

The Effects of Positive and Negative Framing in a Public Goods Game with a Leader

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1 Motivation

A whole literature section has emerged that analyzes effects of positive and negative framing effects in public goods games. The frame measures differences in the willingness to create a positive externality, when subjects contribute to or refrain from taking from a common account. Both cases impose a social dilemma on the players, because investment returns depend on the prosocial behavior of the other players. Although the incentive structure is identical, the typical result of these experiments is that prosocial investments are higher in the Give-frame than in the Take-frame (see e.g. Cookson (2000), Brandts & Schwieler (2009), Dufwenberg et al. (2011)).

It has also been widely investigated how leaders considerably alter contributions in public goods games (see Section 2). For common pool resource games, this institution is not as well investigated. According to Moxnes & van der Heijden (2003), a leader decreases the use of a public bad, that imposes a cost on the whole group. According to these findings, leaders do influence the behavior of their followers. Group dynamics change as individuals in these unequal roles start to interact. So how does a frame affect the decisions of a group consistent of a leader and several followers? Answering this question would give more insight about how framing works in a group with one individual leading the others and/or where decisions are not made simultaneously. In the latter case one person becomes a “leader” by choosing her contribution first and thereby setting a reference point. In the course of a university seminar, I conducted an economic experiment to gain some new insight into the presented questions. It compares a public goods game (PGG) with a leader and a common pool resource game (CPR) with a leader. The incentive structure was identical, the only difference was that in the PGG, the subjects GAVE some of their endowment to the common pot, and in the CPR, the subjects TOOK from a common pot. The PGG with a leader has been tested various times before, but the CPR design with a leader is new.

In each round, leaders and followers were asked to state their expectation about the decisions of the other role. Expectations are interesting to assess, because the frame constitutes a psychological change which affects perceptions and expectations. If excluded, we could miss an important piece of the puzzle. Gächter & Renner (2014) found that leaders influence followers’ beliefs about other followers’ contributions and change the follower’s own contributions. This is analogous to my experiment to the extent that a third party (the leader / the frame) influences the belief’s of two parties (one follower’s of the other followers / the leader’s of the followers and vice versa).

2 Related Literature

The literature about framing effects in public goods games and common pool resource games needs to be reviewed with care, as the frame can be implemented among different dimensions. Cox (2015) differentiates between four different frames: contributing to generate gains (CG), contributing to prevent losses (CL), taking to prevent gains (TG) and taking to generate losses (TL). When closely comparing the instructions, my experiment is comparable to his CG-treatment and the TG-treatment, as I hold constant the positive externality (gain). Andreoni (1995), Cookson (2000), and others for example rather focus on the positive vs. negative externality frame (CG and TL). Cox (2015) played the treatments over 10 rounds, which makes his first four rounds comparable to mine. The last round of the experiment must be analyzed with care, as there are usually end game effects in public goods games. Cox (2015) is different from my paper, as he rematches groups after every round, he plays with 5 players and uses a multiplier of 2.5. Also, he does not investigate any leader or belief effects.

Dufwenberg et al. (2011) find that frames influence beliefs about other followers’ contributions. These beliefs influence contributions. The authors conducted two Give- and two Take-treatments, two of which

are comparable to mine. They found that beliefs and contributions were higher in the Give-treatment than in the Take-treatment. They played a one-shot game without a leader, so my experiment adds further insight into the trend of beliefs and contributions and how leaders shape these.

The literature about leadership in public goods games is quite large. Gächter & Renner (2004) find that not everybody free-rides but that leaders almost always contribute more than their followers. Even though this disadvantage is bothersome for the leaders it still pays to contribute a higher positive amount. Followers indeed contribute less than the leader, but they do so to a certain ratio (here two thirds). This leads to higher earnings for the leader. Gächter & Renner (2004) call this bluntly but accurately „Leaders are the ‘suckers’ [...] but it pays to be a high contributing leader”. (p. 23) I implemented a leader in the way they did: one person who decides first, all others decide second. For simplicity, the leader is chosen randomly, neither elected or chosen by a certain characteristic. Number of players and the endowment were identical, the multiplier of the public good was similar (1.6 to 2).

3 Experimental Design and Procedures

In the control group, subjects play a standard linear public goods game (PGG) with $N = 4$ players for a total of five rounds. It was not possible to conduct more rounds, due to time restrictions in the sessions. One of the players is randomly assigned the leader role for the entire experiment. To avoid experimenter effects, the leader was called “Erstentscheidender” – the one who decides first. The followers were called “Zweitentscheidende” – the ones who decide second. Groups and roles are assigned randomly and stay constant over the whole experiment. This induces reputation building, which is intentional. I assume that real world social dilemmas that can be modeled with a four-person experiment, are dilemmas of relatively small groups. An example would be equal work division between workers in a department of a company. In those groups, reputation building always plays a role. Moreover, reputation building allows the leader to build up his influence, which is why this is common in the leadership literature (see Moxnes & van der Heijden (2003), Gächter & Renner (2004, 2014), Güth et al. (2004)).

In each round, each player i is given an endowment of $e_i = 20$ tokens, for which he or she can decide how much c_i to invest into a common pot P_j . The total amount in the common pot is multiplied by 2 and equally distributed to the players. The amount, that is not invested into the common account is added to the players’ private earnings with a return of 1. The action of “giving” therefore has a positive external effect on all players. The profit function for each subject is given by:

$$\pi_{i,CG} = e_i - c_i + \frac{1}{2} \sum_{j=1}^4 P_{j,CG} \quad (1)$$

The treatment group plays an analogous common pool resource game (CPR) with $N = 4$ players for five rounds. Again, one player is randomly selected to be the first one to make his decisions. The common pot consists of $P_{j,TG} = 4 * e_i = 160$ tokens. Each player i can extract any integer amount t_i up to 40 tokens ($2 * e_i$) from the pot P_j . One half of the amount he extracts will be transferred to his private account. After each player has extracted the amount they wanted, the amount left in the common pot will be distributed among all four players. If one refrains from “taking”, then the group experiences a positive external effect. This design gives the following profit function:

$$\pi_{i,TG} = \frac{1}{2} t_i + \frac{1}{4} \sum_{j=1}^4 P_{j,TG} - t_j \quad (2)$$

These two equations are equivalent, because in both cases the maximum amount in the private account is $e_i = 20$ and $\frac{1}{2}t_i = 20$. The maximum amount in the public account is in both cases $P_j = 40$. The Nash equilibrium is for both cases to give zero/take everything, as this is the only strategy, that is independent of the others' contributions. Group welfare maximizing, however, are full contributions by every player. Then each player earns the maximum profit. To make the prosocial investments comparable in the analysis, I constructed a variable "prosocial investment". In the PGG, it is defined as the percent of the endowment given to the common pot (100% = 20 tokens). For the CPR, it contains the percentage amount left in the pot, divided by 2 (as this was the maximum amount that could be appropriated, 100% = 20 tokens).

In both treatments, the leader is the first one to submit her investment decision to the common account. Her decision is then displayed to the other players (followers), who then simultaneously make their investment decision. Additionally, subjects are asked to state their expectation of the leader's and the average followers' decision, respectively. After every round, each player can see the decisions of each player in the current round and a history of her own private earnings.

The experiment was programmed using the software z-Tree by Fischbacher (2007). Experiments were conducted at the University of Passau on three days in June 2018. A computer room was prepared with partition walls to ensure private decisions. 160 students participated in 15 sessions (4 to 16 participants per session). 76 subjects participated in the PGG (control group) and 84 subjects participated in the CPR (treatment group). 41,25 % were male and 58,75 % were female, who were between 18 and 32 years old. The majority (41,25%) were students of Economics or Business Studies, the second most frequent group studied International Cultural and Business Studies. Other participants studied European Studies, law, communication, teaching, or IT.

As the experiment was conducted in a university seminar, participants were recruited right before every session. As an incentive to stop by, they were offered coffee and cookies. Earnings made throughout the experiment could not be paid due to the lack of external financing.

For efficiency purposes and due to time restrictions, three experiments were conducted in each session. The other two experiments were completely unrelated to this one (two different dictator games) and the order was alternated. At the beginning of every session, participants were seated in incoming order to ensure randomness. Then, some general explanations about the experiment were read out loud (see Appendix). Any further instructions were given on the computer screen. At the end of all three experiments, the participants answered a demographic questionnaire. The exact instructions can be found in the Appendix.

4 Hypotheses

In the following I will derive the hypotheses about the results of the experiment.

H1: Due to the framing effect, social investments are lower in the CPR than in the PGG.

In the CPR, the players start with nothing in their account and want to come to profit in the game. This could foster an environment of competition and selfishness, even though players cannot take away the tokens from others. If this is the case, players prefer to take a significant amount from the common pot. To the contrast, the public goods game as a positive frame fosters efficiency motives and group collaboration. Therefore, I hypothesize, that contributions will be higher in the PGG than in the CPR.

H2: Trends are negative in both PGG and CPR

The more experience the players get with free riding of other players and its negative effect on their own payoffs, the more subjects will decrease their own contributions. The incentives are the same in both games, so I expect that both trends will be negative. The last round should be the one with the lowest prosocial contributions, as there are no consequences to expect from the group in terms of lower contributions in subsequent periods.

H3: The leaders make higher prosocial investments than the followers in both treatments

Leaders anticipate that there are some followers who are willing to contribute more than zero to the project. That makes it profitable for them to invest in the public good, even though they do not know if the followers will free ride or not. The present free-riding incentive makes it rational for the followers to contribute somewhat less to the project in order to profit from the higher contribution of the leader. This result would be in line with the above-mentioned literature.

H4: Expectations follow approximately the same level and trend as decisions.

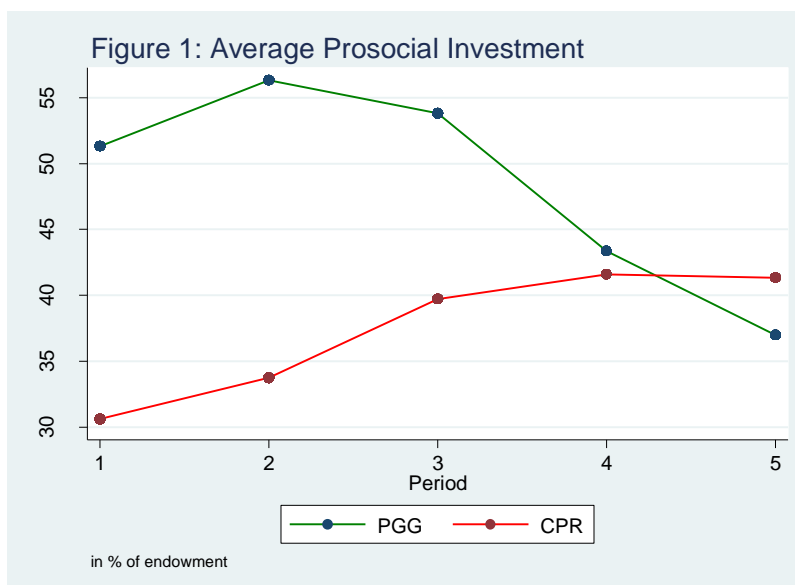
Frames influence beliefs and beliefs influence contributions (cf. Dufwenberg et al. (2011)). If this proves to be true for my experiment, then expectations are similar to the actual decisions. Leaders can probably foresee that followers contribute less than them. The person who contributes more than others, will always have the lowest profit. That could lead to disappointment on the leaders' side, which induces them to lower their decisions. This could be the reason for the hypothesized downwards trend of the two treatments.

5 Results

H1: Due to the framing effect, social investments are lower in the CPR than in the PGG.

Result 1: Prosocial investments are different in the two treatments. Surprisingly, the CPR-players first invest less, but in the last round they invest more than PGG-players.

Figure 1 depicts the average prosocial investment of the players in the PGG and the CPR per round. The social contributions in the PGG range from 51.3% to 56.3% of the endowment in the first three rounds



and then decline rapidly to 37% in the last round. The prosocial investments of the players in the CPR look quite differently. Investments start at 30.6% and increase to about 41% in period 4 and 5. That means, in the first two rounds, players in the PGG invest roughly 20% more of their endowment into the prosocial contribution than the players in the CPR. Due to the opposing trend, players in the CPR invest almost 5% more into the prosocial contribution in the last round. Testing the

contribution levels for equality, a Mann-Whitney test gives a p-value of $p < 0.00001$. Therefore, the prosocial investments are statistically different in the PGG and the CPR, which means that the framing has an effect on the social orientation of the players. Surprisingly, investments in the CPR are not strictly lower than the ones in the PGG, contrary to the results in the literature about framing effects without a leader.

H2: Trends are negative in both PGG and CPR

Result 2: The PGG shows a negative slope, but the CPR shows a positive slope.

What can also be derived from Figure 1, is that the trend of prosocial decisions is negative in the PGG, but positive in the CPR. From the regression table in Table 1, we can derive that the slope in the PGG is -4.16% of the endowment per round and in the CPR it amounts to 7.09%. A wald test, estimated after this regression, indicates that the slopes for the two treatments are statistically different from each other with an error probability of $p < 0.00001$. Therefore, the H2 has to be partly rejected: the CPR has a positive trend over the rounds, but the trend of the PGG is negative, as expected.

Table 1:
Framing Effects on Prosocial Investments
in % of endowment

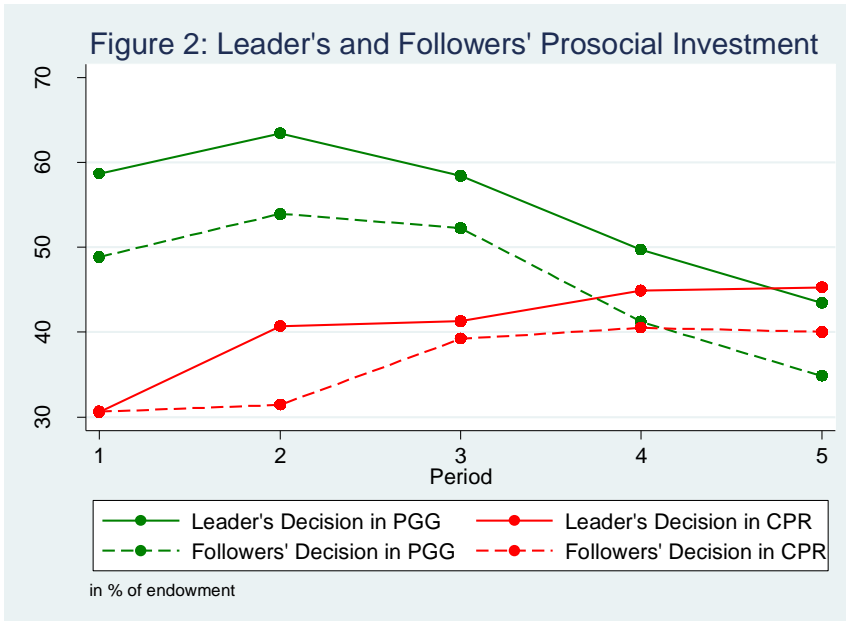
VARIABLES	(1) Prosocial
Framing	-32.22*** (6.744)
Period	-4.164*** (0.998)
Framing * Period	7.093*** (1.643)
Leader	6.238 (5.130)
Constant	59.29*** (4.613)
N	800
R-squared	0.043

Standard errors in parentheses. Errors are clustered at the subject level. "Leader" denotes a dummy for being a leader or not.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

H3: The leaders make higher prosocial investments than the followers in both treatments

Result 3: Graphically, the leaders of both treatments contribute more than the respective followers. Followers contribute a high fraction of the leaders' contribution, especially in the CPR, where followers' and leaders' contributions are graphically but not statistically distinguishable. Framing influences the mind set at the start, but later, group dynamics are more important.

As Figure 2 depicts, differences between leaders and followers are clear. Followers contribute a large fraction of the leader's contributions. In the PGG, followers contribute on average 84.18% of what leaders contribute. In the CPR, the fraction is even higher, namely 90.16% of the leaders' contribution. This is even more than Dufwenberg et al. (2011) found, where followers contributed about two thirds of what leaders contributed. A Mann-Whitney test shows that for the PGG, leaders and followers have different contributions on a 5%-significance level (p-value: 0.0225). For the CPR, this difference is not



significant. This is probably the case, because the fraction that followers give compared to the leaders is very high. This means that either the leader was highly relevant for the followers, or not as relevant. The graphical analysis still supports the thesis that in all rounds the average leader contributed more than the average follower. For a verification it is necessary to conduct an experiment with a no-leader-treatment.

Regression (1) in Table 2 shows the results of a regression of the frame and the leaders' decision on total contributions. The framing is not significant, but the leader decision is. Note, that in Table 1 it was the other way around with a dummy for the leader. This means that being a leader or not does not make a difference, but the level of the leaders' contribution does influence overall contributions. If leaders' decision is included, framing does not make a difference anymore. The same happens in the regression on followers' contributions (regressions (2) and (3)) and on leaders' contributions (regressions (4) and (5)). Group dynamics seem to be more influential than the frame. There are only two decisions, which are independent of the other group: leaders' decision and followers' expectation in period 1. Regressions (6) and (7) show, that these do depend significantly on the treatment. From that analysis, we can derive that the framing mostly influences the mind setting in the first round, but later, group dynamics are more relevant

Table 2: Different Specifications for the Framing Effects on Prosocial Investments

VARIABLES	(1) Contributions	(2) Followers' Decision	(3) Followers' Decision	(4) Leaders' Decision	(5) Leaders' Decision	(6) Followers' Expectation In Period 1	(7) Leaders' Decision In Period 1
Framing	-11.69 (7.344)	-11.69 (7.344)	-30.47*** (7.847)	-11.48 (16.80)	-37.49*** (13.38)	-28.87*** (5.711)	-28.09*** (10.34)
Period	-1.865 (1.169)	-1.865 (1.169)	-4.079*** (1.231)	-4.833* (2.560)	-4.421*** (1.553)		
Framing * Period	2.979 (1.844)	2.979 (1.844)	6.869*** (1.890)	3.447 (4.533)	7.766** (3.380)		
Leader Decision	0.501*** (0.0594)	0.501*** (0.0594)					
Lagged Follower Decision				0.829*** (0.0938)			
Constant	24.41*** (5.609)	24.41*** (5.609)	58.46*** (5.341)	30.00*** (10.41)	68*** (7.118)	46.93*** (4.078)	58.68*** (5.544)
N	600	600	600	160	200	120	40
R-squared	0.252	0.252	0.033	0.396	0.059	0.178	0.156

Robust standard errors in parentheses. Errors clustered by subject.

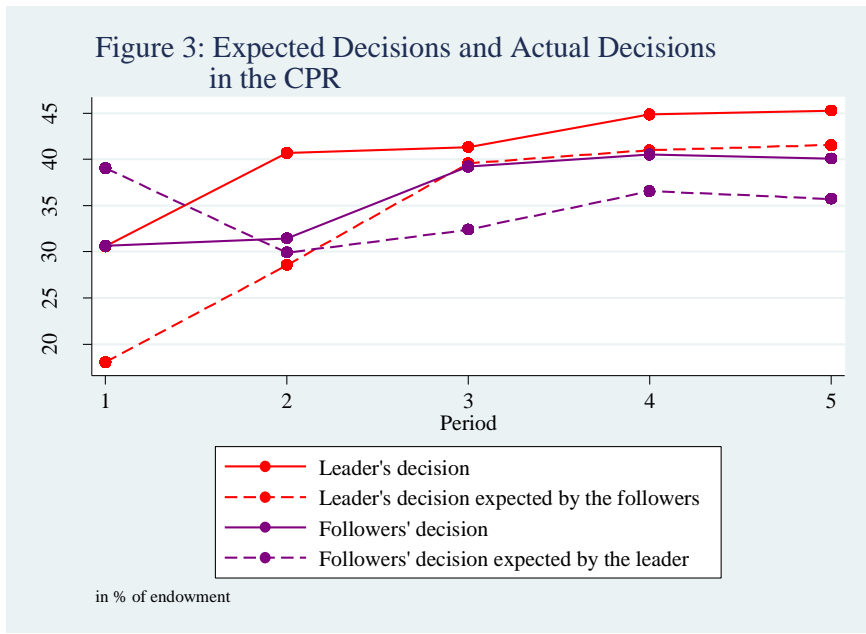
Contributions and decisions in % of endowment.

*** p<0.01, ** p<0.05, * p<0.1

H4: Expectations follow approximately the same level and trend as decisions.

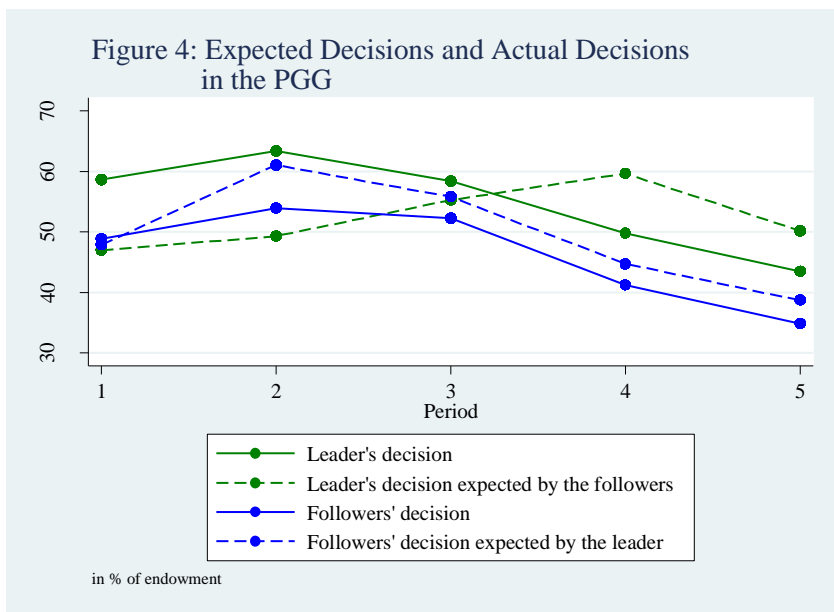
Result 4: Expectations and decisions follow the same trend as in Figure 1. In the CPR, decisions are generally underestimated, so that players increase their contributions. In the PGG, decisions are overestimated, which induces a negative trend.

In Figure 3, the solid lines are the actual decisions of leaders (red) and followers (purple) in the CPR. The dashed lines depict the expected decisions. We can see that the dashed lines are always below the solid lines, with one only exception in period 1. This means that the expectations were exceeded by the



decisions of leaders and followers. This could be psychologically the reason, why the players continually increased their contributions over the rounds.

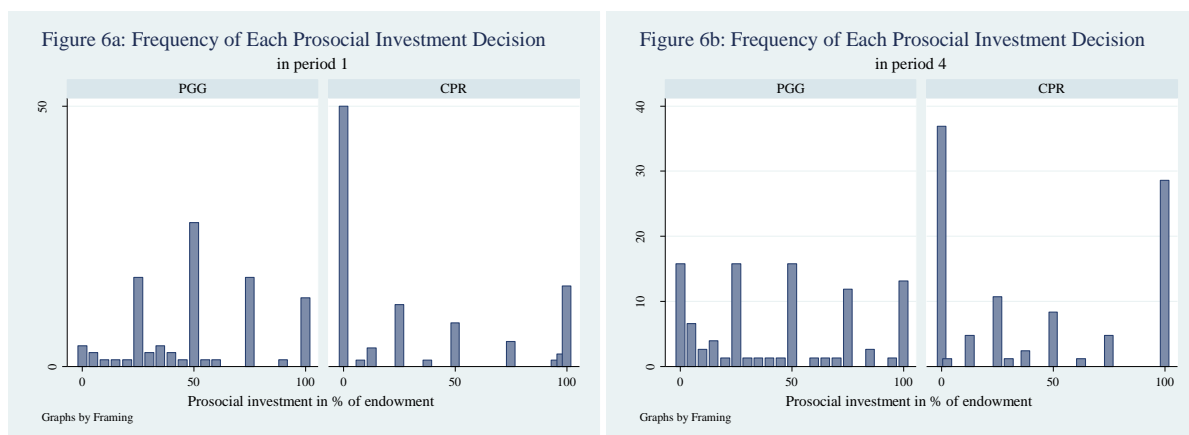
A different picture appears for the PGG. In Figure 4, we can see that the leaders expected the followers to contribute more than they actually did (except for period 1). This led to disappointment on the leaders' side, who consequentially decreased their contributions. Followers seem to have difficulties to estimate the leaders' decisions. They frequently under- or overestimated the leader's decision. The followers seem to adapt more to the leaders' actual decision and try to profit from their role as a second decider. They contribute strictly less than the leaders. To verify the result, that expectations are exceeded in the



CPR and disappointed in the PGG, I conducted a Fisher's exact test. The hypothesis that the number of exceeded expectations is equal in control and treatment group can be rejected on a 1% significance level.

6 Further Results

I would like to go into detail about one more result, that was unexpected from my side. Figures 5a and 5b show the frequency distributions of contributions in period 1 and 4. Period 5 is left out, as it constitutes a change in trends and therefore we can assume that endgame effects played a role for contributions. In the PGG in period one, the highest fraction of players contributed 50% of their endowment, and 25%, 75% and 100% contributions are almost equally distributed. In period 4, contributions of 0%, 25%, 50%, 75%, and 100% are all almost equally distributed. For the CPR, the picture is different. In both periods, most players contributed either 0% and 100%. The fraction of free-riders has lowered from 50% to 36.9% and the fraction of full-contributors has increased from 15.5% to 28.6%. Players seem to enter a “take all or nothing” mentality by the change in framing. A Fisher’s exact test shows that decisions in PGG and CPR are different for 0% and 100% contributions on a 1% significance level.



I am not the first to find this property in the data. Cox & Stoddard (2015) found that in a Take-treatment similar to mine, that more than half of the investment decisions are on the extremes. Brandts & Schwioren (2009) find this property in a one-shot game and assume that the large fraction of free-riders will induce full-contributors to reduce their contributions over time. I find the opposite to be true in my experiment, as elaborated above.

A possible explanation for the “take all or nothing”-mentality in the Take-treatment can be transferred from lying theory. The Take-treatment is about doing something bad or refrain from doing so. Kajackaite & Gneezy (2015) find that when lying, subjects show fixed lying cost. The the cost of lying or taking is smaller than the utility from it, then subjects exploit that to the full extent. If the cost exceeds the benefit, subjects to not lie or take at all. This would be in line with the frequency distribution of the CPR. The Give-frame is equivalent to doing something good. This might rather trigger behavior like partial lying, as elaborated in Gneezy et al. (2016). Subjects want to preserve a positive self-image and their reputation. That induces subjects to contribute at least some positive amount in order to keep this image. How much they contribute depends on the convexity of their personal lying/bad behavior cost funcion. Of course, in order to validate this transfer of theory, further testing is necessary.

7 Discussion and Conclusion

In this paper, I evaluated the results of a framing experiment, that compares a public goods game with a leader to an analogously framed common pool resource game with a leader. In similar framing experiments without a leader, such as in Cox (2015), subjects contribute significantly more in a Give-frame than in a Take-frame. But with a leader and several followers, group dynamics change. Gächter & Renner (2004) find that for the leader, it is profitable to invest prosocially even though followers behave more selfishly than the leaders. The leader's earnings are still higher than in the free-riding case. The sequential group game as opposed to the simultaneous group game changes expectations and reactive decisions towards the other players. Does this affect the group behavior in framed social dilemmas? The results of this paper are affirmative. The main finding is that the frame influences the mind set only in the very first decision/expectation, so that contributions in the PGG are about 20% higher than in the CPR. Subsequent decisions are not dependent on the frame, but on the actual decisions of followers and leaders. Interestingly, in the PGG in rounds 2-5 decisions are rather overestimated, so that players are disappointed by the others' behavior. This could be the reason why players decreased their contributions over the rounds, resulting in a negative overall trend. To the contrast, in the CPR, players rather underestimate the others' decisions so that expectations are surpassed. This results in higher contributions in the subsequent rounds and a positive trend. These opposite trends cause that in period 5 contributions are higher in the CPR than in the PGG.

Furthermore, in the CPR players seem to have a "take all or nothing"-mentality while contributions of players in the PGG are equally distributed over the 25% paces. A possible reason is that the frame makes the subject change between a convex cost function and a fixed cost function, with selfish behavior generating the cost.

This paper cannot make inferences about the effect of the leader, which yet is important to get the full picture. A 2x2 treatments experiment that includes also no-leader treatments and gives real monetary incentives would be more informative in that concern. It would make sense to include more rounds, to assess the further development of the positive trend in the CPR.

The properties found are important when designing policies or managing groups in social dilemmas with sequential decision making or with a person who has an exemplary function. Additionally, it could be important for dilemmas where it is important that many full contributions are reached (CPR-frame), zero contributions have to be avoided (PGG-frame), or contributions should be high in the short term (PGG-frame) or in the long term (CPR-frame).

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Appendix

A. General 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'.

B. Game specific instructions

1. Public goods game, instructions

The general instructions were identical for the leader and the follower role.

Zu Beginn des Experiments bilden Sie eine Gruppe aus 4 zufällig ausgewählten Spielern. Ein Spieler dieser Gruppe wird zufällig die Rolle des **Erstentscheidenden** übernehmen. Dessen Entscheidung wird den anderen Spielern mitgeteilt, bevor sie selbst ihre Entscheidung treffen. Ihre zufällig festgelegte Rolle und Gruppe bleibt das gesamte Spiel über gleich.

Jeder Spieler erhält eine Ausstattung von 20 Talern. Der Erstentscheidende hat nun zuerst die Möglichkeit in einen gemeinsamen Topf einzuzahlen. Die Zahlung kann zwischen 0 und 20 Talern betragen. Diese Entscheidung wird den anderen 3 "Zweitentscheidenden" mitgeteilt. Anschließend sind diese an der Reihe und entscheiden gleichzeitig darüber, wie viele Taler sie in den Topf einzahlen möchten (0-20 Taler). Wenn Sie sich für einen Betrag entscheiden, dann wird der Betrag **durch die Einzahlung verdoppelt**. Wenn alle ihre Entscheidung gefällt haben, wird der Betrag, der im Topf von allen Spielern eingezahlt wurde, gleichmäßig auf alle aufgeteilt.

Die Auszahlung aller Spieler setzt sich demnach folgendermaßen zusammen:

Eigene Ausstattung von 20 Talern
-
Einzahlung in den Topf
+
Anteil aus dem gleichmäßig aufgeteilten Topf (1/4 des Topfes)

Weiter

The game for a player in the leader role was as follows:

Ihnen wurde zufällig die Rolle des **Erstentscheidenden** zugeordnet. Diese Rolle werden Sie im **gesamten Experiment beibehalten**. Sie entscheiden nun, wie viel Sie in den Topf einzahlen möchten. Dies kann jeder Betrag zwischen 0 und 20 Talern liegen. Anschließend bekommen die anderen Spieler Ihre Entscheidung mitgeteilt und werden ihrerseits ihre Entscheidung treffen.

Bitte geben Sie jetzt den Betrag ein, den Sie in den Topf einzahlen möchten.

Ich zahle folgenden Betrag in den Topf ein:

Weiter

Die anderen Spieler entscheiden nun, wie viele Taler sie in den Topf einzahlen wollen.

Welche **Erwartung** haben Sie? Wie viele Taler geben die 3 Spieler in den Topf im Durchschnitt? (0-20 Taler möglich)

erwartete Einzahlung der anderen Spieler (im Durchschnitt)

Weiter

The game for a player in the follower role:

Ihnen wurde zufällig die Rolle eines **Zweitentscheidenden** zugeteilt. Diese Rolle werden Sie im **gesamten Experiment beibehalten**. Der Erstentscheidende wird nun festlegen, wie viele Taler er/sie in den Topf einzahlen möchte. Anschließend wird Ihnen seine Entscheidung mitgeteilt und Sie und die 2 anderen Zweitentscheidenden haben ebenfalls Zeit Ihre Wahl zu treffen. Auch die Zweitentscheidenden können in den Topf einen Betrag zwischen 0 und 20 Talern einzahlen.

Welche **Erwartung** haben Sie? Wie viele Taler zahlt der Erstentscheidende in den Topf ein? Er kann zwischen 0 und 20 Taler einzahlen.

erwartete Einzahlung

Weiter

Der Erstentscheidende hat 2 Taler in den Topf eingezahlt.

Sie haben nun selbst die Möglichkeit einen Betrag in den Topf einzuzahlen. Dieser Betrag kann zwischen 0 und 20 Talern liegen.

Bitte geben Sie jetzt den Betrag ein, den Sie in den Topf einzahlen möchten.

Ich zahle folgenden Betrag in den Topf ein

Weiter

Berechnung der Einkommen und Rundenergebnisse

Sie sind Spieler 4.

<p>Sie haben folgenden Betrag in den Topf eingezahlt: 2.00</p> <p>Folgender Betrag ist nach der Einzahlung auf Ihrem Konto verblieben: 18.00</p> <p>Insgesamt wurde folgender Betrag in den Topf eingezahlt: 8.00</p> <p>Ihr Anteil aus dem Topf beträgt: 4.00</p> <p>Ihr Einkommen in dieser Runde beträgt: 22.00</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Runde</th> <th style="width: 50%;">Ihr Einkommen</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">22.00</td> </tr> </tbody> </table>	Runde	Ihr Einkommen	1	22.00
Runde	Ihr Einkommen				
1	22.00				

Runde	Einzahlung Spieler 1 Erstentscheidender	Einzahlung Spieler 2 Zweitentscheidender	Einzahlung Spieler 3 Zweitentscheidender	Einzahlung Spieler 4 Zweitentscheidender
1	2.00	2.00	2.00	2.00

Weiter

2. Instructions for the common pool resource game for both leader and followers:

Zu Beginn des Experiments bilden Sie eine Gruppe aus 4 zufällig ausgewählten Spielern. Ein Spieler dieser Gruppe wird zufällig die Rolle des **Erstentscheidenden** übernehmen. Dessen Entscheidung wird den anderen Spielern mitgeteilt, bevor sie selbst ihre Entscheidung treffen. Ihre zufällig festgelegte Rolle und Gruppe bleibt das gesamte Spiel über gleich.

In einem Topf befinden sich **160 Taler**. Der Erstentscheidende hat nun zuerst die Möglichkeit, dem Topf einen Betrag zwischen 0 und 40 Talern zu entnehmen. Diese Entscheidung wird den anderen 3 "Zweitentscheidenden" mitgeteilt. Anschließend sind diese an der Reihe und entscheiden gleichzeitig darüber, wie viele Taler sie dem Topf entnehmen möchten (0-40 Taler). Wenn Sie sich für einen Betrag entscheiden, wird **die Hälfte des Betrags** auf Ihr persönliches Konto übertragen. Die **andere Hälfte verfällt**. Der Betrag, der im Topf verbleibt, wird anschließend auf alle Spieler gleichmäßig aufgeteilt.

Ihre Auszahlung setzt sich demnach so zusammen:

Betrag, den Sie dem Topf entnommen haben (max. 40 Taler) / 2
 +
 Ihr Anteil aus dem gleichmäßig aufgeteilten Topf (1/4 des Topfes)

Dieses Spiel wird über **8 Runden** gespielt.

Weiter

The game from the perspective of the leader appeared as the following:

Ihnen wurde zufällig die Rolle des **Erstentscheidenden** zugeordnet. Diese Rolle werden Sie im **gesamten Experiment beibehalten**. Sie entscheiden nun, wie viel Sie dem Topf von 160 Talern entnehmen wollen. Dies kann jeder Betrag zwischen 0 und 40 Talern sein. Anschließend bekommen die anderen Spieler Ihre Entscheidung mitgeteilt und werden ihrerseits ihre Entscheidung treffen.

Bitte geben Sie jetzt den Betrag ein, den Sie dem Topf entnehmen möchten.

Ich entnehme einen Betrag von

Weiter

Die anderen Spieler entscheiden nun, wie viele Taler sie dem Topf entnehmen wollen.

Welche **Erwartung** haben Sie? Wie viele Taler entnehmen die 3 Spieler dem Topf im Durchschnitt? (0-40 Taler möglich)

erwartete Entnahme der anderen Spieler (im Durchschnitt)

Weiter

Berechnung der Einkommen und Rundenergebnisse

Sie sind Spieler 1.

Sie haben dem Topf folgenden Betrag entnommen: 2.00
 Ihrem Konto wurde dadurch folgender Betrag übertragen: 1.00
 Ihr Anteil aus dem Topf beträgt: 38.00
 Ihre Auszahlung in dieser Runde beträgt: 39.00

Runde	Ihr Einkommen
1	38.25
2	39.00

Runde	Entnahme Spieler 1 Erstentscheidender	Entnahme Spieler 2 Zweitentscheidender	Entnahme Spieler 3 Zweitentscheidender	Entnahme Spieler 4 Zweitentscheidender
1	12.00	5.00	4.00	10.00
2	2.00	2.00	2.00	2.00

Weiter

The game from the perspective of the follower:

Ihnen wurde zufällig die Rolle eines **Zweitentscheidenden** zugeteilt. Diese Rolle werden Sie im **gesamten Experiment beibehalten**. Der Erstentscheidende wird nun festlegen, wie viele Taler er/sie dem Topf von 160 Talern entnehmen möchte. Anschließend bekommen Sie und die 2 anderen Zweitentscheidenden ebenfalls Zeit Ihre Wahl zu treffen. Auch sie können dem Topf einen Betrag zwischen 0 und 40 Talern entnehmen.

Welche **Erwartung** haben Sie, wie viele Taler der erste Entscheider dem Topf entnimmt? Er kann zwischen 0 und 40 Taler entnehmen.

erwartete Entnahme

Weiter

Der erste Entscheider hat dem Topf 12 Taler entnommen.

Sie haben nun die Möglichkeit dem Topf einen Betrag zu entnehmen. Dieser Betrag kann zwischen 0 und 40 Talern liegen.

Bitte geben Sie jetzt den Betrag ein, den Sie dem Topf entnehmen möchten.

Ich entnehme dem Topf einen Betrag von

Weiter

Berechnung der Einkommen und Rundenergebnisse

Sie sind Spieler 4.

Sie haben dem Topf folgenden Betrag entnommen:		10.00
Ihrem Konto wurde dadurch folgender Betrag übertragen:		5.00
Ihr Anteil aus dem Topf beträgt:		32.25
Ihr Einkommen in dieser Runde beträgt:		37.25

Runde	Ihr Einkommen
1	37.25

Runde	Entnahme Spieler 1 Erstentscheidender	Entnahme Spieler 2 Zweitentscheidender	Entnahme Spieler 3 Zweitentscheidender	Entnahme Spieler 4 Zweitentscheidender
1	12.00	5.00	4.00	10.00

Weiter