

Online Appendix for
**Performance Information, Production Uncertainty
and Subjective Entitlements in Bargaining**

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Abstract

This document contains supplementary materials for the paper ‘Performance Information, Production Uncertainty and Subjective Entitlements in Bargaining’. It is organized in the following way. Section S1 contains additional statistics regarding entitlements and opening offers of winners and losers (Section S1.1), concessions (Section S1.2), last minute agreements (Section S1.3), and disagreements (Section S1.4) as well as robustness checks of the regression analyses reported in the published paper and potential influences of individual characteristics (Section S1.5). Section S2 contains the experiment instructions and post-experiment questionnaire.

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S1 Additional Statistics

S1.1 Opening Offers and Entitlements: Winners and Losers

The results reported in Table S1.1 are consistent with the results based on the pooled data and reported in the paper (see Table A.1). The exception is treatment NOINFO-UNC where we observe a significant negative effect for losers. At first sight this is surprising but a closer look at the data reveals that it is purely due to one outlying observation, where a loser subject ascribes a very high entitlement to the winner (0.863) but offers a very small share in the first proposal (0.137). This also suggests that opening proposals are comprising an important strategic element. When eliminating this observation the coefficient of L_Entitle is increased to -0.303 and not significantly different from zero ($p = 0.392$). The coefficient estimates of L_Entitle do also not differ between the two NOINFO treatments ($p = 0.335$).[†]

Table S1.1: Opening proposals as a function of subjective entitlements
for winners and losers in each treatment

Independent variables	Dependent variable: opening proposal (winner share)							
	NOINFO-UNC		NOINFO-DET		INFO-UNC		INFO-DET	
	Loser	Winner	Loser	Winner	Loser	Winner	Loser	Winner
Const	0.813 ^{***} (0.106)	0.429 ^{**} (0.206)	0.456 ^{***} (0.058)	0.301 (0.268)	0.331 (0.285)	0.109 (0.126)	0.298 ^{**} (0.125)	0.344 ^{**} (0.195)
W_Entitle		0.291 (0.330)		0.556 (0.495)		0.886 ^{***} (0.205)		0.570 ^{**} (0.310)
L_Entitle	-0.722 ^{***} (0.179)		0.047 (0.104)		0.225 (0.502)		0.337 [*] (0.211)	
Log-L	29.39	12.86	33.60	16.24	9.88	28.39	16.47	13.97
F	16.25	0.78	0.21	1.26	0.20	18.76	2.54	3.39
N	23	20	17	18	19	18	14	23

Note: ^{***,**,*} indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.

S1.2 Concessions and entitlements: two alternative concession measures

In the paper we report level effects of entitlements on the time-weighted relative concessions (see Table 4). Here we do the same for the other two concession measures, the sum of average *relative concessions*, i.e., the size of concessions, and the sum of average *concession times*, i.e., the time when concessions were made. Table S1.2 shows that concessions are smaller and later in the INFO treatments than in the NOINFO treatments, and given performance information they are smaller and later when production is deterministic. KW tests show that differences across treatments are highly significant for both concessions measures ($p \leq 0.0010$). Further pair-wise comparisons using MW tests detect for both concession measures

[†]Here and elsewhere, in order to test equality of coefficient estimates between treatments we pooled the data of the respective treatments and added a dummy and an interaction variable to control for treatment effects.

no significant differences between the two NOINFO treatments ($p \leq 0.9719$), whereas the differences between INFO-UNC and INFO-DET are significant ($p \leq 0.0461$).

Table S1.2: Relative concessions and concession times in each treatment

	NOINFO-UNC	NOINFO-DET	INFO-UNC	INFO-DET
Relative concessions	1.097 (0.625)	1.021 (0.542)	0.794 (0.742)	0.661 (0.416)
Concession times	264.5 (195.5)	289.5 (249.7)	387.8 (211.1)	498.7 (200.9)
# of obs.	43	35	37	37

Note: Table reports averages. Concessions statistics include pairs that disagreed. Standard deviations in parentheses.

In the paper we report regression analyses for the most encompassing concessions statistics, the time-weighted relative concessions (see Table A.2). Here we report the equivalent regression analyses for the sum of average *relative concessions* and the sum of average *concession times* in Tables S1.3 and S1.4, respectively. For relative concessions the effect of entitlements is qualitatively equivalent to the results reported in the paper. The same holds for concession times with the exception that entitlements have no significant effect in INFO-DET. The latter indicates that in INFO-DET the effect of entitlements on time-weighted relative concessions comes mainly through smaller and not through later concessions in pairs with higher tension in entitlements.

Table S1.3: Size of concessions as a function of tension in subjective entitlements in each treatment (OLS regressions)

Independent variables	Dependent variable: relative concessions			
	NOINFO-UNC	NOINFO-DET	INFO-UNC	INFO-DET
Const	1.114 ^{***} (0.104)	1.027 ^{***} (0.091)	1.015 ^{***} (0.151)	0.776 ^{***} (0.074)
Δ _Entitle	0.420 (0.611)	-1.016 (0.677)	-3.127 ^{**} (1.206)	-1.335 ^{***} (0.410)
R ²	0.0071	0.0360	0.0610	0.1190
F	0.47	2.25	6.72	10.62
N	43	35	37	37

Note: ^{***,**,*} indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.

Hence, the results for the two alternative concession measures corroborate the level and marginal effects of entitlements on concessions reported in Section 4.2.2 of the paper.

Table S1.4: Concessions times as a function of subjective entitlements in each treatment (Tobit regressions)

Independent variables	Dependent variable: concession times			
	NOINFO-UNC	NOINFO-DET	INFO-UNC	INFO-DET
Const	261.4 ^{***} (31.4)	285.1 ^{***} (39.9)	314.4 ^{***} (48.0)	469.2 ^{***} (40.3)
$\Delta_Entitle$	-79.7 (202.9)	739.0 [*] (389.6)	1037.6 ^{**} (497.7)	341.8 (271.1)
Pseudo R ²	0.0002	0.0068	0.0064	0.0025
F	0.15	3.60	4.35	1.59
N	43	35	37	37

Note: ^{***}, ^{**}, ^{*} indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.

S1.3 Last minute agreements and entitlements

In keeping with other bargaining experiments with deadline (e.g., Roth et al., 1988, Gneezy et al., 2003) many agreements are reached in the last minute. More importantly though, across treatments the frequencies of last minute agreements differ and show a similar pattern as the timing of agreements. In the two NOINFO treatments, respectively, 26 and 29 percent of agreements are reached in the last minute. This percentage increases to 44 percent in INFO-UNC and peaks at 71 percent in INFO-DET. Pair-wise comparisons with χ^2 -tests indicate no difference in the frequency of last minute agreements between the two NOINFO treatments ($p = 0.708$), whereas the comparison between INFO-UNC and INFO-DET is significant ($p = 0.021$). Comparisons between NOINFO and INFO treatments while keeping the production condition fixed show (marginally) significant differences (NOINFO-UNC vs. NOINFO-DET: $p = 0.078$, NOINFO-DET vs. INFO-DET, $p < 0.001$).

S1.4 Disagreements and entitlements

Similar to other comparable free-form bargaining experiments (e.g., Gächter and Riedl, 2005) we observe only very few disagreements. In total there are five pairs who do not strike an agreement, three in INFO-DET and one each in INFO-UNC and NOINFO-DET. Hence, as expected, there are more disagreements in the INFO than the NOINFO treatments and more in INFO-DET than in INFO-UNC. However, overall there are too few disagreements to make these differences statistically significant ($p = 0.220$, Fisher exact test). When using the pooled data (excluding pairs with ties in performance) a robust probit regression estimating the likelihood of a disagreement in dependence of $\Delta_Entitle$ and Δ_First indicates a significantly positive effect of the former ($p = 0.001$) but not of the latter ($p = 0.107$). This suggests that entitlements also have an effect on disagreements.

S1.5 Robustness checks regarding regression analyses of entitlements

In this section we explore the robustness of the marginal effect of entitlements on opening offers, concessions, bargaining duration and reached agreements reported in Section 4.2. To this end we add control variables which can reasonably be assumed to affect bargaining behavior: risk preferences, Machiavellianism, and, respectively, gender of the bargainer and gender composition of the bargaining pair. The control variable for risk preferences, `Risk_Score`, is constructed from answers to a set of risk questions taken from the German Socio-Economic Panel (GSOEP) survey which have been shown to correlate well with behavior measures of risk preferences (Dohmen et al., 2011, Holt and Laury, 2002). Specifically, subjects had to answer seven 11-Likert scale questions on the perception of risk, where higher a higher score indicates a higher willingness to take risks. (The individual questions can be found in Appendix S2 as Questionnaire D.) The variable `Risk_Score` is the sum of the seven individual scores. The Machiavelli score, `Mac_Score`, is constructed from the standard Machiavelli Questionnaire MACH-IV, which consists of a set of 20 questions measuring a manipulative personality trait which is considered to correlate with selfish behavior. (For a discussion of the MACH-IV, see, e.g., Paulhus and Williams (2002).)

As can be seen from the results reported below the effect of entitlements on opening offers, concessions, bargaining duration and agreements is largely robust to adding these control variables. In all but one regression entitlement effects reported as significant in the paper remain significant after adding the control variables. The only exception is `L_Entitle` in the agreed share regression in `INFO_DET` which is marginally significant without controls and becomes insignificant when adding controls. On the other hand, in the same treatment, in the regression estimating the likelihood of deviation from the equal-split, `L_Entitle` is insignificant without controls and becomes significant with controls. Overall, we are confident to conclude that the marginal effects of entitlements reported in the paper are robust to adding control variables.

Opening proposals. Table S1.5 reproduces the regression table reported in the paper (Table A.1) now with the Machiavelli score, a risk score and gender (male) added as control variables. Adding these variables does not substantially change the estimates for `Entitle`. All statistically significant estimates remain significant at the same level.

Regarding the control variables the `Risk_score` coefficient is never significant. Male subjects tend to make larger opening proposals only in `NOINFO-UNC` and the coefficient estimates of the Machiavelli score is significantly positive only in `INFO-DET`.

Concessions and bargaining duration. To test the robustness of the marginal entitlement effect on concessions and bargaining duration we add pair-level measures of risk and Machiavellianism to the regression equations reported in the paper (see Tables A.2 and A.3) and also control for gender composition. Specifically, the variable `Σ_Mac_Score` is the pair-wise sum of individual Machiavelli scores and `Σ_Risk_Score` is the pair-wise sum of individual risk scores. The variable `Fem_Male` is 1 if the bargaining pair consists of a male and a female subject (0 otherwise) while the variable `Fem_Fem` is 1 if the bargaining pair consists of two female subject (0 otherwise); bargaining pairs consisting of two male subjects are the omitted category.

We expect that pairs exhibiting higher Machiavelli scores make smaller and later concessions (i.e., the coefficient estimate should be negative). Pairs scoring higher on the risk measure consist of subjects willing to take risks which may also translate into smaller and later concessions. Hence, we expect the

Table S1.5: Opening proposals as a function of subjective entitlements
in each treatment: robustness check

Independent variables	Dependent variable: opening proposal (winner share)			
	NOINFO-UNC	NOINFO-DET	INFO-UNC	INFO-DET
Const	0.942 ^{***} (0.277)	0.659 ^{***} (0.223)	-0.232 (0.227)	-0.230 (0.142)
Entitle	-0.330 (0.334)	-0.016 (0.241)	1.426 ^{***} (0.302)	0.875 ^{***} (0.181)
Mac_Score	-0.004 (0.003)	-0.002 (0.002)	-0.001 (0.002)	0.006 ^{**} (0.002)
Risk_Score	-0.002 (0.002)	-0.000 (0.002)	0.001 (0.001)	-0.002 (0.001)
Male	-0.088 ^{**} (0.043)	0.026 (0.042)	-0.027 (0.047)	0.030 (0.035)
Log-L	26.43	33.21	27.15	25.12
F	1.57	0.37	13.84	13.02
N	43	35	37	37

Note: ^{***}, ^{**}, ^{*} indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.

coefficient estimate of Σ _Risk_Score to be negative, too. We do not have any strong *a priori* expectations of the gender composition of bargaining pairs. Table S1.6 reports the results.

The coefficient estimates for Δ _Entitle clearly corroborate the findings reported in the paper (Table A.2): with performance information larger tensions in entitlements decrease the willingness to concede. As reported in the paper, the significant estimate in NOINFO-DET is solely driven by one outlying observation. Without this observation, Δ _Entitle is insignificant in this treatment ($p = 0.229$). The Machiavelli scores show no clear pattern as the coefficient estimates are marginally significantly negative in NOINFO-DET but insignificant in the other three treatments. The risk measure has the hypothesized negative sign in all regressions but is marginally significantly negative only in INFO-DET. Regarding gender composition there is some evidence that bargaining-pairs consisting of at least one female subject tend to be more willing to concede more or earlier. Most coefficient estimates are positive and three of them are also (marginally) significantly positive. However, in one case (mixed gender pair in NOINFO-DET) the estimate is significantly negative, which makes it difficult to draw a clear conclusion.

Table S1.7 reports the results for bargaining duration. As for concessions the coefficient estimates of Δ _Entitle reported in the paper turn out to be robust to adding the control variables. Qualitatively the results are also similar for the explanatory variable measuring the difference in first offers (Δ _First). In the NOINFO treatments it remains significant and in INFO-DET it is close to marginally significant ($p = 0.109$). Regarding the control variables themselves the table shows that pair-wise Machiavelli scores

Table S1.6: Concessions as a function of tension in subjective entitlements in each treatment (OLS regressions): robustness check

Independent variables	Dependent variable: concessions			
	NOINFO-UNC	NOINFO-DET	INFO-UNC	INFO-DET
Const	827.2 (1148.8)	2076.0*** (685.3)	-1735.7 (1201.6)	985.1** (482.8)
Δ _Entitle	168.8 (441.8)	-1153.1** (433.5)	-1514.9** (669.4)	-809.2*** (269.2)
Σ _Mac_Score	1.4 (5.1)	-10.4* (5.7)	13.2 (9.6)	-4.1 (3.3)
Σ _Risk_Score	-8.0 (8.1)	-3.7 (4.8)	-0.8 (5.7)	-4.8* (2.6)
Fem_Male	122.5 (169.2)	-244.9* (130.8)	808.2* (415.6)	176.0** (71.4)
Fem_Fem	231.2 (156.7)	99.3 (116.7)	746.4** (339.1)	142.8 (114.9)
R ²	0.0869	0.3321	0.3856	0.3242
F	1.08	4.07	3.24	4.86
N	43	35	37	37

Note: ***, **, * indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.

do not affect bargaining duration. Interestingly, bargaining pairs with a higher risk score tend to strike agreements earlier, but significantly so only when performance information is available and production is deterministic. Further, largely consistent with the results on concessions, bargaining pairs with at least one female negotiator tend to bargain shorter. The respective coefficients are significantly negative in only two of eight possible cases, however.

Agreements. Tables S1.8 and S1.9 report Tobit and Probit regression results for the agreed share to the winner and the likelihood of a deviation from the equal-split, respectively. The set of control variables includes Machiavelli scores and risk scores separately for the winner and the loser in a pair. In addition, as above, the gender compositions in a pair are added as control variables with male-male pairs as omitted reference category. A comparison with the respective regression results in the paper (Tables 6 and 7) indicates that adding control variables makes the entitlement effect slightly weaker regarding agreed shares but stronger regarding deviations from the equal-split. Specifically, in the regressions on agreed shares the formerly marginally significant coefficient of L_Entitle in INFO-DET becomes insignificant, whereas in the regressions estimating the likelihood of deviations from the equal-split adding the control variables makes the formerly insignificant coefficient of L_Entitle significant and the formerly significant coefficient of

Table S1.7: Bargaining duration as a function of tension in subjective entitlements
in each treatment (Tobit regressions): robustness check

Independent variables	Dependent variable: bargaining duration			
	NOINFO-UNC	NOINFO-DET	INFO-UNC	INFO-DET
Const	543.5 (471.9)	-181.4 (437.3)	658.6 (403.2)	569.0* (395.7)
Δ _First	612.5** (237.1)	280.1** (132.0)	35.5 (216.2)	150.1 (90.7)
Δ _Entitle	49.9 (267.1)	401.1 (328.1)	1713.6*** (362.0)	157.4 (266.2)
Σ _Mac_Score	-2.8 (2.7)	3.9 (3.0)	-0.8 (2.6)	1.6 (2.7)
Σ _Risk_Score	-0.1 (3.3)	1.5 (3.1)	-2.2 (1.6)	-3.3* (1.9)
Fem_Male	18.2 (80.9)	-55.6 (86.5)	-139.4 (84.2)	-44.0 (53.8)
Fem_Fem	-109.4 (78.4)	-239.0** (94.2)	-182.8** (82.0)	9.5 (68.5)
Log-L	-246.8	-156.9	-227.0	-193.8
F	7.23	11.10	5.48	1.82
N	38	24	35	33

Note: ***, **, * indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.

W_Entitle remains significant. All other formerly insignificant coefficients stay insignificant. Interestingly, when adding control variables W_Entitle increases the likelihood of deviations from the equal-split even in treatment NOINFO-UNC but at the same time W_Entitle loses its significance in NOINFO-DET. We take this as support for our view, put forward in the paper, that any significant results in the NOINFO treatments should be interpreted with care as they may represent false positives. Most of the control variables are either insignificant or show no clear pattern.

Table S1.8: Agreements as a function of subjective entitlements
in each treatment (Tobit regressions): robustness check

Independent variables	Dependent variable: agreed share			
	NOINFO-UNC	NOINFO-DET	INFO-UNC	INFO-DET
Const	0.504*** (0.026)	0.234** (0.089)	0.671*** (0.151)	0.530*** (0.135)
W_Entitle	-0.030 (0.031)	0.473*** (0.097)	0.088 (0.152)	-0.071 (0.116)
L_Entitle	0.011 (0.016)	0.123 (0.087)	-0.064 (0.179)	0.157 (0.161)
W_Mac_Score	-0.00000 (0.00015)	0.00042 (0.00074)	-0.00032 (0.00089)	0.00029 (0.00079)
L_Mac_Score	0.00012 (0.00018)	-0.00060 (0.00044)	-0.00149 (0.00088)	-0.00244* (0.001230)
W_Risk_Score	0.00020 (0.00019)	-0.00066 (0.00065)	-0.00066 (0.00090)	0.00308*** (0.00110)
L_Risk_Score	-0.00026 (0.00032)	-0.00010 (0.00046)	-0.00044 (0.00054)	-0.00064 (0.00058)
Fem_Male	0.0044* (0.0022)	-0.0139 (0.0110)	0.01478 (0.0172)	0.0179 (0.0189)
Fem_Fem	0.0046 (0.0032)	-0.0159 (0.0123)	-0.0113 (0.0192)	0.0280 (0.0324)
Log-L	145.1	78.9	60.1	59.7
F	0.80	3.41	2.06	1.41
N	43	34	36	35

Note: ***, **, * indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.

Table S1.9: Likelihood of deviation from equal-split as a function of subjective entitlements in each treatment (Probit regressions)

Independent variables	Dependent variable: deviation from equal-split			
	NOINFO-UNC	NOINFO-DET	INFO-UNC ¹	INFO-DET ¹
Const	-5.98 (4.80)	-4.69 (5.06)	-10.58* (6.31)	-30.46*** (10.17)
W_Entitle	8.69** (4.37)	5.83 (3.99)	5.96 (5.64)	38.88** (16.96)
L_Entitle	2.32 (3.16)	-0.19 (4.94)	14.15 (11.53)	18.47** (9.17)
W_Mac_Score	0.0091 (0.0229)	0.0277 (0.0370)	0.0812 (0.0528)	
L_Mac_Score	0.0109 (0.0347)	-0.0103 (0.0325)	-0.0233 (0.0436)	
W_Risk_Score	-0.0514 (0.0346)	-0.0329 (0.0352)	-0.0343 (0.2545)	-0.0467 (0.0462)
L_Risk_Score	0.0095 (0.0290)	0.0309 (0.0221)	-0.0327 (0.0297)	0.0151 (0.0299)
Fem_Male	0.527 (0.530)	0.315 (0.682)		1.632 (1.253)
Fem_Fem	-0.028 (0.847)	0.283 (0.735)		1.069 (1.255)
Log-L	-20.7	-17.9	-10.6	-5.3
Wald χ^2	6.80	6.34	7.83	15.34
N	43	34	36	35

Note: ***, **, * indicates statistical significance at the 1, 5, 10 percent level, respectively. Robust standard errors in parentheses.¹ Due to (hidden) collinearities between some of the added explanatory variables in INFO-UNC and INFO-DET had to be dropped.

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S2 Experiment Instructions & Post-Experiment Questionnaire

As mentioned in the paper there are some differences in the sequence of events across the four treatments. Below we present the instructions for all treatments and the differences between treatments are mentioned indicated with remarks. After this, the post-experiment questionnaire used in the experiment is presented.

General Explanations for Participants

You are now participating in an economics experiment that is financed by several scientific institutions. In the experiment you can – next to the fixed show-up fee of 3 Euro - earn money with the decisions you make. Your earnings may also depend on the decisions of other participants and random events. How exactly is explained in this instructions document. It is, therefore, very important that you carefully read the following explanations. At the end of the experiment, you will be instantly and confidentially paid in cash all the money you have earned. During the experiment, we will speak of points instead of euro. Thus, all your income will be counted in points. The total number of points you have earned during the experiment will be exchanged into euro at the end of the experiment, where the exchange rate is

$$100 \text{ points} = 65 \text{ euro cents.}$$

During the experiment you are not allowed to communicate. If you have questions then please raise your hand. One of us will come to you to answer your question.

On the following pages we will describe the exact procedure of the experiment.

Information about the exact procedure of the experiment

This experiment will consist of multiple parts. You will receive information about each part after the preceding part has ended. Be assured that your earnings in a particular part are unaffected by what happens in later parts.

This is the instructions of the first part of the experiment.

In this part of the experiment you are randomly paired with another participant. Neither during nor after the experiment will anybody be informed about who has been paired with whom.

In the experiment, you and the person you are paired with ('other' for short) will act in the role of a **head of department** in a firm. Imagine that in this firm there is initially a total budget of **2050 points** for your (you and the other) salaries. However, depending on the performances of both of you and some external factors (both of which will be explained below), the firm might have a larger (**2710 points**), the same (**2050 points**) or a smaller (**1390 points**) salary budget.

In any case, the top management of the firm does not want to dictate a salary distribution between the heads of department. Therefore, you are asked by the top management to bargain a salary distribution with the other head of department. If you can agree on a salary distribution within a pre-specified time, the firm **pays your corresponding salaries** (that is, you earn the points you agreed on). However, if

you are not able to settle an agreement within the pre-specified time you are both 'fired', that is, you are **not paid any salary** (that is, you do not earn any points).

This part of the experiment consists of two stages. The first part consists of the **determination of the salary budget and some questions**. In the second part, **bargaining** over the salary budget takes place.

Determination of performance and the salary budget:

Determination of performance.

Your performance will be measured with a **general knowledge quiz**. Your performances potentially affect the salary budget you will later bargain on. The determination of performance is done as follows. Each participant has to answer questions. For each question there is **exactly one correct answer** and several wrong answers. The questions concern several fields of knowledge. In total there are 16 questions. Each participant receives the **same questions** in the **same order**. The head of department with the **most correct answers** has the **better performance**. You will answer the questions on the computer. You will have at most **30 seconds** to answer each question. Unanswered questions count as wrong answers. A question will look like this:

Remaining Time 30 seconds

Which color is contained in the flags of all Islamic countries?

- Red
- Blue
- Green
- Yellow
- Orange

OK

You answer a question by **choosing the option you think is correct** and subsequently striking the **OK** button within 30 seconds. The next question then shows up automatically. After you and the other head of department have answered all questions (or the time is over) you will see on the screen the salary budget you will have to bargain over with the other head of department. In the following, the determination of the salary budget is explained.

Remark 1 *The following “Determination of salary budget” was used in the UNC treatments.*

Determination of salary budget.

First, it is randomly decided whether the salary budget is determined by **external factors** (e.g., demand conditions in the market for the firm’s product) or the **joint performance** of you and the other head

of department in the general knowledge quiz. More concretely, with **75%** chance, the salary budget is determined by **external factors** and **25%** chance it is determined by **your joint performance, that is, the total number of correct answers** in the general knowledge quiz. Below, it is explained in detail how external factors and performances affect the salary budget.

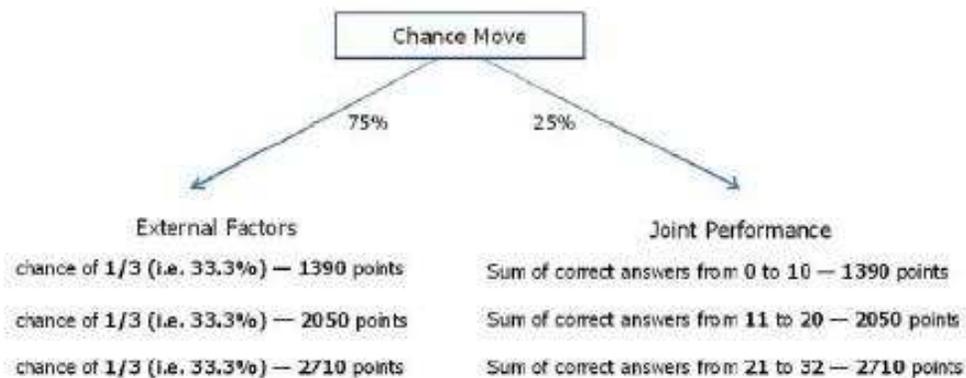
With a chance of **75%** the salary budget will be determined by **external factors** in the following way:

- With a **chance of 1/3** (i.e. **33.3%**), the salary budget will be **1390 points**
- With a **chance of 1/3** (i.e. **33.3%**), the salary budget will be **2050 points**
- With a **chance of 1/3** (i.e. **33.3%**), the salary budget will be **2710 points**

With a chance of **25%** the salary budget will be determined by the **joint performance** of you and the other head of department in the following way:

- If the **total number of correct answers by you and the other** is from **0 to 10**, then the salary budget will be **1390 points**.
- If the **total number of correct answers by you and the other** is from **11 to 20**, then the salary budget will be **2050 points**.
- If the **total number of correct answers by you and the other** is from **21 to 32**, then the salary budget will be **2710 points**.

Summary of the determination of salary budget



Remark 2 *The following “Determination of salary budget” was used in the DET treatments.*

Determination of salary budget.

The salary budget is completely determined by the **joint performance** of **you** and the **other head of department** in the general knowledge quiz. More concretely, it is determined by **the total number of**

correct answers in the general knowledge quiz. Below, it is explained in detail how performances affect the salary budget.

The salary budget will be determined by the **joint performance** of **you** and the **other head of department** in the following way:

- If the **total number of correct answers by you and the other** is from **0 to 10**, then the salary budget will be **1390 points**.
- If the **total number of correct answers by you and the other** is from **11 to 20**, then the salary budget will be **2050 points**.
- If the **total number of correct answers by you and the other** is from **21 to 32**, then the salary budget will be **2710 points**.

After you have finished the knowledge quiz you will learn the outcome of the described procedure and, hence, learn what the salary budget you have to bargain about is.

Beliefs on the number of correct answers.

Next you will be asked your beliefs about your and the other's performance in the general knowledge quiz. You can earn extra money depending on the accuracy of your estimation:

- If your estimation is **exactly equal** to the true number of correct answers, you earn **60 points**.
- If your estimation is the true number of correct answers **-1 or + 1**, you earn **30 points**.
- If your estimation is the true number of correct answers **-2 or + 2**, you earn **15 points**.
- Otherwise, you earn **0 points**.

You will be asked for an estimation of your own performance as well as for the performance of the other department head. Nobody except you will get to know these estimations.

Remark 3 *The following part was used only in the INFO treatments.*

Information about relative performance in the general knowledge quiz.

Next you will receive information on your screen about your actual performance in the general knowledge quiz in comparison to the other department head.

If you have **more correct answers** in the general knowledge quiz than the other department head, then you are the **better** performing department head and the other is the worse performing department head.

If you have **less correct answers** in the general knowledge quiz than the other department head, then you are the **worse** performing department head and the other is the better performing department head.

If you and the other have the **same number of correct answers** in the general knowledge quiz, then you and the other department head are **equally** performing.

This finishes the first stage of the experiment. The next stage is the bargaining over the salary budget. The instructions for this stage will be given shortly. Do you have any questions at this point? If you have a question please raise your hand. If there are no (more) questions we shall continue with the instructions.

The Bargaining

You will have a maximum of **10 minutes** to reach an agreement on the distribution of the salary budget, which is at your joint disposal. You do not have to use up all the bargaining time but must not exceed it. If you do not agree on a distribution within 10 minutes, then you will earn nothing from this bargaining stage! If you do agree on a distribution then you will earn your share.

The bargaining is done via the computer. During bargaining you will **work with a screen** that consists of four parts, which we will explain in what follows. (See screen-shot at the end of these instructions.)

1. In the upper-right part the salary budget you are bargaining over is shown. The clock right on the top shows how much bargaining time (in seconds) is still remaining.
2. In the lower-right part you see “Make and Send New Proposal” screen. There is a “SEND” button to confirm and send proposals.
3. In the upper-left part, the table shows all previous proposals, the identity of proposers (you or other), the number of the proposal, your and the other’s proposed share of the salary budget, and the remainder share. For instance, if you have made the first proposal by proposing x to yourself and y to the other, then the first row of the table shows “**You**” as the proposer, “**1**” as the number of the proposal, “ x ” as the proposer’s salary claim and, “ y ” as the remainder. Note, that the entries in the column “Proposer’s Salary Claim” refer to the claim of the proposer and, hence, can be your claim or the claim of the other department head. The entries in the column “Remainder” therefore also refer to you or the other, depending on who made the proposal.
4. In the lower-left part, you see the other’s and your currently valid proposals. There is also “Accept the Proposal” button to accept the other’s currently valid proposal. If the other department head has not made any proposal to you yet, a “No proposals have been made to you yet” message is shown. Similarly, if you have not made any proposal, a “You have not made a proposal yet” message is shown.

If you want to make a first (or new) proposal you have to fill in two boxes in the lower-right quarter with corresponding shares for yourself and the other department head. The amounts you fill in should add up to the salary budget. Thereafter, you need to press the “SEND” button to send your proposal. The following rules apply:

1. **A proposal** consists of an **amount of points for you** and an **amount of points for the other department head**. To switch a field forward you can either press the “TAB” key on your keyboard or you can click on the next field you want to fill in.
2. The sum of points **cannot** exceed the budget. Smaller sums are also **not** allowed. In case you make an **invalid** proposal in this sense, a “**The numbers have to sum to the salary budget**” message appears.

3. Only **integer** offers are allowed.
4. A sent offer is **binding**, that is, if the other department head accepts your proposal, bargaining is finished and both of you earn the points on which you have agreed upon. The same holds if you accept a proposal of the other department head. You can only accept the current proposal; earlier proposals are not valid any more.

Hence, as long as you have not pressed the “SEND” button you can still change the offer. A sent proposal is binding and shows up on the screen of the other department head as well as on your own screen. You can always make a new proposal, provided that neither you nor the other department head have accepted a proposal and provided that there is still some bargaining time left.

If you want to accept a currently valid proposal, you have to press the “Accept Proposal” button. If you have agreed upon a distribution you have to enter it in the corresponding space in your **information & documentation sheet**.

This is the end of the instructions of this part of the experiment. Do you have any questions? If you have questions please raise your hand. If there are no (more) questions the experiment will start shortly.

Information and Documentation Sheet 1

Cubical #:

1- The size of the salary budget can be **1390** points, or **2050** points, or **2710** points.

Remark 4 *The following part was used in the DET treatments.*

The actual salary budget is determined **completely** by the joint performance of myself and the other head of department. The actually realized size of the salary budget is:

Remark 5 *The following part was used in the UNC treatments.*

The actual salary budget is determined by the joint performance of myself and the other head of department with a chance of 25% and due to external factors with a chance of 75%. The actually realized size of the salary budget is:

2- My estimation about the number of correct answers in the general knowledge quiz is:

My own number of correct answers:
The other department head's number of correct answers:

Remark 6 *The following part (part 3) was used in the INFO treatments.*

3- Actually I am the better/worse/equally performing department head (please strike through the in-applicable) and the other is the better/worse/equally performing department head (please strike through the inapplicable).

4- The bargaining outcome:

There was an agreement: yes no
In case of "yes":
The agreed share of the salary budget that goes to me:
The agreed share of the salary budget that goes to the other department head:.....

Figure S2.1: Screenshot of Bargaining Stage

Period: 1 out of 1 Remaining time [sec]: 11

Who	Counter	Proposer's Salary Claim
your partner	1	1050
you	2	1350
your partner	3	950
you	4	850
your partner	5	1200

You are bargaining over a salary budget of 2050 points

Your Partner's Currently Valid Proposal

Your partner's salary claim: 1200

This leaves for you a salary of: 850

Your Currently Valid Proposal

Your salary claim:

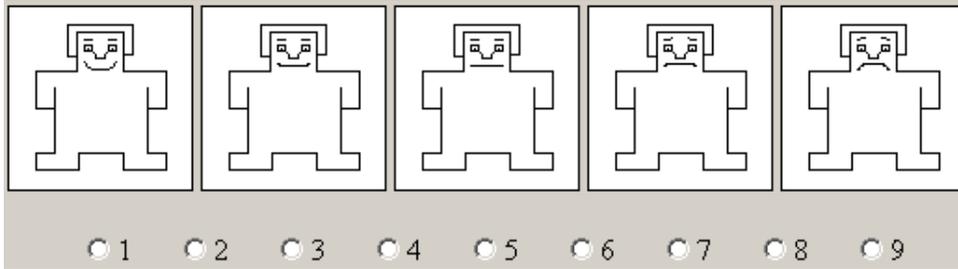
This leaves for your partner:

Remark 7 *The following question was asked after bargaining had finished.*

Mood Question

Cubicle #:

How do you feel **at this moment**? Please choose with the help of the figure the number that best describes how you feel.



Remark 8 *After the experiment reported in the paper another unannounced bargaining stage was conducted. The results of this stage are reported elsewhere. For completeness, the instructions of this stage are provided below.*

A New Experiment

Now a new experiment takes place, which is very similar to the experiment you have just completed. In this experiment you have again to bargain with the other head of department, who is the **same person** as in the experiment you just finished.

Consider that one year has passed by and that the top management of the firm asks you again to bargain about the salary budget. There is one important difference with last years' procedure, however. Now there is no performance measurement. Suppose further that you and the other department head had an equal intermediate performance that was neither good nor bad for the firm.

Therefore, the **salary budget** that you will bargain about is **determined purely by external factors** (e.g., demand conditions in the market for the firm's product).

That is, the economic conditions and, hence, your salary budget are determined completely randomly. If the economic conditions turn out to be favorable, you bargain over **2710** points of salary budget. If the economic conditions are unchanged you bargain over **2050** points of salary budget. If the economic conditions turn out to be bad you bargain over **1390** points of salary budget. The salary budget is randomly determined in the following way:

- With a **chance of 1/3 (i.e. 33.3%)**, the salary budget will be **1390 points**
- With a **chance of 1/3 (i.e. 33.3%)**, the salary budget will be **2050 points**
- With a **chance of 1/3 (i.e. 33.3%)**, the salary budget will be **2710 points**

As last year the top management does not want to dictate the new salaries. Therefore, it has decided to let you and the other department head bargain over the distribution of the new salary budget as you did in the past.

Otherwise the experiment proceeds precisely as the earlier one. You will bargain with the other department head about the distribution of the new salary budget. Again, these points will be exchanged to euros at the same rate (100 points = 65 euro cents). In case of no agreement within 10 minutes, both of you receive nothing. As before, you will not be informed about the identity of the other department head. Otherwise the same rules as before apply. Please, enter the bargaining result in the new documentation sheet that comes along with these new instructions. After you have finished this part of the experiment you get paid your bargaining result from the earlier part of the experiment (including eventual earnings from your estimations of the numbers of correct answers in the general knowledge quiz) and the bargaining result from this part of the experiment. The points you have earned in the earlier experiment will **not be touched** by this experiment, whatever the outcome is.

Do you have any further questions? If you have questions please raise your hand. If there are no (more) questions this part of the experiment will start shortly.

Randomization Procedure

A random number generator independently draws two random numbers from a uniform distribution over [0,1] interval, one for you and one for the other department head.

- If the sum of those two numbers is less than 0.8165, the salary budget will be **1390 points**,
- If the sum of those two numbers is between 0.8165 and 1.1835, the salary budget will be **2050 points**,
- If the sum of those two numbers is more than 1.1835, the salary budget will be **2710 points**.

Information and Documentation Sheet 2

Cubical #:

5- The second bargaining outcome:

The size of the salary budget can be **1390** points, or **2050** points, or **2710** points.

The actual salary budget is determined **completely** by external factors.

The actually realized size of the salary budget:

There was an agreement: yes no

In case of "yes":

The agreed share of the salary budget that goes to me:

The agreed share of the salary budget that goes to the other department head:.....

Post-Experiment Questionnaire

Questionnaire -A-

The following questions concern the determination of performance in the knowledge quiz. Please, indicate for all questions, by crossing the appropriate field, how strongly you agree with the statement. “1 = not at all”, “7 = very”.

1- In a knowledge quiz like this, pure luck decides who is able to answer more questions correctly.

1 2 3 4 5 6 7

2- The one with the better general knowledge is able to answer more questions correctly.

1 2 3 4 5 6 7

3- In my view the knowledge questions have been difficult.

1 2 3 4 5 6 7

Questionnaire -B-

We would now like to know how you assess your own general knowledge. Not all people have an equally good general knowledge. We ask you, therefore, to compare your own knowledge with that of the other participants in this experiment. By definition, of course, there is somebody who has the least general knowledge and somebody who has the best general knowledge. We ask you to indicate on the scale below where you position yourself with respect to your general knowledge, within the group of the participants of this experiment. Of course, since you do not know all participants of this experiment this is a difficult task. Nevertheless we ask you to make your self-assessment as accurate as possible. Please, position yourself by crossing the percentage interval - on the scale below - where you think your own position relative to the other participants in this experiment is with respect to general knowledge. If you think, for example, that you are with your general knowledge at the top ten percent, then cross the percentage interval 91-100. If you think, for example, that you are with your general knowledge at the lowest ten percent, then cross the percentage interval 0-10.

Your estimation of your position within the group of the participants of this experiment with respect to your general knowledge:

- 0 – 10
- 11 – 20
- 21 – 30
- 31 – 40
- 41 – 50
- 51 – 60
- 61 – 70
- 71 – 80
- 81 – 90
- 91 – 100

Questionnaire -B- continued

The following questions concern your behavior in the bargaining experiment.

1- Which factors influenced your bargaining behavior in the first bargaining stage?

Remark 9 *Questions 2, 3, 4, 5, 6 and, 7 below are not relevant for the current paper. They are provided here only to keep the post-experiment questionnaire in its original form.*

2- Which factors influenced your bargaining behavior in the second bargaining stage?

3- Did you take the first bargaining stage outcome into account in the second bargaining stage?

4- If your answer to the previous question was YES, then please explain how the first bargaining stage outcome affected your behavior in the second bargaining stage. If your answer to the previous question was NO, then you can continue with the next question.

5- Did you use the first bargaining stage outcome as a reference point for negotiations in the second bargaining stage?

6- Which factors influenced your decision to use or not to use the first bargaining stage outcome as a reference point for the second bargaining stage?

7- Did your level of satisfaction play a role in your decision to use or not to use the the first bargaining stage outcome as a reference point in the second bargaining stage?

Questionnaire -C-

To what extent do each of the following statements accurately describe you? Please indicate the degree to which you personally agree or disagree with each of the following statements by choosing a number from the scale below that reflects your opinion.

1- Never tell anyone the real reason you did something unless it is useful to do so.

- strongly disagree
- disagree
- neutral
- agree
- strongly agree

2- The best way to handle people is to tell them what they want to hear.

- strongly disagree
- disagree
- neutral
- agree
- strongly agree

3- One should take action only when sure it is morally right.

- strongly disagree
- disagree
- neutral
- agree
- strongly agree

4- Most people are basically good and kind.

- strongly disagree
- disagree
- neutral
- agree
- strongly agree

5- It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.

- strongly disagree
- disagree
- neutral
- agree
- strongly agree

6- Honesty is the best policy in all cases.

- strongly disagree
- disagree
- neutral
- agree
- strongly agree

- 7-** There is no excuse for lying to someone else.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 8-** Generally speaking, people won't work hard unless they're forced to do so.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 9-** All in all, it is better to be humble and honest than to be important and dishonest.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 10-** When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which carry more weight.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 11-** Most people who get ahead in the world lead clean, moral lives.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 12-** Anyone who completely trusts anyone else is asking for trouble.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 13-** The biggest difference between most criminals and other people is that the criminals are stupid enough to get caught.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree

- 14- Most people are brave.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 15- It is wise to flatter important people.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 16- It is possible to be good in all respects.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 17- P.T. Barnum was wrong when he said that there's a sucker born every minute.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 18- It is hard to get ahead without cutting corners here and there.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 19- People suffering from incurable diseases should have the choice of being put painlessly to death.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree
- 20- Most people forget more easily the death of their parents than the loss of their property.
- strongly disagree
 - disagree
 - neutral
 - agree
 - strongly agree

Questionnaire -D-

Please click the option you find most appropriate! “0=not at all willing to take risks”, “10=very willing to take risks”

How do you personally assess yourself: Generally speaking, are you a person who is ready to take risks or are you trying to avoid risks?

0 1 2 3 4 5 6 7 8 9 10

One can behave differently in different circumstances. In the following circumstances, how would you assess your readiness to take risks?

Driving a car?

0 1 2 3 4 5 6 7 8 9 10

Making a financial investment?

0 1 2 3 4 5 6 7 8 9 10

In leisure time and when doing sports?

0 1 2 3 4 5 6 7 8 9 10

Regarding your professional career?

0 1 2 3 4 5 6 7 8 9 10

Regarding your health?

0 1 2 3 4 5 6 7 8 9 10

Regarding confidence in strangers?

0 1 2 3 4 5 6 7 8 9 10

Please, consider what you would do if you face the following situation: Imagine that you win 100,000 Euro in a lottery. Right after receiving the prize, you receive a new offer from a reputable lottery company, which includes the following: there is a chance to double the amount of money you bet. In case you win, the prize will be immediately paid out. However, there is also an equally high risk of losing half of the money you bet. You can invest the 100,000 Euro into the lottery in whole or in part in the following ways or reject the offer entirely.

What part of the lottery winnings would you put in this new lottery, which is, on the one hand, risky and promises gains, on the other hand ?

- The whole amount of 100.000 Euro
- An amount of 80.000 Euro
- An amount of 60.000 Euro
- An amount of 40.000 Euro
- An amount of 20.000 Euro
- Nothing at all

Questionnaire -D- continued

Another question about risk-taking. Please consider what you would do if you face the following situation: Imagine that you win 100,000 Euro in a lottery. Right after receiving the prize, you receive an investment offer from a reputable bank, which includes the following: within two years, there is a chance to double the amount of money you invest. However, there is also an equally high risk of losing half of the money you invest. You can invest the 100,000 Euro in whole or in part in the following ways or reject the offer entirely.

What part of the lottery winnings would you put in this investment opportunity, which is, on the one hand, risky and promises gains on the other hand?

- The whole amount of 100.000 Euro
- An amount of 80.000 Euro
- An amount of 60.000 Euro
- An amount of 40.000 Euro
- An amount of 20.000 Euro
- Nothing at all

Questionnaire -E-

At the end some statistical questions:

Age:

Gender:

Study:

How much money per month do you have at your disposal (net of accommodation costs)?: