Channel Negotiations with Information Asymmetries: Contingent Influences of Communication and Trustworthiness Reputations

Joydeep Srivastava
Dipankar Chakravarti*

December 2005

*Joydeep Srivastava is Associate Professor of Marketing, Robert H. Smith School of Business, University of Maryland, College Park, MD 20742 (srivasta@rhsmith.umd.edu). Dipankar Chakravarti is Professor of Marketing and The Ortloff Professor of Business, Leeds School of Business, University of Colorado, Boulder, CO 80309-0419 (dipankar.chakravarti@colorado.edu). The authors are grateful to Praveen Kopalle, Don Lehmann, Ambar Rao, Amnon Rapoport, Richard Staelin and Peeter Verlegh for their suggestions. We also acknowledge the assistance of Rajesh Bagchi, Suman Ghosh, Richard Kiser, Shawn LaMaster and Gina Slejko in various phases of this research.

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Abstract

This paper reports three experiments examining how communication types and mutual trustworthiness reputations influence sequential bargaining between an uncertain manufacturer and an informed distributor in a marketing channel. Experiment 1 finds that relative to when bargainers communicate only through offers and counteroffers, explicit communication produces more efficient bargaining outcomes, particularly when manufacturer uncertainty is higher. Bargainers gradually build a positive social tenor in the interaction using informational and relational messages, and avoiding coercive messages. Experiment 2 finds that mutual reputations of high (versus low) trustworthiness influence bargaining from the outset and drive more efficient outcomes. Interestingly, in both studies, the uninformed manufacturer benefits more from the larger extracted surplus, but not at the distributors' expense. Experiment 3 finds that communication type effects are contingent upon whether trustworthiness reputations are high or low. Relative to a no communication condition, relational messages elicit the most positive (negative) outcomes when trustworthiness reputations are high (low). Informational messages have a smaller but positive impact on bargaining outcomes in both trustworthiness conditions and seem to build trust.

Negotiations are critical for marketing channel coordination, e.g., for resolving channel member conflicts and for setting trade terms such as transfer prices and margins (Coughlan et al. 2001). There is a significant literature on how constructs such as relative power, goal compatibility and interdependence affect channel relationships (e.g., Morgan and Hunt 1994). In contrast, the normative and behavioral principles governing channel negotiations are relatively unexplored. Encouragingly, as the literature reaffirms critical the role of negotiations in marketing (e.g., Corfman and Gupta 1993; Coughlan et al. 2001) the normative development (e.g., Banks, Hutchinson and Meyer 2002) and empirical testing (e.g., Srivastava, Chakravarti and Rapoport 2000) of non-cooperative sequential bargaining models are receiving new attention.

Economists and game theorists (e.g., Grossman and Perry 1986; Rubinstein 1985) have actively developed non-cooperative sequential bargaining models where own-payoff maximizing bargainers have asymmetric information and learning must precede agreement. Offers and counteroffers are *the* key communication device in these models, both to signal private information and indicate that a specific deal is acceptable (Kennan and Wilson 1993). The signals need not be "truthful," since an informed bargainer with a high reservation price may mimic one with a low reservation price to get a better deal. But, if delayed agreements are costly, a buyer with a higher reservation price has incentive to agree sooner. Hence, an assertion that a high price is unprofitable is more credible if the buyer is ready to endure a costly delay. Such diagnostic signals drive agreements between own-payoff maximizing bargainers such that explicit communication is redundant in these models.

Until recently, non-cooperative sequential bargaining models received little attention in marketing. Srivastava et al. (SCR 2000) examined the predictive ability of an adaptation of Grossman and Perry's (GP 1986) seminal sequential equilibrium (SE) model of bargaining under

one-sided incomplete information. SCR (2000) used a marketing channel scenario in which an uninformed manufacturer (M) and an informed distributor (D) negotiated price via alternating offers, with no duration restrictions (c.f. Ochs and Roth 1989). They focused on how M's uncertainty and delay costs influenced bargaining outcomes. Although the SE model's directional predictions were consistent, the point predictions were quite discrepant with the data. Bargaining was normatively inefficient as unproductive delays attenuated the surplus.

SCR's (2000) process data also showed that many bargainers did not follow the SE model's signaling rationale. The informed D's offers were correlated with their reservation prices, as they should be. However, the uninformed M's did not correctly interpret or act on these price signals, even when delay was costly and the D's had little incentive to deceive. A majority of the players acted as if they were dividing a fixed resource, with one gaining only at the other's expense. Apprehensive of deception by the informed D's, some M's ignored the strategic implications of delay costs and bargained inefficiently. Thus, despite its elegant economic rationale, the SE model described the actual bargaining data poorly. These data also showed no evidence of learning over time (c.f. Camerer and Weigelt 1988).

The present paper reaches beyond the normative framework to explore two focal factors that may enable channel members bargaining under asymmetric information to extract more of the surplus. First, as SCR (2000) show, the offer/counteroffer sequence does not always convey the intended economic signal. Hence, given information asymmetries, *explicit communication* (beyond just offers/counteroffers) may possibly improve bargaining processes and outcomes. Experiment 1 explores this proposition under varying levels of M uncertainty. We also show how communication content (informational, relational or coercive) affects bargaining, an issue yet unaddressed in the literature.

Second, trust has no normative role in bargaining models. Yet, research in organizational science (Bromiley and Cummings 1995) and marketing (e.g., Morgan and Hunt 1994) shows that trust lowers opportunism in dyads. Experimental economists find that bargainers show fairness concerns and other-regarding preferences, acting as if motivated not just by their own, but also their opponents' payoffs (e.g., Fehr and Gachter 2000). Other studies report "trust behaviors," i.e., players risk utility loss based on perceived opponent preferences and expectations of reciprocity (Fehr, Fischbacher and Kosfeld 2005). These results suggest that, with asymmetric information, high *mutual trustworthiness reputations* (Hardin 2002) may improve negotiation outcomes. Experiment 2 tests this proposition under varying levels of M uncertainty.

Like SCR (2000), Experiments 1 and 2 used the GP (1986) model as a backdrop and involved actual bargaining. Whereas SCR (2000) compared the SE predictions to the actual behavior, the present paper examines how the focal factors influence bargaining processes and outcomes. Experiment 3 studies the *interactive* effect of communication content (informational and relational messages vs. no communication) and trustworthiness reputations (high/low). This study involves no actual bargaining, but examines subjects' anticipated bargaining outcomes given scenarios similar to those in Experiments 1 and 2. Together, the three studies make a behavioral contribution showing how *communication* and *trustworthiness reputations* influence bargainer apprehension, cooperation, and bargaining efficiency and offer predictive promise for bargaining models incorporating these factors. In the rest of the paper, we first briefly overview the GP (1986) model, and then sequentially present the three experiments. We conclude with a discussion the implications of the findings and future research possibilities.

BACKDROP: THE SEQUENTIAL BARGAINING MODEL

The GP (1986) model provides the backdrop for the three experiments. The scenario involves a

manufacturer (M) and a distributor (D) negotiating a new product's wholesale price, w. M's product cost, c, is common knowledge, whereas D alone (being closer to the market) knows p, the end user's reservation price. M's belief about p is given by a distribution, $F(p)$, with support $[p_l, p_h]$ and $p_l \geq c$. $F(p)$ is common knowledge. M and D negotiate w, $(c \leq w \leq p)$, making alternating offers in discrete time ($t = 1, 2, 3...$). At $t = 1$, M opens with an offer, w_t, that D can either accept or reject. If D accepts, negotiation ends at $t = 1$. If D rejects the offer, s/he makes a counteroffer at $t = 2$. The sequence continues until the parties agree or call off the negotiation. The surplus (the value of an agreement) shrinks each period by a commonly known discount factor δ, $(0 < \delta < 1)$. Agreement at a price w_t in period t yields respective payoffs: $U_M = \delta^{t-1}(w_t - c)$ and $U_D = \delta^{t-1}(p - w_t)$; and associated bargaining efficiency: $(U_M + U_D)/(p - c) = (\delta^{t-1})$.

SCR (2000) describe the sequential equilibrium (SE) solution under information asymmetry. The delay cost (δ) drives the solution. The intuition is that a D with a low p derives only a small surplus from M's offer and will signal this low valuation with a counteroffer that delays agreement. As explained earlier, D's willingness to endure a costly delay credibly conveys a low p. Note that as δ increases, the lost surplus is smaller and delay is less diagnostic. Thus, as $\delta \rightarrow 1$, a high-valuation D can mimic one with low-valuation. SCR (2000) used a channel negotiation scenario and found that this signaling mechanism (offers and counteroffers alone) often breaks down, leading to inefficient bargaining. The present paper uses similar scenarios to explore how explicit communication (Experiment 1) and trustworthiness reputations (Experiment 2) influence bargaining. Experiment 3 examines the contingent influence of the two factors.

EXPERIMENT 1: EXPLICIT COMMUNICATION

Sequential bargaining models assume that all information is transmitted through the offer and counteroffer sequence as these affect bargainers' payoffs directly. Other costless and nonbinding

communication is "cheap talk" (Farrell and Gibbons 1989) that cannot separate high and low valuation opponents. Opportunistic bargainers can use cheap talk to mislead opponents and bargainers risk losses if they act on unverified expectations created by such talk (Kennan and Wilson 1993; Roth 1995). Hence, if costless and non-binding, explicit communication has no theoretical signal value in incomplete information bargaining and coordination problems.

This normatively appealing intuition is often empirically belied, even in game theoretic contexts. Experimental tests of public goods games show that face-to-face interaction increases cooperation (Roth 1995). A meta-analysis of social dilemmas (Sally 1995) documents that communication creates robust increases in trust and cooperation. Nonbinding pre-play communication improves coordination even when players lack a clear shared meaning (Camerer 2003). In one-sided incomplete information games, Valley, Moag and Bazerman (1998) show that communication, whether face-to-face, telephone, or written, improves bargaining efficiency relative to the economic prediction, with best results from face-to-face interactions. Valley et al. (2002) find similar results in two-sided incomplete information situations with both pre-play and unstructured face-to-face communication.

Valley et al. (1998, 2002) note that in full or symmetric incomplete information games communication helps in coordinating strategies that raise efficiency, without a necessary mediating role of trust. With verification, cooperation may be secured without trust (Cook, Hardin and Levi 2005). However, asymmetric information games allow no verification and imply one-sided dependence, creating potential for inefficient delays due to misattributed adversarial intent (SCR 2000; Srivastava 2001). Indeed Valley et al. (1998) report mistrust and deception with low social identification (written/telephone conditions). Hence, communication may create a positive tenor that fosters trust as a mediator of better bargaining outcomes.

Hypotheses: Communication Effects

Marketing channel researchers agree that communication is beneficial. Mohr and Nevin (1990) propose that communication among channel partners builds trust and commitment, and more so when persuasive information is conveyed (Ganesan 1993). Tests of relational exchange models based on cross-sectional survey data show that reliable and timely communication builds trust in organizations and marketing channel contexts (Morgan and Hunt 1994, J. Anderson and Narus 1990). Although this genre of research suggests that communication fosters cooperation and coordination (E. Anderson and Weitz 1992) little is known about how channel members use various communication types to structure bargaining interactions and the corresponding effects on bargaining outcomes. Experiment 1 addresses these issues.

Communication Types and Timing. Face-to-face bargaining can be more efficient than anonymous bargaining even if communication is limited to offers/counteroffers (Roth 1995). To disentangle such "social identification" effects from those of communication, we used a structured computer-mediated scenario, perhaps trading off some realism. Our scenario was structured so that each party could choose to send either no message or one message from a set menu with each offer/counteroffer. The menu (Appendix 1) contained nine messages in subsets of three calibrated as *informational* (I), *relational* (R), and *coercive* (C), respectively. This format lets us explore how the bargainers used different message types over time to structure the interaction. The format also allows direct comparisons of the results to those of SCR (2000, Experiment 1) who allowed no communication beyond offers/counteroffers.

I communications allow asymmetrically informed bargainers to self-disclose or stress the role of costs, reservation prices, etc. in support of their offers. Such disclosures may reduce uncertainty, add to the subjective payoff structure, and suggest coordination (John 1984). A

shared understanding of transaction goals and trust may also emerge as side benefits. With R communications bargainers may exchange promises, reinforce mutuality of interest, and stress long term relations. These messages may lower fear of opportunism and build trust, but perhaps only after some groundwork is laid. Finally, C communications carry an adversarial tone used to self-aggrandize, assert power asymmetries, and transmit threats of potential punishment and sanctions (John 1984).

Bargainers may initially invest in setting a positive tenor to the interaction (Ostrom 2003). Hence, in the early stages, they may use I messages more and use such disclosures to build cooperation. R messages also may be effective in the earlier versus later stages (Mohr and Nevin 1990). However, since such messages need a credible platform, they may be less common than I messages early in the interaction. C messages are least likely (particularly in the early stages) but may appear later if the parties cannot agree (Valley et al. 2002).

> H1.1. Communication patterns will vary by bargaining stage. In the early stages, I messages will be used most, followed by R messages and least of all C messages. In later stages, the relative use of I messages will decline and that of R and C messages will increase.

Bargaining Process. If bargainers invest in building a positive tenor to their interactions, explicit communication (i.e., via these messages) may change the process relative to when no communication is allowed beyond the offers/counteroffers are allowed. Since communication effects will take time to develop, M (the first mover) has no initial expectation of reciprocity. Hence the opening offers (first price) should not differ across conditions. However, an offer along with an appropriate message should elicit more cooperation from D. This may be reflected in higher counteroffers (more favorable to M) including offers to divide the surplus equally (equal monetary payoff or EMP). This should also drive more final agreements showing EMP splits. Finally, M and D should perceive each other as less competitive and profit oriented.

H1.2: Relative to no communication, bargaining with explicit communication will show the following process features:
(a) Opening offers from M will not differ;
(b) D counteroffers to M will be higher on average;
(c) D counteroffers to M will show more EMP splits;
(d) Final prices will show more EMP splits; and
(e) M and D will perceive each other as less competitive and less profit oriented.

Bargaining Outcomes. The process differences above should also drive differences in bargaining outcome between the two communication conditions. The parties should agree more quickly with communication (than without). Quicker agreements may imply higher final prices (favoring M) and improvements in bargaining efficiency. A profit division more favorable to M is also a logical outcome of more cooperative bargaining. Thus:

H1.3: Relative to no communication, bargaining with explicit communication will show the following outcome differences:
(a) Bargaining duration will be shorter;
(b) Final prices will be higher;
(c) Bargaining efficiency will be higher; and
(d) The D-M profit division will change in favor of M.

The level of M uncertainty is expected to impact bargaining outcomes. As SCR (2000) found, resolving greater uncertainty requires longer offer/counteroffer sequences if no other communication is allowed. Moreover, uncertainty should also moderate communication effects. Specifically, communication may lower M's apprehension more effectively when uncertainty is high (versus low). This may drive greater improvements in bargaining outcomes in the former condition. Although reasonable, this prediction does not have clean support in the published work on collaborative communication (Mohr, Fisher and Nevin 1996). Thus:

H1.4: Bargaining under low (versus high) M uncertainty will show the following outcome differences:
(a) Bargaining duration will be shorter;
(b) Final prices will be higher;
(c) Bargaining efficiency will be higher; and
(d) The D-M profit division will change in favor of M.

H1.5: Manufacturer uncertainty will moderate the explicit communication effects on bargaining outcomes. When M's uncertainty is high (versus low), there will be a:
(a) Greater reduction in bargaining duration;
(b) Greater increase in final prices;
(c) Greater increase in bargaining efficiency; and
(d) Greater change in the D-M profit division in favor of M.

Method

The design of Experiment 1 matches that of SCR 2000 (Experiment 1) except that it allows explicit communication. The subjects were 18 graduate business students (14 males and 4 females; mean age: 25) at a public university. All had full-time work experience (average: 3.5 years) and 39 percent had business negotiation experience. The scenario was based on a popular case on price setting in a marketing channel. The subjects played a manufacturer (M) or distributor (D) negotiating the unit transfer price of a new industrial product. Subjects participated in the study in two groups of ten and eight. In each group, half the subjects were randomly assigned to play the M (D) role and read a scenario with a common background and role-specific instructions. M's marginal cost (c = \$100) was common knowledge. D's value for the product depended on the consumer reservation price, p. Although positive gain from trade (i.e., $p_l > c$) was also common knowledge, D was close to end consumers and knew p exactly. In contrast, M only knew that p may be any integer between p_l and p_h with equal probability. The value of p was drawn randomly for each game and revealed to D (but not to M). Thus, for any p, M knew only own profits, whereas D knew both parties' profits.

Subjects had 20 minutes to read instructions and played two practice games before the main negotiations. Both parties were told that after each period without agreement, the payoff would shrink based on the symmetric delay cost ($\delta = 0.9$). M made the first offer and D either accepted the offer, or rejected it and made a counteroffer. If an offer/counteroffer was accepted in period t, the game ended with respective M and D profits of $\delta^{t-1}(w - c)$ and $\delta^{t-1}(p - w)$. The

values were shown on the computer screen. M's uncertainty was manipulated by varying p_l and p_h (the endpoints of a mean preserving uniform distribution) presented as "estimates from industry sources." The p_l and p_h values in the low (high) uncertainty conditions were \$130 and \$150 (\$110 and \$170) respectively. Instructions stressed that although p was always in the [p_l, p_h] range, it varied across games.[1] Each subject in the first (second) group played ten (eight) bargaining games - first playing five (four) games in one uncertainty condition and then five (four) more games in the other. The order of the uncertainty conditions was counterbalanced across groups. Subjects sat in separate booths and knew that in each game they were paired randomly with a different person, ensuring one-shot and double blind interactions (Roth 1995).

The M-D dyads communicated via computers using custom interactive software. Along with each offer/counteroffer, subjects sent either no message or one message from a calibrated menu of nine messages (Appendix 1) created for each role. The three *informational* (I) messages presented quality, cost, and market arguments. The three *relational* (R) messages conveyed a willingness to cooperate and establish a beneficial relationship. The three *coercive* (C) messages contained threats and demeaning statements. Subjects completed a task perception questionnaire after each game and a longer one at the end of the study. They received a \$5 fee and a pre-announced monetary reward contingent on performance (mean earnings in three randomly chosen games were paid in cash). On average, subjects earned \$16.

Results

Experimental Checks. Subjects indicated that the scenario was realistic and that they made decisions carefully (Means = 5.76 and 6.16 on respective 7-point scales). The uncertainty

[1]To assess how p affects bargaining, each dependent measure was regressed as a function of p. Because M's did not know p at the outset, their first offers were unaffected by p. However, for higher p, bargaining duration decreased, bargaining efficiency improved, and final prices were higher (all p's < .001). Thus, the D's were willing to pay more and settle sooner when p was higher. As expected, both M and D profits increased with p (all p's < .0001).

manipulation also worked as intended. Relative to subjects in the high uncertainty (HU) condition, those in the low uncertainty (LU) condition perceived that the end-user price that D could get was in a narrower range and that M was less uncertain of this price (all p's < .001). The order of the two uncertainty conditions did not affect the dependent measures.

Communication Types and Timing. We expected the players to try to set a positive tenor to their interactions. Since this is a key to the other predictions, we checked the pattern of exchanged messages. Across dyads, the total number of messages is correlated with bargaining duration because messaging opportunity increases with the number of periods to agreement (one message per period). A total of 313 messages were exchanged in the 82 games (only 6 showed no messages). Of these, 61.0 percent (n = 191), 28.1 percent (n = 88), and 10.9 percent (n = 34) were I, R and C messages, respectively. Of games in which messages were sent, I and R messages were sent in 92.1 percent and 52.7 percent, respectively. C messages were used in only 15.8 percent of the games. These data confirm the positive tenor of the interactions.

Based on the bargaining duration results of SCR (2000), we examined the distribution of I, R and C messages in the first three (versus later) bargaining periods.[2] Of the 313 messages, 188 were sent in the first three periods. Of these, 73.4 percent (n = 138), 24.5 percent (n = 46) and 2.1 percent (n = 4) were I, R and C messages, respectively. In contrast, of the 125 messages sent in period 4 and beyond, 42.4 percent (n = 53), 33.6 percent (n = 42) and 24.0 percent (n = 30) respectively were I, R and C messages. As predicted in H1.1, communication patterns varied with bargaining stage (χ^2 (2) = 47.12, p < .001). In the early stages, I messages predominated, followed by R messages (with very few C messages). In the later stages, I messages showed a

[2]There results using a four period cutoff are similar. Of the 313 messages, 226 were sent in the first four periods. Of these, 69.9 percent (n = 158), 25.2 percent (n = 31) and 4.9 percent (n = 11) were I, R and C messages, respectively. Of the 87 messages in periods 5 and beyond, 37.9 percent (n = 33), 35.6 percent (n = 31) and 26.4 percent (n = 23) were I, R and C messages, respectively. These data support H1 (χ^2 (2) = 39.85, p < .001).

relative decline, along with relative increases in R and C messages. C messages were used only in twelve games that lasted longer (ten periods on average) because the parties could not agree quickly. Thus, the social tenor of the interaction was generally positive.

Bargaining Process. H1.2 predicts that relative to no communication, bargaining with explicit communication will show: (a) no differences in M's opening offers (i.e., the first price); (b) higher D counteroffers to M on average; (c) more D counteroffers to M showing EMP splits; (d) more EMP splits in final prices; and (e) bargainers perceiving each other as less competitive and less profit oriented. We test these predictions next. The dependent measures (at the M-D dyad-level) were analyzed as a 2 x 2 mixed design ANOVA, with communication as a between-subject factor, uncertainty as a within subject factor, and the 2-way interaction. Data for the no-communication condition were from SCR (2000, Experiment 1).[3] Table 1 shows the means.

[INSERT TABLE 1 HERE]

First Prices. The first price was higher in the HU relative to the LU condition (Means = 134.18 vs. 128.13; $F(1, 107) = 24.64$, $p < .0001$). However, as expected (H1.2a), the first price was similar with and without communication (Means = 132.34 vs. 130.46; $F(1, 110) = 1.67$, $p > .20$). There was no significant interaction between communication and uncertainty ($p > .30$). Since the first offer preceded any communication, M had no reason to believe that D would behave differently until the interaction developed further.

Counteroffers. Consistent with H1.2b, D's counteroffers were higher (more favorable to M) when communication was permitted versus when it was not (Means = 115.13 vs. 113.65; $F(1, 106) = 5.10$, $p < .03$). Unexpectedly, D's counteroffers were higher in the LU versus the HU

[3]The experiments were run within two weeks of each other using subjects from the same pool. Since study assignment was random, we pooled the data from the two studies and analyzed it as a 2 x 2 design (communication: between-subject and uncertainty: within-subject). Comparisons with the normative SE point predictions are also summarized in Table 1 for reference. A detailed discussion of the results is available from the authors.

condition (Means = 116.61 vs. 111.78; $F(1, 72) = 29.61$, $p < .0001$), perhaps reflecting a favorable D response to M's more reasonable opening offer. The communication x uncertainty interaction was not significant ($p > .30$). Consistent with H1.2c, D's counteroffers to M showed a marginally higher proportion of EMP splits with versus without communication (50.7 vs. 38.3 percent; $z = 1.64$, $p < .06$). Thus, with explicit communication, the informed D made more favorable counteroffers and was also more willing to share the surplus equally.

Division of Profits. The data on the final division of profits tracked the counteroffers and were directionally consistent with H1.2d. The pooled analyses shows that the proportion of games in which M and D split the surplus equally was marginally higher (41.4 percent, $n = 34$) with communication relative to no communication (30.7 percent, $n = 43$; $z = 1.62$, $p < .10$).

Competitiveness Perceptions. Subjects reported retrospective perceptions of opponent competitiveness. With (versus without) communication, M's agreed less with statements that (a) D's main goal was to maximize profit (Means = 3.78 vs. 5.40; $t = 5.21$, $p < .005$) and (b) D was competitive during bargaining (Means = 4.11 vs. 4.95; $t = 2.07$, $p < .05$). Symmetrically, with (versus without) communication, D's agreed less with similar statements about M's profit making goals (Means = 3.00 vs. 5.41; $t = 3.91$, $p < .005$) and competitiveness (Means = 3.89 vs. 4.64; $t = 1.89$, $p < .05$) Thus (H1.2e) communication lowered competitive perceptions.

Bargaining Outcomes. H1.3 predicted that relative to no communication, bargaining with explicit communication will show shorter durations, higher final prices, higher bargaining efficiency, and a change in the D-M profit division in favor of M. H1.4 argued an uncertainty main effect, with similar outcome patterns for low (versus high) uncertainty. Finally, H1.5 proposed that under high (versus low) M's uncertainty, communication will accentuate the effects predicted in H1.3. Table 1 presents the relevant means.

Bargaining Duration. Explicit communication and uncertainty had significant main and interactive effects on the number of periods to reach agreement. Consistent with H1.3a, bargaining duration was lower with (versus without) explicit communication (Means = 3.21 vs. 4.34; $F(1, 110) = 3.82$, $p < .05$). H1.4a was also supported, with shorter bargaining durations under low versus high uncertainty (Means = 3.00 vs. 4.84, $F(1, 108) = 7.83$, $p < .01$). Moreover, a significant interaction provided support for H1.5a ($F(1, 107) = 4.32$, $p < .05$). Communication did not impact bargaining duration in LU (Means = 3.00 in both conditions), but had a strong and significant effect under HU (Means = 5.67 vs. 3.41, $p < .05$). Thus, with communication, M and D reached quicker agreements, particularly when M uncertainty was high.

Final Prices. As predicted (H1.3b) bargainers agreed on a higher final price when explicit communication was permitted (Means = 118.57 vs. 116.67; $F(1, 110) = 4.47$, $p < .04$). Also, consistent with H1.4b, the final price was significantly higher in the LU condition (Means = 119.02 vs. 115.71; $F(1, 108) = 16.87$, $p < .0001$). However, the communication x uncertainty interaction was not significant ($p > .70$) and H1.5b received no support.

Bargaining Efficiency. Although bargaining efficiency was directionally higher (H1.3c) with (versus without) communication, the difference was not significant (Means = 0.81 vs. 0.76; $F(1, 110) = 2.36$, $p > .10$). Bargaining efficiency was significantly higher in the LU versus the HU condition (Means = 0.83 vs. 0.74; $F(1, 108) = 10.45$, $p < .002$). These data support H1.4c. The interaction of communication and uncertainty approached significance ($F(1, 108) = 3.69$, $p < .06$). Consistent with H1.5c, bargaining efficiency improved with communication (Means = 0.79 vs. 0.70; $p < .05$) under HU, but not under LU (Means = 0.84 vs. 0.83, $p > .50$).

Individual Profits. M's profits were higher with (versus without) communication (Means = 15.33 vs. 13.36; $F(1, 110) = 4.33$, $p < 0.04$). However, communication had no impact on D's

profits (Means = 16.02 vs. 16.35; $F(1, 110) = 0.02$ $p > .80$). Consistent with H1.3d, the D-M profit division shifted in M's favor with communication (Means = 0.69 vs. 2.99; $F(1, 108) = 5.18$, $p < .02$). M's profits were also higher under LU versus HU (Means = 15.89 vs. 12.28; $F(1, 108) = 14.85$, $p < .0005$). Although D's profits were unaffected by uncertainty ($p > .70$), the D-M profit division shifted in M's favor under LU versus HU (Means = 0.62 vs. 3.66; $F(1, 108) = 11.04$, $p < .001$). These results are consistent with H1.4d. Finally, the communication x uncertainty interaction was not significant for either M or D profits ($p > .35$ and $p > .50$ respectively). However, communication shifted the D-M profit division in M's favor equally in both HU and LU ($p > .7$). H1.5d is thus not supported.

Discussion

Experiment 1 showed the communication patterns over bargaining stages. The messages used in the earlier stages were mainly informational and relational with coercive messages used only in prolonged bargaining sequences. Thus, even in a very structured context, bargainers invested in building a positive social tenor to their interactions and improved bargaining efficiency. Comparison with SCR (2000, Experiment 1) shows the nuances of the data. Explicit communication had little effect on bargaining when M uncertainty was low. However, when M uncertainty was high, communication led to quicker and more efficient agreements.

In our scenario, D was fully informed, whereas the uninformed M could not assess the fairness of an offered price. This asymmetry should favor D in all conditions. Yet, the D's fared better than the M's only when uncertainty was high and no communication was allowed. Thus, the D's generally did not exploit the information asymmetry, even with low delay cost ($\delta = 0.9$). They did not falsely signal a low p when it was actually high (Rapoport et al. 1995; SCR 2000) and often offered to share surplus equally. These cooperative behaviors imply other-regarding

preferences (Hoffman et al. 1994; Rabin 1993). Yet, the uninformed M often was unable to interpret the counteroffers as signals of either value or cooperative intent. Apprehensive that D may be opportunistic, they prolonged bargaining. Communication significantly mitigated this apprehension. First, although D's realized somewhat higher profits than M's, the profit division shifted, giving M a more equitable share. M benefited more than D from communication, but notably, the gains came from the larger extracted surplus, versus at D's direct expense.

The communication effects build gradually. M's did not lower their first offers perhaps because they could not anticipate the tenor of the interactions at the outset. However, communication elicited better counteroffers (including more frequent EMP splits) from D. Retrospective measures confirmed that, with communication, both bargainers perceived their opponents as less competitive and profit oriented. Thus, communication may have helped persuade the M's that the D's would reciprocate cooperation, suggesting a mediating role of trust. Experiment 2 examines whether mutual trustworthiness reputations influence bargaining processes and outcomes even without explicit communication.

EXPERIMENT 2: TRUSTWORTHINESS REPUTATIONS

Given the infeasibility of complete contracts, trust and trustworthiness is essential in exchange (Hardin 2002). Trust fosters a generalized expectancy of reliable and fair actions and creates commitment in relations (Ostrom 2003). Behavioral economists commonly report "other-regarding behaviors" including fairness, trust, and positive reciprocity in bargaining and public goods experiments (Fehr et al. 2005, Fehr and Gachter 2000; Rabin 1993, Roth 1995). Although commitment to fairness in bargaining may rest on cost-benefit evaluations (Zwick and Chen 1999) the evidence shows that trust fosters reciprocity even in one-shot, double blind investment settings. Indeed, the link is strengthened by even a summary social history of prior

participant behavior (Berg et al. 1995). Thus, shared mutual reputations of trustworthiness (via experience or word of mouth) should improve bargaining processes and outcomes.

Notwithstanding the large literature on trust games and calls for more research (e.g., Camerer 2003, Cox 2004), few studies directly assess how trust influences asymmetric information bargaining. The organizational science and strategy literatures assert that trust lowers transaction costs (Bromiley and Cummings 1995, Zaheer, McEvily and Perrone 1998) creating efficient exchanges that drive competitive advantage. Similarly, the marketing literature suggests that trust fosters a long-term view of relationship costs and benefits and lowers fear of opportunism (Ganesan 1993; John 1984; Morgan and Hunt 1994). However, this empirical support rests largely on survey self-reports of respondents' perceived or anticipated outcomes across a cross-section of settings (e.g., E. Anderson and Weitz 1992; J. Anderson and Narus 1990). These results provide an intuition for how trust may operate in exchange relations. Yet, they could be mere self-affirmation of managerial "theories in use" since they are neither confirmed by actual behavioral observation nor causally related to outcome benchmarks.

SCR (2000) found that with asymmetric information, the uninformed M often interpreted the informed D's counteroffers as evidence of competitiveness, rather than as signals of value or cooperative intent. The vulnerable M then retaliated with delays, compromising bargaining efficiency. Mutual reputations of high trustworthiness, rooted in experience or credible word of mouth, may mitigate or reverse such negative outcomes. Expectations of reliable and fair behavior may secure cooperation and reciprocity even when the parties interact for the first and perhaps the only time (Zaheer et al. 1998). Such trust behaviors need not be dispositional nor reflect a "shallow morality." Rather, if each party encapsulates the other's interest, they have incentive to be reliable and trustworthy in meeting expectations (Hardin 2002).

In our asymmetric information scenario, D's reputation for trustworthiness is based on prior non-exploitative behaviors and may encourage M to cooperate and take counteroffers at face value. This could reinforce D's initial cooperative stance and induce offers providing more reliable signals of the end-user price. Thus, high trustworthiness reputations may enhance cooperation and raise bargaining efficiency. In contrast, low trustworthiness reputations should accentuate inefficient bargaining. D has less incentive to cooperate and M is justifiably vigilant against D's likely opportunism (Bromiley and Cummings 1995; John 1984; Zaheer et al. 1998). Experiment 2 assesses these effects of high versus low mutual trustworthiness reputations using a set of measures similar to Experiment 1. M's uncertainty level is manipulated as before.

Bargaining Process. High mutual reputations for trustworthiness should lower M's tendency to open with high prices. This should elicit more reasonable (higher) counteroffers from D and also induce a greater willingness to share the surplus equally. Hence, a greater proportion of final agreements may show EMP splits. The bargainers should also perceive each other as less competitive. Thus:

H2.1: When bargainers share high (versus low) mutual trustworthiness reputations, bargaining will show the following process differences:
(a) M opening offers will be lower;
(b) D counteroffers to M will be higher;
(c) D counteroffers to M will show more EMP splits;
(d) Final prices will show more EMP splits; and
(e) M and D will perceive each other as less competitive and less profit oriented.

Bargaining Outcomes. The cooperative tenor expected with high (versus low) trustworthiness should drive quicker agreements and higher final prices (favoring M). Also, consistent with Experiment 1, bargaining should be more efficient and show a profit split more in favor of M. The effect of M uncertainty on bargaining outcomes should be similar to those in SCR (2000) and the present Experiment 1:

H2.2: When bargainers share high (versus low) mutual trustworthiness reputations, bargaining outcomes will differ:
(a) Bargaining durations will be shorter;
(b) Final prices will be higher;
(c) Bargaining efficiency will be higher; and
(d) The D-M profit division will change in favor of M.

H2.3: Bargaining outcomes under low (versus high) M uncertainty will differ:
(a) Bargaining duration will be shorter;
(b) Final prices will be higher;
(c) Bargaining efficiency will be higher; and
(d) The D-M profit division will change in favor of M.

Moreover, greater uncertainty requires a longer offer/counteroffer sequence for resolution, leaving room for trust to have impact. Hence, greater gains should accrue from reputations of high trustworthiness when M's uncertainty is high (versus low). This implies an interaction between trustworthiness reputation and uncertainty:

H2.4: Manufacturer uncertainty will moderate the effect of trustworthiness reputations on bargaining outcomes. When M's uncertainty is high (versus low), there will be a *greater*:
(a) reduction in bargaining duration;
(b) increase in final prices;
(c) increase in bargaining efficiency; and
(d) change in the D-M profit division in favor of M.

Method

The design of Experiment 2 tracks that of Experiment 1 with two changes. First, subjects communicated only through offers and counteroffers (no messages were allowed). Second, we manipulated the parties' mutual reputations for trustworthiness. All other task features and parameters were identical. A new set of 32 subjects (28 males and 4 females, mean age: 25) was drawn from the same graduate business student pool (4 years full-time work experience; 44 percent with business negotiation experience). The experiment was run in two sessions of sixteen subjects each, with eight subjects randomly assigned to play the M (D) role. The delay cost, δ, was 0.9 and M's uncertainty was manipulated within-subjects at two levels.

The players' mutual reputation for trustworthiness was manipulated between dyads in a manner consistent with the relational exchange literature (Morgan and Hunt 1994; Zaheer et al. 1998). The following descriptions were embedded in the respective negotiation scenarios:

> "You have dealt with manufacturer's/distributor's present VP-Sales/VP-Purchase for some years now. In past dealings with the VP-Sales/VP-Purchase, you have felt that you could (could not) count on the VP's word in business transactions. The VP-Sales/VP-Purchase also has a reputation for being (not being) very straightforward and "up front." Thus, the manufacturer's/distributor's VP will not (will) play games or misrepresent the firm's interest. The VP is known (not known) to bargain in good faith and the prices that the VP has negotiated in the past have (have not) been satisfactory to both parties."

Subjects in the first (second) session were in the high (low) trustworthiness condition. In each session, the eight M-D dyads were divided into two equal groups and the order of the within-subject factor (M uncertainty) was counterbalanced. Each M participated in two games (one in each uncertainty condition) with each of the four D's. Thus, in both sessions (high or low trustworthiness) half the subjects in each group completed four games in one uncertainty condition and four more in the second uncertainty condition. This ensured one-shot and double blind interactions. As in Experiment 1, p was drawn randomly before each game. The value was communicated to D, but not to M. Subjects completed a brief questionnaire after each game and a longer questionnaire after completing all games. They were paid $5 for participation and also a performance-contingent monetary reward (i.e., mean earnings in three randomly chosen games were paid in cash at the end of the study). Subjects earned about $15 on average.

Results

Experimental Checks. Subjects reported that the bargaining scenario was realistic and that they made their decisions carefully (Means = 5. 43 and 5.68 on respective 7-point scales). Those in the high (versus low) trustworthiness reputation condition viewed their opponents as more trustworthy (Means = 3.5 vs. 2.5; $F(1, 62) = 8.86$, $p < .004$ for the M's; Means = 4.88 vs.

2.87; F(1, 62) = 84.43, p < .0001 for the D's). The uncertainty manipulation also worked as intended. Relative to HU subjects, LU subjects perceived that the end-user price that D faced was in a narrower range and that M was more certain about it (all p's < .0001). The order of the two uncertainty conditions did not affect the dependent measures.[4] These measures (all at the M-D dyad level) were analyzed using repeated measures ANOVAs as a function of trustworthiness and uncertainty, and the 2-way interaction. Table 2 shows the results by study condition.[5]

[INSERT TABLE 2 HERE]

Bargaining Process. H2.1 predicted the following process effects when bargainers share high (versus low) mutual trustworthiness reputations: (a) lower M opening offers; (b) higher D counteroffers to M; (c) more EMP splits in D counteroffers to M; (d) more EMP splits in the final price; and (e) perceptions of each other as less competitive and less profit oriented.

First Prices. Although directionally consistent (H2.1a) opening offers did not differ between the high (HT) and low trustworthiness (LT) conditions (Means = 134.11 vs. 136.16; F(1, 62) = 1.25; p >. 26). However, the offers differed sharply between HU and LU (Means = 138.34 vs. 131.94; F(1, 62) = 12.35, p < .0001). Interestingly, the trustworthiness x uncertainty interaction approached significance (F(1, 62) = 3.21, p < .06). High (versus low) uncertainty led to higher opening offers in LT (Means = 140.91 vs. 131.42; F(1, 31) = 10.11, p < .003), but not in HT (Means = 135.77 vs. 132.45; F(1, 31) = 2.76, p > .10). In other words, high (versus low)

[4]As in Experiment 1, each dependent measure was regressed as a function of *p*. Predictably, since M's did not know *p* at the outset, their first offers were unaffected by *p*. However, with higher *p*'s, bargaining duration decreased, bargaining efficiency improved, and final prices were higher (all p's < .001). Thus, D's were willing to pay more and settle sooner when *p* was higher. Also, as expected, both M and D profits increased with *p* (all p's < .0001).

[5]Comparisons with the normative SE model point predictions are in Table 2. A detailed discussion is available from the authors.

trustworthiness reputations influenced opening offers when M was more uncertain.

Counteroffers. Consistent with H2.1b, D's counteroffers were higher (i.e., favored M) in HT versus LT (Means = 116.4 vs. 112.8; $F(1, 57) = 3.70$, $p < .05$). D's counteroffers were also higher in the LU versus the HU condition (Means = 116.3 vs. 112.9; $F(1, 57) = 12.23$, $p < .001$), perhaps reciprocating M's more reasonable opening offers. Also, counteroffers in HT versus LT showed a higher proportion of EMP splits. This was true in both HU (62.5 vs. 32.1 percent; $z = 2.19$, $p < .05$) and in LU (42.3 vs. 19.2 percent; $z = 1.8$, $p < .05$). Thus, (H2.1c) D's were more willing to share surplus equally when trustworthiness was high (versus low).

Division of Profits. Consistent with the counteroffers, a simple EMP model accounted for about 39 percent (n = 11) of the HT agreements, whereas the EMP model could account for only about 11 percent (n = 7) of the LT agreements. This difference ($z = 3.67$, $p < .05$) is consistent with H2.1d. Thus, high (versus low) trustworthiness led to more EMP agreements.

Competitiveness Perceptions. M's in the HT (versus LT) condition agreed less with statements that (a) D's main goal was to maximize profits (Means = 3.50 vs. 4.38; $t = 2.33$, $p < .01$) and (b) D was competitive in bargaining (Means = 2.93 vs. 5.13; $t = 6.08$, $p < .0001$). The D's held symmetric perceptions. Those in the HT (versus LT) condition agreed less with corresponding statements about M's profit maximization goals (Means= 5.50 vs. 6.63; $t = 2.11$, $p < .05$); and competitiveness (Means = 4.75 vs. 6.00; $t = 2.55$, $p < .01$). These data support H2.1e, and imply that high (versus low) trustworthiness fostered more cooperative bargaining.

Bargaining Outcomes. H2.2 predicted the following outcomes when bargainers share high (versus low) mutual trustworthiness reputations: (a) shorter bargaining durations; (b) higher final prices; (c) higher bargaining efficiency; and (d) change in the D-M profit division in favor of M. H2.3 predicted a similar pattern of bargaining outcomes for high (versus low) M

uncertainty. Further, H2.4 predicted that trustworthiness effects on bargaining outcomes will be moderated by the level of M uncertainty. Specifically, when M uncertainty is high versus low, H2.4 predicted greater (a) reduction in bargaining durations; (b) increase in final prices; (c) increase in bargaining efficiency; and (d) change in the D-M profit division in M's favor. We test these hypotheses next. The relevant means are presented in Table 2.

Bargaining Duration. Consistent with H2.2a, bargainers in the HT condition reached quicker agreements than those in LT (Means = 3.83 vs. 5.47; $F(1, 62) = 4.57$, $p < .03$). The data show an uncertainty main effect (H2.3a). The LU bargainers reached faster agreements than those in HU (Means = 3.58 vs. 5.72; $F(1, 62) = 12.48$, $p < .001$). However, the results did not support H2.4a. The trustworthiness effects in HU and LU were ordered as predicted, but the difference was not significant (Means = 2.00 vs. 1.29, $p > .50$).

Final Prices. Although final prices were directionally higher in the HT (versus LT) condition, the difference was not significant (Means = 121.30 vs. 119.36, $p > .20$). Thus, H2.2b was not supported. However, consistent with H2.3b, the final price was higher in LU versus HU (Means = 121.51 vs. 119.12; $F(1, 62) = 3.44$, $p < .05$). H2.4b did not receive support - the trustworthiness reputation x uncertainty interaction did not affect final price ($p > .50$).

Bargaining Efficiency. Trustworthiness had a significant effect on bargaining efficiency. Consistent with H2.2c, bargaining efficiency was higher in HT versus LT (Means = 0.78 vs. 0.69; $F(1, 62) = 4.12$, $p < .05$). Also (H2.3c) bargaining was more efficient in LU versus HU (Means = 0.79 vs. 0.68; $F(1, 62) = 10.12$, $p < .002$). Also, as for the duration and final price measures, trustworthiness reputation and uncertainty did not interactively influence bargaining efficiency ($p > .50$). Thus, there was no support for H2.4c.

Individual Profits. M's made higher profits in the HT versus the LT condition (Means =

17.34 vs. 13.94; $F(1, 62) = 3.78$, $p < .05$). M profits also showed an uncertainty main effect, with profits higher in LU versus HU (Means = 17.13 vs. 14.15; $F(1, 62) = 6.76$, $p < .01$). As for the other measures, the trustworthiness reputation x uncertainty interaction was not significant. Also, the two manipulations had no main or interactive effects on D's profits (all p's > .80).

The D-M profit division shifted in favor of M in the HT versus the LT condition (Means = -3.01 vs. 0.38; $F(1, 62) = 3.45$, $p < .05$). This is consistent with H2.2d. Unexpectedly, the M's outperformed the D's in the HT condition. Also, as proposed in H2.3d, the profit division shifted in favor of the M's in LU versus HU (Means = -2.79 vs. 0.15; $F(1, 62) = 3.68$, $p < .05$). Again, the M's outperformed the D's in the LU (versus the HU) condition. Finally, the profit division showed a significant trustworthiness x uncertainty interaction. Trustworthiness (high vs. low) had a marginally smaller effect in favor of M's in HU versus LU (Means = -1.55 vs. -5.23; $F(1, 62) = 2.94$, $p < .06$). This result is contrary to H2.4d and reflects M's disproportionate profit gains when high trust accompanied low uncertainty. Thus, by agreeing quickly when uncertainty was low, M's avoided the high surplus attrition in the earlier bargaining periods.

Discussion

Experiment 2 shows that manipulating trustworthiness reputations influenced bargaining from the very outset. High (versus low) trustworthiness produced lower opening offers from M. The D's did not exploit these lower opening offers, but reciprocated with better counteroffers (including more EMP offers). Bargainers also reached quicker (and more efficient) agreements. Although uncertainty influenced outcomes, gains from high reputations of trustworthiness were equal in both uncertainty conditions. This main effect was unexpected as we had proposed that trustworthiness reputations would have more impact under high (versus low) uncertainty.

Traditional economic intuition suggests that trust should have little effect on bargaining.

Yet, Experiment 2 shows that high trustworthiness reputations encouraged cooperation. In both uncertainty conditions, they reached quicker agreements and extracted a larger proportion of the surplus. Since D was usually not opportunistic, M was the primary beneficiary of this increased surplus. However, M's gains came from the additional surplus and not directly at D's expense. Indeed, M did significantly better than D by agreeing quickly when high trust accompanied low uncertainty, perhaps benefiting from being unaware of the resulting inequity in surplus division.

The trustworthiness manipulations implied no specific strategies for a sequence of offers and counteroffers. The end user prices for each game were drawn randomly, and the interactions were one-shot and double blind. Overall, the bargaining outcome differences show that the trustworthiness manipulation influenced cooperation. High trust elicited cooperation, despite motive and opportunity for opportunistic behavior. At the same time, the fact that M's took a disproportionate share of the incremental surplus suggests that this was a market outcome, rather than the product of concerted coordination between the parties (c.f. Valley et al 1998, 2002)or simple demand effects.

EXPERIMENT 3: COMMUNICATION AND TRUSTWORTHINESS REPUTATION

Experiments 1 and 2 raise a natural question about how communication type and trustworthiness reputations interactively impact bargaining. Also, since Experiment 1 allowed subjects to self-select messages, the effects of specific types of communication could not be isolated because subjects used a heterogeneous mix of messages in similar temporal patterns. Experiment 3 allows us to contrast the effects of informational (I) and relational (R) messages to those in a no communication (N) condition, under high (versus low) mutual reputations of trustworthiness. We used our familiar asymmetric information bargaining setting in which D is fully informed of the available surplus, and M has either high or low uncertainty about the

consumer price that D can command. Subjects played either the M or D role and were asked to provide judgments about the outcomes of an in-progress negotiation described in scenarios manipulating the focal factors. Although the subjects did not actually bargain in this study, this scenario approach enabled study of the bargaining expectations and mindsets created by the homogeneous message type manipulation.

Hypotheses

Experiment 1 showed that both I and R messages were used in the early stages of bargaining. This created a positive tenor to the interactions and improved bargaining outcomes. These results suggest that improved bargaining outcomes will be anticipated with both I and R message histories, relative to no communication (N). This prediction follows H1.3. With a more cooperative mindset, both M and D should expect to settle earlier, lowering bargaining duration. Moreover M (D) should also expect to settle for more cooperative lower (higher) prices. These judgments imply higher bargaining efficiency and higher profit expectations for both parties. Also, the fact that in Experiment 1, subjects used more I (versus R) messages suggests that the former are expected to be more effective than the latter in improving bargaining outcomes.

> H3.1 Relative to a no communication (N) condition, using I and R messages during bargaining will show the following differences in anticipated outcomes, with larger effects for I versus R messages:
> (a) Both D and M will estimate shorter bargaining durations;
> (b) Estimated final prices will be lower for M and higher for D;
> (c) Both D and M estimates will imply higher bargaining efficiency;
> (d) Both D and M estimates will imply higher profits.

We focus next on the interaction of communication type and trustworthiness. The pattern of effects produced by I and R messages (relative to N) on bargaining outcomes should differ for high versus low trustworthiness reputations. The seemingly substantive I messages may be better received than N regardless of the trustworthiness level. In contrast, the interpretation of R

messages may depend on the level of trustworthiness. These may be better received than N only if trustworthiness reputations are high. With low trustworthiness reputations, R messages may be perceived as disingenuous. Hence they may be discounted or could even exacerbate the prevailing distrust (Ullman-Margalit 2004). This reasoning predicts that trustworthiness reputations will moderate communication type effects.

> H3.2 The impact of I and R messages relative to no communication (N) will differ depending on whether mutual trustworthiness reputations are high or low. For R messages when trustworthiness is low:
> (a) Both D and M will estimate longer bargaining durations;
> (b) Estimated final prices will be higher for M and lower for D;
> (c) Both D and M estimates will imply lower bargaining efficiency;
> (d) Both D and M estimates will imply lower profits.

The main effects of trustworthiness reputations should be similar to those predicted in H2.2. Also, the main effect of M uncertainty should parallel those in H1.4 and H2.3. M's uncertainty level should also moderate explicit communication effects as in H1.5. However, based on Experiment 2, M uncertainty may not moderate trustworthiness reputation effects (contrary to H2.4). We offer no formal prediction regarding the triple interaction of these factors, but present the corresponding results later in the paper.

Method

The negotiation context in Experiment 3 was identical to those in Experiments 1 and 2. The product cost c ($100) and delay cost δ (0.9) were the same. M's uncertainty was manipulated using the same mean-centered uniform distributions: High ($110 - $170), Low ($130 - $150). However, instead of actual bargaining, subjects were randomly assigned to either the M or the D role and given corresponding scenarios describing a 6-period offer/counteroffer history. The price path (M: $142, D: $110; M: $133, D: $112; M: $126, D: $115) was based on average prices in bargaining episodes of six or more periods in Experiments 1 and 2. Subjects

playing the D (but not the M) role were told that the end user price *p* was $141.

The experiment used a 2 x 2 x 2 x 3 mixed design. The M/D roles and the trustworthiness reputation levels (high/low) were assigned between subjects. The latter used a summary description of past dealings, as in Experiment 2. The M uncertainty level (high/low) and the communication type manipulations were within subjects. Communication type was manipulated at three levels. In the N condition, the price path was presented without any accompanying messages. In the R and I conditions, each offer/counteroffer was accompanied by a message from the appropriate set (Appendix 1).[6] For workload reasons, each subject evaluated only two scenarios pairing different uncertainty and communication conditions. This created an incomplete blocking as each subject saw only two of the three message conditions.

A total of 168 subjects (average age 31, 32% female) participated in the study. Subjects were students in executive and regular MBA programs (average work experience: 7 years; 64% with business negotiation experience) at a public university. The study involved a three-part take home assignment returnable in one week. In Part A, each subject read a scenario corresponding to their first assigned study condition. They then answered questions about the period in which they expected to reach agreement and the associated final price. No actual bargaining was involved. These questions were followed by task perception and manipulation check questions. Part B involved identical procedures for the second assigned condition. The order of the uncertainty and communication type combination was counterbalanced across Parts A and B.[7] In Part C, subjects answered some classification questions. Each subject was paid a participation fee of $10 and a pre-announced $25 prize was awarded in each of the 24 conditions

[6]Coercive messages were excluded as they were of less interest given the results of Experiment 1.
[7]The six basic Part A, Part B combinations were (1) LU – I, HU-N; (2) HU-N, LU-R; (3) LU-R, HU-I; (4) HU-I, LU-N; (5) LU-N, HU-R; and (6) HU-R, LU-I. This combination was repeated for the two between subject factors (i.e., role: M/D and trustworthiness reputations: high/low). Thus, the study had 24 cells, each containing 7 subjects.

to the subject whose final price estimate was closest to the average final price estimated by their opponents.

Results

Experimental Checks. Subjects indicated that the bargaining scenario was realistic and that they made decisions carefully (Means = 4.98 and 5.77 on respective 7-point scales). Not surprisingly, mean realism for the N condition (4.55) was lower than for I (5.34) and R (5.07) conditions (p's < .005). Designated manipulation checks showed that the uncertainty and trustworthiness reputation manipulations worked as intended ($p < .0001$).

Subjects in both I and R (versus the N) condition rated the communication between bargainers as less sparse (all p's < .0001). I subjects rated their messages higher on conveying quality, cost and price information than R subjects ($p < .0001$). Also, subjects in the R (versus I) condition rated their messages higher on conveying cooperative, mutual benefit and long term orientations ($p < .01$). The order of the scenarios did not affect the dependent measures (all p's > .25) which, in Experiment 3 were at the individual subject level (versus at the dyad level in Experiments 1 and 2). The measures were analyzed (PROC Mixed in SAS) as a function of role (M/D), trustworthiness (high/low), uncertainty (high/low), communication (N, I and R) and all 2-way, 3-way and 4-way interactions of these factors. Tables 3 - 5 show the relevant means.

Bargaining Outcomes. According to H3.1, relative to the N condition, in the I and R conditions both D and M should estimate shorter bargaining durations; M (D) should estimate lower (higher) final prices; and both D and M should anticipate higher bargaining efficiency and higher profits. The effects should be larger for I versus R messages. H3.2 predicted that the above will hold in all cells except when R messages are used with low trustworthiness reputations. In this last condition, we expected the opposite pattern of results.

Bargaining Duration. The M and D subjects did not differ in their bargaining duration estimates ($F(1, 164) = 0.82$, $p > .35$). Table 3, Panel A shows the pooled means. There was a main effect of communication type (Means: N = 9.60, I = 8.65 and R = 9.29; $F(2, 142) = 4.39$, $p < .02$). Consistent with H3.1a, I subjects (versus N and R) estimated shorter durations (all p's < .05). The R and N condition means were ordered consistent with H3.1a, but did not differ ($p > .35$). Trustworthiness had a main effect (Means: HT = 8.30; LT = 10.06; $F(1, 164) = 42.6$, $p < .0001$) corroborating the Experiment 2 results. There was also a significant communication x trustworthiness interaction ($F(2,142) = 12.33$, $p < .0001$). Consistent with H3.2a, duration estimates were highest for R messages in the LT condition (Mean = 11.11, all p's < .02). Across LT and HT, duration estimates differed only marginally for the N and I conditions (Means: N: 10.02 vs. 9.18, $p < .08$; I: 9.05 vs. 8.25, $p < .09$, respectively). However, the R condition means differed sharply (Means: 11.11 vs. 7.48, $p < .0001$). The effectiveness of R messages was contingent on high trustworthiness. No other main or interaction effects (including those involving M uncertainty) were significant.

Final Prices. The final price data showed nuanced differences. Understandably, the M's estimated a higher average final price than D's (Means = 119.63 vs. 118.23; $F(1, 164) = 23.70$, $p < .0001$). There was a significant role x communication type interaction ($F(2, 142) = 4.40$, $p < .05$). The means for the various communication type are in Table 4, Panel A. For M's, these means were ordered as predicted (I: 118.70, R: 120.01, and N: 120.17 respectively). The I condition price was lower than that in the N condition ($p < .002$) but the R and N conditions did not differ ($p > .70$). For D's too, the communication means were ordered as predicted (I: 118.30, R: 118.24, N: 118.14) but no differences were significant ($p > .70$). Thus, H3.1b received partial support. The uninformed M's responded to communication with lower price estimates. On the

other hand, the informed D's price estimates were unaffected.

A significant role x trustworthiness interaction ($F(1, 164) = 64.72$, $p < .0001$) corroborated the Experiment 2 results. Table 4, Panel A shows that with high (versus low) trustworthiness, M's were willing to settle for lower prices (Means = 118.19 vs. 121.07, $p < .0001$). The D's were willing correspondingly to settle for higher prices (Means = 119.10 vs. 117.36, $p < .0001$). Thus, when trustworthiness was high, both parties were willing to make price concessions.

A 3-way interaction ($F(2, 142) = 22.25$, $p < .0001$) emerged between role, trustworthiness reputations and communication type (Table 4, Panel A). For M's, the *differences* in estimated final price for HT and LT by communication type were (I: -1.50, R: -6.20, N: -0.94). These attained significance for I ($p < .05$) and R ($p < .0001$), but not for N ($p > .10$). As predicted (H3.2b), M's estimated the highest final prices (123.11) when R messages were used in LT (all p's $< .001$). Interestingly, in HT, M's final price estimates did not differ for R and I messages (Means = 116.91 and 117.95, $p > .10$), whereas the estimates in LT were higher in the R condition than in I and N (Means: R: 123.11, I: 119.45, N: 120.64, all p's $< .001$). Thus, when low trust prevailed, I messages may have helped build trust, but R messages were perhaps seen as disingenuous, exacerbating distrust. For D's, the corresponding *differences* in final price estimates for HT versus LT were: (I: 1.21, $p<.07$, approaching significance; R: 3.12, $p<.0001$, significant; and N: 0.86, $p>.10$, not significant). Also, the D's estimated the lowest prices (116.68) with R messages in the LT condition. This estimate was lower than those for I and N messages in HT (all p's $< .005$), but in LT, the corresponding differences were not significant (p's $> .10$). Overall, H3.2b received support for M's but not for D's.

The uncertainty manipulation showed no main or 2-way interactions on the final price estimates, but was involved in two 3-way interactions. The first (Table 4, Panel B) was between

role, communication type and uncertainty ($F(2, 142) = 4.17$, $p < .05$). The data show that in LU, communication had little effect on estimated prices for either D or M (all p's > .80). The data corroborate the results of Experiment 1. In HU, communication had little impact on D's price estimates (all p's > .40). For M, though, price estimates were lower for I messages versus both N and R (all p's < .0001). Thus, the uninformed M's responded more favorably to I messages relative to R messages or no communication (N). The second 3-way interaction ($F(2, 142) = 3.19$, $p < .05$) was between trustworthiness reputations, communication type and uncertainty (Table 4, Panel C). In LU, communication had no effect on estimated prices whether trustworthiness was high or low (all p's > .10). In HU, communication again had no effect when trustworthiness reputations were high (all p's > .20). However, with low trustworthiness, estimated prices were lower for I relative to both N and R (all p's < .005). Thus, I messages had a positive mitigating effect when low trust and high uncertainty prevailed. The effect seems attributable to the uninformed M being more willing to settle at a lower price.

Although the focal factors had nuanced impact on estimated final prices, the overall effects were consistent with those in Experiments 1 and 2. There was partial support for H3.1b and H3.2b and the results generally matched the underlying reasoning. The implications emerge in the gap in the final prices estimated by D and M in the various conditions (Table 5). With high trustworthiness, both I and R messages closed and reversed the D-M expected price gap, making a successful transaction more likely than in N. With low trustworthiness, I messages also closed the D-M price gap. However, the R messages boomeranged and greatly increased the gap. With low uncertainty, communication had little impact. However, with high uncertainty, I messages reversed the D-M price gap. R messages had little effect relative to no communication.

Bargaining Efficiency. The bargaining efficiency ratios computed from subjects' duration

and final price estimates were analyzed as for the other measures. The pattern of results (Table 3, Panel B) was similar to that for bargaining duration. The M and D subjects did not differ in bargaining efficiency ($F(1, 164) = 0.02$, $p > .85$). There was a main effect of communication type (Means: N = 0.42, I = 0.46 and R = 0.44; $F(2, 142) = 4.46$, $p < .02$). Consistent with H3.1c, estimated bargaining efficiency was higher for I versus N subjects ($p < .05$). The means for the R and N conditions were also ordered as predicted in H3.1c, but were not significantly different ($p > .20$). Trustworthiness had a strong main effect (Means: HT = 0.47; LT = 0.40; $F(1, 164) = 44.86$, $p < .0001$) as in Experiment 2. The communication x trustworthiness interaction was also significant ($F(2,142) = 13.95$, $p < .0001$). Consistent with H3.2c, efficiency estimates were lowest for R messages in the LT condition (Mean = 0.36, all p's < .02). The estimates across HT and LT differed marginally for the N condition (Means = 0.41 vs. 0.43, $p < .10$) but were significantly different for both I (Means 0.44 vs. 0.48, $p < .05$) and R (Means: 0.36 vs. 0.51, $p < .0001$). Thus, the effectiveness of I, and especially R, messages was contingent upon high trustworthiness. No other main effects or interactions were significant.

Individual Profits. The M and D profits computed from the duration and final price estimates were analyzed as before (Table 3, Panel C). On average, D's estimated higher profits than M's (Means = 9.85 vs. 8.20; $F(1, 164) = 75.99$, $p < .0001$). The communication type effect approached significance (Means: N = 8.82, I = 9.28 and R = 9.00; $F(2, 142) = 2.63$, $p < .10$). Consistent with H3.1d, the pooled profit estimates were higher for I versus N ($p < .05$). The R and N conditions were ordered as predicted, but did not differ ($p > .40$). Trustworthiness had a main effect as in Experiment 2 (Means: HT = 9.33; LT = 8.73, $F(1, 164) = 10.26$, $p < .001$). The communication x trustworthiness interaction was also significant ($F(2,142) = 3.22$, $p < .05$). The pooled profit estimate was lowest for R messages in LT (Mean = 8.40) with all contrasts

significant (p's < .05) except that against the N condition under LT (p > .40). Thus H3.2d was supported fairly consistently. For the N and I conditions, the profit estimates did not differ across LT and HT (all p's > .50), but the difference was significant for R (Means = 9.59 vs. 8.40, p < .0001). Thus, R messages influenced estimated profits contingent on high trustworthiness. No other effects (including those of M uncertainty) were significant.

Discussion

Experiment 3 described the bargaining mindsets created by the manipulated factors. The effects of communication depend on the prevailing trust reputations. With high trustworthiness, both sides were more willing to make price concessions and anticipated faster and more efficient agreements. I messages produced consistently positive effects across both trustworthiness and uncertainty conditions. However, R messages had equivocal effects, producing the most (least) favorable outcome assessments when trustworthiness was high (low).

Bargainers' perceptions of their opponents were also diagnostic. A measure of the extent to which subjects saw opponents as "profit maximization oriented," showed a trustworthiness x communication type interaction (p < .0001). For R messages, the perception was lowest in HT (Means = R: 5.00, N: 5.64, I: 5.73, all p's < .005), but highest in LT (Means = R: 6.92, N: 6.32, I: 6.21, all p's < .001). Also, a "perceived cooperativeness" measure (averaging items measuring opponent cooperativeness, competitiveness (reversed) and concern for fair outcomes) showed a similar interaction (p < .0001). The cooperativeness ratings for R messages were highest in HT (Means = R: 4.71, N: 4.03, I: 4.06, all p's < .0001) but lowest in LT (Means = R: 2.38, N: 2.87, I: 3.50, all p's < .005). Notably, it was I messages that led to the highest perceived cooperativeness scores in LT (p's < .001). Finally a "mutual trust" measure (averaging two items: "You (your opponent) believe (s) your opponent (you) is (are) trustworthy") also showed the same

interaction ($p < .0001$). With R messages, perceived trust was highest in HT (Means = R: 6.24, N: 5.59, I: 5.69, all p's < .0005) but also lowest in LT (Means = R: 2.17, N: 2.59, I: 3.44, all p's < .01). Thus, R messages were very effective given a trust platform, but boomeranged without it. I messages created more stable perceptions across high and low trustworthiness including the highest "mutual trust" scores in LT (p's < .0001).

GENERAL DISCUSSION

Prior experimental research on asymmetric information bargaining in marketing channel contexts shows that an uninformed party, apprehensive of opponent opportunism, often misinterprets even veridical signals of value and cooperative intent. Consequent retaliatory delays lower bargaining efficiency. The present paper reports three experiments exploring how explicit communication and shared trustworthiness reputations can mitigate these problems. Experiment 1, a computer-mediated bargaining study of explicit communication effects showed that the bargainers naturally set a positive tenor to their interactions using informational and relational messages. Comparison with the SCR (2000, Experiment 1) results showed that when manufacturer uncertainty was high, such communication (although nonbinding) produced faster agreements at higher prices and improved bargaining efficiency.

Valley et al. (1998, 2002) also found that communication moderates bilateral bargaining outcomes under both symmetric and asymmetric information. They attributed their results to strategic coordination that accommodates bilateral preferences, without a mediating role of trust. Our results in Experiment 1 obtain with asymmetric information, in one-shot and double blind interactions, without a prior reputation inventory, and in computer-mediated (not face-to-face) communication, with restricted message options. Although bargaining efficiency improves, the asymmetric division of the incremental surplus is inconsistent with concerted coordination by the

players. Rather, it seems to be a market outcome of messages conveying cooperative intent and other-regarding behavior (Rabin 1993, Roth 1995). Whether such messages work by creating trust that elicits "truth-telling;" by improved decoding of economic signals; or by activating cooperative social norms (e.g., equity) at the bargaining table merits future research.

Experiment 2 studied the impact of trustworthiness reputations, also in computer-mediated bargaining. Even sans communication, high trustworthiness improved bargaining outcomes. Although we predicted larger gains from trustworthiness under high (versus low) manufacturer uncertainty, gains were similar in the two conditions. Trust actions were seen from the outset: in lower manufacturer opening offers, "friendlier" distributor counteroffers, and more EMP splits. The manufacturer's profit gains came from a larger incremental surplus and not directly at the distributors' expense. However, asymmetric division of the incremental surplus again suggests that the gains were market outcomes and not from coordination. These results imply that trust (trustworthiness) may play an even more critical role with incomplete information on both sides of the table (e.g., if the manufacturer's cost is private information).

Experiment 3 involved no real bargaining, but scenarios matching those in Experiments1 and 2 allowed study of the bargaining mindsets created by various communication types under high/low trustworthiness. As in Experiment 1, we found that communication can create expectations of better bargaining outcomes, but also that these effects depend on trust levels. Informational messages improve expected outcomes with both high and low trustworthiness (but less under low trust). Relational messages had contingent effects, yielding the most (least) positive outcome expectations when trustworthiness was high (low). Manufacturer uncertainty effects on expected bargaining outcomes were limited to final prices. Here, informational messages worked best when uncertainty was high and trust was low. Exploring communication

effects in high uncertainty and low trust environments (Ullman-Margalit 2005) is a priority.

The exchange literature (e.g., Morgan and Hunt 1994; Zaheer et al. 1998) implies that trust can only emerge in extended relationships. However, trust actions may stem from expectations of reciprocity rooted in an assessment of encapsulated interest (Hardin 2002). They may occur not only in dyads, but also in social interactions across different partners and varying recipients and reciprocators (Cox 2004; Hardin 2002). Indeed trust actions can even be temporarily induced in humans by a nasal dose of oxytocin (Fehr et al. 2005). Our results (c.f., Berg et al. 1995) are obtained in one-shot, double blind interactions, with trustworthiness manipulated using instruction sets with positive/negative transaction histories. To our knowledge, this paper is the first to document the impact of communication *type* (Experiment 1) and a trust induction (Experiment 2) on marketing negotiation *processes* and *outcomes*. Experiment 3 documents the *mindsets* that stem from these factors. These results corroborate and add to findings based on managerial self-reports and cross-sectional surveys.

Our studies show that marketing agents may not be good game-theoretic players of non-cooperative strategy. Yet, they often realize better outcomes by communicating even given limited opportunity, and by cooperating based on trust (without immediate incentives) and expected reciprocity (sans guarantees). Even so, communication and trust alone may not sustain marketing relationships, as defection incentives eventually do arise (Morgan and Hunt 1994, Ho and Weigelt 2005). Evolutionary reasoning (Hoffman et al. 1998) suggests that marketing agents may be predisposed to cooperate in exchange interactions with business partners who are not obvious adversaries. However, they may also assess partner trustworthiness and tacitly learn associated behaviors that build reputation and transmit expectations. The behaviors may sustain if reinforced, but if exploited, agents may be adaptively replaced by other more effective (even

non-cooperative) behaviors. Studies of these aspects of exchange behaviors would enrich the marketing literature significantly.

APPENDIX

The set of messages used for explicit communication in Experiments 1 and 3 are shown below:

Manufacturer Messages	Distributor Messages
Informational (I) I1. "Our market research suggests that the construction companies view the new product to be of superior quality. The offer we are making reflects the R&D effort and manufacturing costs that went into making this quality product."	**Informational (I)** I1."Our market research indicates that the construction companies view the new product to be of superior quality and needs to be distributed quickly for it to be successful. The offer we are making covers the costs associated with distribution."
I2. "Industry sources have given us some idea of the price that the construction companies are willing to pay for the new superior quality pad. Based on our estimate, we are making an offer that ought to yield nearly equal profits for both firms."	I2. "Frequent interactions with the consumers give us a good understanding of the price that they are willing to pay for the new superior quality pad. This understanding enables us to make an offer that will yield equal profits for both firms."
I3. "The offer we are making reflects not only our R&D and manufacturing costs but also our estimate of what you can ultimately get from the construction companies."	I3. "Our offer reflects not only our distribution costs but also how much we can ultimately get for the product from the construction companies."
Relational (R) R1. "We want to establish a cooperative working relationship. Hence, we believe that we are making an offer that will make this negotiation successful for both firms."	**Relational (R)** R1. "Working together responsively is the only way to develop a mutually beneficial relationship. Our offer reflects this philosophy."
R2. "Cooperating with each other is in the long-term interest of both our firms. We are therefore making an offer which we believe is fair for both parties."	R2. "We want to cooperate and reach an agreement that works for both our firms in the long run. The offer we are making is indicative of our position."
R3. "The offer we are making is intended to produce a long-term win-win solution for both our firms."	R3. "The offer we are making is intended to produce a long-term win-win solution for both parties."
Coercive (C) C1. "As the manufacturer of the product that required considerable R&D and manufacturing effort both in terms of time and money, we deserve to make higher profits. If you do not cooperate, we may have to deal with another distributor."	**Coercive (C)** C1. "Since we are taking care of all the activities associated with distribution, we deserve to make more profit. Moreover, you will suffer a loss if you do not deal with us."
C2. "Your firm does not have any idea what it takes to manufacture a high-tech product while our firm's reputation as a manufacturer of such products is unmatched in the market. We thus deserve to realize higher profits."	C2. "Your firm has no clue as to what consumers are willing to pay for the product while our firm, with one of the best distribution networks in the country, knows the price we can get from the construction companies. We deserve to make higher profits."
C3. "Your non-cooperative stance is taking this negotiation nowhere. If you do not concede and accept our offer now, your firm will be in trouble."	C3. "Your ignorance and non-cooperative stance is taking this negotiation nowhere. If you do not concede and accept our offer now, your firm's profits will be in the red."

A total of 24 pretest subjects (18 male, 6 female) were given an abbreviated case scenario as context and were asked to rate the statements (both M and D versions) on nine characteristics (Table A1) using 7-point scales (1= Disagree; 7= Agree). The bolded means (Table A1) show that the pretest subjects perceived the messages as intended. For example, message 1 carries quality and cost information (informational), message 4 conveys cooperation, mutuality and long-term orientation (relational) and message 7 is seen as threatening, other-demeaning and self-aggrandizing (coercive). Note that the informational messages had no specific content, but merely *alluded* to quality, cost and consumer price. Messages 1 and 3 did not mention price and quality respectively and received low ratings on these dimensions. However, they conveyed information on other dimensions. Some informational messages (2 and 3) also had relatively high relational ratings. A principle component analysis of the ratings showed that three factors explained 90% of the variance across messages and loaded on corresponding I, R and C items.

Table A1
Mean Message Ratings

	Informational			**Relational**			**Coercive**		
Message #	**I1**	**I2**	**I3**	**R1**	**R2**	**R3**	**C1**	**C2**	**C3**
Reflects quality info	**5.8**	**4.8**	**2.6**	2.5	2.3	2.2	2.5	2.7	1.9
Reflects cost inform	**5.9**	**4.6**	**5.1**	2.5	2.2	1.8	2.4	2.0	1.7
Reflects res. price info	**2.8**	**5.1**	**5.4**	3.0	2.6	2.2	2.8	2.5	2.0
Shows cooperation	3.5	4.2	4.4	**6.0**	**5.8**	**5.8**	2.2	1.7	1.9
Shows mutuality	3.5	4.3	4.3	**6.3**	**6.4**	**6.4**	2.4	2.0	2.1
Shows long term orientation	3.1	4.0	4.1	**6.1**	**6.2**	**6.4**	2.1	1.9	1.7
Threatening	2.8	2.2	3.0	1.9	2.1	1.8	**6.2**	**6.5**	**6.6**
Other-demeaning	2.7	2.4	2.5	2.2	2.4	1.6	**5.2**	**6.7**	**6.4**
Self-aggrandizing	3.8	2.8	2.4	2.2	2.0	2.3	**5.4**	**6.5**	**5.3**

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TABLE 1

Experiment 1: Bargaining Process and Outcome Means by Communication and Uncertainty Conditions

	High Uncertainty			Low Uncertainty		
		Communication			Communication	
Dependent Measures	**Predicted***	**Present**	**Absent#**	**Predicted***	**Present**	**Absent#**
First Price	119.62	134.68[d]	133.89[c]	118.49	130.00[a]	127.03[a]
Duration (# of periods)	3.23	3.41[d]	5.67[c]	1.00	3.00[a]	3.00[a]
Final Price	109.52	117.15[a]	114.87[a]	118.49	119.99[c]	118.46[d]
Bargaining Efficiency	0.79	0.79[d]	0.70[c]	1.00	0.83[a]	0.84[a]
Manufacturer Profit	7.85	14.09[a]	11.21[a]	18.49	16.57[c]	15.49[a]
Distributor Profit	25.25	16.27[a]	15.75[a]	21.51	15.77[a]	16.94[a]

Notes:

*Predicted values from the sequential equilibrium (SE) model are shown for reference purposes. Significance of contrast between SE prediction and observed mean:
[a] $p < .0001$; [b] $p < .001$; [c] $p < .05$; [d] not significant.
A detailed discussion of these data is available from the authors.

#Data for the Communication absent condition are from SCR (2000, Experiment 1).

TABLE 2

Experiment 2: Effects of Trustworthiness Reputations on Bargaining

	High Uncertainty			Low Uncertainty		
		Trustworthiness Reputations			Trustworthiness Reputations	
Measures	**Predicted***	**High**	**Low**	**Predicted***	**High**	**Low**
First price	119.62	135.77[a]	140.91[a]	118.49	132.45[a]	131.42[a]
Duration (# of periods)	3.23	4.72[c]	6.72[b]	1.00	2.93[a]	4.22[a]
Final price	109.52	119.61[a]	118.68[a]	118.49	122.98[a]	120.05[c]
Bargaining efficiency	0.79	0.72[d]	0.64[c]	1.00	0.83[a]	0.74[a]
Manufacturer profit	7.85	15.41[a]	12.89[b]	18.49	19.28[d]	14.99[b]
Distributor profit	25.25	14.79[a]	13.82[a]	21.51	13.88[a]	14.82[a]

Notes:

*Predicted values from the normative (SE) model are shown for reference purposes.
Significance of contrast between SE prediction and observed mean:
[a] $p < .0001$; [b] $p < .001$; [c] $p < .05$; [d] not significant.

TABLE 3

Experiment 3: Bargaining Outcome Estimates

Communication Type	Overall	Trustworthiness Reputations		Difference
	Mean	High	Low	High – Low
Panel A. Bargaining Duration Estimates*				
Informational (I)	8.65	8.25	9.05	-0.80
No Communication (N)	9.60	9.18	10.02	-0.84
Relational (R)	9.30	7.48	11.11	-3.63
Mean	9.18	8.30	10.06	-1.76
Panel B. Bargaining Efficiency Estimates+				
Informational (I)	0.46	0.48	0.44	0.04
No Communication (N)	0.42	0.43	0.41	0.02
Relational (R)	0.44	0.51	0.36	0.15
Mean	0.44	0.47	0.40	0.07
Panel C. Individual Profit Estimates#				
MANUFACTURER				
Informational (I)	8.47	8.39	8.54	-0.15
No Communication (N)	8.05	8.20	7.90	0.30
Relational (R)	8.09	8.65	7.53	1.12
Mean	8.20	8.42	7.99	0.43
DISTRIBUTOR				
Informational (I)	10.09	10.42	9.75	0.67
No Communication (N)	9.59	9.80	9.38	0.42
Relational (R)	9.89	10.52	9.26	1.26
Mean	9.85	10.24	9.46	0.78
POOLED MANUFACTURER & DISTRIBUTOR				
Informational (I)	9.28	9.41	9.14	0.27
No Communication (N)	8.82	9.00	8.64	0.36
Relational (R)	9.00	9.59	8.40	1.19
Mean	9.03	9.33	8.73	0.60

*Estimated number of periods to agree pooled over D and M subjects.
+Computed from the final price and duration estimates data and pooled for D and M subjects.
#Computed from the final price and duration estimates data

TABLE 4

Experiment 3: Final Price Estimates

Panel A. Role x Communication x Trustworthiness Reputations

Communication Type	Overall Communication Mean	Trustworthiness Reputations		Difference T-Rep High – Low
		High	Low	
MANUFACTURER				
Informational (I)	118.70	117.95	119.45	-1.50
No Communication (N)	120.17	119.70	120.64	-0.94
Relational (R)	120.01	116.91	123.11	-6.20
Mean	119.63	118.19	121.07	-2.89
DISTRIBUTOR				
Informational (I)	118.30	118.91	117.70	1.21
No Communication (N)	118.14	118.57	117.71	0.86
Relational (R)	118.24	119.80	116.68	3.12
Mean	118.23	119.10	117.36	1.74

Panel B. Role x Communication x Uncertainty

MANUFACTURER				
Informational (I)	118.70	117.84	119.56	-1.72
No Communication (N)	120.17	120.77	119.57	1.20
Relational (R)	120.01	120.38	119.64	0.74
Mean	119.63	119.66	119.59	0.07
DISTRIBUTOR				
Informational (I)	118.30	118.39	118.21	0.18
No Communication (N)	118.14	117.91	118.38	-0.47
Relational (R)	118.24	118.16	118.32	-0.16
Mean	118.23	118.15	118.30	-0.15

Panel C. Trustworthiness Reputations x Communication x Uncertainty*

HIGH T-REPUTATIONS				
Informational (I)	118.43	118.43	118.43	0.00
No Communication (N)	119.13	118.89	119.38	-0.49
Relational (R)	118.36	118.18	118.54	-0.36
Mean	118.64	118.50	118.78	-0.28
LOW T-REPUTATIONS				
Informational (I)	118.57	117.80	119.34	-1.54
No Communication (N)	119.18	119.79	118.57	1.22
Relational (R)	119.89	120.36	119.43	0.93
Mean	119.21	119.31	119.11	0.20

*Estimated final price pooled over M and D roles

TABLE 5

Experiment 3: Gaps in Distributor and Manufacturer Final Price Estimates*

Communication Type	Trustworthiness Reputations		Uncertainty	
	High	Low	High	Low
Informational (I)	0.96	-1.75	0.55	-1.35
No Communication (N)	-1.13	-2.93	-2.86	-1.19
Relational (R)	3.20	-6.43	-2.22	-1.32
Mean	1.01	-3.70	-1.51	-1.29

*Positive (negative) entries imply that D expects to pay more (less) than M expects to receive, making successful transactions more (less) likely.