 Clear
- 3- Were you motivated to participate in this experiment?
Not at all 1 2 3 4 5 6 7 Very motivated
- 4- How much time do you believe you needed to negotiate with your partner?
Not much time 1 2 3 4 5 6 7 A lot of time
- 5- How successful were you as negotiator in this game?
Not successful 1 2 3 4 5 6 7 Very successful
- 6- Are you satisfied with the profit you obtained?
Dissatisfied 1 2 3 4 5 6 7 Satisfied
- 7- Does the final contract agreement meet your expectations at the beginning of the game?
Not at all 1 2 3 4 5 6 7 Completely
- 8- Are you satisfied with the way you have negotiated?
Dissatisfied 1 2 3 4 5 6 7 Satisfied
- 9- Are you satisfied with the agreement you have made with your exchange partner?
Dissatisfied 1 2 3 4 5 6 7 Satisfied
- 10- What was your bargaining strategy?
Keeping information 1 2 3 4 5 6 7 Giving information
- 11- What was the bargaining strategy of your exchange partner?
Keeping information 1 2 3 4 5 6 7 Giving information
- 12- How much influence did you have on your exchange partner during the negotiation?
Little influence 1 2 3 4 5 6 7 Much influence
- 13- What do you think about the cost information that you received for the negotiations?
Useless 1 2 3 4 5 6 7 Useful
- 14- What do you think of your cost information when compared to that of your exchange partner?
Less useful 1 2 3 4 5 6 7 More useful
- 15- How did you experience the negotiations about the contract price?
Easy 1 2 3 4 5 6 7 Complex
- 16- In the tables that you received, an interval was included for the price of the machine and spare parts. Which value in this interval did you focus on during the negotiations (tick the value closest to what you had in mind when trying to reach an agreement)?
a- the minimum price of the interval.
b- the maximum price of the interval.
c- the mean price of the interval.
- 17- How did you experience the negotiations about maintenance and delivery time?
Easy 1 2 3 4 5 6 7 Complex
- 18- To what extent do you agree with the following statement: I tried to convince my exchange partner about the benefits of my offer.
Totally disagree 1 2 3 4 5 6 7 Totally agree
- 19- To what extent do you agree with the following statement: I tried to convince my exchange partner to accept my offer.
Totally disagree 1 2 3 4 5 6 7 Totally agree
- 20- To what extent do you agree with the following statement: I tried to find a compromise with my exchange partner.
Totally disagree 1 2 3 4 5 6 7 Totally agree

21- In which way did you try to realize your returns from the negotiations?
 Individually 1 2 3 4 5 6 7 Together

22- How did you look at the outcomes of the negotiation?
 Individual results 1 2 3 4 5 6 7 Joint results

23- Did you ever participate in an experiment before?
 Yes: which experiment
 NO

24- Consider the following choices:

(i) A fixed payment of €5000,

OR

(ii) A lottery in which there is a probability that you win €10000 and a probability that you win nothing

Select from the following lotteries which you would prefer over the fixed payment of €5000

(multiple responses possible):

- a- 70% chance of winning €10000, 30% chance of winning nothing.
- b- 60% chance of winning €10000, 40% chance of winning nothing.
- c- 50% chance of winning €10000, 50% chance of winning nothing.
- d- 40% chance of winning €10000, 60% chance of winning nothing.
- e- 30% chance of winning €10000, 70% chance of winning nothing.

25- What is your gender?

- Man
- Woman

26- Were you during the negotiations more interested in your own position or more interested in searching for a joint solution?

Own position 1 2 3 4 5 6 7 Joint solution

27- Describe the bargaining strategies that you have used:

a- Winning 1 2 3 4 5 6 7 Adjusting to the other

b- Deceptive 1 2 3 4 5 6 7 Honest

c -Biased information 1 2 3 4 5 6 7 Objective information

28- Was to your impression your exchange partner more interested in his/her self- interest or in finding a joint solution?

Self interest 1 2 3 4 5 6 7 Joint solution

29- Describe the bargaining strategies that your exchange partner has used

a- Winning 1 2 3 4 5 6 7 Adjusting to the other

b- Deceptive 1 2 3 4 5 6 7 Honest

c -Biased information 1 2 3 4 5 6 7 Objective information

References

- Albarracín, D., Wyer, R., 2000. The cognitive impact of past behavior: influences on beliefs, attitudes, and future behavioral decisions. *J. Pers. Soc. Psychol.* 79, 5–22.
- Anderson, S., Dekker, H., 2005. Management control for market transactions: the relation between transaction characteristics, incomplete contract design and subsequent performance. *Manage. Sci.* 51, 1734–1752.
- Anderson, S., Dekker, H., 2014. The role of management controls in transforming firm boundaries and sustaining hybrid organizational forms. *Found. Trends Acc.* 8 (2), 75–141.
- Arnold, M., Gillenkirch, R., Hannan, R., 2014. The Effect of Environmental Risk on the Efficiency of Negotiated Transfer Prices. Working Paper. University of Bern.
- Babcock, L., Loewenstein, G., 1997. Explaining bargaining impasse: the role of self-serving biases. *J. Econ. Perspect.* 11 (1), 109–126.
- Babcock, L., Loewenstein, G., Issacharoff, S., Camerer, C., 1995. Biased judgments of fairness in bargaining. *Am. Econ. Rev.* 85 (5), 1337–1343.
- Baiman, S., Rajan, M., 2002. The role of information and opportunism in the choice of buyer-supplier relationships. *J. Acc. Res.* 40 (2), 247–278.
- Bazerman, M., Carroll, J., 1987. Negotiator cognition. In: In: Staw, B., Cummings, L. (Eds.), *Research in Organizational Behavior*, vol. 9. JAI Press, Greenwich, CT, pp. 247–288.
- Buckless, F., Ravenscroft, S., 1990. Contrast coding: a refinement of ANOVA in behavioral analysis. *Acc. Rev.* 65 (4), 933–945.
- Chang, L., Cheng, M., Trotman, K., 2013. The effect of outcome and process accountability on customer-supplier negotiations. *Acc. Organ. Soc.* 38, 93–107.
- Church, B., Zhang, P., 1999. Bargaining behavior and payoff uncertainty: experimental evidence. *J. Econ. Psychol.* 20, 407–429.
- Clopton, S.W., 1984. Seller and buying firm factors affecting industrial buyers' negotiation behavior and outcomes. *J. Mark. Res.* 21 (1), 39–53.
- Coletti, A., Sedatole, K., Towry, K., 2005. The effect of control systems on trust and cooperation in collaborative environments. *Acc. Rev.* 80 (2), 477–500.
- De Dreu, C., Beersma, B., Stroebe, K., Euwema, M., 2006. Motivated information processing, strategic choice, and the quality of negotiated agreement. *J. Pers. Soc. Psychol.* 90 (6), 927–943.
- Degraeve, Z., Roodhooft, F., van Doveren, B., 2005. The use of total cost of ownership for strategic procurement: a company-wide management information system. *J. Oper. Res. Soc.* 56 (1), 51–59.
- Dekker, H., 2003. Value chain analysis in interfirm relationships: a field study. *Manage. Acc. Res.* 14, 1–23.
- Drake, A., Haka, S., 2008. Does ABC information exacerbate hold-up problems in buyer-supplier negotiations? *Acc. Rev.* 83 (1), 29–60.
- Eliashberg, J., LaTour, S.A., Rangaswamy, A., Stern, L., 1986. Assessing the predictive accuracy of two utility-based theories in a marketing channel negotiation context. *J. Mark. Res.* 23 (2), 101–110.
- Fan, X., Thompson, B., Wang, L., 1999. Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes. *Struct. Equ. Model.* 6 (1), 56–83.
- Graham, J., Evenko, L., Rajan, M., 1992. An empirical comparison of Soviet and American business negotiations. *J. Int. Bus. Stud.* 23 (3), 387–418.
- Graham, J., 1983. Brazilian, Japanese, and American business negotiations. *J. Int. Bus. Stud.* 14 (1), 47–61.
- Haka, S., Luft, J., Ballou, B., 2000. Second-order uncertainty in accounting information and bilateral bargaining costs. *J. Manage. Acc. Res.* 12, 115–139.
- Hayes, A.F., Preacher, K., 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behav. Res. Methods Instrum. Comput.* 36, 717–731.
- Hayes, A.F., 2009. Beyond Baron and Kenny: statistical mediation analysis in the new millennium. *Commun. Monogr.* 76, 408–420.
- Heide, J., John, G., 1992. Do norms matter in marketing relationships? *J. Mark.* 56 (2), 32–44.
- Hu, L.-T., Bentler, P., 1999. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equ. Model.* 6 (1), 1–55.
- Iida, K., 1993. Analytic uncertainty and international cooperation: theory and application to international economic policy coordination. *Int. Stud. Q.* 37, 431–457.

- Kelley, H., 1966. A classroom study of the dilemmas in interpersonal negotiations. In: Archibald, K. (Ed.), *Strategic Interaction and Conflict*. University of California Institute of International Studies, Berkeley, pp. 49–73.
- Kolstad, C.D., 2005. Piercing the veil of uncertainty in transboundary pollution agreements. *Environ. Resour. Econ.* 31 (1), 21–34.
- Krishnan, R., Miller, F., Sedatole, K., 2011. The use of collaborative interfirm contracts in the presence of task and demand uncertainty. *Contemp. Acc. Res.* 28, 1397–1422.
- Luft, J.L., Haka, S.F., Ballou, B., 1998. Bargaining strategy and accounting information about opponent's payoffs: bargaining in a hall of mirrors. *Behav. Res. Acc.* 10 (Supplement), 111–140.
- Luft, J.L., 2016. Cooperation and competition among employees: experimental evidence on the role of management control systems. *Manage. Acc. Res.* 31, 75–85.
- MacCallum, R., Austin, J., 2000. Applications of structural equation modeling in psychological research. *Annu. Rev. Psychol.* 51, 201–226.
- Malouf, M.W.K., Roth, A.E., 1981. Disagreement in bargaining, an experimental study. *J. Confl. Resolut.* 25 (2), 329–348.
- Masschelein, S., Cardinaels, E., Van den Abbeele, A., 2012. ABC information, fairness perceptions, and interfirm negotiations. *Acc. Rev.* 87 (3), 951–973.
- Miller, F., Drake, A., 2016. Using information asymmetry to mitigate hold-ups in supply chains. *Manage. Acc. Res.* 32, 16–26.
- Neale, M.A., Northcraft, G., 1986. Experts, amateurs, and refrigerators: comparing expert and amateur negotiators in a novel task. *Organ. Behav. Hum. Decis. Process.* 38, 305–317.
- Neale, M., Northcraft, G., 1991. Behavioral negotiation theory: a framework for conceptualizing dyadic bargaining. In: In: Staw, B., Cummings, L. (Eds.), *Research in Organizational Behavior*, vol. 13. JAI Press, Greenwich, CT, pp. 147–190.
- Neale, M.A., Huber, V., Northcraft, G., 1987. The framing of negotiations: contextual versus task frames. *Organ. Behav. Hum. Decis. Process.* 39, 228–241.
- Pfetsch, F., Landau, A., 2000. Symmetry and asymmetry in international negotiations. *Int. Negot.* 5, 21–42.
- Pruitt, D., Lewis, S., 1975. Development of integrative solutions in bilateral negotiation. *J. Pers. Soc. Psychol.* 31, 621–633.
- Pruitt, D., 1981. *Negotiation Behavior*. Academic Press, New York.
- Putnam, L., Jones, T., 1982. Reciprocity in negotiations: an analysis of bargaining interaction. *Commun. Monogr.* 49 (3), 171–191.
- Riddell, W.C., 1981. Bargaining under uncertainty. *Am. Econ. Rev.* 71 (4), 579–590.
- Rode, C., Cosmides, L., Hell, W., Tooby, J., 1999. When and why do people avoid unknown probabilities in decisions under uncertainty? Testing some predictions from optimal foraging theory. *Cognition* 72, 269–304.
- Roth, A., Murnighan, J., 1982. The role of information in bargaining: an experimental study. *Econometrica* 50 (5), 1123–1142.
- Schloetzer, J., 2012. Process integration and information sharing in supply chains. *Acc. Rev.* 87 (3), 1005–1032.
- Siegel, S., Fouraker, L., 1960. *Bargaining and Group Decision Making: Experiments in Bilateral Monopoly*. McGraw-Hill, New York.
- Teigen, K., Jørgensen, M., 2005. When 90% confidence intervals are 50% certain: on the credibility of credible intervals. *Appl. Cogn. Psychol.* 19, 455–475.
- Thompson, L., Loewenstein, G., 1992. Egocentric interpretations of fairness and interpersonal conflict. *Organ. Behav. Hum. Decis. Process.* 51 (2), 176–197.
- Thompson, L., 1990. Negotiation behavior and outcomes: empirical evidence and theoretical issues. *Psychol. Bull.* 108 (3), 515–532.
- Van den Abbeele, A., Roodhooft, F., Warlop, L., 2009. The effect of cost information on buyer-supplier negotiations on different power settings. *Acc. Organ. Soc.* 34, 245–266.
- Walton, R., McKersie, R., 1965. *A Behavioral Theory of Labor Negotiation*. Mc-Graw-Hill, New York.
- Wang, K.J., Tuttle, B.M., 2009. The impact of auditor rotation on auditor-client negotiation. *Acc. Organ. Soc.* 34, 222–243.
- Weingart, L., Hyder, E., Prietula, M., 1996. Knowledge matters: the effect of tactical descriptions on negotiation behavior and outcome. *J. Pers. Soc. Psychol.* 70 (6), 1205–1217.
- Wouters, M., Anderson, J., Wynstra, F., 2005. The adoption of total cost of ownership for sourcing decisions: a structural equations analysis. *Acc. Organ. Soc.* 30 (2), 167–191.