1. Addendum 1: Additional Belief Elicitation Treatments

In this document, we summarize the experimental outcomes under two additional belief elicitation treatments. The basic experimental design remains exactly the same as described in section 2 of our main paper, except for the way predictions are rewarded: under the “no-payment” treatment, subjects do not receive any remuneration; while under the “scoring-rule” treatment, accuracy is rewarded according to a quadratic scoring rule.

The implementation of the no-payment elicitation technique is self-explanatory, and we only describe here the scoring-rule treatment. In phase 3 of each round, after the auction payoffs have been distributed, we roll a 6-sided die once in public to determine which of the six integer bids in the list given in phase 2 will be used to measure the accuracy of the subjects’ predictions. Let us denote $\tilde{b}$ this randomly selected bid. Then, to keep bidding and predicting separated, we match subjects in pairs in such a way that the pairs in the bidding and prediction phases are different. Finally, for each subject $i$ we apply the same rule as in the auction phase to establish whether the bid $\tilde{b}$ would have won the auction against $b_{-i}$, the effective bid of the subject with whom subject $i$ is matched in the prediction phase. In other words, $\tilde{b}$ is declared the winner if either $\tilde{b} > b_{-i}$, or $\tilde{b} = b_{-i}$ and bidder $i$ wins the random draw. Subject $i$’s prediction payoffs are $2.5(2\tilde{P}_{i,\tilde{b},t} - \tilde{P}_{i,b_i,t}^2)$ if $\tilde{b}$ is declared the winner, and $2.5(1 - \tilde{P}_{i,b_i,t}^2)$ otherwise, where $\tilde{P}_{i,\tilde{b},t}$ is bidder $i$’s predicted probability of winning the auction with a bid $\tilde{b}$ in round $t$. Following conventions, the quadratic scoring rule payment mechanism was described to subjects verbally and through examples. In addition, we explained in the instructions that reporting their true beliefs was the best way for subjects to maximize their prediction payoffs. Finally, during the experiment, we displayed before a subject confirmed each prediction $\tilde{P}_{i,\tilde{b},t}$, the payoffs this prediction would generate in the two possible states of the world (i.e. $\tilde{b}$ is or is not declared the winner against $b_{-i}$).

The parameters of the quadratic scoring rules have been selected such that the expected prediction payoffs are roughly similar to the one allocated in our main paper. Indeed, instead of a $2 prediction payoffs allocated on average per round in our main paper, subjects in the additional sessions earned $2.17 on average. The auction payoffs in the two additional elicitation treatments remain quite similar to the one obtained in our main paper. Indeed, in the two informational treatments (i.e. no-feedback and feedback) subjects earned on average $10.28 and $11.33 in the no-payment treatment, $10.43 and $11.39 in the scoring-rule treatment, versus $9.92 and $11.12 in our main paper. The additional sessions were conducted with volunteers at the State University of New York at Stony Brook. There were 16 experimental sessions, four for each combination.

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1 This document is in fact the premise of a paper in which we intend to compare belief elicitation techniques.
of belief elicitation and informational treatment, and each session included 10 subjects and 15 rounds.

We now describe the experimental outcomes in these additional sessions. The analogs of Tables 1 to 6 and Figures 1 to 6 from our main paper, may be found in Tables 1.1 to 6.1 and Figures 1.1 to 6.1 for the scoring-rule treatment, and in Tables 1.2 to 6.2 and Figures 1.2 to 6.2 for the no-payment treatment. Figures 1.1 and 1.2, as well as 3.1 and 3.2, indicate that, without feed-back, subjects overbid and underestimate their probability of winning the auction regardless of the belief elicitation technique. In addition, according with the results in our main paper, little evidence of strategy and/or belief adjustment may be detected when subjects receive no feed-back about their predictions (see Figures 1.1, 1.2, 5.1 and 5.2, as well as Tables 1.1, 2.1, 1.2 and 2.2). In contrast, when they are informed about the quality of their predictions, subjects learn to correct their misperceptions and curb down their tendency to overbid (see Figures 2.1, 2.2, 6.1 and 6.2, as well as Tables 1.1, 2.1, 1.2 and 2.2). This informational treatment effect is confirmed statistically for each belief elicitation treatment in Tables 1.1, 2.1, 1.2 and 2.2.

The experimental outcomes obtained under the no-payment and scoring-rule treatments are therefore consistent with those described in our main paper. A few differences, however, may be noted: First, the variance parameters $\sigma$ and $\sigma_n$ are all significantly higher (either at a 5% or 10% significance level) in Tables 1.1 and 1.2 (respectively, Table 2.1 and 2.2), than in Table 1 (respectively, Table 2). Second, when they receive feed-back about their predictions, subjects appear to adjust their beliefs and bidding behavior at a slightly slower pace than in our main paper. Indeed, observe that, although the difference is not always statistically significant, the absolute values of $\delta_5$ (respectively, $\delta_{50}$) are in general lower in Tables 1.1 and 1.2 (respectively, Tables 2.1 and 2.2), than in Table 1 (respectively, Table 2). Third, subjects tend to resort to focal point predictions (i.e. deciles and quartiles) significantly more often in the no-payment and scoring-rule treatments. Fourth, the predictions of a given subject are significantly more volatile from one period to the next in the no-payment and scoring-rule treatments. Fifth, on average the subjects decision time decreased sharply over time in the prediction task under the no-payment and scoring-rule treatments, while it remained roughly constant i) in the bidding phase of the no-payment and scoring-rule treatments.

\footnote{For instance, in the last 3 periods 26% of the predictions submitted by subjects in the contest treatment are either a decile or quartile, against 51% and 64% in the no-payment and scoring-rule treatments.}

\footnote{To test this hypothesis we estimated by maximum likelihood a model in which the dependent variable $\Delta P_{i,b,t} = |P_{i,b,t} - P_{i,b,t-1}| / P_{i,b,t}$ (i.e., the relative deviation in the predictions stated by a bidder over two periods), is assumed to be normal with mean and variance defined in equations (4.1) and (4.2) in our main paper. Independently of the informational treatment, we find the variance parameters $\sigma$ and $\sigma_n$ to be significantly larger (either at a 5% or 10% significance level) in the no-payment and scoring-rule treatments, than in the contest treatment.}
and ii) in the bidding and prediction phases of the contest treatment.\footnote{For instance, in the no-payment and scoring-rule treatments, the decision time in the prediction phase is on average 24\% lower than in the bidding phase, and roughly 42\% less than the decision time in the prediction phase of the contest treatment.}

To summarize, the two additional beliefs elicitation treatments conducted confirm the main conclusions reached in our paper. Namely, subjects overbid and underestimate their probability of winning, but they tend to correct their misperception and curb-down their overbidding when provided with feed-back on the quality of their predictions. The no-payment and scoring-rule treatments, however, appear to generate slightly noisier and slightly less homogenous predictions and bidding behavior.

We now turn to the estimation of the different structural models with the data collected in the no-payment and scoring-rule treatments. The analog of Tables 4 to 6, may be found in Tables 4.1 to 6.1 for the scoring-rule treatment, and in Tables 4.2 to 6.2 for the no-payment treatment. First observe that, although sometimes significantly different, the parameters estimated with the data collected in the three different treatments are of the same order of magnitude. In addition, the main conclusions reached in our main paper remain valid under the no-payment and scoring-rule treatments. In particular, i) we still find that subjects are heterogeneous with respect to probabilistic beliefs and risk aversion, ii) specification tests still indicate that the Quantal best-response model is the best able to organize the data, and iii) we can still identify some correlations between beliefs and preferences. Slight differences between treatments may be observed however. First, note that the standard deviations ($\sigma_r$, $\sigma_\alpha$, $\sigma_\beta$) are in general larger in the no-payment and scoring-rule treatments, thereby reflecting more heterogeneity between subjects in terms of risk aversion and probabilistic beliefs. Second, the QRE noise parameters $\mu$ is in general higher in the no-payment and scoring-rule treatments, thereby reflecting more volatility in the strategy selection in these two treatments. Finally, observe that no obvious trend may be detected when comparing the results obtained under the different treatments. In particular, we cannot confirm the hypothesis that, in contrast with the scoring-rule treatment, the no-payment and contest treatments yield similar results because they are the least intrusive.
### Table 1.1
Evolution of Predictions

<table>
<thead>
<tr>
<th></th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment effect*</th>
</tr>
</thead>
<tbody>
<tr>
<td>b=0</td>
<td>( \hat{\delta}_b^0 )</td>
<td>( \hat{\delta}_b^5 )</td>
<td>( \hat{\delta}_b^{10} )</td>
</tr>
<tr>
<td>b=0</td>
<td>7.236*</td>
<td>-0.194*</td>
<td>-0.025</td>
</tr>
<tr>
<td></td>
<td>(2.194)</td>
<td>(0.047)</td>
<td>(0.048)</td>
</tr>
<tr>
<td>b=1</td>
<td>9.508*</td>
<td>-0.124*</td>
<td>-0.010</td>
</tr>
<tr>
<td></td>
<td>(2.486)</td>
<td>(0.038)</td>
<td>(0.041)</td>
</tr>
<tr>
<td>b=2</td>
<td>18.977*</td>
<td>-0.081*</td>
<td>-0.008</td>
</tr>
<tr>
<td></td>
<td>(3.389)</td>
<td>(0.039)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>b=3</td>
<td>28.781*</td>
<td>-0.050</td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(3.803)</td>
<td>(0.045)</td>
<td>(0.037)</td>
</tr>
<tr>
<td>b=4</td>
<td>37.292*</td>
<td>-0.024</td>
<td>-0.007</td>
</tr>
<tr>
<td></td>
<td>(3.920)</td>
<td>(0.038)</td>
<td>(0.031)</td>
</tr>
<tr>
<td>b=5</td>
<td>49.041*</td>
<td>-0.028</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(4.854)</td>
<td>(0.032)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>b=6</td>
<td>60.369*</td>
<td>-0.030</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(6.439)</td>
<td>(0.025)</td>
<td>(0.031)</td>
</tr>
<tr>
<td>b=7</td>
<td>70.757*</td>
<td>-0.015</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>(6.834)</td>
<td>(0.024)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>b=8</td>
<td>79.140*</td>
<td>-0.009</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(8.699)</td>
<td>(0.016)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>b=9</td>
<td>88.861*</td>
<td>-0.005</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(9.462)</td>
<td>(0.0010)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>b=10</td>
<td>94.185*</td>
<td>-0.003</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(5.594)</td>
<td>(0.007)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>b=11</td>
<td>99.230*</td>
<td>-0.002</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(4.723)</td>
<td>(0.005)</td>
<td>(0.010)</td>
</tr>
</tbody>
</table>

### Variance Parameters

<table>
<thead>
<tr>
<th></th>
<th>Treatment 1</th>
<th>Treatment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \hat{\sigma} )</td>
<td>( \hat{\gamma}_1 )</td>
<td>( \hat{\gamma}_2 )</td>
</tr>
<tr>
<td>9.938*</td>
<td>5.827*</td>
<td>-0.566*</td>
</tr>
<tr>
<td>(0.653)</td>
<td>(0.845)</td>
<td>(0.142)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level. Numbers in parenthesis refer to the standard deviations of the estimates

To test for the presence of a treatment effect, we estimate \( \Delta \hat{\delta}_r = \hat{\delta}_r(T_1) - \hat{\delta}_r(T_2) \quad \forall \tau \in \{0,5,10\} \), where \( \hat{\delta}_r(T_1) \) (respectively \( \hat{\delta}_r(T_2) \)) is the parameter estimated with the data collected in Treatment 2 (respectively Treatment 1).
## Table 2.1
### Evolution of Bidding Behavior

<table>
<thead>
<tr>
<th></th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment effect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\hat{\delta}_v^0$</td>
<td>$\hat{\delta}_v^5$</td>
<td>$\hat{\delta}_v^{10}$</td>
</tr>
<tr>
<td>$v=0$</td>
<td>0.015</td>
<td>0.000</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.015)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>$v=2$</td>
<td>1.088*</td>
<td>0.008</td>
<td>-0.005</td>
</tr>
<tr>
<td></td>
<td>(1.118)</td>
<td>(0.015)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>$v=4$</td>
<td>2.314*</td>
<td>0.0030</td>
<td>-0.003</td>
</tr>
<tr>
<td></td>
<td>(0.283)</td>
<td>(0.020)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>$v=6$</td>
<td>3.794*</td>
<td>-0.023</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.595)</td>
<td>(0.019)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>$v=8$</td>
<td>5.135*</td>
<td>-0.006</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(0.727)</td>
<td>(0.023)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>$v=11$</td>
<td>6.642*</td>
<td>-0.008</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(0.749)</td>
<td>(0.020)</td>
<td>(0.010)</td>
</tr>
</tbody>
</table>

### Variance Parameters

<table>
<thead>
<tr>
<th></th>
<th>Treatment 1</th>
<th>Treatment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\hat{\sigma}$</td>
<td>$\hat{\gamma}_1$</td>
</tr>
<tr>
<td>$v=0$</td>
<td>0.252*</td>
<td>0.528</td>
</tr>
<tr>
<td></td>
<td>(0.072)</td>
<td>(1.388)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level. Numbers in parenthesis refer to the standard deviations of the estimates.

To test for the presence of a treatment effect, we estimate $\Delta \hat{\delta}_v^\tau = \hat{\delta}_v^\tau (T_\tau) - \hat{\delta}_v^\tau (T_\tau)$ $\forall \tau \in [0,5,10]$, where $\hat{\delta}_v^\tau (T_\tau)$ (respectively $\hat{\delta}_v^\tau (T_\tau)$) is the parameter estimated with the data collected in Treatment 2 (respectively Treatment 1).

## Table 3.1
### Frequency with which the Correct RNBNE Bid or Strategy is Played

#### Treatment 1

<table>
<thead>
<tr>
<th></th>
<th>Frequency of RNBNE Bid played for Value Equals to</th>
<th>Frequency of RNBNE Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$v=0$</td>
<td>$v=2$</td>
</tr>
<tr>
<td>All Periods</td>
<td>98.33%</td>
<td>77.17%</td>
</tr>
<tr>
<td>First Three Periods</td>
<td>91.67%</td>
<td>58.33%</td>
</tr>
<tr>
<td>Last Three Periods</td>
<td>100.00%</td>
<td>97.50%</td>
</tr>
</tbody>
</table>

#### Treatment 2

<table>
<thead>
<tr>
<th></th>
<th>Frequency of RNBNE Bid played for Value Equals to</th>
<th>Frequency of RNBNE Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$v=0$</td>
<td>$v=2$</td>
</tr>
<tr>
<td>All Periods</td>
<td>99.67%</td>
<td>94.67%</td>
</tr>
<tr>
<td>First Three Periods</td>
<td>98.33%</td>
<td>84.17%</td>
</tr>
<tr>
<td>Last Three Periods</td>
<td>100.00%</td>
<td>99.17%</td>
</tr>
</tbody>
</table>
Table 4.1
Constrained Quantal Response Equilibrium Models
(Estimated with Observed Bids Only)

<table>
<thead>
<tr>
<th>Model with Risk Aversion</th>
<th>Model with Risk neutrality</th>
</tr>
</thead>
<tbody>
<tr>
<td>and Objective Beliefs</td>
<td>and Subjective Beliefs</td>
</tr>
<tr>
<td>( \mu )</td>
<td>( \mu )</td>
</tr>
<tr>
<td>( r_0 )</td>
<td>( \alpha_0 )</td>
</tr>
<tr>
<td>( \sigma_r )</td>
<td>( \beta_0 )</td>
</tr>
<tr>
<td>( \sigma_\alpha )</td>
<td>( \sigma_\beta )</td>
</tr>
<tr>
<td>( \rho_{\alpha, \beta} )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment 1</th>
<th>Treatment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 0.081^* )</td>
<td>0.121^*</td>
</tr>
<tr>
<td>(0.011)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>( 0.709^* )</td>
<td>0.564*</td>
</tr>
<tr>
<td>(0.014)</td>
<td>(0.019)</td>
</tr>
<tr>
<td>( 0.148^* )</td>
<td>0.136*</td>
</tr>
<tr>
<td>(0.024)</td>
<td>(0.027)</td>
</tr>
<tr>
<td>( 0.153^* )</td>
<td>0.198*</td>
</tr>
<tr>
<td>(0.012)</td>
<td>(0.017)</td>
</tr>
<tr>
<td>( 0.986^* )</td>
<td>0.841*</td>
</tr>
<tr>
<td>(0.020)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>( 2.152^* )</td>
<td>1.962*</td>
</tr>
<tr>
<td>(0.036)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>( 0.068^* )</td>
<td>0.156</td>
</tr>
<tr>
<td>(0.028)</td>
<td>(0.046)</td>
</tr>
<tr>
<td>( 0.222^* )</td>
<td>0.185*</td>
</tr>
<tr>
<td>(0.064)</td>
<td>(0.067)</td>
</tr>
<tr>
<td>( 0.233 )</td>
<td>0.353</td>
</tr>
<tr>
<td>(0.157)</td>
<td>(0.180)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level.
Numbers in parenthesis refer to the standard deviations of the estimates.

Table 5.1
Full Quantal Response Equilibrium Model
(Estimated with bids and Predictions)

<table>
<thead>
<tr>
<th>Treatment 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periods</td>
</tr>
<tr>
<td>All</td>
</tr>
<tr>
<td>(0.013)</td>
</tr>
<tr>
<td>Last 5</td>
</tr>
<tr>
<td>(0.015)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periods</td>
</tr>
<tr>
<td>All</td>
</tr>
<tr>
<td>(0.014)</td>
</tr>
<tr>
<td>Last 5</td>
</tr>
<tr>
<td>(0.017)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level.
Numbers in parenthesis refer to the standard deviations of the estimates.

Table 6.1
Quantal Best-Response Model
(Estimated with bids and Predictions)

<table>
<thead>
<tr>
<th>Treatment 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periods</td>
</tr>
<tr>
<td>All</td>
</tr>
<tr>
<td>(0.010)</td>
</tr>
<tr>
<td>Last 5</td>
</tr>
<tr>
<td>(0.009)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periods</td>
</tr>
<tr>
<td>All</td>
</tr>
<tr>
<td>(0.011)</td>
</tr>
<tr>
<td>Last 5</td>
</tr>
<tr>
<td>(0.012)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level.
Numbers in parenthesis refer to the standard deviations of the estimates.
### Table 1.2

#### Evolution of Predictions

<table>
<thead>
<tr>
<th></th>
<th>Treatment 1</th>
<th>Treatment 2</th>
<th>Treatment effect*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\hat{\delta}_b$</td>
<td>$\hat{\delta}_b$</td>
<td>$\Delta\hat{\delta}_b$</td>
</tr>
<tr>
<td><strong>b=0</strong></td>
<td>8.582* (2.359)</td>
<td>-0.318* (0.053)</td>
<td>-0.033 (0.035)</td>
</tr>
<tr>
<td><strong>b=1</strong></td>
<td>9.878* (2.832)</td>
<td>-0.097* (0.046)</td>
<td>-0.023 (0.031)</td>
</tr>
<tr>
<td><strong>b=2</strong></td>
<td>17.503* (3.150)</td>
<td>-0.063 (0.045)</td>
<td>-0.020 (0.032)</td>
</tr>
<tr>
<td><strong>b=3</strong></td>
<td>27.912* (3.718)</td>
<td>-0.070 (0.042)</td>
<td>-0.012 (0.030)</td>
</tr>
<tr>
<td><strong>b=4</strong></td>
<td>37.281* (3.886)</td>
<td>-0.022 (0.041)</td>
<td>-0.008 (0.023)</td>
</tr>
<tr>
<td><strong>b=5</strong></td>
<td>49.960* (5.720)</td>
<td>-0.041 (0.033)</td>
<td>-0.015 (0.027)</td>
</tr>
<tr>
<td><strong>b=6</strong></td>
<td>62.817* (5.932)</td>
<td>-0.030 (0.037)</td>
<td>-0.009 (0.022)</td>
</tr>
<tr>
<td><strong>b=7</strong></td>
<td>73.421* (6.720)</td>
<td>-0.020 (0.031)</td>
<td>-0.004 (0.018)</td>
</tr>
<tr>
<td><strong>b=8</strong></td>
<td>81.589* (6.644)</td>
<td>-0.011 (0.024)</td>
<td>0.001 (0.014)</td>
</tr>
<tr>
<td><strong>b=9</strong></td>
<td>88.902* (8.749)</td>
<td>-0.006 (0.016)</td>
<td>0.003 (0.015)</td>
</tr>
<tr>
<td><strong>b=10</strong></td>
<td>94.346* (4.769)</td>
<td>-0.005 (0.010)</td>
<td>0.001 (0.010)</td>
</tr>
<tr>
<td><strong>b=11</strong></td>
<td>99.525* (4.932)</td>
<td>-0.003 (0.009)</td>
<td>0.000 (0.008)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level. Numbers in parenthesis refer to the standard deviations of the estimates.

To test for the presence of a treatment effect, we estimate $\Delta\hat{\delta}_b = \hat{\delta}_b(T) - \hat{\delta}_b(T)$ for $\forall \tau \in [0.5, 1]$, where $\hat{\delta}_b(T)$ (respectively $\hat{\delta}_b(T)$) is the parameter estimated with the data collected in Treatment 2 (respectively Treatment 1).
Table 2.2
Evolution of Bidding Behavior

<table>
<thead>
<tr>
<th>v=0</th>
<th>( \hat{\delta}_v^0 )</th>
<th>( \hat{\delta}_v^5 )</th>
<th>( \hat{\delta}_v^{10} )</th>
<th>( \hat{\delta}_v^0 )</th>
<th>( \hat{\delta}_v^5 )</th>
<th>( \hat{\delta}_v^{10} )</th>
<th>( \Delta \hat{\delta}_v^0 )</th>
<th>( \Delta \hat{\delta}_v^5 )</th>
<th>( \Delta \hat{\delta}_v^{10} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>v=2</td>
<td>0.203 (0.026)</td>
<td>0.008 (0.015)</td>
<td>-0.007 (0.005)</td>
<td>0.042 (0.023)</td>
<td>-0.004 (0.013)</td>
<td>-0.003 (0.006)</td>
<td>0.039 (0.064)</td>
<td>-0.004 (0.011)</td>
<td>-0.000 (0.006)</td>
</tr>
<tr>
<td>v=4</td>
<td>1.095* (0.218)</td>
<td>0.013 (0.019)</td>
<td>-0.005 (0.010)</td>
<td>1.063* (0.123)</td>
<td>-0.005 (0.015)</td>
<td>-0.003 (0.010)</td>
<td>-0.010 (0.093)</td>
<td>-0.015 (0.019)</td>
<td>-0.000 (0.003)</td>
</tr>
<tr>
<td>v=6</td>
<td>2.642* (0.423)</td>
<td>-0.012 (0.018)</td>
<td>-0.008 (0.009)</td>
<td>2.450* (0.400)</td>
<td>-0.082* (0.027)</td>
<td>-0.070* (0.022)</td>
<td>-0.039* (0.107)</td>
<td>-0.063* (0.024)</td>
<td>-0.040 (0.022)</td>
</tr>
<tr>
<td>v=8</td>
<td>3.867* (0.702)</td>
<td>-0.013 (0.024)</td>
<td>-0.005 (0.009)</td>
<td>3.821* (0.516)</td>
<td>-0.076* (0.025)</td>
<td>-0.068* (0.023)</td>
<td>-0.125* (0.099)</td>
<td>-0.089* (0.025)</td>
<td>-0.051* (0.020)</td>
</tr>
<tr>
<td>v=11</td>
<td>5.198* (0.839)</td>
<td>-0.005 (0.026)</td>
<td>-0.003 (0.011)</td>
<td>5.267* (0.535)</td>
<td>-0.085* (0.020)</td>
<td>-0.043* (0.021)</td>
<td>0.193* (0.112)</td>
<td>-0.072* (0.020)</td>
<td>-0.043* (0.017)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>v=0</th>
<th>( \hat{\gamma}_1 )</th>
<th>( \hat{\gamma}_2 )</th>
<th>( \hat{\gamma}_3 )</th>
<th>( \hat{\sigma}_q )</th>
<th>( \hat{\gamma}_1 )</th>
<th>( \hat{\gamma}_2 )</th>
<th>( \hat{\gamma}_3 )</th>
<th>( \hat{\sigma}_q )</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Periods</td>
<td>97.67%</td>
<td>98.83%</td>
<td>51.17%</td>
<td>31.00%</td>
<td>21.50%</td>
<td>16.33%</td>
<td>6.17%</td>
<td></td>
</tr>
<tr>
<td>First Three Periods</td>
<td>88.33%</td>
<td>76.67%</td>
<td>35.00%</td>
<td>16.67%</td>
<td>12.50%</td>
<td>11.67%</td>
<td>2.50%</td>
<td></td>
</tr>
<tr>
<td>Last Three Periods</td>
<td>100.00%</td>
<td>97.50%</td>
<td>56.67%</td>
<td>31.67%</td>
<td>27.50%</td>
<td>16.67%</td>
<td>7.50%</td>
<td></td>
</tr>
</tbody>
</table>

**Variance Parameters**

<table>
<thead>
<tr>
<th>( \hat{\delta}_v )</th>
<th>( \hat{\gamma}_1 )</th>
<th>( \hat{\gamma}_2 )</th>
<th>( \hat{\gamma}_3 )</th>
<th>( \hat{\sigma}_q )</th>
<th>( \hat{\delta}_v )</th>
<th>( \hat{\gamma}_1 )</th>
<th>( \hat{\gamma}_2 )</th>
<th>( \hat{\gamma}_3 )</th>
<th>( \hat{\sigma}_q )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.267* (0.052)</td>
<td>0.574 (1.366)</td>
<td>0.738* (0.171)</td>
<td>-0.011 (0.029)</td>
<td>0.229* (0.038)</td>
<td>0.282* (0.042)</td>
<td>0.528* (0.869)</td>
<td>0.856* (0.311)</td>
<td>-0.055* (0.024)</td>
<td>0.182* (0.043)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level. Numbers in parenthesis refer to the standard deviations of the estimates.

To test for the presence of a treatment effect, we estimate \( \Delta \hat{\delta}_v^\tau = \hat{\delta}_v^\tau (T_2) - \hat{\delta}_v^\tau (T_1) \forall \tau \in [0,5,10] \), where \( \hat{\delta}_v^\tau (T_2) \) (respectively \( \hat{\delta}_v^\tau (T_1) \)) is the parameter estimated with the data collected in Treatment 2 (respectively Treatment 1).

Table 3.2
Frequency with which the Correct RNBNE Bid or Strategy is Played

<table>
<thead>
<tr>
<th>Treatment 1 Frequency of RNBNE Bid played for Value Equals to v=0</th>
<th>v=2</th>
<th>v=4</th>
<th>v=6</th>
<th>v=8</th>
<th>v=11</th>
<th>Treatment 1 Frequency of RNBNE Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Periods</td>
<td>97.67%</td>
<td>98.83%</td>
<td>51.17%</td>
<td>31.00%</td>
<td>21.50%</td>
<td>16.33%</td>
</tr>
<tr>
<td>First Three Periods</td>
<td>88.33%</td>
<td>76.67%</td>
<td>35.00%</td>
<td>16.67%</td>
<td>12.50%</td>
<td>11.67%</td>
</tr>
<tr>
<td>Last Three Periods</td>
<td>100.00%</td>
<td>97.50%</td>
<td>56.67%</td>
<td>31.67%</td>
<td>27.50%</td>
<td>16.67%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment 2 Frequency of RNBNE Bid played for Value Equals to v=0</th>
<th>v=2</th>
<th>v=4</th>
<th>v=6</th>
<th>v=8</th>
<th>v=11</th>
<th>Treatment 2 Frequency of RNBNE Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Periods</td>
<td>98.17%</td>
<td>93.00%</td>
<td>74.00%</td>
<td>60.00%</td>
<td>45.00%</td>
<td>29.33%</td>
</tr>
<tr>
<td>First Three Periods</td>
<td>90.83%</td>
<td>74.17%</td>
<td>40.00%</td>
<td>23.33%</td>
<td>8.33%</td>
<td>4.17%</td>
</tr>
<tr>
<td>Last Three Periods</td>
<td>100.00%</td>
<td>98.33%</td>
<td>89.17%</td>
<td>83.33%</td>
<td>71.67%</td>
<td>53.33%</td>
</tr>
<tr>
<td>Table 4.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constrained Quantal Response Equilibrium Models</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Estimated with Observed Bids Only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment 1</th>
<th>Model with Risk Aversion and Objective Beliefs</th>
<th>Model with Risk neutrality and Subjective Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\mu$</td>
<td>$r_0$</td>
</tr>
<tr>
<td></td>
<td>0.074*</td>
<td>0.646*</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>Treatment 2</td>
<td>0.096*</td>
<td>0.608*</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.012)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level. Numbers in parenthesis refer to the standard deviations of the estimates.

| Table 5.2 |
| Full Quantal Response Equilibrium Model |
| (Estimated with bids and Predictions) |

<table>
<thead>
<tr>
<th>Treatment 1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Periods</th>
<th>$\mu$</th>
<th>$r_0$</th>
<th>$\alpha_0$</th>
<th>$\beta_0$</th>
<th>$\sigma_r$</th>
<th>$\sigma_\alpha$</th>
<th>$\sigma_\beta$</th>
<th>$\rho_{r,\alpha}$</th>
<th>$\rho_{r,\beta}$</th>
<th>$\rho_{\alpha,\beta}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.111*</td>
<td>0.301*</td>
<td>0.724*</td>
<td>1.588*</td>
<td>0.116*</td>
<td>0.066*</td>
<td>0.221*</td>
<td>0.093</td>
<td>0.721*</td>
<td>0.150</td>
</tr>
<tr>
<td></td>
<td>(0.009)</td>
<td>(0.012)</td>
<td>(0.011)</td>
<td>(0.051)</td>
<td>(0.024)</td>
<td>(0.027)</td>
<td>(0.051)</td>
<td>(0.228)</td>
<td>(0.251)</td>
<td>(0.148)</td>
</tr>
<tr>
<td>Last 5</td>
<td>0.112*</td>
<td>0.287*</td>
<td>0.734*</td>
<td>1.589*</td>
<td>0.095*</td>
<td>0.053</td>
<td>0.219*</td>
<td>0.133</td>
<td>0.753*</td>
<td>0.088</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.011)</td>
<td>(0.018)</td>
<td>(0.067)</td>
<td>(0.038)</td>
<td>(0.033)</td>
<td>(0.046)</td>
<td>(0.241)</td>
<td>(0.242)</td>
<td>(0.157)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment 2</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Periods</th>
<th>$\mu$</th>
<th>$r_0$</th>
<th>$\alpha_0$</th>
<th>$\beta_0$</th>
<th>$\sigma_r$</th>
<th>$\sigma_\alpha$</th>
<th>$\sigma_\beta$</th>
<th>$\rho_{r,\alpha}$</th>
<th>$\rho_{r,\beta}$</th>
<th>$\rho_{\alpha,\beta}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.110*</td>
<td>0.429*</td>
<td>0.751*</td>
<td>1.188*</td>
<td>0.108*</td>
<td>0.091*</td>
<td>0.212*</td>
<td>0.129</td>
<td>0.261</td>
<td>0.174</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.012)</td>
<td>(0.015)</td>
<td>(0.039)</td>
<td>(0.029)</td>
<td>(0.040)</td>
<td>(0.049)</td>
<td>(0.163)</td>
<td>(0.247)</td>
<td>(0.157)</td>
</tr>
<tr>
<td>Last 5</td>
<td>0.059*</td>
<td>0.266*</td>
<td>0.793*</td>
<td>1.123*</td>
<td>0.100*</td>
<td>0.087*</td>
<td>0.180*</td>
<td>0.284</td>
<td>0.339</td>
<td>0.094</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.016)</td>
<td>(0.018)</td>
<td>(0.036)</td>
<td>(0.035)</td>
<td>(0.039)</td>
<td>(0.050)</td>
<td>(0.189)</td>
<td>(0.233)</td>
<td>(0.193)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level. Numbers in parenthesis refer to the standard deviations of the estimates.

| Table 6.2 |
| Quantal Best-Response Model |
| (Estimated with bids and Predictions) |

<table>
<thead>
<tr>
<th>Treatment 1</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Periods</th>
<th>$\mu$</th>
<th>$r_0$</th>
<th>$\sigma_r$</th>
<th>$\mu$</th>
<th>$r_0$</th>
<th>$\sigma_r$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.069*</td>
<td>0.216*</td>
<td>0.096*</td>
<td>0.065*</td>
<td>0.197*</td>
<td>0.087*</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.015)</td>
<td>(0.021)</td>
<td>(0.009)</td>
<td>(0.016)</td>
<td>(0.023)</td>
</tr>
<tr>
<td></td>
<td>0.083*</td>
<td>0.292*</td>
<td>0.080*</td>
<td>0.057*</td>
<td>0.225*</td>
<td>0.086*</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.017)</td>
<td>(0.026)</td>
<td>(0.013)</td>
<td>(0.017)</td>
<td>(0.032)</td>
</tr>
</tbody>
</table>

* denotes a parameter larger than zero at a 5% significance level. Numbers in parenthesis refer to the standard deviations of the estimates.
Figure 3.1
Comparison of Bid Functions
Scoring-Rule Treatment 1

Figure 4.1
Comparison of Bid Functions
Scoring-Rule Treatment 2
Figure 5.1
Evolution of Bids Submitted
Scoring-Rule Treatment 1

Figure 6.1
Evolution of Bids Submitted
Scoring-Rule Treatment 2
Figure 3.2
Comparison of Bid Functions
No-Payment Treatment 1

Figure 4.2
Comparison of Bid Functions
No-Payment Treatment 2
Figure 5.2
Evolution of Bids Submitted
No-Payment Treatment 1

Figure 6.2
Evolution of Bids Submitted
No-Payment Treatment 2