

Gender Effects on Corrupt Deals – an experimental analysis

Abstract

This paper presents new findings about the gender impacts on a bribery act. It dealt with the question if the counterpart's gender has an influence on the bribe decision. I address this question with the help of an experiment in which students, assigned to Company A or Employee B, decide in the first step whether to bribe or not. In the second they choose between reporting, opportunism and reciprocity. Overall women in the role of Company A bribe significantly less when they faced with other women. In contrast, men have the same bribe ratio when facing with women or men.

1. Research motivation

The competition between sexes is ubiquitous: who drives better or who is more intelligent, just to name a few. But the hugest societal discussion between them is about which sex is cheating more. Especially in the case of relationships, men and women blame each other about dishonesty and think that they are the more honest soul. This discussion is not only an interesting one in social life, but also in business. Are female employees more honest – or in other words are less corrupt than men?

The police chief of Mexico City believed in this hypothesis, when he exchanged all 900 male traffic policemen with women, because he was convinced that they are less corrupt (Moore, 1999). But are women really less corrupt or just less often involved in bribery acts as they are perceived as to be to honest? Contrary to the present academic literature, this paper focuses on the question, whether the sex of the responder has an effect on a bribery act. Therefore it uses a laboratory experiment conducted at the University of Passau. Overall it results in a low bribe ratio of 17.9% when women are faced with other women; instead gender compositions of male-male, female-male or male-female groups have with 50.0% a higher bribe ratio.

The remainder of this paper proceeds as follows. The next chapter starts with an overview of the main related literature of behavioral gender studies. Section 3 will introduce the experimental design, followed by the hypotheses in section 4. In a next step, the dataset will be introduced and some limitation presented. Section 7 shows the main results and finally section 8 concludes the paper with some remarks.

2. Previous literature

The academic interest in the topic of gender and corruption has strongly increased in the last two decades. The reason for this is a difference in the behavior between men and women. Various studies point out this differential, e.g. during negotiations (Bowles et al., 2005), by exhibiting helping behavior (Eagl & Crowley, 1986), risk aversion (Eckel & Grossman, 2008; Watson, & McBaughton, 2007) or in competitive environment (Gneezy et al., 2003). These results support the stereotypes of selfless women and selfish men.

In the late nineties, two pioneering studies about gender and corruption conclude the general micro findings drawing a bigger picture. This was the study by Dollar et al. (2001) as well as Swamy et al. (2001). Both studies compare on a cross-country basis the effects of women's

share in parliament on the corruption level. Both come to the final conclusion, that a larger share of women in parliament decreases corruption. That would lead to the implications that women are more effective in promoting honest governments (Dollar et al., 2001; Swamy et al., 2001).

In contrast to this empirical macro level approach, my research uses a laboratory experiment, as it is commonly used in this area¹. When analyzing the differences between gender in the case of corruption, the following three specific issues should be outlined: differences in attitude towards corruption, in accepting bribes and in offering bribes (Boehm, 2015).

According to Swamy et al. (2001), men generally have a higher attitude toward corruption. Comparing the results of the World Value Surveys, they found out that one-fifth more women than men believe that accepting a bribe can never be justified. Also splitting the samples towards their nationality is in most cases significant at the 5%-level. So it seems like a worldwide phenomenon. The study of Alatas et al. (2009), limits these findings, as they find only gender differences in some of the examined countries.

Not only men's attitude is stronger, they also offer and accept bribes more often. For example, male managers in Georgia are more involved in bribery (Swamy et al., 2001), men offering bribes significantly more often in lab-experiments (Rivas, 2007) and interviews with taxi drivers in Colombia show that men are easier to be bribed (Fink & Boehm, 2011).

Women in contrast are regarded as more trust-worthy and less likely to condone bribe taking (Swamy et al., 2001). This suggests that corrupt deals are more likely to fail if women are involved, because they are more honest. Frank et al. (2011) have the same idea, though with another explanation. According to them, women act more opportunistically which means that they take the bribe but do not give a favor in return. Lamsdorff and Frank (2011) confirm that men reciprocate much more. They conducted a one-shot bribery game with students from the Universities of Clausthal and Passau. As a result, male students reciprocated and female students cheated the briber significantly more often. The results also held over many rounds, as in Rivas (2013). These findings weaken the argument of the fairer sex but can still lead to a decrease in corruption, as paying a bribe brings no advantages for the payer. But the authors do not examine the conclusion, whether a briber takes the argument of more honest women into account and that is why women are less involved in corrupt deals.

¹ For a better understanding and a summary of corruption experiments see Dus'ek et al. (2005)

3. Experimental design

This chapter explains the experimental design in detail. It is based on the corruption game of Lambsdorff and Frank (2011), added by some additional features. To win a public contract Company A has to decide whether to bribe an amount of 10 Euro to Employee B or not. Without paying a bribe, the contract is rewarded to another company. This is the first modification as the original experiment had a decision about the framing of the bribe but paying it was unavoidable. With this choice, one of the biggest criticisms of the Lambsdorff and Frank (2011) paper was eliminated, as for example shown in Giamattei (2010). Company A starts with an endowment of 20 Euro, Employee B with 10 Euro.

In the second step, only if Company A pays a bribe, Employee B has three options like in the original experiment. Blowing the whistle (option 1) leads to a punishment of Company A of 10 Euro and Employee B has to drop the bribe. Opportunistic behavior is the second option, whereas Employee B keeps the bribe but does not give the contract to the briber. The third option is reciprocal behavior whereas the contract is rewarded to Company A. It thereby receives a gain of 30 Euro and maximizes its payoff. As giving the contract to Company A is not the best solution, an externality is included in the experiment. For every rewarded contract to Company A, all participants will be penalized with a fee of 2 Euro. For a graphical illustration of the game tree, see Figure 1. The payoffs are presented in the following way: (payoff Company A; payoff Employee B).

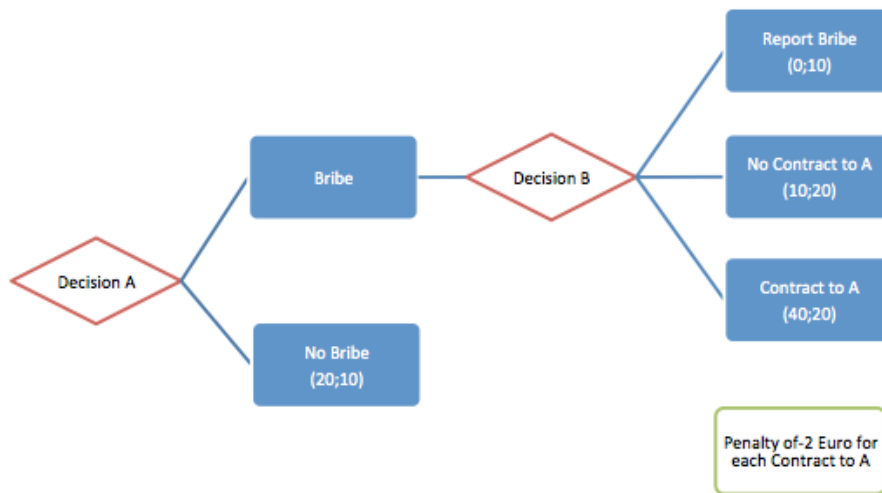


Figure 1: Game tree

To measure the effect of Employee B's gender on the bribe decision, an additional treatment was included. In this case, Company A was shown the sex of its partner and can thereby consider it in the decision making process.

No matter about the treatment, when mathematically solving the game via backward induction, classical game theory predicts paying no bribe in the Nash equilibrium. As Employee B has the highest payoff in the case of opportunistic behavior, Company A anticipates this and therefore pays no bribe. But as behavioral studies have already shown (e.g. Camerer, 2003), many people behave different from the rational Nash equilibrium. This will also affect the hypotheses in the next section.

4. Hypotheses

This chapter summarizes the hypotheses. It starts with general ones as already found in previous studies and then presents the paper specific ones.

H1a: Men bribe more often

As shown in section 2, experimental studies show that men have less moral problems with paying a bribe and bribe more often. This experiment should confirm the recent results.

H1b: Men reciprocate more

Among others, Lamsdorff and Frank (2011) find out that men have a higher attitude towards positive as well as negative reciprocity. This is also shown in non-corruption research, for example in ultimatum games (Eckel, & Grossman, 2008). I would also expect a significant difference in the response of male and female employees.

H2: Male employees are bribed more often

Besides the scientific research it is a public consensus that men are easier to bribe. Considering this information, this leads to a higher expected probability of reciprocal behavior when facing with a man. Participants are likely to take this information into account. As a reason I would expect higher bribe rates if Company A has a male counterpart.

H3: Business students bribe more often

Students from different fields of study behave differently. That is what has already been investigated by scientific research, for example for economic students (Carter et al., 1991). Business students are expected to act more profit maximizing and have less moral concerns compared to other students. As a result they should bribe more often. The alternative hypothesis would be, that these students have more economic lectures and can easier calculate the Nash equilibrium.

Before testing the hypotheses in particular, the next chapter shows the setting of the experiment as well as the data collection.

5. Setting and data

The experiment took place on the 27th and 28th of June 2017 at the University of Passau. It was conducted at the pc-pools at the School of Business and Economics via computer interface, using the software z-Tree (Fischbacher 2007). Every hour up to 20 participants were able to participate in the experiment. The game was played over one round with no training session and the candidates were mainly recruited by approaching them randomly in the university buildings.

After the recruitment, participants were randomly seated in the room. In the next step, the instructions were read out loud. These contain the information that the experiment as well as the evaluation is anonymous, participants are not allowed to talk to their neighbors and that the payoffs were just hypothetical. In Appendix A, the transliterated oral instructions are shown.

Thereafter the experiment starts on the computers. After a welcome screen, participants have to fill out a questionnaire about their age, sex, study program, size of their hometown and if they have siblings. This data is important for the statistical analysis and especially the sex for the treatment case. The next stages contain the game description and a game tree. In accordance with Lamsdorff and Frank (2011), the experimental description uses morally loaded terms as "bribe." Other experiments use neutral language instead of such a framing as it can guide the participants in a special direction. But there is enough criticism to the neutral approach, which justifies the framing situation. Abbink and Hennig-Schmidt (2006) for example show no impact of the framing on corruption games with morally loaded terms.

Once all information was presented the next screen contains the role assignment. Groups were randomly matched and players did not know their fellow players. Two decision stages, whether to bribe or not and the response of the bribee followed. Finally the results and payoffs were shown and the participants were thanked for their effort. Afterwards a second experiment took place, which is not part of this study. During the two days of the experiment, the same three instructors supervised the procedures and were always available in case of additional questions. The screenshots of the experiment can be seen in Appendix B.

Overall, the dataset contains 199 participants² with an average age of 24.1 years. 154 of them are in the treatment group. Especially the female-ratio is important for a gender study, it amounts to 61%. This ratio is pretty high, but models the conditions at the University of Passau well, with a ratio of 60% (University of Passau, 2017).

Overall the experimental setting exposed some limitations, which are shown in the next chapter.

6. Limitation

The biggest limitation of the experiment is the absence of real payoffs. Students are just “paid” by coffee, sweets and fruits. Especially in a corrupt game, where they have to weight money against moral scruples, the results can be distorted toward more honest behavior.

A second limitation is the selection of students. As described before, they were randomly selected in the university building but as they receive just snacks for playing 20 minutes, their participation was sometimes more a favor to other students. So this selection towards more friendly and helping students can lead to a selection bias. This has no disadvantages when comparing in-between the data, but it can underestimate the fact when comparing it with other studies and results.

² Uneven number due to participation of the instructors in uneven rounds and exclusion of this results afterwards.

7. Results

This section analysis the results of the experiment and tests the different hypotheses.

7.1. General bribe studies

As a first step the results are examined in accordance with the recent literature about gender and corruption. The first hypothesis is, that male participants in the role of Company A bribe more often than females. As we can see in Figure 2, 57.1% of men bribe Employee B, compared to only 33.3% of women. This seems like a strong gender effect.

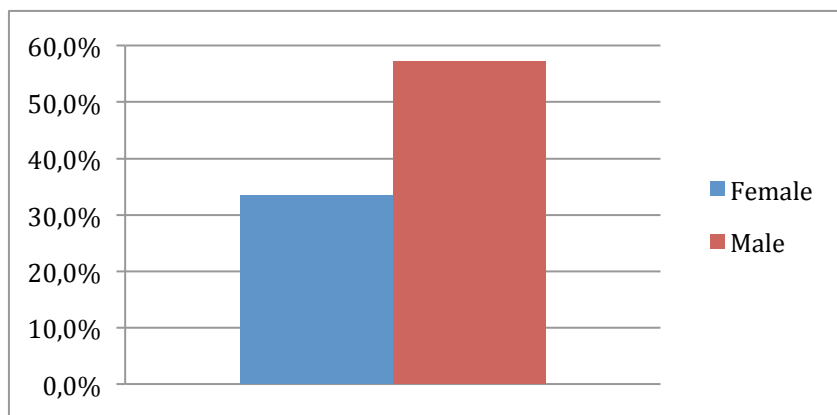


Figure 2: Bribe ratio of Company A across genders

To test, if the differences between the two groups arise only randomly, this paper uses the Fisher's exact probability test (Fischer, 1935). The null hypothesis implies that the groups follow a joint distribution. In the case of hypothesis 1, the difference is significant at the 5% level and the null hypothesis can be rejected, with Fisher's exact test of 3.3% (see Appendix C). As a consequence, the results are in accordance with prior research, for example as in Lambsdorff and Frank (2011).

The second hypothesis is about the response of Employee B, if a bribe is paid. Also in this case I would expect the same results as in previous research that men reciprocate more and women act more opportunistically. As illustrated in Figure 3, the opposite is the case: more females reciprocate the favor (54.2%) compared to males (46.2%). On the other hand, male participants act slightly more opportunistically (23.1% against 20.8%), which means that they accept the bribe and does not reward the contract to the bribing company. But these results are not significant. For a detailed overview of the Fisher's exact test please see Appendix C. These

results are in contrast to previous findings, as for example in Lambsdorff and Frank (2011). One problem might be the small sample size, as the decisions are only made if Company A paid a bribe in the first step. Due to a high non-bribe rate, the sample contains only 41 observations.

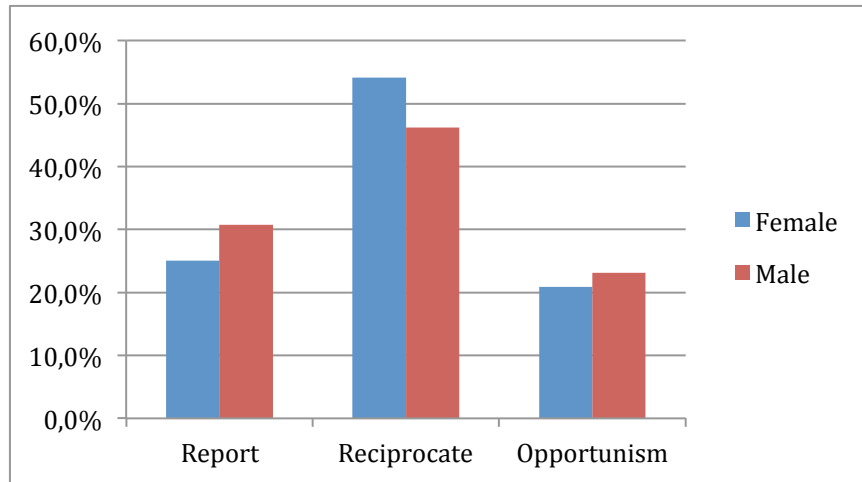


Figure 3: Response of Employee B across genders

7.2. Sex of the counterpart

In this section, the additional feature that Company A knows the counterparts gender is taken into account. So only participants in the treatment group are included in this sample, in total 78 decisions of Company A. The sample is grouped into 4 subgroups, dependent on the gender composition of each group: female-female (28 groups), female-male (22 groups), male-female (16 groups) and male-male (12 groups). As stated before, the expectation is that male counterparts are bribed more often. As you can see in Figure 4 there is no difference in the bribe rate whether a man plays with a woman or man and in addition if a woman plays with a man. The three results are balanced between bribing and no bribing. In contrast, only 17.9% of women take the bribe option if the counterpart is also a woman. According to the Fisher's exact test, this combination is highly significant at each common significant level with a value of 0.001. For the detailed results please see Appendix C. This implies that women have high concerns when facing other women. In my view this is due to the expectations about opportunistic behavior of the counterpart. But this weakens the argument of the fairer and more honest sex.

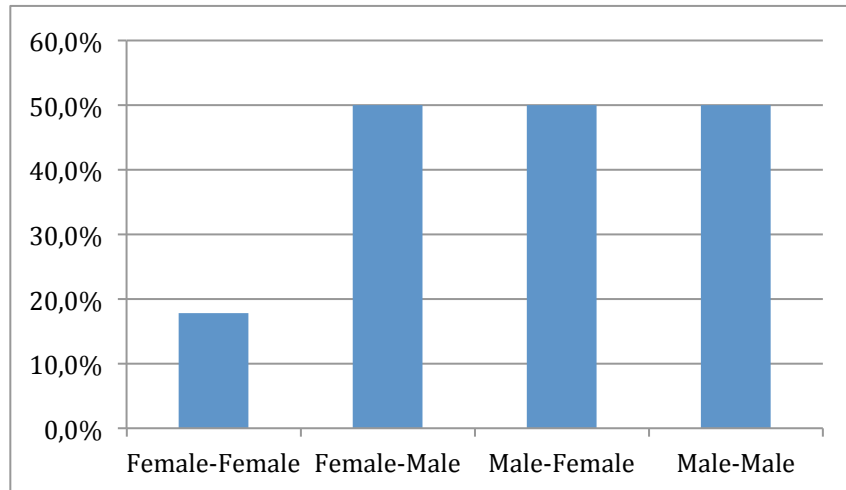


Figure 4: Bribe ratio across gender groups in the treatment case

The results above show no significant differences in three of four subgroups. But the question, if participants react different if they have more information about their counterparts' sex, remains. For this test, the sample is spitted into male and female participants in the role of Company A. In a second step the two samples are sub grouped according to the knowledge about the sex of the counterpart. In the treatment group this can be "male" or "female" and in the control group know "nothing" about the counterpart. Due to insufficient observations in the male case, just the female sample is analyzed more detailed.

If women know nothing about their counterpart the bribe ratio is 37.5%. This ratio increases up to 50.0% if they play with a man. If they are faced with a woman, the ratio drops down to 17.9%, as you can see in Figure 5.

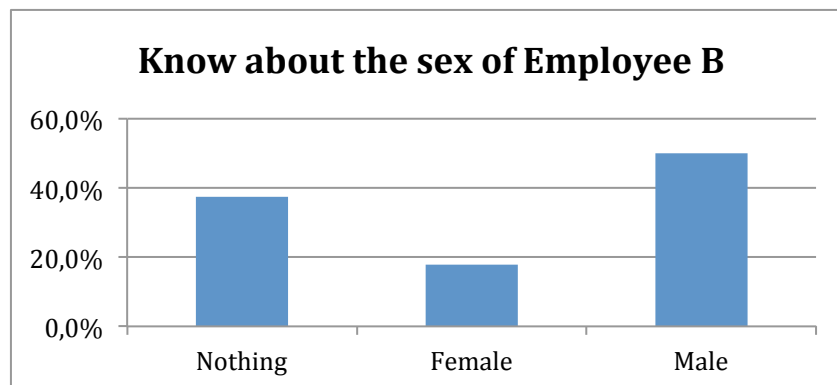


Figure 5: Bribe ratio if women are in the role of Company A

To test whether the results are significant, the Fisher's exact test is used. As this works only in a 2x2 matrix, the test is applied to each row separately. The value is the probability that the distribution of that row is not different from the rest of the matrix. As you can see in Table 1 only the female case is significant at the 5% level.

Company A knows about the sex of Employee B	No Bribe	Bribe	Total	Fisher's exact test
Nothing	10 (62%)	6 (38%)	16 (100%)	0.764
Male	23 (82%)	5 (18%)	28 (100%)	0.055
Female	11 (50%)	11 (50%)	22 (100%)	0.034

Table 1: Fisher's exact test

7.3. Additional control variables

With the help of a regression, the robustness of the previous results is tested. Due to the binary characteristics of the dependent variable (bribe or no bribe), a logistic regression is used.³ Column 1 of Table 2 presents the results whereas only the gender compositions are the independent variables. Each variable is a dummy with values of 0 and 1. For example in the female-male case, it takes 1 if Company A is female and Employee B is male, or 0 otherwise. In accordance with the previous findings only the female-female team composition is significant at the 5%-significant level. This means that with a female-female group the probability of paying a bribe decreases. In total, the regression has an explanatory power of 8%.

Column 2 adds the study program to the regression. Due to many different programs at the University of Passau and to fewer observations, this is concluded at the faculty level. The assumed differences according to economic lectures as well as different attitude should be still different at this aggregate level. The dummy Business includes all studies at the Faculty of Business Administration and Economics, for example Business Administration or Economics; Arts for the Faculty of Arts and Humanities, for example European Studies, Media and Communication or Governance; as well as the Faculty of Law, which is the exclusive one. The additional control variables are not significant and do not change the results of column 1: only female-female groups are significant at the 5%-significant level with a negative sign.

³ As a robustness check, a probit regression presents the same results

	(1)	(2)	(3)
Decision Company A			
Female-Female	-1.505* (0.652)	-1.486* (0.658)	-1.441* (0.665)
Male-Male	-0.000 (0.718)	-0.027 (0.739)	0.014 (0.751)
Male-Female	-0.000 (0.657)	0.000 (0.684)	-0.063 (0.695)
Business		0.056 (1.535)	0.083 (1.552)
Arts		-0.057 (1.535)	-0.025 (1.558)
Village			0.004 (0.644)
Small Town			-0.355 (0.742)
Observations	78	78	78
r ² _p	0.0803	0.0807	0.0848

Standardized beta coefficients; Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 2: Logistic regression of Company A's decision

As a last check, dummy variables for the size of participants' hometown are included: village, small-town and city as the excluded one⁴. The new variables are not significant and overall the results are in accordance with column 1 and 2. Also the explanatory power is with 8% almost constant over the three regressions.

8. Conclusion

This paper analysis gender effects in a bribery game conducted at the University of Passau. It partly confirms prior findings, especially that men bribe more than women. But does not support the findings about more reciprocal behavior of men. In contrast to prior research this paper shed new light on the impacts on the bribee's gender on a bribery act. In total I find a strong effect when women face with other women. The bribe ratio is only 17.9% compared to 50.0% in all other gender compositions (male-male, female-male, male-female). The Fisher's exact test is highly significant with a value of 0.001. These results are also consistent with a logistic regression, which takes several control variables into account. It shows that women trust each other less compared to other gender compositions, I estimate due to fewer

⁴ There were no exact criteria given to the participants when choosing between village, small-town and city; so the results depend more on subjective assessments.

expectations about reciprocal behavior. In contrast, male bribers do not decide differently between male and female counterparts. Overall this shows that women are only less often involved in bribery acts, if the briber is also a woman. Future research should analyze the reasons behind the decisions more detailed.

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Watson, J., & McNaughton, M. (2007). Gender Differences in Risk Aversion and Expected Retirement Benefits. *Financial Analysts Journal*, 63(4): 52–62.

Appendix A: Transliterated oral instructions

„Herzlich Willkommen!

Vielen Dank für Ihre Bereitschaft, an zwei kurzen Experimenten teilzunehmen. Bevor das erste Experiment startet, einige allgemeine Erläuterungen vorab: Mit den Experimenten wollen wir Erkenntnisse über menschliches Verhalten gewinnen. Die Teilnehmer an den Experimenten befinden sich alle hier im Raum und nehmen an denselben Experimenten teil. Alle Teilnehmer sind anonym und können sich nicht untereinander absprechen. Auch Ihre Entscheidungen und Angaben werden anonym ausgewertet. Bitte verhalten Sie sich während der Experimente ruhig und sprechen Sie nicht mit Ihrem Nachbarn. Beachten Sie, dass es während der Experimente zu Wartezeiten kommen kann. Haben Sie einen Bildschirm einmal verlassen, kann dieser nicht erneut aufgerufen werden. Die erzielten Gewinne können leider nicht ausbezahlt werden. Versuchen Sie dennoch sich vorzustellen und sich so zu verhalten, als würde um echtes Geld gespielt werden. Auf der folgenden Seite wird der Ablauf des ersten Experimentes erklärt. Bitte lesen Sie die Anleitung sorgfältig durch und heben Sie Ihre Hand im Falle noch offener Fragen. Ein Spielleiter kommt dann zu Ihnen. Sie können jetzt mit dem ersten Experiment beginnen: Klicken Sie dazu auf 'Experiment starten'.

Appendix B: Screenshots of the experimental stages

Bitte beantworten Sie vor Spielbeginn folgende Fragen über Ihre Person.

Ihr Alter

Ihr Geschlecht Weiblich
 Männlich

Ihr Studiengang BWL
 VWL
 Jura
 Muk
 Kuwi
 Info
 Stawi
 Sonstige

Aufgewachsen in Dorf
 Kleinstadt
 Großstadt

Zu Beginn des Experiments wird Ihnen zufällig eine Rolle zugeordnet. Es gibt 2 Rollen: Firma A und Mitarbeiter B.

Firma A möchte den Zuschlag für einen großen Auftrag erhalten, hat aber das schlechtere Angebot abgegeben. Um den Auftrag doch zu erhalten, hat Firma A die Möglichkeit einen fixen Betrag in Höhe von 10 Euro als Bestechungsgeld an Mitarbeiter B zu zahlen. Mitarbeiter B muss anschließend entscheiden, ob die Bestechung gemeldet und der Auftrag an Firma A vergeben wird. Durch den Auftrag kann Firma A einen Gewinn von 30 Euro erzielen.

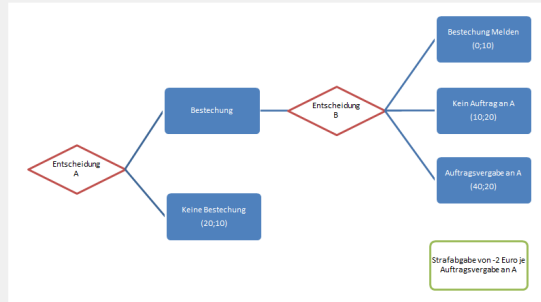
Bereits vor Spielbeginn verfügt Firma A über einen Betrag von 20 Euro und Mitarbeiter B von 10 Euro. Das Experiment wird nur eine Runde gespielt, danach ist es beendet.

Zu Beginn des Experiments entscheidet Firma A, ob sie eine Bestechung an Mitarbeiter B zahlen will. Ohne Bestechung wird der Auftrag nicht an Firma A vergeben. Beide erhalten ihren Anfangsbetrag von 20 Euro und 10 Euro ausgezahlt. Entscheidet sich Firma A für die Bestechung, so obliegt die finale Auftragsvergabe bei Mitarbeiter B:

- Wird die Bestechung gemeldet, muss Firma A eine Geldstrafe in Höhe von 10 Euro leisten und Mitarbeiter B die Bestechung abgeben. Die Auszahlung beträgt Firma A: 0 Euro und Mitarbeiter B: 10 Euro.
- Nimmt Mitarbeiter B die Bestechung an, vergibt den Auftrag aber nicht an Firma A, so beträgt die Auszahlung Firma A: 10 Euro und Mitarbeiter B: 20 Euro.
- Vergibt Mitarbeiter B den Auftrag an Firma A, so erwirtschaftet diese einen Gewinn in Höhe von 30 Euro. Auszahlung Firma A: 40 Euro, Mitarbeiter B: 20 Euro.

Wird der Auftrag an Firma A vergeben, wird das schlechtere Angebot gewählt. Dadurch entsteht ein Schaden in Höhe von 2 Euro. Dieser wird von der finalen Auszahlung abgezogen. Dieser Schaden betrifft jeden Spieler im Raum. Wird z.B. der Auftrag von 5 Personen im Raum an Firma A vergeben, so beträgt der Schaden $5 \cdot 2 = 10$ Euro für jeden Spieler.

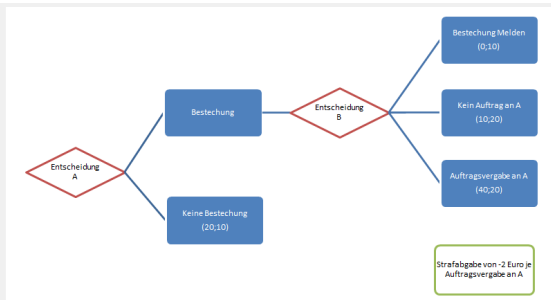
Zur Unterstützung ist die Spielbeschreibung mit den Auszahlungen im Format (Auszahlung A; Auszahlung B) graphisch dargestellt. Diese wird auf den folgenden Seiten weiterhin angezeigt, der detaillierte Text aber nicht mehr.



Weiter

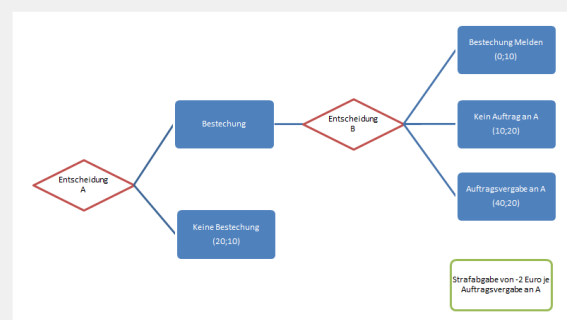
Ihnen wurde zufällig die Rolle von **Mitarbeiter B** zugeordnet. Firma A entscheidet zuerst, ob eine Bestechung an Sie gezahlt wird.

Weiter



Ihnen wurde zufällig die Rollen von **Firma A** zugeordnet. Sie entscheiden zuerst, ob Sie eine Bestechung zahlen wollen. Zur Unterstützung ist die Spielbeschreibung mit den Auszahlungen im Format (Auszahlung A, Auszahlung B) graphisch dargestellt. Zu Beginn des Experiments wurden bei Mitarbeiter B diverse Eigenschaften abgefragt. Davon wird Ihnen nun eine angezeigt, welche Sie zur Entscheidungsfindung nutzen dürfen. Bei Mitarbeiter B handelt es sich um **eine Frau**.

Bitte entscheiden Sie sich jetzt! Bestechung von 10 Euro an Mitarbeiter B:



Firma A hat Ihnen eine Bestechung von 10 Euro gezahlt. Nun sind Sie für die Auftragsvergabe zuständig. Zur Unterstützung ist die Spielbeschreibung mit den Auszahlungen im Format (Auszahlung A, Auszahlung B) graphisch dargestellt. Bitte entscheiden Sie sich jetzt.

- Bestechung melden
- Auftrag nicht an Firma A vergeben
- Vergabe an Firma A

Sie haben den Auftrag an Firma A vergeben. Ihre Auszahlung würde damit 20 Euro betragen. Von allen Mitspielern im Raum haben aber 1 den Auftrag an Firma A vergeben. Der dadurch entstandene Schaden von 2 Euro wird Ihnen abgezogen. Dies führt zu einer finalen Auszahlung von 18 Euro.

Weiter

Vielen Dank für Ihre Teilnahme am Experiment. Bitte klicken Sie zum Beenden auf "Experiment beenden."

Experiment beenden

Appendix C: Calculation of the Fisher's exact test

Fisher's exact test for 7.1, the response of Employee B in the bribery case across genders:

Response of Employee B (in the bribe case)	Female	Male	Fisher's exact test
Report	6 (25%)	6 (31%)	1.0
Opportunism	10 (54%)	10 (46%)	1.0
Reciprocate	4 (21%)	5 (23%)	1.0
	20 (100%)	21 (100%)	

Fisher's exact test for 7.2, the response of Employee B in the bribery case across genders:

Group composition	No Bribe	Bribe	Total	Fisher's exact test
Female-Female	23 (25%)	5 (31%)	28 (100%)	0.007
Male-Female	8 (54%)	8 (46%)	16 (100%)	0.308
Female-Male	11 (21%)	11 (23%)	22 (100%)	0.207
Male-Male	6 (50%)	6 (50%)	12 (100%)	0.520

To test whether the results are significant, the Fisher's exact test is used. As this works only in a 2x2 matrix, the test is applied to each row separately. The value is the probability that the distribution of that row is not different from the rest of the matrix.