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EMOTIONAL HAZARD IN A POWER-TO-TAKE EXPERIMENT*

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In this experimental study of a two player power-to-take game, players earn an income in an individual effort task preceding the game. The game has two stages. First, one player can claim any part of the other's income (take rate). Then, the latter player can respond by destroying own income. We focus on how emotions influence responses and show: (1) a higher take rate increases (decreases) intensity of negative (positive) emotions; (2) negative emotions drive destruction; (3) at high emotional intensity, responders destroy everything; (4) expectations affect the probability of punishment. *Emotional hazard* is identified as a new source of efficiency costs.

Many people would agree that emotions play a very important role in the decisions they make. Extensive research by psychologists over the last two decades has provided a lot of supportive evidence. It appears that emotions play a significant role in matters like attention, learning, and memory (Izard *et al.*, 1984). Recent neuroscientific research even suggests that emotions are essential for rational decision making (Damasio, 1994; Picard, 1997). If emotions play such an important role in psychological processes, they are also likely to be relevant for understanding economic decision making. Frank (1988) argues that emotions are relevant for economics because they can help us solve important commitment problems. He shows, for example, that players endowed with the emotion guilt can sustain the co-operative outcome of a prisoner's dilemma game.[1] Other recent economic studies focus on the effects of emotions on preferences (Hirshleifer, 1987; Loewenstein, 1996) or on the implications for rationality (Elster, 1996, 1998). However, as yet little work has been done to integrate emotion theory in economic research. Elster (1998) addresses this neglect and hypothesises that it may have to do with the different explananda of psychology and economics: 'Whereas economists mainly try to explain behaviour, emotion theorists try to explain emotions. By and large, psychological studies of the emotions have not focused on how emotions generate behaviour' (p. 47).

The object of this study is to investigate how emotions generate behaviour in a laboratory experiment. As our vehicle of research we use a simple

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[1] Frank (1988) assumes that people give signals about their emotional commitments or dispositions (for example, via facial expression or the pitch of the voice) that are difficult to simulate. In his prisoner's dilemma model these signals are somewhat perturbed and players only know the probability of co-operation by another player.

'power-to-take' game. Before this game is played and the subjects receive instructions about it, subjects have to earn an income (Y_i) by doing an individual real effort task on the computer. In the power-to-take game one subject can be considered as the 'take authority' (with earned income Y_{take}) and the other subject as the 'responder' (with earned income Y_{resp}). The game consists of two stages. In the first stage, the randomly chosen take authority decides on the so-called take rate $t \in [0,1]$, which is the part of the responder's income Y_{resp} left after the second stage that will be transferred to the take authority. In the second stage, the only action that the responder can take is to decide on $d \in [0,1]$, the part of Y_{resp} that will be destroyed. For the take authority the payoff of the game is thus equal to the transfer $t(1 - d)Y_{resp}$, generating a total earning out of the experiment of $Y_{take} + t(1 - d)Y_{resp}$. For the responder, the payoff equals $(1 - t)(1 - d)Y_{resp}$, which also determines his or her total earnings out of the experiment. Note that in this game the responder can only destroy his or her own prior-to-the-take income (Y_{resp}) and not that of the take authority (Y_{take}). Furthermore, it follows that only if $t = d = 0$ experimental earnings for both players will be equal to the income earned in the effort task; otherwise, the responder will always get less than Y_{resp}, whereas the take authority gets at least Y_{take}.

In this study we are primarily interested in how emotions influence responder behaviour. Emotion theory and self-reports will be used as instruments. We believe that our design provides an interesting environment to study how emotions generate economic behaviour. First, to study a complex issue like emotions, a simple experimental game is helpful as a starting point. The power-to-take game is very straightforward. For example, if the responder feels angry about the take authority, then (s)he can punish by destroying income. Punishment, however, is costly for the responder. An interesting feature of this game is that punishment is a continuous variable, since the responder can destroy any part of his or her own (prior-to-the-take) income. In this way it is possible to learn more about how subjects trade off emotional satisfaction of punishment against monetary gain.[2] Second, subjects have to work for their income in our experiment.[3] In most experimental studies endowments are simply given to subjects. If it takes effort to get an endowment, subjects are likely to take the game where this endowment is at stake more seriously.

Moreover, the power-to-take game is of economic interest in itself. The game models in a simple, abstract, but fundamental way situations where one

[2] The frequently studied ultimatum game, where emotions are likely to play a role as well, is less suited for this purpose. In this game punishment is a discrete choice since the responder can either reject (punish the proposer) or accept the ultimatum.

[3] This approach, where subjects earn money in a real effort task, is not entirely new. Van Dijk *et al.* (2001) study experimentally how different payment schemes affect real effort in a similar task as used in this paper. In an experimental study of distributive preferences by Rutström and Williams (1997), subjects earn their endowments by solving a computerised version of the Tower of Hanoi problem. Burrows and Loomes (1994) compare bargaining behaviour in a treatment where unequal endowments are the result of effort in the so-called Hash game with a treatment where unequal endowments are determined by chance.

agent can (potentially) appropriate part of the endowment (effort) of another agent. A first example that comes to mind concerns taxation. In fact, the game can be seen as an elementary version of the tax model of Aumann and Kurz (1977, 1978) (see also Gardner, 1981; Peck, 1986). The take authority can be regarded, in an admittedly simplistic way, as a majority coalition (government) that by means of taxation can appropriate a part of the endowment of the minority (the responders). The minority can retaliate by destroying part of the endowment. In case the endowment stands for the returns on the supply of a production factor, 'destruction of the endowment' could stand for a diminished supply of the factor. If destruction were indeed emotion driven, this would imply a new source of efficiency cost of taxation, which may be called *emotional hazard*. Another situation resembling the power-to-take game is monopolistic pricing. In case of a monopoly, the monopolist first decides on how much to take from the surplus by setting the price. Subsequently, the buyer decides how much to buy, given the price chosen by the monopolist. If the buyer feels that the price is outrageous, an emotional response may induce the buyer to punish the monopolist by buying less than the rational 'text book' buyer would do. A third situation where emotional hazard may be important concerns principal-agent relationships. The principal can be seen as the take authority who decides on the incentive scheme for the agent. The agent takes notice of the scheme and subsequently decides on his or her effort level. The agent may feel emotionally urged to punish the principal by choosing a low effort level, which is costly for the agent because it conflicts with the material incentives provided by the principal. These examples show that the power-to-take game is not only interesting to study from an emotion theoretic but also economic point of view.

Although a thorough analysis of the way economic behaviour is influenced by emotions is lacking, there are a few experimental studies referring to emotions that should be mentioned. In these studies attention is mainly focused on the role of information and intentions in bargaining games. Pillutla and Murnighan (1996) manipulate information about the cake size and outside option in an ultimatum game, and find that responders reject more when offerers know the value of the outside option. Their explanation is that intentional low offers lead to wounded pride, feelings of anger, and, ultimately, spiteful behaviour. Related is Blount (1995) who manipulates intentionality in an ultimatum game by letting a third neutral party make the offer or by using a computer that determines the offer randomly. This study shows that intentional low offers lead to more rejections than randomly determined low offers (see also Offerman (forthcoming)). Finally, we mention a video experiment by Hennig-Schmidt (1999), showing that emotions play a crucial role in breaking up group bargaining.

The organisation of the paper is as follows. In Section 1 we present our research questions and the experimental design. The results are given in Section 2. In Section 3 the main results of some additional experiments on the power-to-take game are discussed. Section 4 addresses the issue whether existing economic models can explain our results, while Section 5 concludes.

1. Research Questions and Experimental Design

1.1. *Research Questions*

Before we discuss our research questions, we first shortly highlight some important features of emotions.[4] Emotions arise when one evaluates an event as relevant for one's concerns or preferences. If concerns are promoted, positive emotions result. If concerns are damaged, negative emotions arise. Positive emotions, like joy or relief, are experienced as pleasurable whereas negative emotions, such as anger or sadness, are experienced as painful. Emotions thus have a direct hedonic impact (cf. Loewenstein, 1996). An important feature of emotions is that they are 'cognitively impenetrable': one cannot choose to have or not have emotions, given certain stimuli or events that are relevant for one's concerns (Frijda, 1986, p. 468). Another important feature is that emotion implies action tendency, which is the urge to execute a particular action (Frijda, 1986; Lazarus, 1991). Whether or not an action tendency results in action (for example approach or avoidance) depends on the so-called regulation phase where the consequences of executing an action tendency are evaluated. If, however, the intensity of an emotion is very strong it may surpass what Frijda calls 'regulation thresholds' or 'points of no return'.

A responder who is confronted with a positive take rate faces a trade-off between the emotional satisfaction of punishment and the satisfaction of monetary gain. An important research question is how responders deal with these conflicting motivations. Two mechanisms of decision making are possible. First, if emotional intensity is low, we would expect responders to make a compromise between these conflicting intrapersonal urges, and to choose (in general) an intermediate level of punishment.[5] Second, if emotional intensity is very high, a compromise may not be feasible and we would expect responders to destroy everything. The reason is that at higher intensities visceral urges such as emotions progressively seize command over behaviour, instead of being compromised with what is best to do based on a cognitive analysis of the consequences (see, eg, Loewenstein, 2000, p. 428). Using a metaphor, one may view the decision making of the responder as the outcome of an election with two competing parties. One party is in favour of punishment whereas the other favours income. Behaviour of the responder can be seen as the policy resulting after the election. The first mechanism would then resemble a representative election system, and the second one a plurality system.[6] Our experimental design will tell us which of these two

[4] The psychological literature on emotions is now quite substantial and a number of general theories have emerged (Frijda, 1986; Lazarus, 1991; Ortony *et al.*, 1988). In the discussion that follows we will focus on some important features of emotions on which there seems to be consensus in this literature.

[5] In economic terms, this compromise entails an outcome where the marginal rate of substitution between punishment and income (or other consumption) equals the price ratio. Note that the price ratio depends on the take rate. If, for example, the take rate is 50%, then taking a dollar away from the take authority will cost the responder exactly one dollar in which case the price ratio is equal to one.

[6] Emotion theory seems to support the second system where the 'winner' takes it all (Frijda, personal communication; Tesser and Achee, 1994).

mechanisms of decision making is more important. Other important research questions that we will address are: Which emotions are responsible for punishment?; What is the relationship between the intensity of experienced emotions and the take rate, on the one hand, and the destruction of income, on the other?; What effect does the responder's expectation of the take rate have on his or her behaviour?

1.2. *Experimental Design*

In total 78 subjects, almost all undergraduate students from the University of Amsterdam, participated in the experiment. About half of the subjects (55%) were students of economics. The other half were students from various fields such as chemistry, mathematics, law, planning, and psychology. About 40% of the subjects had participated in an economic experiment, different from this one, before. We framed the take game as neutrally as possible, avoiding any suggestive terms like take authority (a translation of the instructions is provided in Appendix 1). Subjects received a show-up fee of 15 guilders (approximately $7.5), independent of their earnings in the experiment. On average, subjects received 28.50 guilders in total. The whole experiment took about one hour and 45 minutes.

Before subjects played the one-shot take game, they first had to participate in an individual two-variable optimisation task on the computer for 30 minutes.[7] This task consists of 10 periods, where in each period subjects have to search for a maximum value. This maximum, which varies over the periods, can be imagined as the top of a mountain. The payoff for a period is related to the position on the mountain at the end of the period, with a maximum of 1 guilder and 50 cent. The task was set up such that most subjects were able to find the maximum value within the time limit of three minutes. A pilot experiment suggested that subjects indeed perceive this task as a form of work.[8]

After subjects had completed the computer task, they were randomly divided into two groups. One group was referred to as participants *A* (the take authorities) and the other as participants *B* (the responders). Then the instructions for the take game were read, followed by two individual exercises on the computer to check subjects' understanding of the procedures. After these exercises, random pairs of a responder and take authority were formed by letting take authorities draw a coded envelope from a box. The envelope contained a form on which the earnings of a responder from the real effort task were stated. The take authorities then had to fill in a take rate as well as their own earnings, and put the form back in the envelope again. Subsequently, the envelopes were brought to the matched responders who filled in the part of their earnings to be destroyed. The envelopes containing

[7] See van Dijk *et al.* (2001).

[8] Subjects indicated that they experienced the task as rather neutral, in the sense that it was neither very exciting nor very boring, neither very difficult nor very easy, and neither very pleasant nor very unpleasant.

the forms were then returned to the take authorities for their information. Then, we asked subjects to fill out a questionnaire with questions concerning expectations, motivations, and emotions.[9] When subjects completed the questionnaires, the envelopes were again collected and brought to the cashier, who paid out the subjects in private. It is noted that the experimenters were not able to see what decisions subjects made in the take game and how much they earned. The cashier who was not present during the experiment privately paid subjects outside the laboratory. We have chosen for this double blind procedure in order to minimise any possible distortions of subject behaviour due to experimenter observation.[10]

We now briefly discuss how we measured emotions. To assess the emotions responders experienced when they learned about the decision of the take authority, we gave them a list of eleven emotion names and asked them to report the intensity of each emotion on a 7-point scale, ranging from 'no emotion at all' to 'high intensity of the emotion'. The list included the following emotions: irritation, anger, contempt, envy, jealousy, sadness, joy, happiness, shame, fear, and surprise. Note that the list not only includes the (negative) emotions that one may expect to be relevant in our setting. Both positive and negative emotions are included, in order to avoid that subjects are 'pushed' in a particular direction.

Although assessing emotions with the help of self-reports may seem problematic to some economists, emotion theorists think it is a valuable method of measurement. According to Ortony *et al.* (1988, p. 9), for example, 'There is as yet no known objective measure that can conclusively establish that a person is experiencing some particular emotion, just as there is no known way of establishing that a person is experiencing some particular colour. In practice, however, this does not normally constitute a problem because we are willing to treat people's reports of their emotions as valid. Because emotions are subjective experiences, like the sensation of colour or pain, people have direct access to them, so that if a person is experiencing fear, for example, that person cannot be mistaken about the fact that he or she is experiencing fear'.

[9] We trust that the information provided by these questionnaires is reliable. Psychologists claim that 'subjects have no special reason to disguise their true preferences' (Kahneman and Tversky, 1979). Another concern that readers may have is the lack of financial incentives for reporting expectations truthfully. There is, however, evidence that providing financial incentives for probability estimates does not change the data much: 'When one examines subjects' choices and decisions the observed effects of financial incentives were with one exception not dramatic. Subjects with financial incentives appeared to perform somewhat better than their counterparts without such incentives, but the differences were not great, were generally not statistically significant and did not hold in every case' (Grether, 1992, p. 54). We will return to these issues later on in the text.

[10] In our take game, for example, subjects may be concerned about being judged as greedy or vengeful by the experimenter. Bolton and Zwick (1995) tested whether a double blind procedure affects behaviour in an ultimatum game and concluded that 'the small distortion of subject behaviour that may be attributed to experimenter observation is not decisive in the sense that the basic character of the data is unchanged when the distortion is filtered out' (pp. 113–4). On the other hand, Hoffman *et al.* (1994) found that in a dictator game double blindness does matter, leading to more greedy behaviour of the dictator.

2. Results

The individual data are presented in Table 1. Concerning the amount responders and take authorities earned in the real effort task that preceded the take game, it turns out that most of the time paired subjects had exactly the same earnings at the start of the take game, and in any case the income of the take authorities was at least as high as that of the responders. As can be observed from this table, take authorities chose considerable take rates. The mean take rate is 58.5, the median 66.7, and the mode 70.0. Furthermore, it appears that eight (21%) of the 39 responders destroyed income. The extent to which they chose to do so leads to our first substantive result.

RESULT 1. *The behaviour of responders is discontinuous, they typically destroy nothing or everything.*

Support. As Table 1 shows, seven out of eight responders destroying income chose an extreme rate of (almost) 100%.

Intensity score measures concerning the emotions experienced by the responders are presented in Table 2 (the asterisks in the table will be referred to below). The data show that responders who destroyed as well as those who destroyed nothing experienced a variety of emotions. Especially, negative emotions, such as irritation, contempt, anger, and envy obtain a relatively high score. In addition, it is noted that anger is strongly positively correlated to irritation, with a correlation

Table 1
Summary of Individual Data

Case no.	Y_{take}	Y_{resp}	t (%)	d (%)	Case no.	Y_{take}	Y_{resp}	t (%)	d (%)
1	15	15	0	0	21	15	15	70	0
2	15	15	0	0	22	15	15	70	0
3	15	12	0	0	23	15	15	70	0
4	15	13.5	25	0	24	15	13.5	70	30
5	15	15	30	0	25	15	15	70	0
6	15	15	30	0	26	15	15	70	0
7	15	15	30	0	27	15	15	70	0
8	15	15	35	0	28	15	15	70	100
9	15	15	40	0	29	15	15	70	100
10	15	15	50	0	30	15	15	70	0
11	15	15	50	0	31	15	15	70	0
12	15	15	50	0	32	15	15	75	100
13	15	15	50	0	33	15	15	75	0
14	15	13.5	60	0	34	15	15	80	0
15	15	15	65	0	35	15	9	80	99
16	15	15	65	0	36	15	13.5	80	100
17	15	15	65	0	37	15	15	90	100
18	15	15	65	0	38	15	15	90	0
19	15	15	66	0	39	15	15	100	100
20	15	15	66.7	0					

Note: Y_{take} denotes the effort-task income of the take authority, Y_{resp} the effort task income of the responder, t the take rate and d the part of Y_{resp} destroyed by the responder. Cases are ordered by the take rate.

coefficient of 0.71 ($p < 0.01$), which suggests that anger and irritation refer to a similar underlying emotion. The same holds for happiness and joy (correlation coefficient of 0.94, $p < 0.01$), and, although less strongly, for envy and jealousy (correlation coefficient of 0.5, $p < 0.01$).

RESULT 2. *The intensity of negative (positive) emotions experienced by the responder is positively (negatively) related to the take rate.*

Support. We have estimated an ordered logit model for each emotion separately. The results are given in Table 3.

With regard to the negative emotions irritation, envy, and contempt, the estimated coefficients are all significantly positive. For anger, the coefficient is also positive but only significant at $p = 0.13$. An increase in the take rate is thus related to a higher intensity of these negative emotions. With regard to the positive emotions happiness and joy, the estimated coefficients are significantly negative, which means that an increase in the take rate is related to a lower intensity of these emotions.

RESULT 3. *The probability of destroying income is positively related to the intensity of experienced negative emotions.*

Support. We have estimated a binary logit model for each emotion separately. The dependent variable 'Destroy' equals 1 if a responder destroyed income, and 0 otherwise. The results are given in Table 4. It turns out that only for irritation and contempt significant results are obtained. An increase in the intensity of these emotions significantly increases the probability that a responder will destroy income. Note that the effects for envy, happiness, and joy are not significant. Although the intensity of envy, happiness, and joy are related to the take rate, these emotions ultimately do not affect behaviour. It is irritation and contempt that appear to influence behaviour. A Mann-Whitney test gives further support for

Table 2

Intensity Scores of Emotions Experienced

	Responders who destroyed ($n = 8$)		Responders who did not destroy ($n = 31$)	
Emotion	mean[†]	stand. dev	mean[†]	stand. dev
Irritation**	5.88	1.13	3.58	1.95
Contempt**	5.25	1.28	2.42	1.86
Anger	4.00	1.51	3.32	2.04
Surprise	4.25	2.38	3.06	2.13
Envy	4.00	2.07	3.58	1.98
Jealousy	2.75	1.58	3.77	2.25
Sadness	3.00	1.60	2.87	1.84
Happiness	1.75	1.39	2.23	1.78
Fear	1.63	1.06	1.94	1.36
Joy	1.63	1.41	2.19	1.58
Shame	1.63	1.77	1.65	1.28

Note: [†] The intensity scale ranges from 1 (no emotion) to 7 (high intensity); **$p < 0.01$, two-tailed Mann–Whitney test of no significant difference in means.

Table 3

Relationship Between Intensity of Emotion and the Take Rate

Dependent variable	Explanatory variable	Coefficient	p-value	Chi-square
Irritation	Take rate	0.058	0.000	17.50**
Happiness	Take rate	−0.048	0.001	12.41**
Joy	Take rate	−0.047	0.001	12.12**
Envy	Take rate	0.026	0.039	4.35*
Contempt	Take rate	0.031	0.062	4.11*
Anger	Take rate	0.020	0.126	2.33
Sadness	Take rate	0.015	0.227	1.50
Surprise	Take rate	−0.017	0.181	1.81
Shame	Take rate	−0.012	0.471	0.50
Fear	Take rate	−0.006	0.680	0.17
Jealousy	Take rate	0.002	0.887	0.02

Note: Ordered logit estimates for each emotion; $n = 39$; *p < 0.05; **p < 0.01.

Table 4

Relationship Between Destroying Income and Intensity of Emotion

Explanatory variable	Coefficient	Constant	Chi-square
Contempt	0.880**	−4.830**	13.12**
Irritation	0.953*	−6.075**	10.64**
Surprise	0.251	−2.273	1.88
Jealousy	−0.244	−0.563	1.54
Joy	−0.303	−0.786	1.01
Anger	0.186	−2.038	0.80
Happiness	−0.197	−0.966	0.56
Fear	−0.213	−0.978	0.40
Envy	0.111	−1.776	0.29
Sadness	0.042	−1.477	0.03
Shame	−0.011	−1.336	0.00

Note: Dependent variable is Destroy (0 or 1). Binary logit estimates for each emotion. The logit function is $f(x) = 1/[1 + \exp - (a + bx)]$; $n = 39$; *p < 0.05; **p < 0.01.

this finding: responders who destroyed income experienced on average significantly more irritation and contempt than those who destroyed nothing (see the means in Table 2).[11] With regard to the other emotions, differences in experienced emotion show no statistically significant effect on behaviour.

RESULT 4. *The probability of destroying income is positively related to the take rate.*

Support. To test the corollary of the previous two results, we used another binary logit model where the dependent variable is 'Destroy' (0 or 1) and the explanatory variable the take rate. The estimated coefficient (0.14) and constant (−11.29) are both significant at the 5% level.

We have also investigated whether behaviour or experienced emotion is influenced by gender, education (economics or not), or experience in

[11] The significance level is 0.004 for irritation and 0.001 for contempt, using a two-tailed test.

economic experiments. It turns out that none of these factors have an effect on behaviour or experienced emotions.

2.1. *The Role of Expectations*

Fig. 1 provides some information about responders' expectations of the take rate and the actual rates chosen by the take authorities. A proportion of the responders explicitly reported not to have any expectation. Consequently, the analysis of expectations that follows is based on a smaller number of observations ($n = 22$). From Fig. 1 we see that for most responders expectations were not consistent with the actual take rate. Responders above the 45° line were too optimistic: they expected a lower take rate than the actual rate. Responders under the 45° line were too pessimistic: they expected a higher take rate than the actual rate. The figure also shows which responders destroyed income (squares). Interestingly, only responders who were too optimistic destroyed income.

Because expectations were assessed after the take game, it is possible that responders who were too optimistic found it hard to admit that they were wrong. These responders may have been inclined to present themselves as realistic or perhaps even as pessimistic. Therefore, we checked whether responder's expectations of the take rate are correlated to the take rate. It turns out that the correlation between the take rate and expected take rate is very low (correlation coefficient of 0.12) and not significant ($p = 0.60$). We

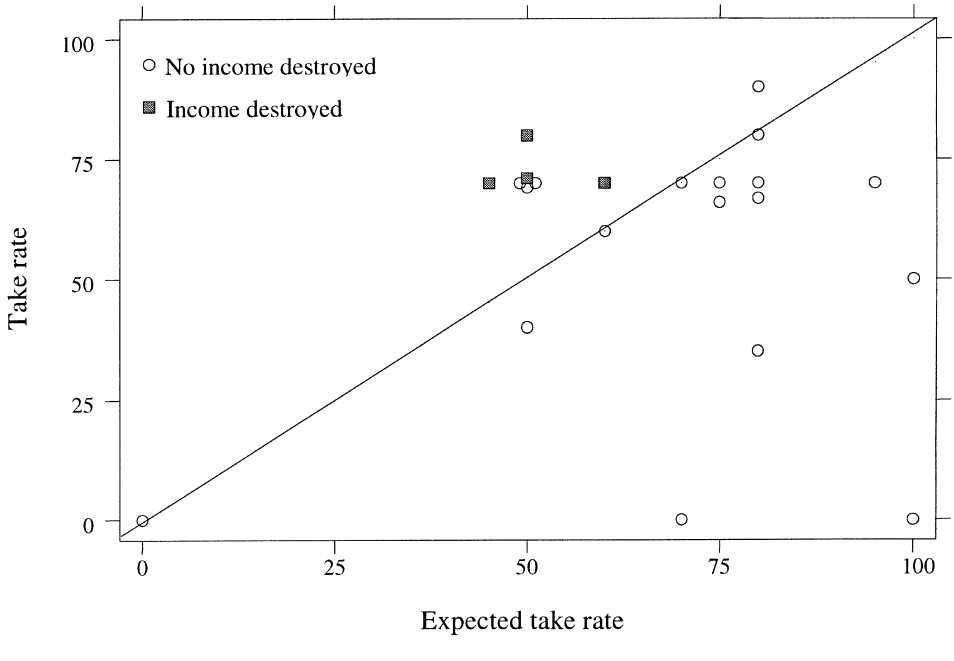

Fig. 1. *Scatter Diagram of Actual and Expected Take Rates*

conclude that there is no systematic bias in responders' reported expectations of the take rate.

RESULT 5. *Responder's expectation of the take rate has a significant effect on the probability of destroying income but not on the intensity of experienced emotion.*

Support. To investigate whether expectations influence the intensity of experienced emotion, we compared each model in Table 3 with a model that includes both the take rate and the responder's expectation of this rate. Somewhat surprisingly, it appears that expectations have no predictive value for the intensity of the (negative or positive) emotions. Further, we analysed whether behaviour is related to expectations. To that purpose, two logit models were estimated with 'Destroy' again as the dependent variable (equal to 1 if a responder destroyed income, and zero otherwise). For both models the number of observations is smaller than the full sample, because we have only included those responders who explicitly reported an expectation. The regression results, given in Table 5 below, show that model 2, including expectations, is significantly better than model 1, which does not include expectations.[12]

Why do expectations influence behaviour but not emotions? We offer the following explanation. Expectations can influence a decision in two ways. First, expectations may influence the intensity of emotion because of a 'surprise' effect (Ortony *et al.,* 1988, p. 60). In our case, this effect does not seem to play an (important) role next to the effect of the actual take rate, since we have not found any significant relation between expectations and experienced emotion. Second, expectations can be related to norms (standards) that influence behaviour in a more cognitive way (cf. Pruitt, 1968). If the take

Table 5

Comparison of Logit Models With and Without the Expected Take Rate

	Dependent variable	Explanatory variables	Coefficient	p-value	Log likelih.
Model 1 ($n = 22$)	Destroy (0 or 1)	Constant	−5.7518	0.1666	18.322
		Take rate	0.0639	0.2701	
Model 2 ($n = 22$)	Destroy (0 or 1)	Constant	−3.3714	0.0600	11.000
		Take rate – expected take rate	0.1677	0.0665	
Model Comparison	Significance of log LR $p < 0.01$				

Note: The logit function is $f(x) = 1/[1 + \exp - (a + bx)]$.

[12] Using the estimated model 2 it is easy to calculate that for the probability of destroying income to exceed 50% the difference between the actual and the expected take rate should be larger than 20 percentage points. We have also estimated the coefficients of the take rate and expected take rate separately for model 2. The coefficient of the take rate is then equal to 0.17 ($p = 0.11$) and the coefficient of the expected take rate −0.17 ($p = 0.08$).

authority violates the responder's norms, then the responder will judge this behaviour as inappropriate. The responder may therefore believe (s)he should punish the take authority.[13] Evidence from an empirical study on fairness in the market place by Kahneman *et al.* (1986) supports the claim that expectations are closely related to norms: '(…) the gap between the behaviour that people consider fair and the behaviour they expect in the marketplace tends to be rather small (p. 731)'. Furthermore, they note that people agree on general principles of fairness but can have disagreement about specific cases.[14] This may explain the variation in the reported expectations of responders (see Fig. 1).

3. Additional Experiments on the Power-to-Take Game

In this section we will briefly discuss some important results of two additional experimental studies on the power-to-take game that we are involved in. The first study ('no-effort experiment') investigates whether the behaviour of take authorities and responders changes if endowments are simply provided to them like manna from heaven, instead of being based on own earned income (Bosman, Sutter and van Winden, 2000). From an economic viewpoint, this is an interesting issue since in large private and public organisations surpluses are often generated via the entitlement of managers to the use of a budget that does not necessarily bear a strong direct relationship with the manager's own past effort, in contrast with for example the owner-entrepreneur of a small business. Although standard economic theory says past effort should not count as such, the well-known 'anomaly' of the sunk-cost effect (see eg Thaler, 1980) suggests that it may affect economic behaviour.

The second study ('group experiment') investigates how groups, rather than individuals, play the power-to-take game (Bosman, Hennig-Schmidt and van Winden, 2000). Since many economic decisions are taken by groups – and groups are often modelled as a single agent – this is an important issue. Although social psychologists have studied group dynamics quite extensively, there has not been much experimental work on group decision making in economic settings.[15] Moreover, the evidence gathered by economists is inconclusive. For example, Bornstein and Yaniv (1998) find that groups who play an ultimatum game behave more in accordance with standard economic theory than individuals. In the power-to-take game, which bears similarity to

[13] The bimodal distribution of the expectations suggests that two standards apply to the power-to-take game. First, a split-the-difference rule (27% expected a take rate of 50%), and, second, something like a split-the-difference 'squared' rule (23% expected a take rate of 80%). The latter may have been activated by the following reasoning: Since a take rate of at least 50% should be feasible, the real issue is the appropriate take rate in the interval [50, 100]. Interestingly, only one subject expected a rate of 0%, at which both subjects would leave the experiment with the same earnings.

[14] It is possible that subjects are confused about which norm applies to the power-to-take game because of its rather abstract nature. This may explain why a substantial proportion of the subjects reported not having any expectations.

[15] A major finding by social psychologists is the so-called group polarisation hypothesis: groups behave towards more extreme points in the same direction as the initial individual tendencies. See Cason and Mui (1997) for a short discussion on this hypothesis.

the ultimatum game, this should then show up in higher take rates and lower destruction rates for groups. However, other studies show that groups behave in a more other-regarding way (Cason and Mui (1997) investigating the dictator game) or that they behave in the same way as individuals (Bone *et al.* (1999) focusing on lottery choice). There is also evidence that groups do not behave differently per se but learn faster and reason with more depth compared to individuals (Kocher and Sutter (2000) studying beauty contests).

3.1. *No-effort Experiment*

For convenience, in this section we will refer to the experiment of this paper as the 'effort experiment'. The no-effort experiment is set up in exactly the same way as the effort experiment except that the take authority and responder are simply given the endowment of 15 guilders, without having to do any effort for it. How may effort influence behaviour in the power-to-take game? Psychologically, the degree of 'ego-involvement' becomes higher when subjects have to do real effort. For the responder, there appear to be two opposing ways in which more ego-involvement, implying a stronger concern or interest, can influence behaviour. On the one hand, it makes responders more emotional when something is taken away from them, enhancing the propensity to destroy (Lazarus, 1991). On the other hand, more ego-involvement makes responders feel more attached to their endowment which, psychologically, makes it more costly to destroy one's endowment. Theoretically, it is hard to predict which effect will dominate. If responder behaviour is influenced by (sunk) effort, an interesting question is whether take authorities anticipate such an emotion driven effect. We now turn to the main results.

Like in the effort experiment, there is a significant positive (negative) relation between the intensity of negative (positive) emotions experienced by the responder and the take rate.[16] Furthermore, the probability of destruction in the no-effort experiment depends significantly positively on the intensity of anger and contempt, and negatively on the intensity of happiness and joy. Although similar negative emotions drive destruction, positive emotions only appear to be relevant in the no-effort experiment. Responders' expectations are also important in the no-effort experiment. Responders who are optimistic (expecting a lower rate) destroy significantly more often than others do. Finally, as with effort, the probability of destruction in the no-effort experiment is positively related to the take rate and negatively related to the expected take rate.[17]

Although emotions and expectations appear to play a qualitatively similar role in the decision to destroy, responders destroy more often – in particular

[16] These emotions are irritation, contempt, anger, sadness, happiness, and joy.

[17] Qualitatively, the take and expected take rate play a similar role in the decision to destroy in the effort and no-effort experiment. However, there is evidence, that the strength of the reaction to the take and expected take rate differs between effort and no-effort (with the reaction to the take rate being stronger in case of effort). See Bosman, Sutter and van Winden (2000) for a more detailed discussion on this issue.

an intermediate amount – and a greater amount on aggregate in the no-effort experiment.[18] This is an important result. Apparently, not only sunk effort can lead to efficiency costs due to an emotional response – emotional hazard – not accounted for by standard economic models. To establish the precise consequences of emotional hazard for institutionally richer economic environments (see the examples in the introduction) becomes an interesting issue for future work.

Before we explain the surprising result that in the no-effort experiment responders destroy more often an intermediate amount, we refer first to the following two observations: (1) responders who destroy their whole endowment are significantly more irritated than responders who destroy only a part; (2) responders who destroy everything in the effort experiment experience the same emotional intensity as responders who destroy everything in the no-effort experiment. As argued in Section 1, at higher emotional intensity individuals do not make a compromise between their conflicting intrapersonal urges (here, going for the money versus punishment). Responders simply choose the highest level of destruction. Lower intensity allows a compromise between these conflicting urges. In the effort experiment such a compromise at lower emotional intensity does not occur because of the relatively large psychological cost of destruction due to ego-involvement. In the no-effort experiment, however, the psychological cost of destruction is smaller and this may explain the observed intermediate rate of destruction at lower emotional intensity.

Another surprising result is that take authorities do not appear to anticipate the effect of effort on responder behaviour at all, since the take rates are not significantly different in the effort and no-effort experiment.[19] While take authorities may assume that the two opposing effects of effort are equally strong, a more basic reason for their behaviour is the empirical observation that people underestimate the influences of visceral factors in a state they are not currently in themselves ('hot–cold empathy gaps'; see Loewenstein (2000)). Whether take authorities can learn to take the emotional state of others into account (for example, via repeated play) is still an open question.

Finally, responders in the no-effort experiment expect much lower take rates than responders in the effort experiment.[20] Psychological studies show that people become less optimistic/more pessimistic when a pending event becomes more self-relevant, to avoid negative emotions (van Dijk *et al.*, 2000). In this light, expecting a substantial take rate can be seen as a form of *emotional hedging*, to protect oneself. Since the emotional impact of a particular take rate will be stronger if more is at stake psychologically, higher

[18] In the effort experiment responders destroyed an aggregate income of 18.7%. In the no-effort experiment they destroyed 24.7% of their aggregate endowment. The proportions of responders who destroy everything, part, or nothing are significantly different between the effort and no-effort experiment (in the no-effort experiment these proportions are 6/40, 9/40, and 25/40 respectively).

[19] The average take rate with effort was 58.5% and without effort 59.9%.

[20] In the effort experiment the average expected take rate was 66% and in the no-effort experiment 48%.

expected take rates in the effort-experiment can be explained in this way. An interesting question for future work is whether expectations can be strategically influenced (for example, by giving information about selected take rates) in order to manipulate emotional reactions. At this stage we do not know the answer. Note, for instance, that the relevant expectations may be determined by relatively stable moral standards of behaviour (see our discussion of the role of expectations in Section 2).

3.2. *Group Experiment*

In the group experiment, each subject first has to earn her or his endowment by doing the same effort task as in the effort experiment. Subsequently, a take authority and responder group, each consisting of three members, is randomly formed.[21] The income of the group equals the aggregate income of its members. Each group is given 10 minutes to come to a group decision, without any formal decision rule being imposed on them. An important and new feature of this experiment is that groups are being videotaped while making their group decision.[22] The videotapes are used to make transcripts of the group discussions. With the help of these transcripts, it is possible to learn more about individual motivations and the way these (sometimes conflicting) motivations interact in a group. Since gathering data in this way is expensive and time consuming, the number of observations is relatively small. Nevertheless, the data appear to be informative and support some tentative conclusions.

A first conclusion is that, overall, groups behave in much the same way as individuals.[23] The take rates in the group experiment are similar to the take rates in the effort experiment, with an average rate of 60%. Two out of twelve groups destroyed their whole group income, while one destroyed 50%. These numbers are in line with individual responder behaviour in the effort experiment.[24] The efficiency costs due to emotional hazard thus appear to be robust and not limited to individual decision making.

Furthermore, and again in line with the effort experiment, the transcripts show that individual members of responder groups typically wanted to destroy 0 or 100% of their income.[25] For example, in one group a member said:

[21] There were 12 take authority and 12 responder groups. In one case, both the take authority and responder group consisted of two members.

[22] According to Loomes (1999), the use of audio or video records makes up one of the real challenges of experimental economics in the future.

[23] Although we asked responders to report their individually experienced emotions, we cannot establish the relationship between emotions and behaviour in the same way as in the effort and no-effort experiment because decisions are made at the group level.

[24] Responders' individual expectations of the take rate appear to play a qualitatively similar role in the group experiment as in the effort and no-effort experiment. The individual responder's expectation of the take rate was assessed before group members came together to decide on destruction and before they learned about the take rate. It turns out that responders who were too optimistic typically show a preference for destruction in the group discussion.

[25] In total, 32 out of the 35 subjects showed a preference for a destruction rate of either 0 or 100%, while 2 wanted to destroy an intermediate amount, and one member did not reveal a preference.

'OK, I believe there are only two extremes since the rest is foolish', while in another group a member said: 'So, in my view the question can only be, do we destroy everything or do we destroy nothing (…) in between is playing'. In the responder group where 50% of the group income was destroyed, the group outcome was clearly an interpersonal rather than intrapersonal compromise, since individual members indicated to prefer a destruction rate of either 0 or 100%.

Another interesting result is that responders typically stuck to their intended decisions in the group discussion, even in case of conflicting preferences. Those who wanted to destroy neither seemed to cool off nor got persuaded by more rational members during the 10 minutes discussion.[26] Although no formal decision rule was imposed, groups appeared to use a simple majority decision rule to arrive at a group decision. Consequently, the composition of the group, in terms of individuals' intended decisions, determined whether the group behaviour was more or less 'rational' than that of its members. One of the interesting questions for future research is to what extent different institutions (eg group decision rules or communication procedures) affect group decision making.

4. Other Theories

In this section we investigate the extent to which existing economic models can explain our results and the main results of the additional experiments that we discussed in the previous section. A first candidate is the standard game-theoretic approach, assuming rational self-interested behaviour. This model predicts that the responder will not destroy any income if the take rate is less than 100% and is indifferent between all percentages of destruction if the rate is 100%. Our data (see Table 1) show that 18% of the responders destroyed income at take rates (considerably) lower than 100%. In fact, 27% of the responders who faced a take rate of 70% already destroyed income. In the additional experiments some responders already destroyed everything at take rates as low as 60%. These results clearly cannot be reconciled with the standard model.[27] Moreover, we have found other evidence (also in the additional experiments) that behaviour in the power-to-take game is inconsistent with the standard model. According to our estimated logit model (see Table 5) the difference between the actual take rate and the expected take rate determines the probability of destruction. This model suggests that

[26] According to Frijda (1988, p. 354): 'Time does not really soften emotions (…) Emotional events retain their power to elicit emotions indefinitely' (law of conservation of emotional momentum). Interestingly, current experimental work on the ultimatum game, in which one of the authors is involved shows that if subjects get the opportunity to cool off (by having them wait for some time before they have to decide), the intensity of experienced emotions and rejection rates do not go down (Bosman *et al.*, 2001). Although emotions are typically of short duration, this result suggests that they are robust in terms of their effect on decision making because they show up (again) when one actually has to make a decision.

[27] The co-operative game model of taxation of Aumann and Kurz (1977), which is referred to in the introduction, is not very successful either, because it predicts a split-the-difference outcome (that is, a take rate of 50%) with no destruction of income.

responders would even destroy income at rates lower than 70%. For example, when the take rate is 50% and the expected take rate 20%, the probability of destruction is 84%. In the standard model responders' expectations of the take rate play no role at all.

We next turn to economic models where it is assumed that individuals are not only motivated by their own payoffs. Some recent models assume that people may be motivated by considerations of fairness or equity.[28] In one approach it is assumed that players are not only motivated by their own payoff but also by a 'relative' payoff, measuring how their own payoff compares to that of the other player(s). Another approach assumes that players' concern with the distribution of payoffs depends on the intentions of the other player(s).[29]

The equity or inequality aversion model of Fehr and Schmidt (1999) falls in the first category.[30] It is assumed that people exhibit inequality aversion and are willing to give up money in order to have less inequality. Applied to our power-to-take game, this model does not predict the behaviour of take authorities very well. We observe much higher take rates, also in the additional experiments, than predicted by this model. With regard to the responders, Fehr and Schmidt predict that responders will never destroy when the take rate is below 50%, and (generally) they will either choose a destruction rate of 0% or 100%. This prediction is in line with the results of our effort experiment and with the group experiment but not with the no-effort experiment where the majority of responders destroyed an intermediate amount of their endowment. Although the probability of punishment according to the Fehr and Schmidt model is roughly in line with our (logit) estimates in the effort experiment, our finding that expectations have a significant impact on the probability of punishment is not captured by the Fehr and Schmidt model, since expectations do not play a role in their model.

Another potentially relevant model is that of Rabin (1993). An important feature of this model is that intentions play a crucial role. It is assumed that people are willing to sacrifice their own material well-being to help those who are believed to be intentionally kind and to hurt those who are intentionally unkind. Applying Duwfenberg and Kirchsteiger's (1998) adaptation of this model for sequential games it turns out that, for a certain range of take rates (above 50%), there can be multiple equilibria where responders destroy nothing, some part, or everything of their income. Since in this model it is also possible that responders choose an intermediate amount of punishment, it is in this respect consistent with our results of the effort experiment – though responders in the effort experiment (almost) never choose this

[28] Another potentially relevant motive that is mentioned in the literature is envy (see, eg Feldman and Kirman, 1974). Although we indeed find a positive relationship between the take rate and envy (cf. Table 3), there appears to be no effect of envy on the behaviour of responders (cf. Table 4).

[29] In addition to these approaches, Levine (1995) developed a model that incorporates both distributional and intentional concerns.

[30] A similar model in this category is that of Bolton and Ockenfels (2000).

option – as well as the results of the additional experiments. The model, however, does not capture our finding in all experiments that (particularly) if expectations deviate from reality, they have a significant effect on the probability of punishment. Furthermore, Rabin assumes that if the material payoffs become very large, players are no longer willing to sacrifice their own material well-being any further in order to punish (reward) unkind (kind) behaviour. Although we have not tested what happens in the power-to-take game when the stakes are increased, this assumption is questionable when taking emotional urges into account. In any case, experimental research on the ultimatum game by Slonim and Roth (1998) shows that even when the financial stakes are very high (62.5 times the hourly wage) subjects still behave reciprocally and reject unfair (but still substantial) offers.[31] From an emotional point view this makes sense. After all, emotions arise when one's interests are affected. Higher stakes are likely to increase the intensity of emotions, which may cause emotions to progressively seize command over behaviour (see Section 1), even though the cost of giving in to one's emotional urges becomes higher as well.

5. Conclusion

The goal of this paper is to investigate the influence of emotions on economic decision making. To that purpose we used a simple two player power-to-take game that captures some important aspects of economic reality, as discussed in the introduction. Focussing on the (emotional) behaviour of the responder, we have identified a new source of efficiency cost: *emotional hazard*. Results from additional experiments on the power-to-take game showed that emotional hazard is a robust phenomenon that also occurs when groups decide or when endowments are given to subjects like manna from heaven. In the latter case the degree of emotional hazard becomes even greater since responders destroyed more on aggregate when endowments were unearned.

It now becomes an interesting research issue to establish the precise consequences of emotional hazard in institutionally richer economic environments. For example, the effort and group experiments show that if emotions influence behaviour, the impact can be quite substantial because subjects make rather 'extreme' choices. Even if the number of agents whose behaviour is influenced by emotions is not very large, the effect in aggregate can be quite substantial because of these agents' extreme choices. An important question is to what extent this type of behaviour and the efficiency costs that go with it are present outside the economic laboratory. Note that the degree of emotional hazard in our experiment is likely to represent a lower bound. Remember that subjects played the power-to-take game anonymously and were not able to identify one another. When people deal with each other face to face or are able to communicate, emotions are likely to play a greater role

[31] Hoffman *et al.* (1996) find that ultimatum game behaviour does not significantly change when the pie is increased from $10 to $100.

because the situation is less abstract. Moreover, people can easily reinforce each other's emotions and get trapped in a downward spiral. A simple difference in opinion, for example, can easily turn into a heated debate. Processes like these that enhance emotions appear to be particularly relevant for economic situations where agents deal with each other in person, such as principal-agent relationships or monopoly pricing where the buyer deals directly with the seller.

Another interesting issue for future research concerns the strategic manipulation of expectations. Our results show that expectations, in particular the difference between the actual and expected take rate, play an important role in the responder's decision to destroy income. Is it possible to influence the probability of destruction, and in this way economic efficiency, by manipulating these expectations (eg give responders information about selected take rates)? Since the relevant expectations may be determined by relatively stable moral standards of behaviour, as discussed in Section 2, the answer is not clear at this stage. Furthermore, the behavioural sensitivity to deviations from these expectations may change with more experience or information. Finally, there is even the possibility that agents become more emotional when they find out that they are being manipulated.

The emotion process is clearly a complex one. Many issues are still unresolved. Nevertheless, it appears that emotions play an important role as a determining factor of economic behaviour. Economists should therefore be interested in learning more about emotions. By doing so, we may get a better picture of the determinants of economic behaviour, the welfare consequences thereof, and the ways to deal with it.

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Appendix 1: Instructions Power-to-Take Game (translated from Dutch)

Two Phases

This part of the experiment consists of two phases. In phase 1 only participant *A* must make a decision whereas in phase 2 only participant *B* must make a decision. Every participant thus makes one decision.

Phase 1: participant A chooses percentage

In this phase, each participant *A* will be paired with a participant *B*. This will be done by letting participant *A* draw a coded envelope. With the help of the code only we know which seat numbers are paired. Both participant *A* and *B* are thus anonymous. The envelope contains a form which says how much participant *B* earned in part I of the experiment. Participant *A* must choose a percentage and fill this in on the form, together with *A*'s own income from part I of the experiment. This percentage determines how much of participant *B*'s income after phase 2 will be transferred to participant *A*. The percentage chosen by participant *A* must be an integer in the interval [0, 100].

When participant *A* has completed the form, it must be put in the envelope again. After this we will collect the envelopes and bring them to the participants *B* who are paired with the participants *A* by means of the code.

Phase 2: participant B chooses percentage

In this phase participant *B* has to fill in on the form which percentage of his or her *own* income from part I of the experiment will be destroyed. The percentage chosen by participant *B* must be an integer in the interval [0, 100]. The transfer from participant *B* to participant *A* will be based on the income of participant *B* that is left. Note that the transfer equals the percentage chosen by participant *A* of the income of participant *B* that is left after phase 2.

When participant *B* has completed the form, it must be put in the envelope again. After this we will collect the envelopes and bring them to the participants *A* who are paired with the participants B. Participant *A* will take note of the decision of participant *B* and, subsequently, puts the form back into the envelope. Finally, the envelopes will be collected for the payment procedure which will be clarified below.

Example how to determine one's payoffs

We will now give an example for the purpose of illustration. Suppose that in part I of the experiment participant *A* earned 15 guilders and participant *B* 12 guilders. In phase 1 of part II of the experiment, participant *A* decides that 60% of the income of participant *B* will be transferred to him or her (participant *A*). In the second phase, participant *B* can destroy part or everything of his or her income from part I of the experiment. Suppose participant *B* decides to destroy 0% of his or her income. The transfer from *B* to *A* is then equal to 7 guilders and 20 cent (60% of 12 guilders). The total payoff for *B* at the end of the experiment is equal to 19 guilders and 80 cent (namely, the show-up fee of 15 guilders plus the 12 guilders of part I minus 7 guilders and 20 cent of part II). The total payoff for *A* at the end of the experiment is equal to 37 guilders and 20 cent (namely, the show-up fee of 15 guilders plus 15 guilders of part I plus 7 guilders and 20 cent of part II).

Now suppose that in this example participant *B* had decided to destroy 50% of his or her income. In this case the transfer from *B* to *A* is only 3 guilders and 60 cent (namely, 60% of the remaining income of participant *B* after phase II, which is 60% of 6 guilders). The total payoff for *A* at the end of the experiment is equal to 33 guilders and 60 cent (namely, the show-up fee of 15 guilders plus 15 guilders of part I plus 3 guilders and 60 cent of part II) and for participant *B* 17 guilders and 40 cent (namely, the show-up fee of 15 guilders plus the 12 guilders of part I minus 9 guilders and 60 cent of part II (of which 6 guilders are destroyed and 3 guilders and 60 cent transferred).

In Summary

In phase 1, each participant *A* will be paired with a participant *B* by drawing an envelope. The envelope contains a form which states the income of participant *B* from part I of the experiment. Participant *A* fills in his or her own income from part I of the experiment and the percentage that indicates how much of participant *B*'s income will be transferred to participant *A* after phase 2. When participant *A* has completed the form, it will be brought to participant *B*. In phase 2, participant *B* decides which percentage of his or her *own* income from part I of the experiment will be destroyed, and fills this in on the form. Subsequently, the form will go to participant *A* who takes note of the decision of participant *B*. Then, the form will be collected and the

payment procedure follows. Note, that the pairing is anonymous so that nobody knows whom he or she is paired with.

Other Information

Completing the Form

The decision of both participant *A* and *B* will be filled in on a form. You have received a specimen of this form. In phase 1, participant *A* completes the blue block. In this block the income of participant *B* is stated. Participant *A* fills in his or her own income and the percentage. In phase 2, participant *B* completes the yellow block. In this block, participant *B* states which part of his or her own income will be destroyed. The forms must be completed with the pen that you find on your table in the laboratory. If a form has been completed with another pen, the form will be invalid and you will not be paid. Finally, for making calculations you can make use of the electronic calculator that is on your table.

The payment procedure

When participant *A* has taken note of the decision of participant *B* in phase 2, the envelope containing the form will be collected and brought to the cashier. Next, the participants will go to the reception room of the laboratory one by one. The cashier, who will not be present during the experiment, will pay the participants in the reception room. The cashier determines the payment of each participant with the help of the form and the codes that are linked to the seats. In this way, anonymity is secured with regard to who earned what.

Exercises

We ask you to do two exercises on the computer in order to become familiar with the procedures. These exercises consist of completing the form for an imaginary situation and determining the payoffs. You are not actually paired with another participant during these exercises. Your earnings in these exercises will not be paid out to you. When the exercises have been finished, the computers will be switched off and you again have the opportunity to ask questions. After this the experiment will start.

Finally

To secure anonymity, participants *A* and *B* will be partially separated by a sliding wall. The instructions on the table will be available to you during the experiment. At the end of the experiment you are asked to fill in a short questionnaire. Anonymity is again secured. After this, you are asked to leave the laboratory one by one. You must be silent and refrain from communication with others until you have left the laboratory.

Appendix 2: Decision Form Power-to-Take Game
(translated from Dutch)

Code: xxx

Participant *A* fills in this block:

Income of participant *A* from part I: …….

Income of participant *B* from part I: xxx

I (participant *A*) decide that ..... % of the income of participant *B* will be transferred to me.

Participant *B* fills in this block:

I (participant *B*) destroy ..... % of my income of part I of the experiment.

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