

DISCUSSION PAPER SERIES

IZA DP No. 13688

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Heterogeneous Effects of Insurance on  
Solidarity**

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# Crowding-Out or Crowding-In? Heterogeneous Effects of Insurance on Solidarity

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## ABSTRACT

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# Crowding-Out or Crowding-In? Heterogeneous Effects of Insurance on Solidarity\*

We analyze whether the availability of formal insurance products affects informal solidarity transfers in two independent behavioral experiments in the Philippines. The first experiment allows for communication, non-anonymity and unrestricted transfers. The second experiment mimics a laboratory setting without communication and preserves anonymity, which minimizes strategic concerns. The introduction of an insurance treatment alters solidarity in both experiments. We find crowding-out effects in the first setting with strategic motives, while there are even crowding-in effects due to insurance availability in the anonymous experiment. These and additional supporting results are in line with crowding-out of strategic, but not necessarily intrinsic motives due to the availability of insurance.

**JEL Classification:** O12, Z13

**Keywords:** insurance, solidarity, crowding effects, lab-in-the-field experiment, Philippines

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## I. Introduction

A large majority in the world's poorest countries is without formal insurance.<sup>1</sup> As a response, informal transfers within networks of friends, neighbors and relatives are important to manage income fluctuations caused by illnesses, accidents, unemployment, or other adverse events. Ample evidence for the importance of such mechanisms in developing countries has been collected in the economic literature and beyond (see e.g. Townsend 1994, Udry 1994, Morduch 1999 or more recently Fafchamps 2008). This paper investigates how the availability of formal insurance – such as weather, health, and life insurance products that are currently promoted widely – affects solidarity, i.e. the willingness to help those hit by a random shock, within the social network. If formal insurance to a large degree crowds out informal solidarity transfers, this could substantially limit the overall protective effect of insurance schemes. Moreover, we shed light on how the introduction of insurance affects different motives for solidarity transfers.

There is empirical evidence in line with crowding out of informal risk-sharing by formal insurance.<sup>2</sup> Dercon and Krishnan (2003) find that consumption is more responsive to shocks if there is food aid in rural Ethiopia, Albarran and Attanasio (2003) show that public transfers displace private transfers in Mexico, and Jensen (2003) similarly finds pension transfers to reduce private transfers in South Africa. Only recently, Strupat and Klohn (2018) provide evidence directly assessing the effect of an insurance scheme. Their analysis suggests that the national health insurance scheme in Ghana crowds out informal transfers. Besides mostly focusing on government programs instead of insurance schemes, these papers lack exogenous variation to causally interpret the effect (except for Albarran and Attanasio 2003), have difficulties to accurately measure informal transfers under *ceteris paribus* conditions and cannot identify the underlying motives for informal transfers.<sup>3</sup> Lin, Liu, and Meng (2014) avoided such problems by studying crowding-out effects in a lab setting with a student population. They find crowding-out of transfers in a multi-period setting with repeated interaction and with transfers being revealed after each round. They explain crowding-out with strategic reciprocity, where reducing risk through insurance leads to a lower value of the

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<sup>1</sup> Different studies find limited access to formal insurance, for example in the 100 poorest countries (Roth, McCord, and Liber 2007) and to health insurance amongst the extremely poor (Banerjee and Duflo 2007). Also more recent work confirms that access to insurance policies adapted to the needs of low-income households remains small, relative to the potential market of up to 4 billion potential customers (Swiss Re 2010).

<sup>2</sup> There is also evidence for the reverse influence of informal risk-sharing on formal insurance demand (Mobarak and Rosenzweig 2013; Dercon et al. 2014).

<sup>3</sup> Some papers infer transfers by comparing income/consumption patterns on the village level, with strong assumptions involved (e.g. Dercon and Krishnan 2003; Jensen 2003). Others try to measure transfers directly, even though such measurement is prone to errors and inconsistencies between sender and receiver data (Comola and Fafchamps 2010).

informal arrangement and, therefore, a lower incentive to comply with it. The underlying limited commitment argument is the basis of several popular models (such as Coate and Ravallion 1993; Attanasio and Ríos-Rull 2000) and constitutes the economists' main workhorse to analyze informal risk-sharing.

Given the evidence on the importance of intrinsic (i.e. non-strategic) motivations for transfers (Leider et al. 2009; Ligon and Schechter 2012) and donations or mutual support in general (Andreoni 1990), crowding-out of intrinsic motivation is another important concern to study.<sup>4</sup> According to philosopher Michael Sandel, the advancement of market values in almost every aspect of life has led to the crowding-out of nonmarket norms without people noticing it (Sandel 2012).<sup>5</sup> A related prominent literature in psychology and economics has found examples where extrinsic incentives, such as penalties, rewards or the exhibition of control, reduce self-determination and autonomy, thereby undermining intrinsic motives to act pro-socially (Gneezy, Meier, and Rey-Biel 2011) or pro-environmentally (Rode, Gómez-Baggethun, and Krause 2015). Although introducing insurance does not constitute a typical extrinsic incentive, the possibility to buy protection on the market might weaken the individual feeling of responsibility for others. On the other hand, positive effects are possible in theory as well, e.g. if insurance is perceived as a helpful tool for mutual protection.

In order to analyze crowding effects in the context of both strategic reciprocal and intrinsic motives, we conducted two waves of lab-in-the-field experiments. We believe it is important to establish results with people routinely engaging in informal risk-sharing and therefore implemented all experiments with villagers in the Philippines. Our first design (Communication Experiment) tries to reflect the reality of risk-sharing practices as much as possible.<sup>6</sup> We model risk in a behavioral game using lotteries that involve random losses. Informal risk-sharing is implemented in non-anonymous groups of three, where group

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<sup>4</sup> While purely intrinsic motives are those actions that are done out of enjoyment, for its own sake and because they are satisfying in itself, extrinsic motivations come from external goals. The distinction is fuzzy, though (Ryan and Deci 2000). In our context, we refer to strategic motives (instead of extrinsic motives) to capture the relevant aspect of the limited commitment models and intrinsic motives (instead of non-strategic motives) to refer to the set of motives which are done without direct influence of other's (except the possibility of having internalized these pressures and feelings of guilt). It is important for our distinction that intrinsic motives remain unaffected by strategic incentives as they are measured in the context of a one-shot, anonymous interaction without communication.

<sup>5</sup> Crowding out effects may occur rather quick (e.g. Ryan and Deci 2000), as they signal whether the context of the transaction is a market or a social interaction. Alternatively, crowding-out may be the result of a long process of enculturation with a market-based society leading to a change in social norms (Henrich et al. 2010; Sandel 2012). Our experiments (as any laboratory experiment) focus on the short term crowding-out hypothesis.

<sup>6</sup> The Communication Experiment has been previously published as a working paper (Landmann, Vollan, and Frölich 2012). However, the working paper version did not fully account for possible reciprocal motives due to communication and non-anonymity and, thus, was unable to satisfactorily explain motives of the crowding-out effect. As a consequence, we designed additional experiments to review our findings based on an anonymous design and without communication, which we present in this version.

members can transfer money to each other after the lottery. The insurance treatment is introduced via offering alternative lotteries that are safer but require some fixed ex-ante payment. An additional feature of the Communication Experiment is that players know and see each other and are also allowed to talk to each other before transfers are made. These conditions activate both a range of pro-social but also reciprocal motives, as prevalent outside the laboratory. The second experiment (Anonymous Experiment) follows a typical laboratory or lab-in-the-field experiment by preserving anonymity between the players. This more conventional one-shot laboratory setting without communication inhibits reciprocal strategic behavior and transfers should mainly be driven by pro-social considerations. The insurance treatment has similar features as in the Communication Experiment and thus, the effect of insurance on solidarity can be identified between subjects in each of the two experiments. While solidarity in those two experiments may vary due to different designs, the identification of the insurance treatment within each experiment provides a clean comparison. The variation of communication and anonymity between the two experiments further allows us to discuss the potential origins of crowding-out effects based on intrinsic or reciprocal motives but does not serve as a “clean” test.

We find that solidarity is affected in each of the two experiments due to the introduction of an insurance treatment. Interestingly, crowding-out of solidarity only occurs in the “realistic” Communication Experiment with a mix of motives involved. Here, the protective effect of the insurance mechanism is reduced by a lower willingness to redistribute through solidarity transfers. Since around half of all participants opt for insurance if they have the choice, a substantial part remains uninsured. Consequently, those remaining uninsured face a higher risk of being left alone with a bad outcome than in a scenario without insurance availability. Hence, the results of the Communication Experiment suggest that voluntary insurance could potentially limit the overall protective effect of insurance schemes. In the Anonymous Experiment, which inhibits strategic motives by restricting communication and ensuring anonymity, results are different. Here we find an increase in solidarity with the availability of insurance (crowding-in), which most plausibly can be attributed to a strengthening of intrinsic motives. The underlying intrinsic motives (e.g. altruism, guilt aversion, trust, etc.) for these effects cannot be disentangled with our design. Combining the results of both experiments suggests that the crowding-out effect in the more realistic Communication Experiment most likely cannot be explained by crowding-out of intrinsic motives. Thus, introduction of insurance only seems to affect strategic motives without threatening truly pro-social motivation. These results are in line with the finding analyzing

strategic motives in a student lab setting (Lin, Liu, and Meng 2014), as well as theoretical work on risk-sharing under limited commitment (such as Coate and Ravallion 1993; Attanasio and Ríos-Rull 2000).

## II. Setup of the Experiments

In order to measure willingness to help after a financial loss we use modified versions of the solidarity game (Selten and Ockenfels 1998). In the original solidarity game according to Selten and Ockenfels (1998), the three members of a group are each endowed with DM 10 with  $2/3$  probability and with DM 0 with  $1/3$  probability. Using the strategy method, the players had to decide how much they would transfer in case of winning to one or two losers. We believe that it constitutes an adequate experimental tool to capture mutual aid in a risky environment. This setting also distinguishes solidarity from other forms of pro-social behavior such as altruism in dictator games, trust, or contributions in public good games.<sup>7</sup>

The rationale of the solidarity game is similar throughout the two experiments although they are based on different parameters (compare Table A1 in Appendix A). This implies that the experiments were not designed to be directly comparable in terms of absolute solidarity transfers. Rather, the second experiment (Anonymous Experiment) can be understood as a set of deliberative design choices to rule out strategic reciprocal motives and render the initial design more closely to a standard laboratory experiment. We model risk with a lottery using random mechanisms to determine the “losers” of the group. This design reflects the risk to lose money instead of the possibility to win money. We consider it important to play in the loss domain because a different reference point might change behavior (Fehr and Schmidt 1999). Depending on the result of the random mechanism a player will lose some amount or nothing. Informal risk-sharing is implemented in groups of three.<sup>8</sup>

Our measure of individual solidarity transfers is the willingness to redistribute from the better- to the worse-off in the group. This shows an important relation to inequality aversion (Fehr and Schmidt 1999), but other models might also explain the motivation to help

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<sup>7</sup> From a sociological perspective, solidarity is an own-standing concept. According to Durkheim (1997, reprinted from 1893), in societies with a low division of labor (such as the rural Philippines) solidarity captures the feeling of unity between individuals who often share the same beliefs and morals as they have similar education, religion, work and lifestyle (frequently also kinship ties or familial networks). It generates and sustains strong feelings of togetherness and social-cohesion, resulting in collective action and mutual aid (e.g. informal risk-sharing arrangements).

<sup>8</sup> We have chosen a 3-player game as we believe that two player games are not adequate for our experiment. A three player game represents the smallest group size where diffusion of responsibility sets in (Latané and Darley 1968).

(e.g. Rabin 1993; Bolton and Ockenfels 2000; Charness and Dufwenberg 2006; Bénabou and Tirole 2006), including strategic motives for transfers (e.g. Coate and Ravallion 1993). In contrast to observational data, the controlled environment of our behavioral experiment allows to monitor the endowments and transfer choices of participants perfectly under comparable situations.

Insurance is introduced via offering alternative lotteries that are less risky but require some ex-ante fixed payment. The advance fee of insurance thus is always the ‘guaranteed loss’ in case of no shock. We model take-up of insurance as observable to the other group members. This observability of insurance for peers is in line with typical distribution channels (e.g. farmer associations, cooperatives, saving groups etc.) and diffusion of information in developing countries (Cai, Janvry, and Sadoulet 2013; Banerjee et al. 2013). Furthermore, public knowledge about uptake of insurance might provide information on how much co-players' rely on the solidarity network. As solidarity transfers might depend on whether sender and recipient are insured, we allow variation in insurance uptake for senders and recipients in both experiments.

The implementation of both experiments is very similar. Both experiments, though carried out in different villages, were all conducted on Panay Island in the Western Visayas (Region VI) of the Philippines. We used uniform instructions that were translated from English into the local language (Hiligaynon) and back to English for verification. Instructions were presented orally by the same local field assistant and both experiments were conducted with pen and paper. Transfer decisions were taken in private and decisions of co-players were never revealed. Group composition remained constant throughout the experiment such that we consistently measured behavior towards the same person.<sup>9</sup> At the end of the experiments the participants received their earnings in private. All participants received a fixed show-up fee. In the Communication Experiment, a participant earned on average 237 PhP, including a show-up fee of 100 PhP. In the Anonymous Experiment, average earnings were very similar with 235 PhP, including 100 PhP show-up fee. This amount corresponds to approximately 6 USD or one daily minimum wage in the formal sector – something few people from our sample would be able to earn within one day.<sup>10</sup> More details on the implementation and the sampling of villages as well as households can be found in Appendix A.

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<sup>9</sup> Note that participants might otherwise have imagined different types of community members being their anonymous co-player across rounds. Our setup facilitates a consistent interpretation of solidarity measures from different points in time.

<sup>10</sup> The minimum daily wage in Western Visayas ranged between 235 and 245 pesos in 2012. Larger enterprises had to pay 277 PhP per day. Source: <http://www.nwpc.dole.gov.ph/pages/rb-6/cmwr.html>.

## II.1 Design of the Solidarity Experiment with Communication

In the Communication Experiment we investigate two independent experimental rounds where participants are provided an initial endowment of 200 Philippine Pesos (PhP). Depending on the result of the die roll, participants can keep all or part of it. If the die shows a 1, 2 or 3, the endowment can be kept. If the die shows a 4 or 5, the participant loses 100 Pesos of the endowment. If the die shows a 6, 180 Pesos are lost. Within one round, participants took an insurance decision (if available), played the lottery, communicated and made transfers. Before taking the transfer decision, participants were informed about the amounts of money held by their co-players and could then communicate with each other. As every possible outcome leads to a unique payoff (see Table 1), players were able to infer whether their co-players bought an insurance and/or faced a shock. The use of the communication stage before the transfer decision gives subjects the possibility to ask for help or signal their neediness. Possibly, participants also communicated over past or future payments and made (non-verifiable) reciprocal arrangements. Thus, besides intrinsic motives to help, communication also introduces strategic motives for giving, including post-experimental considerations.

We test *two variants* of insurance (offered in separate sessions), called insurance 1 and insurance 2. For insurance 1, participants have to pay 45 Pesos in advance and half of all losses are covered. The price for insurance 2 is only 20 Pesos, but only the catastrophic loss is covered. Table 1 shows the losses for the no-insurance case and insurance schemes 1 and 2.<sup>11</sup> Obviously, insurance is supposed to decrease the uncertainty of outcomes which is reflected in the lower standard deviation. In our design we wanted to mirror the fact that more comprehensive insurance schemes usually entail higher risk premiums and face higher administrative costs due to a higher claim frequency. Hence, we designed our prices such that a lower standard deviation translates to a lower expected payoff. Insurance 2 constitutes an intermediate case with an interesting additional feature: Due to the low price and the focus on the catastrophic loss it can secure an even higher minimum payoff than insurance 1.<sup>12</sup> By making the insurance costly we were not only mimicking reality but also created variation in

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<sup>11</sup> We never used the word "insurance". In earlier pre-tests in other locations we had framed these options as "insurance" and found that almost all participants purchased insurance when it was framed as such indicating a very positive image of insurance.

<sup>12</sup> Individuals with minimax preferences would prefer insurance 2 over 1. Both options 1 and 2 reflect typical insurance products where full coverage is impossible. In most developing countries, health insurance for example covers only the medical expenses (often less than 100%), but not lost labor income. The more comprehensive insurance could be like a medical insurance scheme, while the catastrophic insurance could mimic rainfall or crop insurance, which only pay out when large losses occur.

take-up. Observing participants with and without insurance allows us to analyze heterogeneous effects of transfers dependent on insurance take-up of sender and receiver (see Section III.3).

**Table 1: Losses (in PhP) under different options**

	Communication Experiment (roll of a die)			Anonymous Experiment (random draw)		Expected Loss	Standard- deviation of Loss
	1,2,3: no shock	4,5: medium shock	6: catastrophic shock	2/3: no shock	1/3: Shock		
Normal Risk	<b>- 0</b>	<b>- 100</b>	<b>- 180</b>			-63.3	68.7
Insurance 1	<b>- 45</b>	<b>- 95</b>	<b>- 135</b>			-76.7	34.4
Insurance 2	<b>- 20</b>	<b>- 120</b>	<b>- 110</b>			-68.3	48.5
Normal Risk				<b>-0</b>	<b>-200</b>	-66.7	94.3
Low Risk				<b>-40</b>	<b>-140</b>	-73,3	47.1
Insurance 3				<b>-40</b>	<b>-140</b>	-73,3	47.1

Note: The initial endowment is 200 PhP in each round. The loss in case of “no shock” is the price of the insurance participants have to pay upfront, i.e. 45 PhP for insurance 1, 20 PhP for insurance 2, and 40 PhP for insurance 3.

## II.2 Design of the Anonymous Solidarity Experiment

In the Anonymous Experiment we made several design choices to mainly capture pro-social motivations of giving. Most notably we did not allow for communication and one co-player was anonymous.<sup>13</sup> Additionally, we used the strategy method and determined that there would only be one loser in the group losing his entire endowment, in order to ease the analysis and implementation. Thus, the solidarity game with strategy method involved two stages. First, each player had to state how much of the 200 PhP endowment he or she would like to transfer to a potential loser who had lost his entire endowment. Transfers were restricted to a range of 0 to 70 PhP (in steps of 10 PhP). Note that restricting the range of transfers might anchor absolute solidarity transfers in a different way compared to the unrestricted transfer possibility in the Communication Experiment. Second, each participant privately drew a ball (without replacement) from an opaque bag filled with three balls: An orange ball determined the loser of the group and transfers were triggered accordingly but were not revealed to participants.

<sup>13</sup> Each player took one transfer decision to an anonymous co-player and one transfer decision to a known co-player. We only analyze the decision to the anonymous co-player as this transfer decision should mainly be driven by pro-social motives.

Thus, people did not see what others did nor could they change their transfers by reacting to what others had done.

We test one insurance option in the Anonymous Experiment (insurance 3). Players could choose this insurance scheme ex-ante, reducing the loss induced by drawing the orange ball to only 100 pesos instead of the entire endowment. The insurance option was available at a price of 40 pesos. After players decided on the take-up of insurance, the decision was revealed to the other group members before they made their transfer choices. We also implemented a low risk treatment similar to insurance 3 where we exogenously implemented the payoff structure according to the situation under insurance 3. This creates exogenous variation in riskiness, even in the absence of an insurance option.

### **II.3 Treatment Plan**

Both the Communication and Anonymous Experiment were embedded in sessions with other independent games (see Table 2). Since we wanted to keep these games independent from each other and stakes for each decision high, only one of the games was paid out at random. The Communication Experiment was designed to test several related topics. For example we wanted to test differential take-up for different insurance types 1 and 2. However, for analyzing the crowding-out hypothesis we pool the data from insurance 1 and 2 to increase the sample size. In order to test the effects of the insurance on solidarity transfers, the behavioral experiments were implemented as outlined in Table 2. In six villages no insurance was offered in round one and two. In this setting, participants had no choice and always played without insurance. In eight villages, insurance 1 was offered in round one, while no insurance was offered in round two. In another eight villages, the same was done with insurance 2. Thus, the crowding-out effect can be identified by only looking at round 1, by observing the persistence after removing the insurance in round 2 and by combining both round 1 and 2. What is important for the identification of crowding effects is that in both situations – with and without insurance availability – we have variation in shock intensity and protection levels. This allows us to separate the effect of insurance availability from changes in within-group inequalities (i.e. differences between winners and losers of the lottery).

In the Anonymous Experiment we identify crowding effects due to insurance within one round only. Also, instead of creating variation in shock intensity and different insurance variants, we included a treatment with similar outputs as if players would buy insurance, but without having an insurance choice (Low Risk). Thus, instead of creating exogenous variation in shock intensity within one treatment, we implement different shock intensities across

treatments (Low vs. Normal Risk). Pooling the Normal Risk and the Low Risk groups again provides variation in within-group inequalities and, thus, allows us to disentangle the effect of changing these inequality levels from providing the option to become insured.

**Table 2: Treatment plan for both solidarity experiments**

Communication Experiment				Anonymous Experiment		
	No Insurance (6 villages)	Insurance (16 villages)		No Insurance (20 villages)	Insurance (10 villages)	
before				Solidarity Game Conditional Solidarity Game		
Round 1	Normal Risk	Normal Risk or Insurance 1	Normal Risk or Insurance 2	Normal Risk	Low Risk	Normal Risk or Insurance 3
Round 2	Normal Risk			Not applicable		

Note: In each block in the Communication Experiment, in half of the villages the experiments were played with the “secret-hiding device” (see section III.4 for further details on the secret hiding treatment) and in the other half without.

### III. Empirical Analysis

In the following, we will first describe the participants of the different experiments and show balancing tables by treatments (Section III.1), before we consider some descriptive results on the uptake of insurance (Section III.2). Afterwards, in Section III.3, we employ regression models to identify crowding effects on solidarity transfers caused by the availability of insurance. Section III.4 introduces evidence from an additional variant of the Communication Experiment, where we tried to eliminate strategic motives.

#### III.1 Sample Description and Balancing Tests

In the Communication Experiment we carried out 22 experimental sessions, each in a new village chosen at random within the study region. Each session consisted of 15-24 participants, resulting in a total sample size of 466 individuals. Each participant could transfer to both co-players in each round independent of their losses. Our description refers to 229 individuals playing the standard version of the Communication Experiment described above, while an additional treatment was played in the other half of the experimental sessions (see section III.4 for further details). In the Anonymous Experiment we also carried out one session per village, randomly drawing 30 locations from coastal villages in the study region, amounting to 705 participants. Table 3 shows the balancing test between the two experiments. Households were randomly sampled in both experiments (see Appendix A for details of sampling procedure). We find that the difference in gender is marginally significant in the two experiments maybe owing to our invitation procedure, which targeted the household head or

spouse. However, as our main interest is the comparison of treatment effects within each experiment we do not think these small imbalances are of any importance for the interpretation of our results.

**Table 3: Sample characteristics Communication versus Anonymous Experiment**

	Communication	Anonymous	Diff.	P value
Age	43.2	41.4	-1.8	0.1362
Male	0.27	0.39	0.12	<b>0.0592</b>
College	0.27	0.20	-0.07	0.1221
Share of life in spent village <sup>1</sup>	0.71	0.75	0.05	0.1327
Regular income?	0.24	0.24	0.01	0.8552
Monthly hh income <sup>2</sup>	3853	4137	284	0.3332
N	229	705		

Notes: P values from OLS regressions on group dummy with standard errors clustered at the village level, <sup>1</sup> One observation in the Communication and two in the Anonymous Experiment missing. <sup>2</sup> Three observations in the Communication Experiment missing.

Besides the differences over the two experiments, Table 4 shows balancing tests within each experiment for the two randomly assigned insurance treatments.

**Table 4: Balancing table for insurance treatments, by experiment**

	Communication Experiment				Anonymous Experiment			
	No Insurance (Mean)	Insurance (Mean)	Diff.	P value	No Insurance (Mean)	Insurance (Mean)	Diff.	P value
Age	43.3	43.1	-0.2	0.9202	41.4	41.5	0.1	0.9019
Male	0.23	0.29	0.06	0.5208	0.41	0.35	-0.06	0.3711
College	0.25	0.27	0.03	0.6984	0.18	0.22	0.04	0.2279
Share of life in village <sup>1</sup>	0.75	0.69	-0.06	0.1502	0.75	0.77	0.02	0.4303
Regular income?	0.26	0.23	-0.04	0.7415	0.24	0.25	0.01	0.7698
Monthly hh income <sup>2</sup>	4058	3772	-286	0.4629	4137	4137	0	0.9992
N	65	164			469	236		

Notes: P values from OLS regressions on group dummy with standard errors clustered at the village level, <sup>1</sup> One observation in the Communication and two in the Anonymous Experiment missing. <sup>2</sup> Three observations in the Communication Experiment missing.

### III.2 Insurance Uptake

A first finding is that the safer lottery options are frequently demanded by participants: On average more than 40% of participants ‘buy’ an insurance if they have the possibility to do so (Communication: 40.9%, Anonymous: 43.2%). Note that in the Communication Experiment we had two different options (insurance 1 and 2, compare Table 1), but the demand for the two policies is nearly identical (41.0% versus 40.7%). The similar insurance demand levels

suggest that differences in the crowding-out effect should not be driven by differential demand for the insurance policies.

Probit regression results for individual characteristics of those persons who "bought" insurance are provided in Appendix Table A2. Only in the Anonymous Experiment we find that older people are more likely (5% significance level) and men are less likely (10% significance level) to purchase insurance. However, pooling the data of both experiments renders those estimates insignificant.

### III.3 Testing for Crowding Effects

We conceptualize solidarity as transfers  $T_{ij}$  from the better-off  $i$  to the worse-off  $j$  given the inequality  $(Y_i - Y_j)$  of pre-transfer payoffs  $Y$ . This is straightforward in the Anonymous Experiment, as only the better-off could transfer to the worse-off. However, in the Communication Experiment also participants, who lost part of their endowment, could transfer money. Hence, we define solidarity as *net* transfers ( $T_{ij} = T_i - T_j$ ) given pre-transfer differences  $(Y_i - Y_j)$  to measure effective redistribution from the better-off to the worse-off. This implies that solidarity in both experiments is given by the *net* transfer function  $T_{ij}(Y_i - Y_j)$  if  $Y_i > Y_j$ . For our econometric specification, we linearize the function as follows:

$$(1) \quad T_{ij}(Y_i - Y_j) = \alpha + \beta(Y_i - Y_j) + \varepsilon_{ij}$$

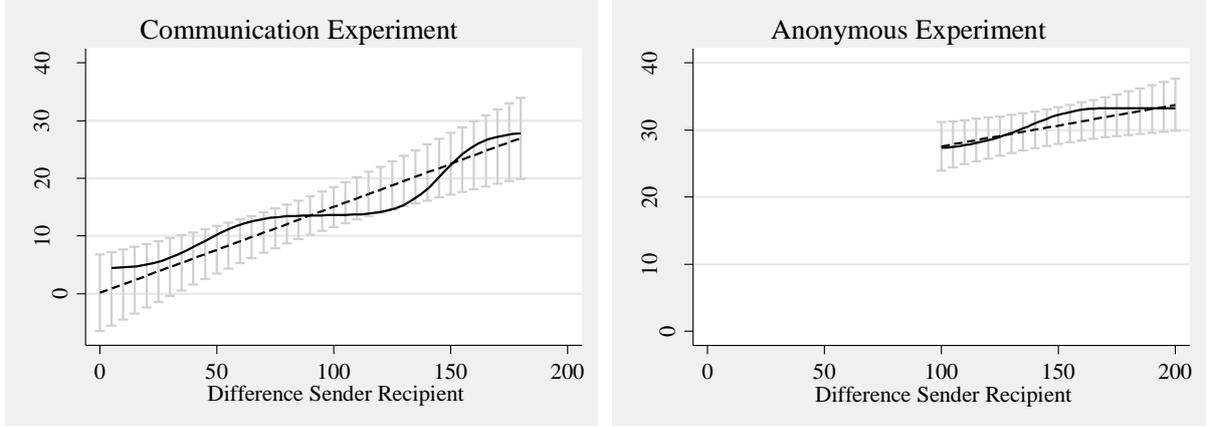
The linearization obviously involves an assumption, but we do not think that it is particularly strong, given the empirical relationship observed between  $T_{ij}$  and  $Y_i - Y_j$ . Figure 1 shows the result of a nonparametric smoothing, estimating the expected solidarity transfer given differences between sender and recipient before transfers were made (solid line) for both experiments. Depending on the size of the shock and whether subjects purchased insurance, differences between individuals vary substantially, both in the Communication and the Anonymous Experiment. Due to the different parameters outlined in Table 1 the possible difference between a loser and a winner ranges from 10 to 180 in the Communication Experiment and from 100 to 200 in the Anonymous Experiment (see also Appendix Figure A.2 for a histogram). Figure 1 clearly confirms that redistribution is sensitive to pre-transfer differences and indicates that the relationship can be approximated well with a linear function (dashed line). Note that the nonparametric fit is within the confidence bounds of the linear estimation.<sup>14</sup> The slope of these linear estimations ( $\beta$  from Equation 1) is to a large extent

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<sup>14</sup> The corresponding estimates, including standard errors, are shown in Appendix Table A3.

responsible for effective redistribution. In the case of full redistribution amongst equals, a three-person group would implement  $T_{ij} = 0.33(Y_i - Y_j)$ .

**Figure 1: Sensitivity of solidarity transfers to inequality ( $Y_i - Y_j$ ): nonparametric fit vs. linear approximation**



Note: The solid line shows predictions from a local constant smoothing (Gaussian kernel, bandwidth 25), while the dotted line illustrates the linear specification (95% confidence intervals shaded in grey, account for clustering of standard errors at the session level). Note that pre-transfer differences in the Anonymous Experiment only range from 100-200 (see Figure A2 for the empirical distribution).

For estimating crowding-out or crowding-in effects, we interact the sensitivity parameter with the availability of insurance ( $D_v = 1$  in the insurance treatment):

$$(2) \quad T_{ij}(Y_i - Y_j) = \alpha + \beta(Y_i - Y_j) + \gamma D_v(Y_i - Y_j) + \varepsilon_{ij}$$

Note that given the functional form specified,  $\gamma > 0 \Leftrightarrow E[T_{ij}^{D=1} | Y_i - Y_j] > E[T_{ij}^{D=0} | Y_i - Y_j]$ . In other words, the interaction of the difference with the availability of insurance indicates whether net transfers, given initial differences, increased ( $\gamma > 0$ , crowding-in) or decreased ( $\gamma < 0$ , crowding-out) due to the availability of insurance. The approximation with a linear functional form allows us to estimate crowding effects with one parameter only. Even if the linear functional form would not perfectly describe the transfer curves, though, we should still be able to pick up relevant crowding effects. In particular, if one curve dominates the other this necessarily leads to a higher slope in the linearization.

Table 5 shows the result of estimating Equation 2 for the two experiments. Column 1a shows the overall result for the Communication Experiment, which suggests that net transfers are crowded out once insurance is available. The sensitivity to inequality decreases by roughly 25% due to the availability of insurance. The coefficient *Difference* indicates that inequality of 10 PhP leads to an increase in transfers by 1.7 PhP without insurance but only to

an increase of 1.3 PhP when insurance is available. In Column 1b we restrict the analysis to only the first round, where insurance is initially offered. This leaves us with less observations and insignificant results, but with qualitatively very similar coefficients. In column 1c we restrict the Communication Experiment results to cases where the group of three only experienced one shock, similar to the design of the Anonymous Experiment. The interaction effect with insurance remains stable, but becomes significant at the 5% level in this subsample. The results appear to be robust, which suggests that insurance crowds out solidarity transfers in the non-anonymous design with communication. In specification 2 we show the estimation for the Anonymous Experiment. Here we find a positive effect of the availability of insurance on net transfers. The positive effect due to insurance makes up almost 60% of the main effect (*Difference* ( $Y_i - Y_j$ )).<sup>15</sup> Thus, when anonymity is given and communication is precluded there is no crowding-out effect, arguably because only intrinsic motives for giving are salient in this situation. This might suggest that crowding-out in the Communication Experiment is due to a reduction in strategic motives and not a reduction of intrinsic motives, even though we cannot draw this conclusion with certainty.

As noted above, the linear prediction is an approximation of the true relationship between transfers and pre-transfer differences, but should pick up relevant crowding effects even in the absence of an exactly linear relationship. To make sure that the linear function does not hide important nonlinearities, though, we again compare our linear predictions to a nonparametric estimation. Figure 2 displays our main linear regression results (grey) together with a non-parametric smoothing (black) in the case of insurance (dashed lines) and no insurance (solid lines). Even though the nonparametric graphs do not exactly follow a linear trend, they correspond nicely to our linear estimations. In the Communication Experiment the transfer levels in the insurance treatment are lower at any given point in the distribution of pre transfer differences while the opposite holds for the Anonymous Experiment where the transfers are higher in the insurance treatment. Another way to illustrate the crowding-out effect in the Communication Experiment is by looking at the outcomes of unprotected individuals who face a severe loss: While they on average receive net transfers of 55.8 PhP from their co-players in the treatment without insurance, it is only 35.9 PhP in the insurance treatment. This means that in particular those who do not opt for insurance end up being more vulnerable in this setup when insurance is available.

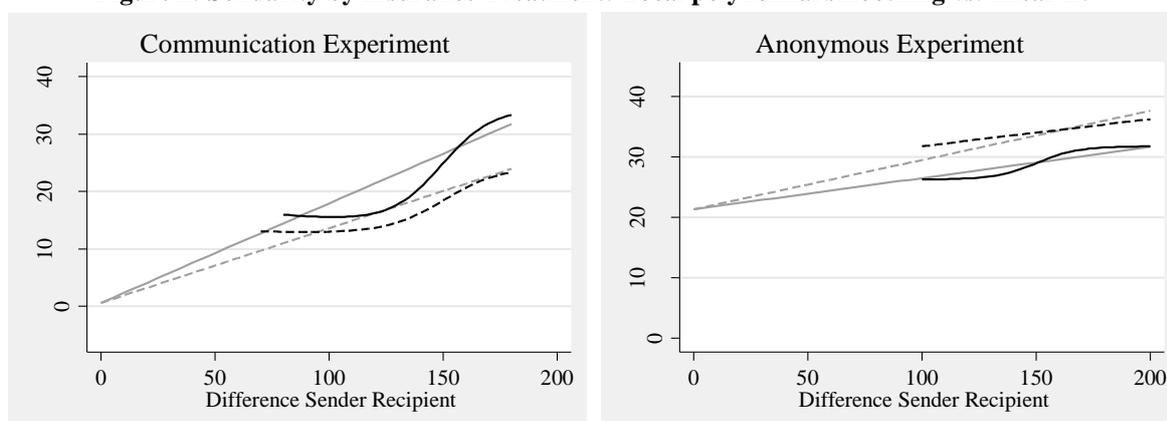
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<sup>15</sup> We repeat all those regressions including a set of control variables and find qualitatively similar results (see Appendix Table A4)

**Table 5: Crowding effects in the Communication experiment and the Anonymous Experiment**

	(1a)	(1b)	(1c)	(2)
	Communication Experiment			Anonymous Experiment
	All	Round1 only	One shock only	
Difference ( $Y_i - Y_j$ )	<b>0.173***</b> (0) [0]	<b>0.168***</b> (0) [0]	<b>0.109**</b> (0.0444) [0.0160]	<b>0.0515*</b> (0.0298) [0.0838]
Insurance x Difference	<b>-0.0433*</b> (0.0240) [0.0720]	-0.0444 (0.0358) [0.216]	<b>-0.0469**</b> (0.0234) [0.0480]	<b>0.0300*</b> (0.0182) [0.0998]
N	313	173	115	705

Note: P-values (in square brackets) obtained via wild clustered bootstrap inference (Cameron, Gelbach, and Miller 2008), hence standard errors are ‘rigged’ but reported in parentheses to illustrate level of significance, clustered at the session level, 500 bootstrap iterations, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Figure 2: Solidarity by Insurance Treatment: Local polynomial smoothing vs. linear fit**

Note: The black lines show predictions from a local constant smoothing (Gaussian kernel, bandwidth 25), while the grey lines illustrate the linear specifications estimated in Table 5 column 1a (left) and Table 5 column 2 (right). Solid lines indicate predictions in the treatment without insurance, dashed lines refer to the treatment with insurance.

### III.4 Communication Experiment with Secret Hiding

The above interpretation that insurance crowds *out* strategic motives for solidarity but crowds *in* intrinsic motivation can be sustained by a further treatment which we implemented in 11 additional sessions of the Communication Experiment. In order to minimize the strategic reciprocal pressure from communication and non-anonymity, we implemented the possibility of *income hiding*. In this setup, players could pretend to have experienced an income shock, thereby hiding some of their money from the other two players in their risk sharing group. The hiding option provides a specific excuse not to help: Not having enough cash at hand. Thus, solidarity transfers become much more intrinsic in this set-up, similar to the Anonymous Experiments. Our intention was that the hiding option should reduce strategic pressure to give without inducing transfers from the worse-off to the better-off. Hence, we

permitted hiding up to the equivalent of a medium shock but not pretending catastrophic shocks. To avoid influencing participants we did not call this ‘hiding’, but framed this option as a possibility to “put money in a lockbox”. If the die result was 1, 2 or 3 (i.e. no shock) individuals could decide to hide the monetary difference to a medium shock in a secret lockbox. This information was private to the individual, and group members were only informed about the amount the person retained after the lottery/lockbox stage (i.e. the other members could not know if money was hidden). Similar to the other experiments we observe an insurance uptake of 44% and no systematic problems with the balancing of covariates in this treatment (see Table A.5).

The hiding option was used by a large majority of participants: 94% of those who suffered no loss pretended to have suffered a medium shock. Table 6 shows how the results change in this treatment. In our main specification (1a), sensitivity of solidarity transfers to the difference ( $Y_i - Y_j$ ) decreases substantially compared to the situation without income hiding. The introduction of formal insurance, however, does not lead to significant crowding-out effects on transfers anymore. To the contrary, the significantly positive interaction effect (*Insurance x Difference*) suggests a crowding-in of solidarity transfers when insurance is available. In Figure A2 we show the corresponding non-parametric smoothing graphs, which confirm that the transfers with insurance availability strictly dominate the transfers without insurance. This is similar to the results from the Anonymous Experiment where strategic motives have been eliminated as well. This result is robust to restricting the estimation to the first round only and to cases with only one shock per group. We interpret these results as additional evidence that intrinsic motivations are not crowded-out but rather crowded-in by access to insurance.

**Table 6: Crowding effects with hiding opportunity in the Communication Experiment**

	(1a) All	(1b) Round1 only	(1c) One shock only
Difference ( $Y_i - Y_j$ )	<b>0.0717***</b> (0) [0]	<b>0.0399*</b> (0.0223) [0.0758]	<b>0.165**</b> (0.0677) [0.0160]
Insurance x Difference	<b>0.0587*</b> (0.0356) [0.0998]	<b>0.0606*</b> (0.0310) [0.0519]	<b>0.0936**</b> (0.0442) [0.0359]
N	307	165	136

Note: P-values (in square brackets) obtained via wild clustered bootstrap inference (Cameron, Gelbach, and Miller 2008), hence standard errors are ‘rigged’ but reported in parentheses to illustrate level of significance, clustered at the session level, 500 bootstrap iterations, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## IV. Discussion

In order to understand crowding effects on informal risk-sharing (and in other domains) it is important to analyze what drives informal transfers. Note that we broadly distinguished two motives. The first one is an incentive-based and self-enforcing arrangement to engage in strategic reciprocal risk-sharing. The value of complying with the arrangement is derived from the prospect of future interaction and, thus, the threat of punishment or reputational loss in case of non-compliance. The second motive is intrinsic solidarity. It does not require any future interaction and is mainly based on pro-social preferences. Both types of motives have been shown to play a role in several experiments (Leider et al. 2009; Ligon and Schechter 2012). Also, both motives can potentially be crowded out, which is undesirable in itself. It nevertheless seems important to distinguish between these two motives for at least two reasons: First, pure incentive effects might easily be reverted by removing the intervention, while crowding-out of intrinsic motives might be more persistent even after removing the intervention (Gneezy and Rustichini 2000). Second, if markets crowd out morality per se, introducing insurance products may have negative consequences on other spheres of life as well, even if those are unrelated to risk-sharing arrangements. This might be especially harmful in small rural communities where pro-social behavior is instrumental for many other non-market exchanges.

The effect of insurance on strategic motivations is straightforward in theory: Models of limited commitment (e.g. Coate and Ravallion 1993; Attanasio and Ríos-Rull 2000) suggest that the introduction of insurance decreases the need for strategic risk-sharing, especially since all participants were endowed with adequate funds to purchase an insurance contract. In contrast, it is unclear whether insurance would increase, decrease or not affect intrinsic motivations for solidarity at all. In this section, we therefore focus on theoretical explanations related to intrinsic crowding effects. The key assumption for the following discussion is that the differences in the two experimental designs we studied in the Philippines influence the *relative* importance of strategic vis-à-vis intrinsic motives and, hence, may induce different kinds of crowding effects.<sup>16</sup>

In line with arguments that the expansion of markets may lead to more individualistic societies and the erosion of social norms (Sandel 2012) one might speculate that insurance products are perceived as market solutions which crowd out morality (similar

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<sup>16</sup> We cannot directly test this assumption, e.g. by comparing absolute levels of transfer between the experiments, as such a comparison is confounded by other design differences (see Appendix Table A1). Also, it is unclear whether extrinsic and intrinsic motivations might substitute each other.

to the effect shown by Falk and Szech 2013).<sup>17</sup> A decrease in intrinsic motivations may occur especially if the insurance is perceived to be controlling and restricting participants' autonomy (Frey and Jegen 2001; Bénabou and Tirole 2006; Bowles 2008; Gneezy, Meier, and Rey-Biel 2011). Since the take-up decision in our experiment is voluntary (and taken before the communication stage) we think that a feeling of control is rather unlikely, though. On the contrary, insurance might even be supportive and enabling subjects to better help those in need, which could also increase intrinsic motivations. Note however, that we cannot disentangle the various intrinsic motives leading to higher pro-sociality (such as guilt aversion or altruism) or that become activated once people can communicate with each other (promises and trust trustworthiness) or anonymity is relaxed (personal affection and emotions). A further potential channel affecting intrinsic motives is that purchasing insurance (or not) signals types or intentions of individuals. A recent behavioral experiment (Lenel and Steiner 2017) shows that solidarity transfers decrease if individuals in need forewent the opportunity to purchase insurance, suggesting that signaling effects through insurance uptake are indeed possible.<sup>18</sup> Given the prevailing theoretical (and empirical) ambiguities, it is still unclear how the introduction of insurance should affect intrinsic motives for solidarity transfers.

Comparing the Communication and Anonymous Experiments allows us to test how the introduction of insurance affects strategic and intrinsic motivations. As described in Section II, the use of the communication stage before the transfer decision activates strategic motives for giving. Figure 3 illustrates that insurance is predicted to reduce strategic motives for giving but has an ambiguous effect on intrinsic motives in the Communication Experiment. In the Anonymous Experiment, the situation is different. Participants are freed from strategic motives since they neither know the name of their partner nor will the transfer decisions ever be revealed in public. This setup allows us to test how solidarity, which exists within anonymous groups due to purely intrinsic motives, reacts to the introduction of insurance.

The combined analysis of the two distinct experiments hence has a clear advantage. We would not be able to identify the source of the crowding-out effect based on the Communication Experiment alone, even though we believe that this set-up has a higher

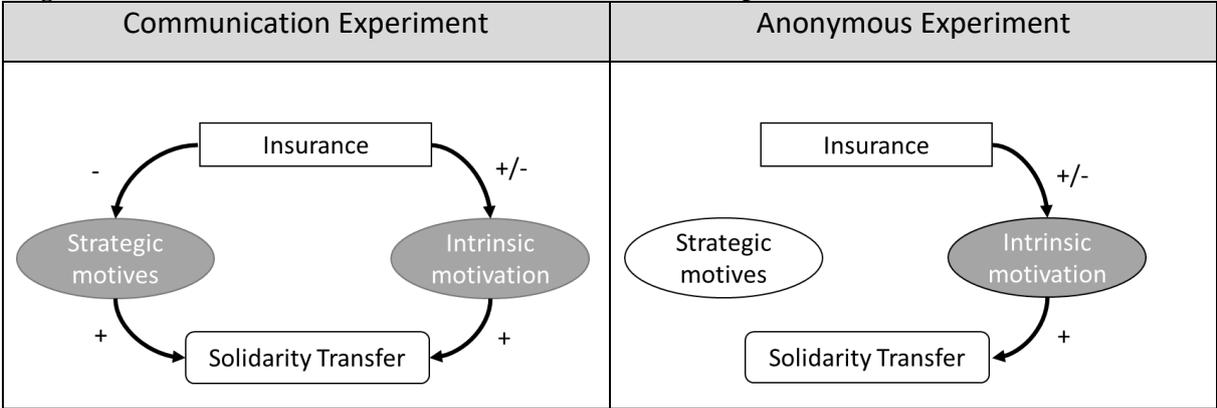
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<sup>17</sup> Note that there is also cross-cultural evidence from Henrich et al. (2010) that market integration may lead to more pro-social behavior in encounters with anonymous members of the society.

<sup>18</sup> This study is different from our paper along several dimensions, though. First, it considers a situation where senders face no risk, which is hence not a standard solidarity situation between group members facing similar risks. Second, Lenel and Steiner (2017) emphasize the preventable nature of financial losses. They use full insurance, such that potential recipients opting for insurance do not need solidarity transfers anymore. The insurance offered in this study design is also very cheap, making it easier to blame a victim for not purchasing.

external validity than the Anonymous Experiment without communication. With the help of the Anonymous Experiment, we are able to get an intuition how insurance interacts with intrinsic motivations while the Communication Experiment enables us to measure the overall effect of insurance in a realistic setting. Based on the above theoretical considerations, we can neither derive clear predictions regarding insurance effects on intrinsic motives alone, nor on the direction of the total effect in the Communication Experiment. We can, however, conjecture that insurance will lead to a more negative effect in the Communication Experiment compared to the Anonymous Experiment. Assuming a similar effect of insurance on intrinsic motives in both settings, there should be an additional negative effect on strategic motives in the Communication Experiment.

**Figure 3: Potential effects of insurance on motivation in both experiments**



In the Anonymous Experiment, where only intrinsic motives should be present, we find that introducing insurance does not lead to crowding-out. Overall, we even find reinforcing effects of the insurance option on solidarity transfers in the setting focusing more on intrinsic motivation.<sup>19</sup> Such situations where pro-social preferences and incentives complement each other are not uncommon, though. Of the 50 papers surveyed by Bowles and Polanía-Reyes (2012), 31% indeed reported crowding-in effects.

In the Communication Experiment, where strategic motives should play a role, we find crowding-out effects. Based on the theoretical literature related to risk-sharing (Coate and Ravallion 1993; Attanasio and Ríos-Rull 2000) we would indeed expect strategic concerns to be more susceptible to a crowding-out effect, as the availability of insurance decreases future mutual benefits (compare results by Lin, Liu, and Meng 2014). These considerations are corroborated by our results from the secret hiding treatment (which offers a *ceteris paribus*

<sup>19</sup> Transfers also do not seem to react to uptake decisions, different to the findings in Lenel and Steiner (2017): Distinguishing between shock victim with and without insurance leads to insignificant differences in solidarity (results available upon request).

test on reducing strategic incentives) as well as the Anonymous Experiment, where mainly intrinsic motives are relevant for transfer decisions. Given the theoretical prediction and our evidence from the two intrinsic settings, we argue that the crowding-out effect in the Communication Experiment is mainly based on strategic considerations.

In reality, different mental processes might be responsible for crowding effects, both regarding strategic as well as intrinsic motives. The relative strength of these mental processes not only depends on the nature of the intervention but also on the personality of the person exposed to the intervention. For example, a financial incentive might induce extrinsically motivated people to react in line with the incentive, while it may discourage intrinsically motivated people. Thus, the overall effect of the incentive might be smaller than expected and might even be negative. In the Communication Experiment our theoretical considerations clearly suggest that strategically motivated people should respond to the insurance intervention most. The heterogeneity is more ambiguous in the Anonymous Experiment, where people help each other based on intrinsic motives. The crowding-in effect could stem from egoistic people becoming more pro-social after the intervention or altruistic people feeling even more empowered and acting more pro-social.<sup>20</sup>

In the Anonymous Experiment we are able to explore these heterogeneities further by conditioning our analysis on solidarity types (inspired by the notion of ‘conditional cooperation’ from public good games, see Keser and van Winden 2000; Fischbacher, Gächter, and Fehr 2001). In particular, we can classify participants into altruistic, egoistic and conditional types, which can be used as a proxy for motivational types.<sup>21</sup> For the following analysis, detailed in the Appendix A.4, we assume that altruistic people have a stronger intrinsic motivation to help others, while more egoistic people are mainly motivated by strategic concerns.

In the intrinsic setup of the Anonymous Experiment we find that especially egoistic participants react positively to the introduction of insurance, while altruistic people do not change their donation (see Tables A7 and A8). In the Communication Experiment with hiding, egoistic individuals also seem to exhibit the strongest crowding-in effect (see Table A8). Thus, in the experimental designs focusing on intrinsic motives, crowding-in effects

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<sup>20</sup> Similarly, a potential crowding-out of pro-social behavior could be due to altruistic people becoming less pro-social in the environment with an intervention or because egoistic people become even less pro-social.

<sup>21</sup> The data was collected one round prior to the introduction of the insurance scheme. Egoistic participants showed a preference for donating little, no matter what their partner in the group donates, altruistic participants always intend to transfer a lot, while conditional types tend to reciprocate the level of support received.

seem to be driven by those subjects who were initially not intrinsically motivated.<sup>22</sup> In the standard Communication Experiment with stronger strategic motives, however, we find that the largest crowding-out effects stem from seemingly egoistic participants (see Table A8). This latter result is clearly in line with our theoretical conjecture derived above. Thus, the exploration of heterogeneous effects reveals an interesting pattern which in particular strengthens our result on crowding-out of strategic motives and might be worth further exploring in future research.

Even though “only” strategic transfer motives seem to be crowded out by the introduction of insurance this may still limit the protective effect of insurance schemes. Especially those participants who remain uninsured and experience a catastrophic shock become worse off compared to a situation without insurance. Such cases obviously become less relevant in situations with higher take-up or even mandatory insurance, for example in case of a government policy. One may question the desirability of strategic solidarity, though. Forms of “forced” solidarity may have negative consequences in real life, for example limiting saving and business development (e.g. Grimm, Hartwig, and Lay 2017). Crowding-out effect may, thus, have positive aspects as well. Given the data at hand, we cannot infer how much of the strategic transfers is perceived to be forced and how much is based on a mutually advantageous risk-sharing contract.

As stated earlier the two experiments differ along several dimensions (see Appendix Table A1). Although anonymity and communication offer plausible theoretical priors backed up by empirical studies underlining the difference between anonymity and communication, we cannot rule out that other design elements, have additionally contributed to the divergent results. Certainly, further research is needed to fully understand the contextual factors leading to either a crowding-in or crowding-out effect. The strength of laboratory experiments is that they offer a suitable tool to study a variety of contextual and cultural conditions leading to motivational crowding-in and crowding-out, and thereby contribute to building a diagnostic behavioral theory of incentives.

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<sup>22</sup> One possible explanation might be that solidarity without insurance is considered as one’s duty and may not create such a positive self-image - in particular for those who are initially less motivated to help. However, when insurance is available solidarity may feel more voluntary as it is legitimate to disengage and withdraw one’s help. This change in perception from a moral duty to a voluntary act of giving increases self-determination and may thus lead to higher transfers for such individuals.

## **V. Conclusion**

Informal risk-sharing is frequent in many developing countries, but usually cannot offer full protection because of limited enforcement mechanisms. In addition, even if people voluntarily want to help each other in case of shocks they may not be able to do so in the case of covariate shocks, e.g. if the entire network is affected by a disease or other catastrophic events. These imperfections of informal risk-sharing might be resolved by the introduction of formal insurance products tailored to the needs of the poor. However, there is substantial evidence that economic interventions can interfere with intrinsic motives which are important drivers of pro-social behavior in personal exchange settings (Frey and Jegen 2001; Bénabou and Tirole 2006; Bowles 2008; Gneezy, Meier, and Rey-Biel 2011).

In this paper we present evidence from two behavioral experiments with villagers in the Philippines investigating their reaction to the introduction of insurance. Each of the experiments investigates whether insurance schemes can undermine (“crowd out”) or reinforce (“crowd in”) people's intrinsic motivations or strategic motives to engage in solidarity. Our findings reveal that solidarity changes due to the introduction of formal insurance in both settings. However, the direction of these effects are different in each set-up. We discussed this puzzling observation suggesting that strategic motives are most likely crowded out by insurance schemes, which is in line with limited commitment models of risk sharing, while some intrinsic motives may even be crowded-in. We do not find evidence that the insurance choice by transfer recipients is a strong determinant for the willingness to help.

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**The following pages are supplementary.**

**They are intended**

**FOR ONLINE PUBLICATION ONLY.**

**They will be made available on the  
homepages of the authors and are included  
here as additional supplementary material  
for reviewers.**

## Appendix A Implementation Details and Econometric Sensitivity Analysis

### Appendix A.1 Details of the Implementation

The experiments share a common set-up with a group of three villagers who stay together throughout the game, make private decisions that are never revealed and where only one game is paid out at random. We employed the same field assistants for all sessions, who received extensive training and were supervised by the team of at least two authors. Participants were seated separately and no group was ever without supervision of at least one assistant. After a short socio-demographic survey, participants were seated to receive the introduction to the workshop, answered test questions, conducted the experiments, completed a final survey and were handed out the payment from one randomly chosen game. The table below and the following sections describe the design, implementation and sampling in more detail.

**Table A1 Summary of design and implementation details**

	<b>Communication Experiment</b>	<b>Anonymous Experiment</b>
Location	Western Visayas (Region VI), in the province of Iloilo.	Western Visayas (Region VI), in the province of Iloilo.
Village Sampling	Random villages excluding urban and high income Municipalities	Random coastal villages, random households excluding urban and high income Municipalities
Household Sampling	8 random households per village. Each invites two peers	9 random households per village. Each invites two peers
Network members	Random allocation whether to play with group of peers or none of the peers.	Recorded decisions to both a peer and an anonymous non-peer. We only use the transfer to the anonymous non-peer in this paper.
Experiment conducted	Summer 2010	Summer 2012
Game(s) of interest	Round 1 & 2	Round 1
No. of player/session	15-24	27
No. of sessions total	22	30
No. of sessions considered	11 (without hiding), 11 (with hiding)	30
<b>Solidarity game</b>		
Initial endowment	200	200
Size of shock	-180, -100	-200, -100 (Low Risk Treatment)
No. of losers in group	0, 1, 2 or 3	1
Loser determined	Rolling a die	Drawing a ball
Transfer	Unrestricted	0-70
Whom to transfer	To anyone in the group	Only to loser
Transfer money to multiple players?	yes	no
When to decide on transfer?	after knowing payoff of all players	before knowing payoff of all players (strategy method)
Average money earned	237 PhP	235 PhP
Average money earned in US\$ in year of study	6\$	6\$
No. of insurance policies tested	2	1

## Communication Experiment

We carried out 22 experimental sessions, each in a new location. Each session consisted of 15-24 participants, resulting in a total sample size of 466 individuals (each taking two transfer decisions per round over three rounds). A participant completing the experiment earned on average 237 PhP (equivalent to 5-6 USD in 2010), including a show-up fee of 100 PhP.

The groups stayed together during all three rounds, and people in a group could identify the other two members. We did not allow for communication after the transfer choice. The instructor pointed out that communication within groups is forbidden outside the communication stage, that violations of the treatment protocol will lead to the exclusion from the experiment, that three experiments will be played independently from each other and that only one of them will be paid out at random. The instructor explained the decision situations to all participants jointly, and everybody received a plastic envelope with graphical instructions for this round and their initial endowment of 200 PhP in the form of play money.

Before participants went to private room 1 to play the lottery, they answered a set of questions in order to test their understanding of the experiment.<sup>23</sup> If the current round permitted insurance options (see Table 2), participants were given a choice of lotteries. Otherwise only the standard lottery (Option A) was available.<sup>24</sup> After the participants made their lottery choice and paid the related price, they rolled a die to determine the loss. Where secret hiding was available, players with no shock could then decide to hide a fixed amount of their money or not. After all participants had chosen whether to hide or not, the participants were allowed to talk for approximately five minutes, before each individual separately went to another private room 2. At this point, the amount that the two co-players had taken out of the first private room was revealed (endowment, minus insurance premium, minus loss due to shock, minus hidden income). Importantly, only the net payout was revealed, and not whether insurance had been bought, or whether shocks had taken place or whether resources had been hidden. From these payouts, however, one could infer who had purchased insurance and who had not. The participant then decided about transfers, i.e. if and how much to give to each of the co-players. Everybody was completely free in the way he or she shared the money. These

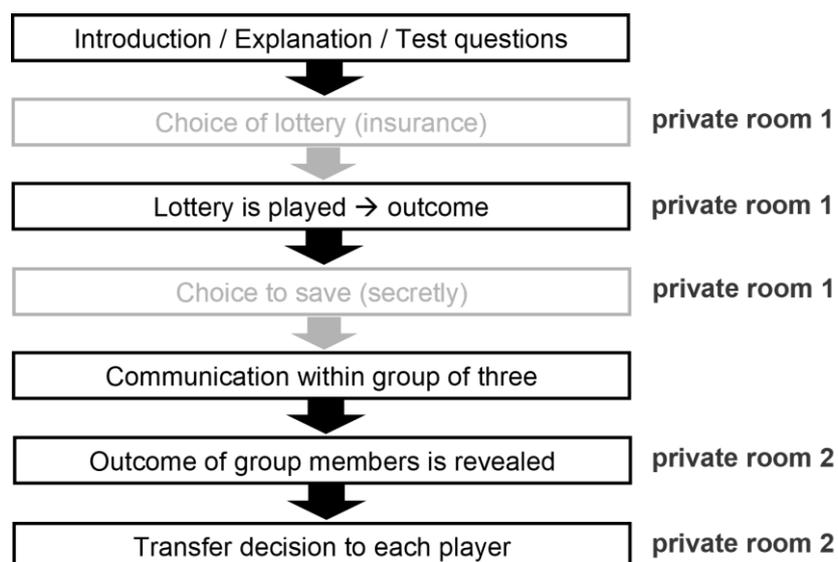
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<sup>23</sup> The test questions can be found in the appendix. When participants made mistakes, the research assistants explained the setup once more. Only those who finally answered all questions correctly were allowed to participate, but fortunately we only had to exclude less than 1% of all participants.

<sup>24</sup> Option A is not framed as the default option, but lotteries are instead assigned neutral names: Angola (A), Botswana (B) and Cameroon (C). However, participants knew that one option is for free, while potential alternatives would require an ex-ante payment from the initial endowment.

transfers were never revealed to anyone. Only after all three rounds had been completed and after one round has randomly been chosen for pay-out, the players received any feedback: They received cash in hand and from the received cash they could partly deduce whether they had received any transfers, still without knowing from whom. Hence, transfers from the past could not affect behavior in future rounds. The complete experimental procedure of one round is summarized in Figure A1.

**Figure A1: Experimental Procedure**



To ensure that experimental conditions did not change, the same team of ten assistants was employed for the same job all the time, strictly adhering to the experimental protocol (i.e. the same person always read the protocol, the same assistants were sitting in room 1 and room 2 etc). In both private rooms, decisions were recorded by the research team. Communication within a group was restricted to the communication stage. Whenever there was an unclear situation, one of the authors was present to decide on the issue.

### **Anonymous Experiment**

In each of the 30 villages we carried out only one session where we aimed at establishing nine groups of three participants. In reality, some of the invited participants could not take part and one group even dropped out during the experiment. Fortunately, only six groups did not show up or participate fully, such that we ended up with 264 groups and 792 individuals who completed the experiment. One particularity of our sampling strategy was that we had specifically oversampled fishermen as participants (because of an additional research question unrelated to this paper). To ensure comparability to the Communication Experiment we

excluded this additional sample consisting of only full-time fishermen.<sup>25</sup> The remaining sample consists of 705 participants (still including randomly sampled fishermen). As explained in the subsection above, each of the nine originally invited villagers had to bring two friends or relatives to the experiment workshop. Each of the nine persons we originally invited was matched with one peer and one anonymous player (who was a peer of someone else). In this paper we exclusively focus on the behavior towards participants remaining fully anonymous to each other.

Instructions were always read out loud by the same person to all players. During the instruction we illustrated all decisions by showing posters and providing examples of solidarity transfers. All decisions took place in private with an assistant who could re-explain the experiment every time before asking a set of control questions. When making their decisions, posters of the different transfer choices were available to the players.

After the three games, people answered a post-experiment survey. Since we wanted to keep games independent from each other and stakes for each round high, we decided to pay out the earnings from one random game. Participants were only informed about their total earnings and could not infer how exactly it was composed. Unobserved components of the earnings were the transfers from the peer, transfers from the anonymous co-player and the rewards for correct guesses (players were not told whether their guess was correct). In total, the procedure took about four hours. Earnings were paid out in private and most participants left individually and – as far as we could observe – without revealing earnings to other participants.

## **Appendix A.2      Sampling**

The experiments were conducted in the Western Visayas (Region VI), in the province of Iloilo. Existing databases suggest that the region is a slightly disadvantaged but not unrepresentative region within the Philippines.<sup>26</sup> A two-stage random sampling procedure was applied throughout both experiments. First, we randomly determined the experimental sites, i.e. we randomly selected barangays, which represent the lowest administrative level in the Philippines and are comparable to a village in rural areas. Municipalities from the first income

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<sup>25</sup> When including the oversampled fishermen in our analysis, the main results remain stable. The samples from the Anonymous and Communication Experiment now differ significantly, however, as fishermen happen to have very distinct socio-demographic characteristics.

<sup>26</sup> The Demographic and Health Survey 2008 for the Philippines and a household survey conducted by the University of Mannheim in 2009 suggest the following: educational attainment is slightly below national average, poverty is higher and coverage with public health insurance is about average.

class (high income) and urban locations were excluded from the sampling process.<sup>27</sup> Likewise very small (population below 500) and very big (population higher than 3000) barangays were not considered to make the sample more homogenous.<sup>28</sup> Permission of the Punong Barangay (elected village representative) to conduct the research was obtained in all but one barangay, leading to its replacement by another random site. We made all possible efforts to visit also remote locations, and all 22 locations of the sample could finally be reached for the Communication Experiment.

Second, in each selected barangay we randomly drew 8 households. Each of these 8 selected households received letters for inviting two additional representatives from distinct households. Thereby, we had up to 24 participants for each experimental site. Our recruiters went to the location some days prior to the experiment, asked the barangay officials for permission to run the experiment, ensured the availability of facilities for the workshops and requested a list of households from which eight households were randomly selected. Only the household head or the spouse of a household head were allowed to take part in the workshop.

The exact combination of treatments played in one site according to the treatment plan was also determined randomly, but the randomization had to pass a balancing test regarding village size across the treatments. The target population consists of low-income households in rural or partially urban areas.

In the Anonymous Experiment, we focused on 30 rural coastal villages in the provinces of Antique, Guimaras and Iloilo, as these criteria ensure that the sample is relatively comparable to a representative village in the Philippines.<sup>29</sup> Within each village, we sampled up to nine participants, who each had to bring two friends or relatives to the experiment workshop. Part of the participants was sample was chosen completely at random, but because of an additional research question unrelated to this paper, we specifically oversampled three fishermen per village. We therefore exclude a total of 87 oversampled fishermen from our analysis, leaving us with 705 participants.

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<sup>27</sup> Income Classification based on Department of Finance Department Order No.20-05 Effective July 29, 2005 (source: <http://www.nscb.gov.ph>).

<sup>28</sup> Four of the 22 barangay were already chosen at random for an earlier household survey. To link the data from both studies they were included even though one barangay was slightly too small (350) and another one slightly too large (3123).

<sup>29</sup> The largest part of the Filipino population lives along the coast, the majority in rural areas. Descriptive statistics also show that the study region is comparable to the Filipino average regarding wealth and education. At the same time it is homogeneous with respect to the local dialect used which facilitated the research in the field (see Table A1 in the supplementary appendix for a list of villages with basic characteristics).

### Appendix A.3 Robustness Tests and Additional Analyses

Buying insurance was voluntary and a substantial number of participants did not buy insurance. In the following two tables we examine how those individuals who bought insurance in our experiment differ from those who did not.

**Table A2: Probit regression explaining insurance uptake in round 1**

	(1) Communication Experiment	(2) Anonymous Experiment	(3) Communication Experiment with hiding	(4) All
Age	-0.00353 (0.00852)	0.0165** (0.00773)	-0.000996 (0.00852)	0.00483 (0.00464)
Male	-0.0134 (0.227)	-0.333* (0.178)	0.255 (0.209)	-0.0625 (0.115)
HH size	-0.0271 (0.0505)	-0.0483 (0.0449)	-0.0284 (0.0448)	-0.0321 (0.0263)
College	-0.103 (0.244)	-0.233 (0.209)	0.306 (0.238)	-0.0333 (0.129)
Share of life in village	-0.304 (0.298)	0.0826 (0.274)	-0.506* (0.287)	-0.228 (0.161)
Regular income?	0.172 (0.254)	0.0666 (0.198)	0.0288 (0.240)	0.121 (0.129)
Monthly hh income	7.62e-06 (4.08e-05)	-6.98e-06 (2.20e-05)	-1.48e-05 (5.74e-05)	-4.60e-06 (1.77e-05)
Constant	0.243 (0.513)	-0.498 (0.428)	0.291 (0.478)	-0.0282 (0.267)
Observations	161	235	168	564

Note: Standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table A3: Test of linearization**

	(1a) Communication Experiment	(1b) Experiment	(1c) Experiment	(2a) Anonymous Experiment	(2b) Experiment	(5) Communication Experiment with hiding	(6) Experiment with hiding		
Difference ( $Y_i - Y_j$ )	0.149*** (0.0297)	0.149*** (0)	0.0780 (0.0951)	0.0617** (0.0250)	0.0617** (0.0294)	0.535 (0.358)	0.0972** (0.0432)	0.0972*** (0.0335)	-0.0437 (0.0690)
Difference squared			0.000336 (0.000385)			-0.00158 (0.00119)			0.000670* (0.000306)
Constant	0.144 (2.978)	0.144 (2.862)	3.131 (5.435)	21.39*** (3.882)	21.39*** (0)	-10.82 (24.31)	-3.543 (3.429)	-3.543 (3.677)	2.385 (3.763)
Observations	295	295	295	705	286	705	295	705	295
Standard errors	clustered	wild BS	clustered	clustered	wild BS	clustered	clustered	wild BS	clustered

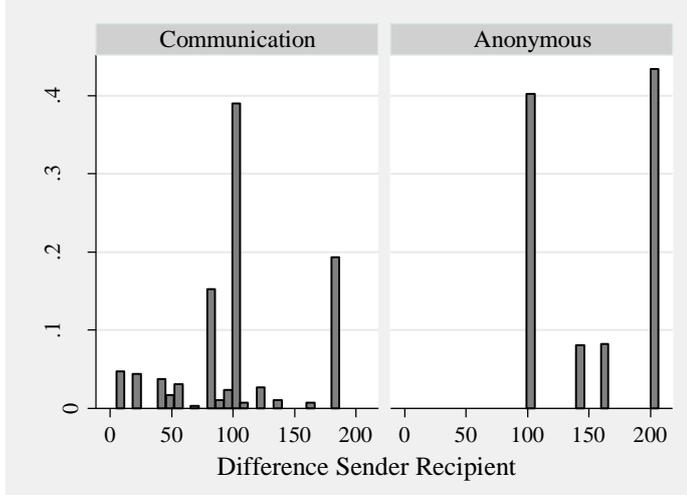
Note: Standard errors in parentheses account for intra-village correlation either by using cluster-robust standard errors (“clustered”) or by using a wild clustered bootstrap (“wild BS”) following Cameron, Gelbach, and Miller (2008) with 500 bootstrap iterations (standard errors are ‘rigged’ but reported to illustrate level of significance), \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table A4: Estimation including control variables**

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Communication Experiment All	Communication Experiment Round 1	Anonymous Experiment	Communication Experiment with hiding All	Communication Experiment with hiding Round 1
Difference ( $Y_i - Y_j$ )	0.186*** (0) [0]	0.187*** (0) [0]	0.0530** (0.0268) [0.0479]	0.0725*** (0.0272) [0.00798]	0.0452 (0.0323) [0.164]
Insurance x Difference	-0.0500 (0.0320) [0.120]	-0.0644* (0.0365) [0.0800]	0.0289* (0.0174) [0.0958]	0.0609** (0.0260) [0.0200]	0.0613 (0.0430) [0.156]
Age	0.182** (0.0847) [0.0320]	0.382*** (0.131) [0.00400]	0.0641 (0.0549) [0.244]	-0.0418 (0.0785) [0.595]	0.0984 (0.133) [0.459]
Male	11.90*** (0) [0]	13.26*** (0) [0]	1.777 (1.784) [0.319]	2.761 (3.533) [0.435]	1.594 (4.108) [0.699]
HH size	1.186* (0.618) [0.0560]	1.267 (0.775) [0.104]	0.420 (0.336) [0.212]	0.577 (0.532) [0.279]	0.584 (0.838) [0.487]
College	3.686 (4.088) [0.368]	4.416 (4.177) [0.292]	3.383 (2.077) [0.104]	-4.160 (2.838) [0.144]	-2.594 (3.095) [0.403]
Share of life in village	-0.660 (4.853) [0.892]	-2.637 (5.766) [0.648]	4.147** (1.717) [0.0160]	3.836 (4.582) [0.403]	0.796 (2.992) [0.790]
Regular income?	6.879** (3.115) [0.0280]	6.855 (4.809) [0.156]	2.821 (1.908) [0.140]	3.526 (3.095) [0.255]	0.875 (3.984) [0.826]
Monthly hh income	-0.000247 (0.000821) [0.764]	-0.00130 (0.000958) [0.176]	9.25e-05 (0.000132) [0.483]	-0.000305 (0.000412) [0.459]	0.000528 (0.000594) [0.375]
Constant	-18.39 (11.15) [0.100]	-23.94*** (8.198) [0.00400]	10.92** (5.508) [0.0479]	-9.201 (7.806) [0.240]	-13.37 (9.641) [0.168]
Observations	308	170	703	302	163
R-squared	0.188	0.262	0.066	0.107	0.069

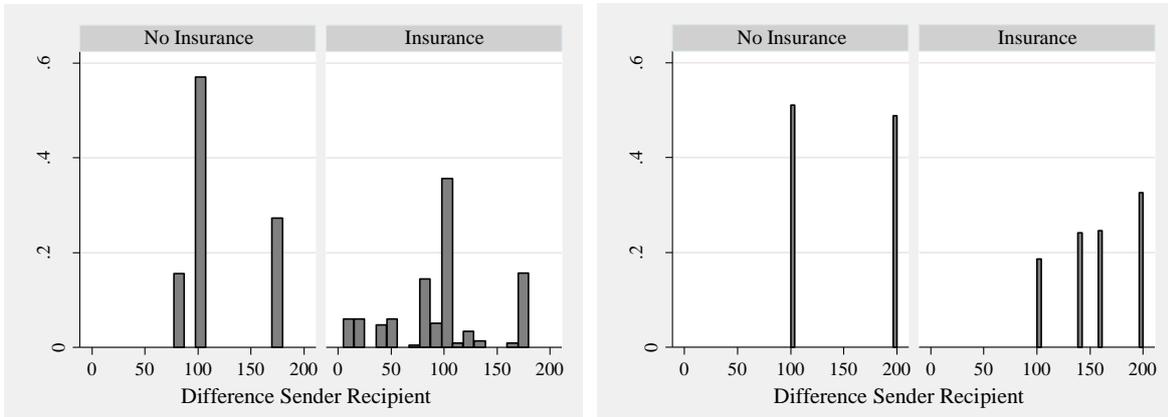
Note: P-values (in square brackets) obtained via wild clustered bootstrap inference (Cameron, Gelbach, and Miller 2008), hence standard errors are ‘rigged’ but reported in parentheses to illustrate level of significance, clustered at the session level, 500 bootstrap iterations, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Figure A2: Histogram of differences between sender and recipient**



Note: Distributions can be derived from the different losses and costs of insurance displayed in Table 1

**Figure A3: Histogram of differences between sender and recipient, by Insurance Treatment**  
 (a) Communication Experiment (b) Anonymous Experiment



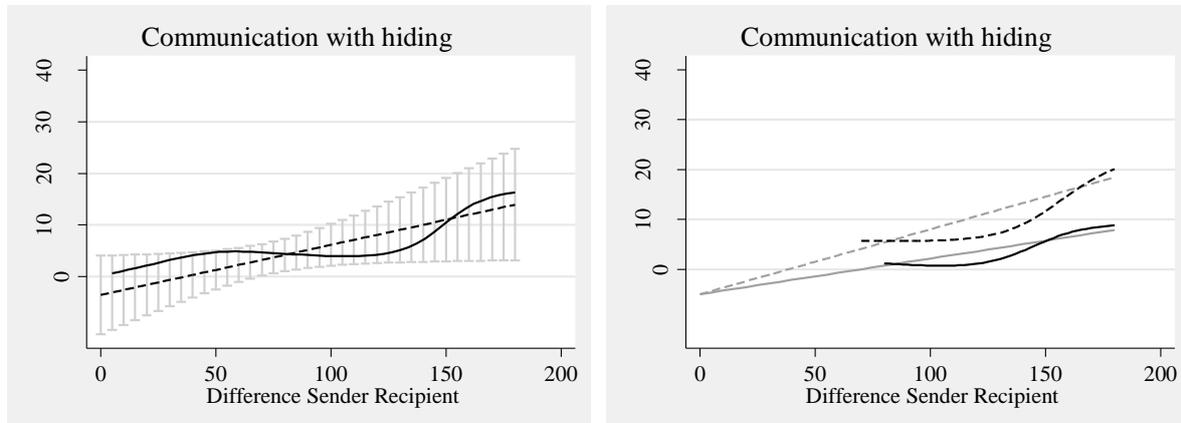
Note: Distributions can be derived from the different losses and costs of insurance displayed in Table 1

**Table A5: Balancing table for Communication Experiment with income hiding**

	Communication Experiment				Communication Experiment with Hiding			
	Without hiding (Mean)	With hiding (Mean)	Diff.	P value	No Insurance (Mean)	Insurance (Mean)	Diff.	P value
Age	43.2	42.3	-0.9	0.5950	42.2	42.3	0.1	0.9780
Male	0.27	0.35	0.08	0.2276	0.37	0.35	-0.03	0.8191
HH size	5.3	5.1	-0.2	0.3188	4.9	5.1	0.2	0.5683
College	0.27	0.23	-0.03	0.5445	0.22	0.24	0.01	0.8797
Share of life in village <sup>1</sup>	0.71	0.75	0.04	0.2596	0.82	0.72	-0.09	<b>0.0213</b>
Regular income?	0.24	0.23	-0.01	0.8852	0.19	0.24	0.05	0.4400
Monthly hh income <sup>2</sup>	3853	3030	-823	<b>0.0146</b>	3186	2968	-218	0.6944
N	226	237			67	170		

Notes: P values from OLS regressions on group dummy with standard errors clustered at the village level, <sup>1</sup> One observation in the treatment without hiding missing. <sup>2</sup> Three observations in the treatment without hiding and three observations in the treatment with hiding missing.

**Figure A4: Communication Experiment with Hiding: Local polynomial smoothing vs. linear fit, overall and by insurance treatment**



Note: Left panel (similar to Figure 1): The solid line shows predictions from a local constant smoothing (Gaussian kernel, bandwidth 25), while the dotted line illustrates the linear specification (95% confidence intervals shaded in grey, account for clustering of standard errors at the session level). Right panel (similar to Figure 2): The black lines show predictions from a local constant smoothing (Gaussian kernel, bandwidth 25), while the grey lines illustrate the linear specifications estimated in Table 6 (1a). Solid lines indicate predictions in the treatment without insurance, dashed lines refer to the treatment with insurance.

#### **Appendix A.4      Analysis of Heterogeneous Responses to Insurance**

We have the following conjectures regarding the heterogeneous responses to insurance:

- When there are only intrinsic motives (Anonymous Experiment) and we observe crowding-in, these effects should mainly stem from participants who were not already intrinsically motivated. Thus, we should see a higher positive effect for egoists / non-altruists.
- When there are mainly strategic motives (Communication Experiment) and we observe crowding-out, these effects should mainly stem from participants who were mainly strategically motivated. Thus we should see higher negative effects for egoists / non-altruists.

As described in the Discussion section we elicited behavioral types in an incentivized way during the Anonymous Experiment in a round prior to the insurance introduction. We allowed participants to specify transfers to co-players, conditional on the solidarity transfers received. Aside from unconditional transfers  $T_{ij}$ , participant  $i$  now also specified conditional transfers: For each transfer  $T_{ji}$  possibly chosen by co-player  $j$  player  $i$  specified an amount  $T_{ij}^*$  to be transferred. These latter transfers are a measure of how conditional solidarity is on beliefs to receive transfers. In case the co-player  $j$  lost, either the amount  $T_{ij}^*(T_{ji})$  or  $T_{ij}$  was then triggered (with equal probability). This ensured incentive-compatibility of both transfer types. Egoists are defined by  $T_{ij}^*(.)$  always  $\leq 20$ , altruists by  $T_{ij}^*(.)$  always  $\geq 50$  and conditional types by a correlation between  $T_{ij}^*$  and  $T_{ji}$  above 0.84 as well as a difference between the minimum and maximum conditional transfer of at least 30. The cutoff correlation of 0.84 was chosen because a correlation of this magnitude is significant at the 1% level. All who did not match those criteria were not classified (about 20% of participants). Alternative classifications yield similar results. Table A7 confirms our conjecture regarding the crowding-in effect in the Anonymous Experiment. Column 1 shows that the positive effect comes from those subjects who were classified as Egoists.

**Table A7: Anonymous Experiment: Crowding-in by motivational type**

VARIABLES	(1)	(2)	(3)
	Incentivized Measures		
	Egoists	Non-Egoists	Altruists
Insurance x Difference	<b>0.0455***</b> (0.0169) [0.00800]	0.0262 (0.0161) [0.104]	0.00194 (0.0148) [0.896]
Difference ( $Y_i - Y_j$ )	0.00950 (0.0243) [0.696]	0.0528* (0.0297) [0.0760]	0.132*** (0.0447) [0.00400]
Observations	162	543	104

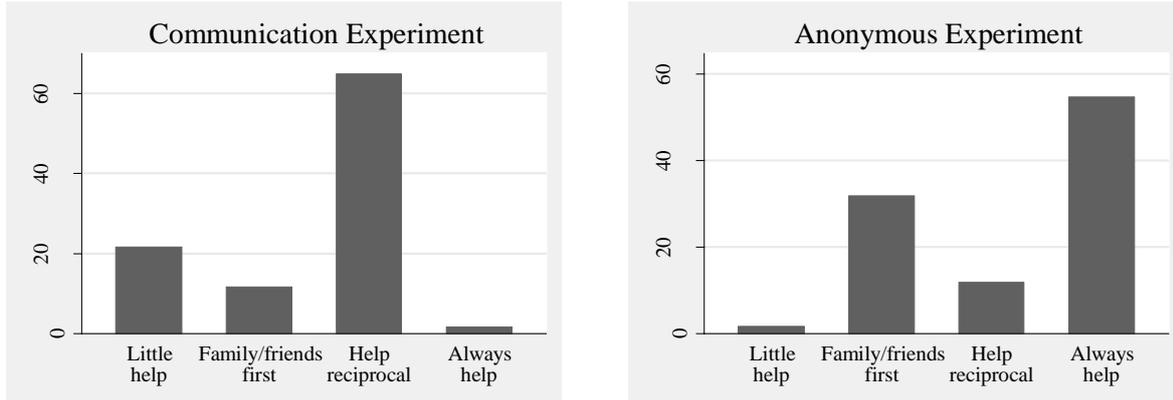
Note: P-values (in square brackets) obtained via wild clustered bootstrap inference (Cameron, Gelbach, and Miller 2008), hence standard errors are ‘rigged’ but reported in parentheses to illustrate level of significance, clustered at the session level, 500 bootstrap iterations, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; Same specification as first column in main result tables. “Non-Egoist” include Conditional Cooperators, Altruists and Others.

Unfortunately, we did not elicit these types in the Communication Experiment. In both experiments, however, we tried to elicit survey measures of these types. To avoid social desirability bias, we asked participants to characterize helping behavior of people in the village in general and believe that this reveals what respondents actually consider an appropriate behavior for themselves. Figure A4 shows the response behavior to this question in both experiments. We take “Little help” (“People are always busy and don’t help so much”) as a sign of egoism, while “Always help” (“People help each other whenever somebody needs help”) should be a sign of altruism.

Unfortunately, we could only ask the survey measure of types after the experiment, which means that responses are potentially driven by the experience of the experiment. Figure A4 shows the indicated answers to the survey items for both the Communication and Anonymous Experiment. Interestingly, the Communication Experiment, which focuses on strategic motives, delivers a much less intrinsic impression than the Anonymous Experiment. Very few people indicate altruism, while more than 20% indicate egoism.<sup>30</sup> In this case it makes sense to distinguish between egoists and non-egoists. In the Anonymous Experiment there are very few participants indicating egoism and more than 50% indicating altruism. We can therefore only reasonably condition results on altruism.

<sup>30</sup> Note that while the levels of altruism and egoism might not be comparable between the different experiments, it is still possible to distinguish between types in tendency.

**Figure A4: Distribution of responses to measure**



Note: response to “Which sentence characterizes the behavior of the people in your barangay best?”  
 Little help: People are always busy and don’t help so much (“Egoists”)  
 Family/friends first: People help first of all their family and friends when help is needed  
 Help reciprocal: People help only those people they know will also help them  
 Always help: People help each other whenever somebody needs help (“Altruists”)

Table A8 (specification 1 and 2) shows results in the Communication Experiment by motivational type. We find that crowding-out of strategic motives almost exclusively stems from participants indicating egoism. Specifications 3 and 4 show results for the Communication Experiment with hiding, where now mainly intrinsic motives should drive solidarity. Similar to the Anonymous Experiments, we again find much stronger crowding-in effects amongst participants indicating egoism. Finally, specification 5 and 6 of Table A8 show the estimates for the Anonymous Experiment where again, the crowding-in effect appears slightly stronger (and significant) for non-altruists.

**Table A8: Crowding effects by motivational type elicited via survey measures**

VARIABLES	Communication Experiment		Communication Experiment with hiding		Anonymous Experiment	
	(1) Survey: Egoism	(2) Survey: No Egoism	(3) Survey: Egoism	(4) Survey: No Egoism	(5) Survey: Altruism	(6) Survey: No Altruism
Insurance x Difference	<b>-0.141**</b> (0.0626) [0.0280]	-0.0107 (0.0285) [0.708]	<b>0.149***</b> (0) [0]	0.0502 (0.0370) [0.176]	<b>0.0347*</b> (0.0198) [0.0800]	0.0265 (0.0220) [0.228]
Difference ( $Y_i - Y_j$ )	0.192** (0.0893) [0.0360]	0.160*** (0) [0]	-0.0797 (0.0555) [0.156]	0.0943*** (0) [0]	0.0471* (0.0254) [0.0640]	0.0560 (0.0371) [0.132]
Observations	61	252	68	239	322	383

Note: P-values (in square brackets) obtained via wild clustered bootstrap inference (Cameron, Gelbach, and Miller 2008), hence standard errors are ‘rigged’ but reported in parentheses to illustrate level of significance, clustered at the session level, 500 bootstrap iterations, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; Same specification as first column in main result tables.

## Appendix B Experimental Protocols

### Appendix B.1 Communication Experiment

#### When participants arrive

[Participants answer the pre-questionnaire.]

[Each participant arriving gets a random player number.]

[Participants are assigned a seat according to the player number.]

#### Basic instructions

Thank you all for coming today. My name is [local instructor] and this is [researcher]. In this experiment today, we want to play some games where you can earn a considerable amount of money that you are permitted to keep and take home. In these games you will have to make decisions that will influence your personal outcome, but each of you will be given a show-up fee of 100 Pesos at the end for sure. [Show a 100 Peso bill.] The whole procedure will last around 3 hours. Thank you in advance for your effort and time.

You should understand that the money you can earn in these games is not [researcher]'s own money. It is money given to him by the German government to do a research study, which will eventually be part of a book. Many other researchers are carrying out similar games all around the world. The games are research.

1. If at any time you find that this is something that you do not wish to participate in for any reason, you are of course free to leave whether we have started the game or not. **But if you feel uncomfortable already now, or you already know that you will not be able to stay for the three to four hours, then you should not participate.**

2. It is very important that you understand the games. Therefore we will check your understanding by asking each of you test questions about the rules. If you do not understand the rules you may always ask the assistants to explain them. **But if you cannot answer the test questions after explaining them again, we will have to exclude you from the game.**

3. Before you get handed out your money at the end of the workshop, you are asked to answer a questionnaire. It is very important for our research, that you answer **all questions seriously**. You will receive your payment only after completing the questionnaire.

After knowing these rules, is there anybody who does not like to participate anymore?

[Wait some moments.]

[If necessary explain the following:]

During the game we are going to use a dice. This is what the dice looks like [show dice]. A dice has six sides each of it has the same size and shape. Therefore, the chance for each side to be drawn is the same. On each side of the dice you can see a number. The numbers range from 1 to 6. If you throw a dice the important number is the one which you see at the top of the dice. This means: the number thrown is the number which you can see by looking at the dice from above. I will throw the dice three times to show you how it works [throw dice to show example and explain the number on top]. During the games your payouts will be determined by throwing the dice.

Each player is provided with an amount of 200 Pesos at the beginning of each game. We play the games with play money. That means the bills look similar to real bills and have the same value. At the end of the workshop you get your earnings as real Peso money. Here you can see some of the play money. [Show play money.]

There will be different games. At the beginning of each game, each of you will be given 200 Pesos. While playing the game you might lose some of this 200 Pesos. What you are able to keep from the initial 200 Pesos will be important for your final earnings. Your private money and the show-up fee are always untouched, so you can only lose money that you received from us.

You will be paid 100 Pesos for coming to the workshop plus the additional earnings that you have kept during one round of the experiment. You can keep money in each game depending on your decisions. **Just one of the games is finally paid out.** It is randomly determined by a dice which of the three games will be paid out to you. **So the outcomes in one game have no influence on the outcomes in the other games.** After you played the games and answered your questionnaire at the end, one by one will come to [researcher], who will hand out these earnings to you and you sign the receipt.

You all received a plastic bag with player number and group number already. The player number is your personal number and the group numbers is the same for three of you who will play in one group for the whole time. You keep this numbers for all three games of the workshop and have to show them at the end in order to get paid. **So always remember to take the plastic bag with your player number with you.** After we have read aloud the instructions for the first game of the workshop, we will call you by your player number. Please follow the assistant if you are called.

There are some more rules for communication. If you have questions, always raise your hand and wait until one of the assistants comes to you. Then you can ask your question and the assistant will answer it. When you are sitting at your table during breaks you are not allowed to discuss the game, but you may talk about the weather, politics and so on. If you talk to your group members when it is allowed to do so, you may not use threats or swearing. If you do not follow these rules you will be excluded from the games and only receive the show-up fee.

[In the following, the instructions vary across the different treatments, as indicated by the treatment plan. The relevant parts, shown in Table 2 of the main text, are described below.]

	<b>No Insurance</b>	<b>Insurance</b>	
Round 1	Normal Risk	Normal Risk or Insurance 1	Normal Risk or Insurance 2
Round 2	Normal Risk		

[We present the instructions for each of the three treatment variants shown above (Normal Risk / Normal Risk or Insurance 1 / Normal Risk or Insurance 2) on the following pages, before documenting the final payout procedure.]

## Normal Risk Treatment

Let's turn to the game. We have formed groups, each consisting of 3 players. [Explain group formation<sup>31</sup>] You will get to know your group members later. They are sitting at another table and you are not allowed to talk with other tables while you wait here in the welcome room.

All of you are given 200 Pesos at the beginning of the game. We give you this amount in form of play money. It is already in your plastic bag.

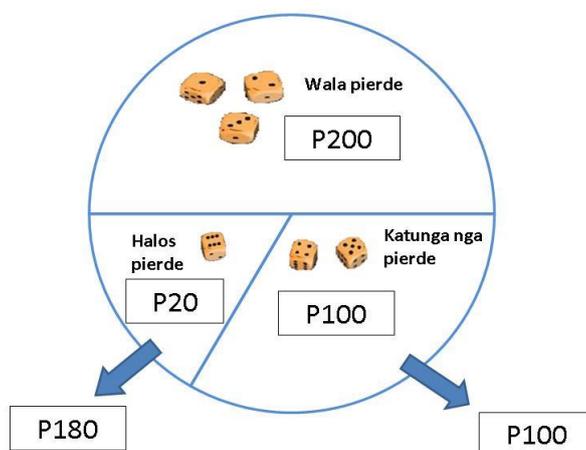
[Show money]

Each of you can experience different situations during this game that influence your financial outcomes: We will randomly determine whether you are exposed to no event, a medium or a catastrophic event. They all occur with different chances. No event happens in 3 out of 6 cases on average. A medium event happens in 2 out of 6 cases on average. A catastrophic event happens once in six times on average. Each of you will roll the dice separately in the dice room.

You go to the *dice room* by yourself where your player number will be checked. To determine whether you face no event, a medium event or a catastrophic event you throw a dice. An event goes along with a loss of some of your initial 200 Pesos. This is dice option **ANGOLA**.

[Explain points at dice poster A]

option ANGOLA:



- Throwing a 1, 2 or 3 means no event:

If you are exposed to no event you do not lose any of your money. You can keep all your 200 Pesos.

<sup>31</sup> Depending on whether group formation was endogenous or exogenous, insert either:

- “You were asked to bring some of your friend or relatives with you to the game. As far as possible we tried to consider this and assign you to the same group”.
- or
- “We have formed groups at random”.

- Throwing a 4 or 5 means a medium event:

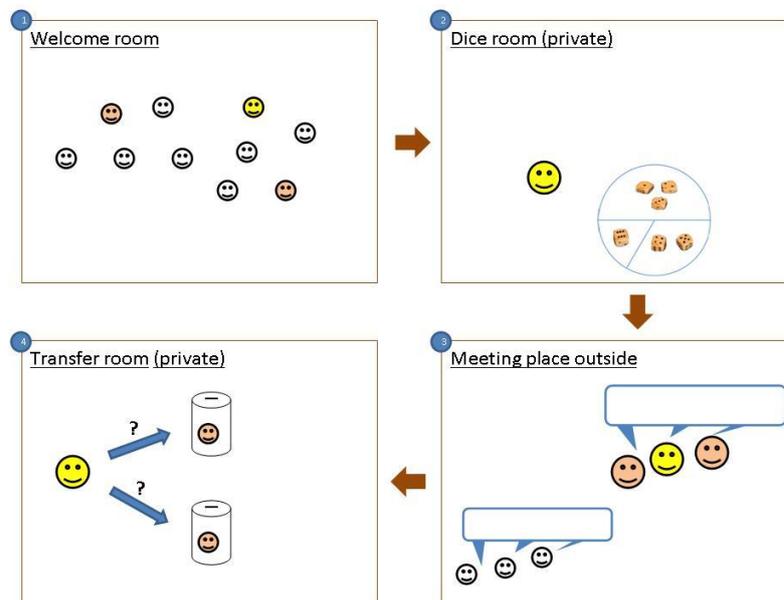
If the medium event occurs you lose 100 of your initial 200 Pesos

- Throwing a 6 means a catastrophic event:

If the catastrophic event occurs you lose 180 Pesos of your initial 200 Pesos.

If you face an event the amount is taken away according to the severity of the event. Do you understand how the loss is determined? What happens if you roll a 2? [Wait for an answer.] What happens if you roll a 4? [Wait for an answer.] What happens if you roll a 6? [Wait for an answer.]

[Overview poster]



After you rolled the dice you meet with your group. When the group is complete you have some minutes to talk within your group. Then you individually go to the *transfer room* where the assistant will announce the amount your group members took out of the *dice room*. Afterwards you choose how much you want to transfer to the other group members. Remember that you are not the only one who can transfer, each of your group can transfer to the others. An assistant will ask you whether and how much of your money you transfer to your other group mates. This amount will be collected by the assistant in the *transfer room*. You can freely choose how much of the money you have in your hand you transfer and to which person you transfer. The rest of your money is noted and collected.

When everybody is back at the table, new start money is distributed and a new game is played. You will only get to know which game is paid out after we finished playing all games.

Are there any questions or points that remained unclear and shall be explained in more detail? Otherwise I will now show the procedure again.

[Wait for questions; show overview poster and illustrate one *example round*]

Now we start with this game. Please follow the assistant that calls you.

[Call participants and ask test questions]

[Lead participants one by one to dice room and play *dice option and dice procedure*]

Box: *Dice procedure* (play individually with each of the participants)

[People arrive at *dice room*, enter and close the door]

My name is xxx and you now can roll the dice to determine your outcome according to this chart. [Show lottery chart.] Please show me your player and group number.

[Note player/group number. Give participant the dice and show how to use it. Note result.]

So you finally have \_\_\_\_ Pesos in your hand. Please go to the place outside. Do not talk with your group members until the group is complete and the assistant allows you to do so.

[Participant goes to *communication area*]

[Group by group meets outside. When group is complete, announce that they can talk.]

Now you have some minutes to talk, before each of you individually decides what to give to others.

[Give at least 3-5 minutes to talk. Assistants note agreements etc. on their sheet. Proceed if *transfer room* is ready for new group.]

The talking time is over. Please stop talking and follow the assistant if you are called.

[Lead individuals to *transfer room* and play *transfer*.]

Box: Transfer procedure (play individually with each of the participants)

[people arrive at *transfer room*, enter and close the door]

Hello. My name is xxx and you can now tell me whether you want to give something to your group members. I will note this and the money will be redistributed if this round is going to be paid out. Can you please show me your player and group number?

[Note player/group number.]

I know that ... took ... out of the dice room [read list of money at hand for the 3 members.]

Do you want to give something to (other1)?

(if yes) How much do you want to give? [Note and collect amount]

Do you want to give something to (other2)?

(if yes) How much do you want to give? [Note and collect amount]

You have decided to give \_\_ Pesos to (other1) \_\_ Pesos to (other2). Please go back to your seat.

[Note and collect the rest. Participant is led back to seat in *welcome room*.]

## Normal Risk or Insurance 1 Treatment

Let's turn to the game. We have formed groups, each consisting of 3 players. [Explain group formation<sup>32</sup>] You will get to know your group members later. They are sitting at another table and you are not allowed to talk with other tables while you wait here in the welcome room.

All of you are given 200 Pesos at the beginning of the game. We give you this amount in form of play money. It is already in your plastic bag.

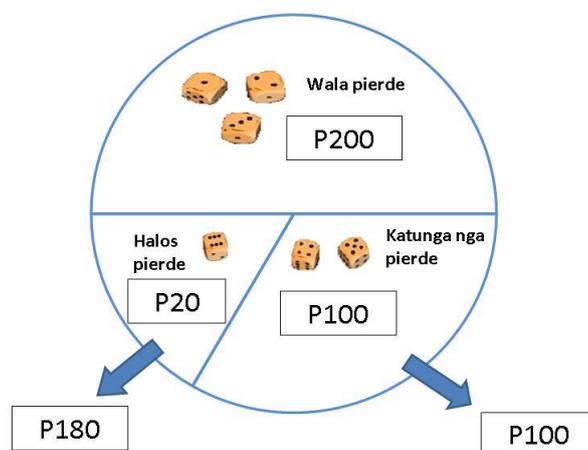
[Show money]

Each of you can experience different situations during this game that influence your financial outcomes: We will randomly determine whether you are exposed to no event, a medium or a catastrophic event. They all occur with different chances. No event happens in 3 out of 6 cases on average. A medium event happens in 2 out of 6 cases on average. A catastrophic event happens once in six times on average. Each of you will roll the dice separately in the dice room.

You go to the *dice room* by yourself where your player number will be checked. To determine whether you face no event, a medium event or a catastrophic event you throw a dice. An event goes along with a loss of some of your initial 200 Pesos. This is dice option **ANGOLA**.

[Explain points at dice poster A]

option ANGOLA:



- Throwing a 1, 2 or 3 means no event:

If you are exposed to no event you do not lose any of your money. You can keep all your 200 Pesos.

<sup>32</sup> Depending on whether group formation was endogenous or exogenous, insert either:

- “You were asked to bring some of your friend or relatives with you to the game. As far as possible we tried to consider this and assign you to the same group”.
- or
- “We have formed groups at random”.

- Throwing a 4 or 5 means a medium event:

If the medium event occurs you lose 100 of your initial 200 Pesos

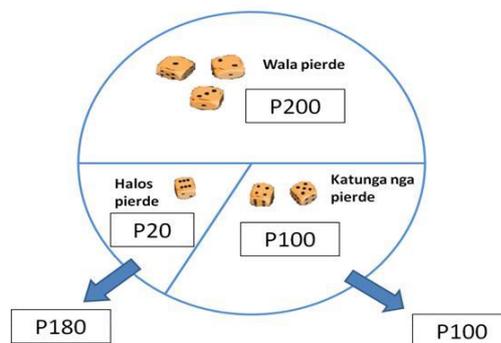
- Throwing a 6 means a catastrophic event:

If the catastrophic event occurs you lose 180 Pesos of your initial 200 Pesos.

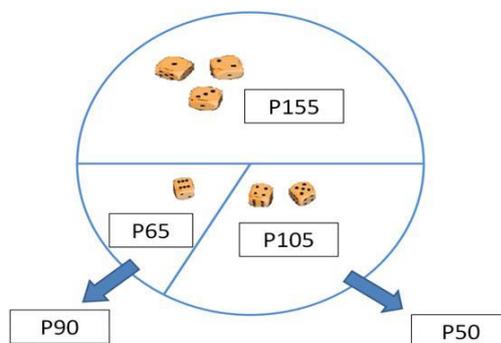
Instead, you have the possibility to purchase dice option **BOTSWANA** at a price of 45 Pesos that you can pay from your initial 200 Pesos. So if you decide to purchase this option, you have 155 Pesos left before rolling the dice.

[Show dice poster AB]

option ANGOLA:



Bayad 45 para sa option BOTSWANA:



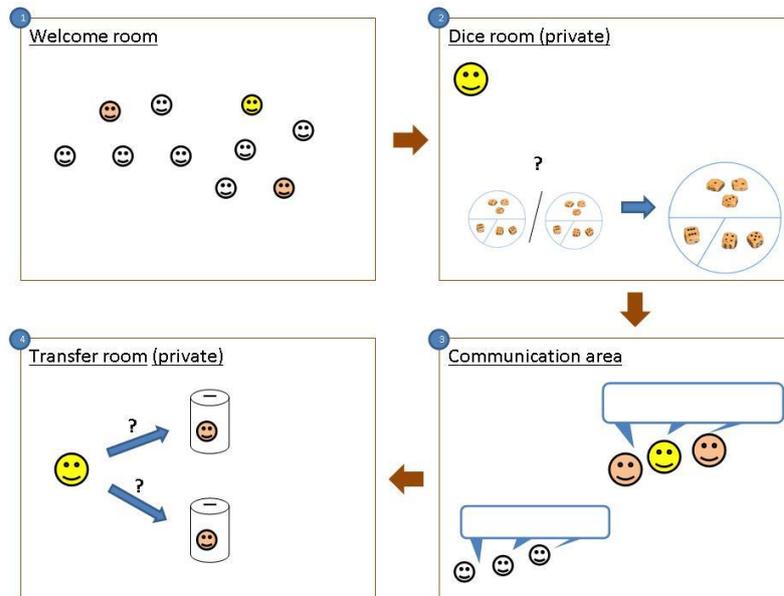
With the dice option your catastrophic loss and your medium event loss are only half of the losses with dice option **ANGOLA**. But you have to pay 45 Pesos for sure.

- E.g. if you roll a 6 and there is a catastrophic event that takes away almost all your initial money with dice option **ANGOLA**, with this dice option you will only lose half. Then you finally would have 200 Pesos minus 45 Pesos to buy this dice option minus 90 remaining loss, which equals to 65 Pesos.
- If you roll a 4 or 5 and there is a medium event occurring to you, you would have to pay 100 Pesos with option **ANGOLA**. With dice option **BOTSWANA** you will only lose 50 Pesos. Finally 105 Pesos would remain for you.
- If you roll a 1, 2 or 3 and no event occurs you finally get 200 Pesos minus 45 Pesos for the **BOTSWANA** option, which is 155 Pesos.

Before rolling the dice you tell the instructor which dice option you prefer. Did you understand all this? Can you decide on the options after you roll the dice? With dice option **ANGOLA** what happens if you roll a 1? [Wait for an answer.] And with option **BOTSWANA** what happens if you roll a 1? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 4? [Wait for an answer.] And with option **BOTSWANA**? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 6? [Wait for an answer.] And with option **BOTSWANA**? [Wait for an answer.] If there are any unclear points with regard to the dice options you can ask the instructor.

So you go to the *dice room* and he will check your player number. You make the decision on the dice option and pay the price if you decide to buy option **BOTSWANA**. Then you determine the event by throwing a dice. Some of your money is taken away according to the event.

[Overview poster]



After you rolled the dice you meet with your group. When the group is complete you have some minutes to talk within your group. Then you individually go to the *transfer room* where the assistant will announce the amount your group members took out of the *dice room*. Afterwards you choose how much you want to transfer to the other group members. Remember that you are not the only one who can transfer, each of your group can transfer to the others. An assistant will ask you whether and how much of your money you transfer to your other group mates. This amount will be collected by the assistant in the *transfer room*. You can freely choose how much of the money you have in your hand you transfer and to which person you transfer. The rest of your money is noted and collected.

These were the instructions of the procedure of this game. Are there any questions or points that remained unclear and shall be explained in more detail? We will now show the procedure again.

[Illustrate one *example round*, use overview poster]

Are there any questions? [Wait for questions and answer (individually with assistants)]

Now we start with the game. Please follow the assistant if your number is called.

[Call participants and ask test questions]

[Lead participants one by one to first room and play dice procedure].

Box: *Dice option and dice procedure* (play individually with each of the participants)

[People arrive at *dice room*, enter and close the door]

Hello. Please show me your player and group number.

[Note player/group number.]

You now can decide whether to purchase the dice option before you roll the dice to determine your event according to these charts, depending on whether you take the option or not. [Show dice poster AB.] Do you have any questions on this possibility?

[Wait for questions and answer them]

Do you want to purchase the option? [Note option decision, collect premium]

You can now roll the dice to determine your outcome. [Give participant the dice and show how to use it. Note result.]

So you finally have \_\_\_\_ Pesos in your hand. Please go to the *communication area*.

[Participant goes to communication area]

[Group by group meets outside. When group is complete, announce that they can talk.]

Now you have some minutes to talk, before each of you individually decides what to give to others.

[Give at least 3-5 minutes to talk. Assistants note agreements etc. on their sheet. Proceed if *transfer room* is ready for new group.]

The talking time is over. Please stop talking and follow the assistant if you are called.

[Lead individuals who have money to *transfer room* and play *transfer*.

Box: Transfer procedure (play individually with each of the participants)

[People arrive at *transfer room*, enter and close the door]

Hello. You can now tell me whether you want to give something to your group members. I will note this and the money will be redistributed if this round is going to be paid out. Can you please show me your player and group number?

[Note player/group number.]

I know that ... took ... out of the dice room [read list of money at hand for 3 members.]

Do you want to give something to (other1)?

(if yes) How much do you want to give? [Note and collect amount]

Do you want to give something to (other2)?

(if yes) How much do you want to give? [Note and collect amount]

You have decided to give \_\_ Pesos to (other1) \_\_ Pesos to (other2). Please go back to your seat.

[Note and collect the rest. Participant is led back to his/her seat.]

## Normal Risk or Insurance 2 Treatment

Let's turn to the game. We have formed groups, each consisting of 3 players. [Explain group formation<sup>33</sup>] You will get to know your group members later. They are sitting at another table and you are not allowed to talk with other tables while you wait here in the welcome room.

All of you are given 200 Pesos at the beginning of the game. We give you this amount in form of play money. It is already in your plastic bag.

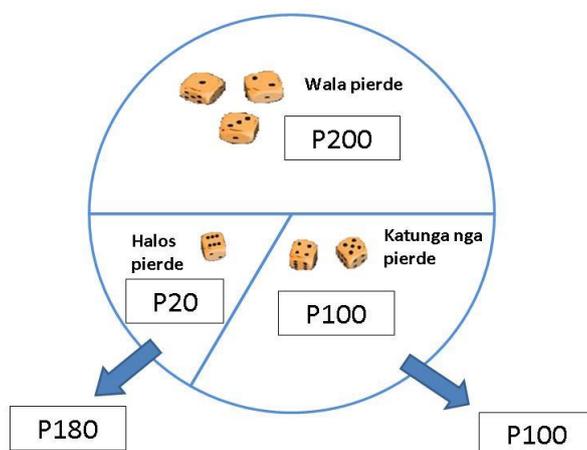
[Show money]

Each of you can experience different situations during this game that influence your financial outcomes: We will randomly determine whether you are exposed to no event, a medium or a catastrophic event. They all occur with different chances. No event happens in 3 out of 6 cases on average. A medium event happens in 2 out of 6 cases on average. A catastrophic event happens once in six times on average. Each of you will roll the dice separately in the dice room.

You go to the *dice room* by yourself where your player number will be checked. To determine whether you face no event, a medium event or a catastrophic event you throw a dice. An event goes along with a loss of some of your initial 200 Pesos. This is dice option **ANGOLA**.

[Explain points at dice poster A]

option ANGOLA:



- Throwing a 1, 2 or 3 means no event:

If you are exposed to no event you do not lose any of your money. You can keep all your 200 Pesos.

<sup>33</sup> Depending on whether group formation was endogenous or exogenous, insert either:

- “You were asked to bring some of your friend or relatives with you to the game. As far as possible we tried to consider this and assign you to the same group”.
- or
- “We have formed groups at random”.

- Throwing a 4 or 5 means a medium event:

If the medium event occurs you lose 100 of your initial 200 Pesos

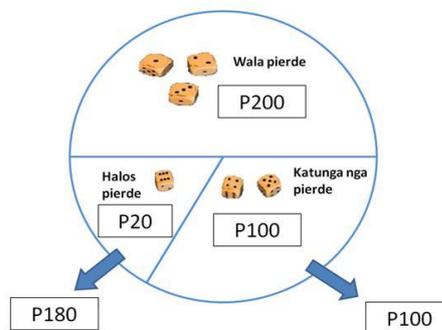
- Throwing a 6 means a catastrophic event:

If the catastrophic event occurs you lose 180 Pesos of your initial 200 Pesos.

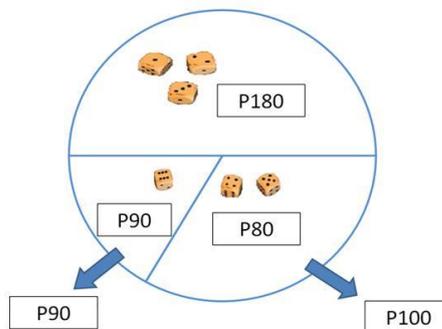
Instead, you have the possibility to purchase dice option **CAMEROON** at a price of 20 Pesos that you can pay from your initial 200 Pesos. So if you decide to purchase this option, you have 180 Pesos left before rolling the dice.

[Show dice poster AC]

option ANGOLA:



Bayad 20 para sa CAMEROON:



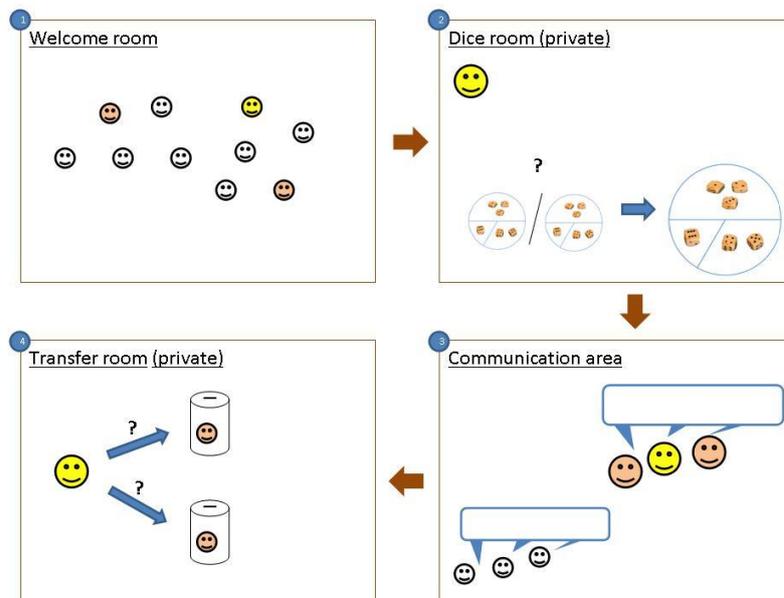
With the dice option your catastrophic loss is only half of the catastrophic loss with dice option **ANGOLA**. But you have to pay 20 Pesos for sure.

- E.g. if you roll a 6 and there is a catastrophic event that takes away almost all your initial money with dice option **ANGOLA**, with this dice option you will only lose half. Then you finally would have 200 Pesos minus 20 Pesos to buy this dice option minus 90 remaining loss, which equals to 90 Pesos.
- If you roll a 4 or 5 and there is a medium event occurring to you, you would have to pay 100 Pesos with option **ANGOLA**. With dice option **CAMEROON** you will also lose 100 Pesos. Finally 80 Pesos would remain for you.
- If you roll a 1, 2 or 3 and no event occurs you finally get 200 Pesos minus 20 Pesos for the option, which is 180 Pesos.

Before rolling the dice you tell the instructor which dice option you prefer. Did you understand all this? Can you decide on the options after you roll the dice? With dice option **ANGOLA** what happens if you roll a 1? [Wait for an answer.] And with option **CAMEROON** what happens if you roll a 1? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 4? [Wait for an answer.] And with option **CAMEROON**? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 6? [Wait for an answer.] And with option **CAMEROON**? [Wait for an answer.] If there are any unclear points with regard to the dice options you can ask the instructor.

So you go to the *dice room* and he will check your player number. You make the decision on the dice option and pay the price if you decide to buy option **CAMEROON**. Then you determine the event by throwing a dice. Some of your money is taken away according to the event.

[Overview poster]



After you rolled the dice you meet with your group. When the group is complete you have some minutes to talk within your group. Then you individually go to the *transfer room* where the assistant will announce the amount your group members took out of the *dice room*. Afterwards you choose how much you want to transfer to the other group members. Remember that you are not the only one who can transfer, each of your group can transfer to the others. An assistant will ask you whether and how much of your money you transfer to your other group mates. This amount will be collected by the assistant in the *transfer room*. You can freely choose how much of the money you have in your hand you transfer and to which person you transfer. The rest of your money is noted and collected.

When everybody is back at the table, new start money is distributed and a new game is played. You will only get to know which game is paid out after we finished playing the three games.

[Researcher] and his assistant will pay you the amount you had left after giving to others in the chosen game plus the amount your group members gave to you in that game. Did you understand everything? Will you know after the first game what your group members gave you? [Wait for an answer.] Will you know it after the second game? [Wait for an answer.] Do you want me to explain this again?

These were the instructions of the procedure of this game. Are there any questions or points that remained unclear and shall be explained in more detail? We will now show the procedure again.

[Illustrate one *example round*, use overview poster]

Are there any questions? [Wait for questions and answer (individually with assistants)]

Now we start with the game. Please follow the assistant if your number is called.

[Call participants and ask test questions]

[Lead participants one by one to first room and play dice procedure].

Box: *Dice option and dice procedure* (play individually with each of the participants)

[People arrive at *dice room*, enter and close the door]

Hello. Please show me your player and group number.

[Note player/group number.]

You now can decide whether to purchase the dice option before you roll the dice to determine your event according to these charts, depending on whether you take the option or not. [Show dice poster AC.] Do you have any questions on this possibility?

[Wait for questions and answer them]

Do you want to purchase the option? [Note option decision, collect premium]

You can now roll the dice to determine your outcome. [Give participant the dice and show how to use it. Note result.]

So you finally have \_\_\_\_ Pesos in your hand. Please go to the *communication area*.

[Participant goes to communication area]

[Group by group meets outside. When group is complete, announce that they can talk.]

Now you have some minutes to talk, before each of you individually decides what to give to others.

[Give at least 3-5 minutes to talk. Assistants note agreements etc. on their sheet. Proceed if *transfer room* is ready for new group.]

The talking time is over. Please stop talking and follow the assistant if you are called.

[Lead individuals who have money to *transfer room* and play *transfer*.

Box: *Transfer procedure* (play individually with each of the participants)

[People arrive at *transfer room*, enter and close the door]

Hello. You can now tell me whether you want to give something to your group members. I will note this and the money will be redistributed if this round is going to be paid out. Can you please show me your player and group number?

[Note player/group number.]

I know that ... took ... out of the dice room [read list of money at hand for 3 members.]

Do you want to give something to (other1)?

(if yes) How much do you want to give? [Note and collect amount]

Do you want to give something to (other2)?

(if yes) How much do you want to give? [Note and collect amount]

You have decided to give \_\_ Pesos to (other1) \_\_ Pesos to (other2). Please go back to your seat.

[Note and collect the rest. Participant is led back to his/her seat.]

## **Questionnaire and Payout**

After having played all the games we will now determine which one to pay out.

Please recall the payment rules.

There is a show-up fee of 100 Pesos plus we roll the dice to determine which game is paid out to you. We throw the dice: 1 and 2 means that game 1 is paid out, 3 and 4 means game 2 is paid out, 5 and 6 means game 3 is paid out.

So now I throw the dice. The result applies to all of you.

[Roll the dice. Alternatively, one of the participants can do it.]

The result is... So you will later be paid out game ...

Now please fill out the questionnaire that is handed out by the assistants. Then you are separately led to a private room where you get your final payments. You give the questionnaire to the instructor and sign a receipt to approve your received money and participation. The money consists of the show up fee, the money left after you transferred to others in game ... and the transfers you received from others in game ...

## **Appendix B.2      Anonymous Experiment**

### **When participants arrive**

[Participants answer the pre-questionnaire.]

[Each participant arriving gets a random player number.]

[Participants are assigned a seat according to the player number.]

### **Basic instructions**

Thank you all for coming today. My name is [local instructor's Name] and this is [researcher]. [Researcher] is a researcher at a university in Germany. In this game today, we want to play some games where you can earn a considerable amount of money that you are permitted to keep and take home. In these games you will have to make decisions that will influence your personal earning, but each of you will be given a show-up fee of 100 Pesos at the end for sure. [Show a 100 Peso bill.] The whole procedure will last around 3 hours. Thank you in advance for your effort and time. [Researcher] is working together with other researchers who are carrying out similar games all around the world.

1. If at any time you find that this is something that you do not wish to participate in for any reason, you are of course free to leave whether we have started the game or not. **But if you feel uncomfortable already now, or you already know that you will not be able to stay for the three to four hours, then you should tell us now.**

2. It is very important that you understand the games. Therefore we will check your understanding by asking each of you test questions about the rules. If you do not understand the rules you may always ask the assistants to explain them. **But if you cannot answer the test questions after explaining them again, we will have to exclude you from the game and you receive only the show-up fee of 100 Pesos.** But don't worry, we will do our best to help you understand.

3. Before you get handed out your money at the end of the workshop, you are asked to answer a questionnaire. It is very important for our research, that you answer **all questions seriously**. You will receive your payment only after completing the questionnaire.

After knowing these rules, is there anybody who does not like to participate anymore?

[Wait some moments.]

There will several games that are slightly different. At the beginning of each game, each of you will be given 200 Pesos [show money]. You will make your decision on a sheet of paper. In each game you might lose some of this 200 Pesos. What you are able to keep from the initial 200 Pesos will be important for your final earnings. How much you keep in each game depends on your decisions, decisions of others and luck. The 100 Pesos for coming to the workshop are always untouched.

We will draw a ball at the end to determine which of the games will be paid out to you. **Just one the games is finally paid out.** [Show balls with numbers] **This is why the outcomes in one game have no influence on the other games. So if you play a game, don't worry what happened in the games before. Just take each game seriously on its own, because it might be the one that is paid out.**

In the games you have to make decisions about small sums of money. Each decision you make is as good – there are no wrong decisions. Your decisions will be kept in private, **so just choose the option YOU like best!** After you played the games and answered your questionnaire at the end, one by one will come to [Researcher], who will hand out these earnings plus the show-up fee to you and you sign the receipt.

You all received a plastic bag with player number already. The player number is your personal number. You keep this number for all games of the workshop and have to show them at the end in order to get paid. **So always remember to take the plastic bag with your player number with you.** After we have read aloud the instructions for the first game of the workshop, we will call you by your player number. Please follow the assistant if you are called.

There are some more rules for communication. During the game talking is strictly prohibited. You cannot ask questions or talk about the rules of the game to other participants while we are in the process of playing. If you have any questions, please raise your hand and wait until someone comes to answer your question in private. If you do not follow the rule you cannot participate in the game anymore and get no earnings from the games.

[Explain and conduct Game 1: **Insurance / Lottery Choice**]

*Participants had the choice between a risky option A (lose initial endowment of 200 with probability 1/3) or a less risky option B (pay 40 Pesos to reduce possible loss to 100). Each participant took an individual decision.*

For the rest of the game we have formed groups, each consisting of 3 players. Each of the originally invited [point to the left side where originally invited sit] brought along two friends. One sits on the right side and will play with you [point to the right side]. The other sits in the middle and will not be in the same group. Instead, the third player in your group will be someone from the middle, but you will never know who it is exactly. And the ones in the middle will never know the two other group members they play with. From now on we will call the unknown players “Player X”.

[Explain and conduct Game 2: **Solidarity Game**  
(equivalent to **Normal Risk Treatment**)]

[Explain and conduct Game 3: **Conditional Solidarity Game**]

*Elicitation of conditional solidarity types (inspired by the notion of ‘conditional cooperation’ from public good games).*

[In the following, the instructions vary across the different treatments, as indicated by the treatment plan. The relevant parts, shown in Table 2 of the main text, are described below.]

	<b>No Insurance</b>		<b>Insurance</b>
before	Insurance / Lottery Choice Solidarity Game Conditional Solidarity Game		
Round 1	Normal Risk	Low Risk	Normal Risk or Insurance 3

[We present the instructions for each of the three treatment variants shown above (Normal Risk / Low Risk / Normal Risk or Insurance 3) on the following pages. Note that these treatments are strongly based on the instructions for the Solidarity Game, so we initially present the latter in detail, before explaining the different variants and then documenting the final payout procedure.]

### **Solidarity Game** [equivalent to Normal Risk Treatment]

You have 200 Pesos at the beginning of the game. Whether you can keep your 200 Peso or lose money will depend partly on your choices and partly on your luck. For each group we now have an opaque bag with 3 balls in it. This means that there are as many balls in the bag as we have players in a group. Each player will have to draw one ball. Out of the 3 balls there are 2 white and 1 red ball. If you draw a white ball you can keep your 200 pesos. If you draw a red ball you lose all 200 pesos. That means that one of the three players in each group will lose everything and two out of three will not lose anything. There is no Option B like in the last game.

In this game the two winners can give money to the loser. Before knowing which ball you draw, all of you will be asked whether and how much they would like to send to the other two players of their group in case they will draw a red ball and lose 200 Peso. Remember that exactly one of you three will lose for sure. Remember also that you are not the only one who can transfer since there will always be two players with 200 Peso in your group. You can transfer between 0 and 70 of your 200 pesos to the loser. We will ask you to write down on a worksheet how much you would give to the other players. Amounts are in steps of 10 Peso. You can also transfer zero. So transfers are 0, 10, 20, 30, 40, 50, 60 or 70. Each transfer decision you make is as good – there are no wrong decisions. Your transfers will be kept in private, **so just choose the amount YOU like best! Remember it's real money.**

From now on we will call the group member you know \_\_\_\_\_ and the unknown group member Player X. For the players sitting in the middle [point] there will be two unknown players Player X and Player Y. So imagine you keep your 200 Peso and Player X loses his entire 200 Peso. We will ask you to write down on the worksheet how much you give to Player X in this case (0, 10, 20, 30, 40, 50, 60 or 70). Now imagine you keep your 200 Peso and \_\_\_\_\_ loses his entire 200 Peso. We will ask you to write down on the worksheet how much you give to \_\_\_\_\_ in this case (0, 10, 20, 30, 40, 50, 60 or 70).

We also want you to think about the transfer of the other winner in your group to the loser. Please guess the amounts that will be transferred. If you guessed correctly you will earn 10 pesos extra for each guess.

Lastly, it might also be that you draw the red ball and lose. For this case we ask you to guess how much \_\_\_\_\_ and Player X would give to you in this case. We will never tell you whether you were right. But [Researcher] will look at the choice actually made by \_\_\_\_\_ and Player X and compare their choices to your guess. If you guessed correctly you will earn 10 pesos extra for each guess. The best thing you can do to increase your payoff is to truthfully state what you think \_\_\_\_\_ and Player X would do.

[SHOW AND EXPLAIN PARTICIPANT FORM *make sure that the player is looking, seeing, and concentrating*]

○ no loss	GUESS TRANSFER OF _____ ○	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>0</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td></tr> </table>	□	□	□	□	□	□	□	□	0	10	20	30	40	50	60	70
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○ no loss	GUESS TRANSFER OF <b><u>Player X</u></b> ○	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>0</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td></tr> </table>	□	□	□	□	□	□	□	□	0	10	20	30	40	50	60	70
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DECIDE TRANSFER TO _____ ●	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>0</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td></tr> </table>	□	□	□	□	□	□	□	□	0	10	20	30	40	50	60	70	
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● lose 200	GUESS TRANSFER OF _____ ○	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>0</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td></tr> </table>	□	□	□	□	□	□	□	□	0	10	20	30	40	50	60	70
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GUESS TRANSFER OF <b><u>Player X</u></b> ○	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td><td>□</td></tr> <tr><td>0</td><td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td></tr> </table>	□	□	□	□	□	□	□	□	0	10	20	30	40	50	60	70	
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0	10	20	30	40	50	60	70											

Your earnings in this game will depend on the colour of the ball you draw, the money you transfer or receive and your guess of the other transfers. If you draw a white ball you keep 200 Peso but might give some of it to the group member who lost. If you draw a red ball you lose all money and have nothing but you might get money from both group members. It is very important that you understand that we will not tell you in this game or any of the following games how much the other players give to you and who the anonymous group members are. The two group members that know each other will draw their balls first and then the bags with one ball left will be brought to [Researcher]. Only she knows from which bag the people in the middle have to draw their ball. Did you understand everything? Will you [point to left and right side] know one member of your group? [Wait for an answer.] Will you know the other member? [Wait for an answer.] Will you [point to middle] know one member of your group? [Wait for an answer.] Will you know after this game what your group members gave you? [Wait for an answer.] Will you know it after the third game? [Wait for an answer.] Do you want me to explain this again?

These were the instructions of the procedure of the second game. Are there any questions or points that remained unclear and shall be explained in more detail? We will start with the test questions now. The assistants will afterwards let you fill in your decision sheet. For the two cases where you draw a white ball please write down how much you would give to the two

group members, respectively. For the case where you draw a red ball and lose everything, guess how much each of the other group members would give you.

[Call participants individually, ask test questions and let participants fill out forms]

[Let pairs draw balls, bring bags back to [Researcher], call anonymous players and let them draw from the corresponding bag (only [Researcher] knows which one)]

### **Normal Risk Treatment**

[play and explain game like in Solidarity Game]

### **Low Risk Treatment**

[play and explain game like in Solidarity Game, but change payoffs: Initial endowment 200-40 = **160** and 1/3 probability to lose **100**]

### **Normal Risk or Insurance 3 Treatment**

The groups are the same as in the last round and again all of you have 200 Pesos at the beginning of the game.

This game is slightly different from the one before. It combines parts of game 1 and game 2. As in game one you can choose between option A and option B and additionally you can also make transfers to your group members as in game 2.

In Option A you can keep your 200 Peso when you draw a white ball; but you receive 0 Peso in the unfortunate case you draw a red ball.

In option B you also have to draw a ball from the same opaque bag with 2 white and 1 red balls, but in option B you only lose 100 pesos if you draw a red ball. In return you have to pay a price of 40 pesos.

Example: “For example if you chose option B, then you lose only 100 pesos if you draw a red ball and you would be left with 60 pesos, because you have to pay the price of 40. If you draw a white ball you lose nothing and you are left with 160 pesos, because you also have to pay the price of 40 pesos.

If you chose option A on the other hand you would lose everything with a red ball and you would be left with 0 pesos. With a white ball you would lose nothing and you would be left with 200 pesos.”

After you have decided whether you prefer option A or option B the decision will be told to the other members of the group. As in game 1 the two winners can give money to the loser. Therefore, before knowing which ball you draw, all of you will be asked whether and how much they would like to send to the other two players of their group in case they will draw a red ball and lose 200 or 100 Peso. For example, the loser will lose 200 pesos with option A and 100 pesos with option B. How much your group members lose might be important for your transfer decision, this is why we tell you the decision. Remember that exactly one of you three will lose for sure. Remember also that you are not the only one who can transfer since there will always be two players with 200/160 Peso in your group. You can transfer between 0 and 70 of your 200/160 pesos to the loser. We will ask you to write down on a worksheet how much you would give to the other players. Amounts are in steps of 10 Peso. Note that your transfer amounts will never be told to the others.

Example: “So imagine you chose option B and draw a white ball. You keep 160 Peso and one group member loses his entire 200 Peso. We will ask you to write down on the worksheet how much you give to this group member in this case (0, 10, 20, 30, 40, 50, 60 or 70). Now imagine you keep 160 Peso and the other group member only loses 100 Peso and pays 40 as a price for the option B. We will ask you to write down on the worksheet how much you give to this other group member in this case (0, 10, 20, 30, 40, 50, 60 or 70).”

Lastly, it might also be that you draw the red ball and lose. For this case we ask you to guess again how much your two group members would give to you in this case. We will never tell you whether you were right. But [Researcher] will look at the choice actually made by the other two group member and compare their choices to your guess. If you guessed correctly you will earn 10 pesos extra for each guess. The best thing you can do to increase your payoff is to truthfully state what you think your group members would do.

[SHOW AND EXPLAIN PARTICIPANT FORM *make sure that the player is looking, seeing, and concentrating*]

○ you pay ___	GUESS TRANSFER OF _____ ( )      ○	<input type="checkbox"/>							
	_____	0	10	20	30	40	50	60	70
	DECIDE TRANSFER TO <b>Player X</b> ( )      ●	<input type="checkbox"/>							
	_____	0	10	20	30	40	50	60	70

○ you pay ___	GUESS TRANSFER OF <b>Player X</b> ( )      ○	<input type="checkbox"/>							
	_____	0	10	20	30	40	50	60	70
	DECIDE TRANSFER TO _____ ( )      ●	<input type="checkbox"/>							
	_____	0	10	20	30	40	50	60	70

● you lose ___ and pay ___	GUESS TRANSFER OF _____ ( )      ○	<input type="checkbox"/>							
	_____	0	10	20	30	40	50	60	70
	GUESS TRANSFER OF <b>Player X</b> ( )      ○	<input type="checkbox"/>							
	_____	0	10	20	30	40	50	60	70

Do you have any questions? These were the instructions of the procedure of the fourth game. Are there any questions or points that remained unclear and shall be explained in more detail?

[Call participants, ask test questions and let them decide about option A/B]

[Researcher] tells assistants the decisions of the group players, then players decide about transfers]

We will distribute the decision sheets now. For the two cases where you draw a white ball please write down how much you would give to the two group members, respectively. For the

case where you draw a red ball and lose everything, guess how much each of the other group members would give you.

[Let participants fill out form separated by screens and draw balls]

## **Questionnaire and Payout**

After having played all the games we will now determine which one to pay out. We will put numbered balls into the plastic bag and blindly draw one of those balls to determine which game everybody will be paid for.

Please recall the payment rules. There is a show-up fee of 100 Pesos plus we will draw one of five balls from the bag to determine the round we will pay out.

The result applies to all of you.

[Draw one ball. Alternatively, one of the participants can do it.]

The result is... So you will later be paid out game ...

Now please fill out the questionnaire that is handed out by the assistants. Then you are separately led to a private room where you get your final payments. You give the questionnaire to the instructor and sign a receipt to approve your received money and participation. The money consists of the show up fee, the money left after you transferred to others in game ... and the transfers you received from others in game ...

### **Appendix B.3      Communication Experiment with Secret Hiding**

*All the basic instruction, the game order, the treatment plan, and the payout procedures are identical to the version without secret hiding.*

*We therefore ONLY provide the detailed description of the three treatment variants (Normal Risk / Normal Risk or Insurance 1 / Normal Risk or Insurance 2) in the following.*

## Normal Risk Treatment

Let's turn to the game. We have formed groups, each consisting of 3 players. [Explain group formation<sup>34</sup>] You will get to know your group members later. They are sitting at another table and you are not allowed to talk with other tables while you wait here in the welcome room

All of you are given 200 Pesos at the beginning of the game. We give you this amount in form of play money. It is already in your plastic bag.

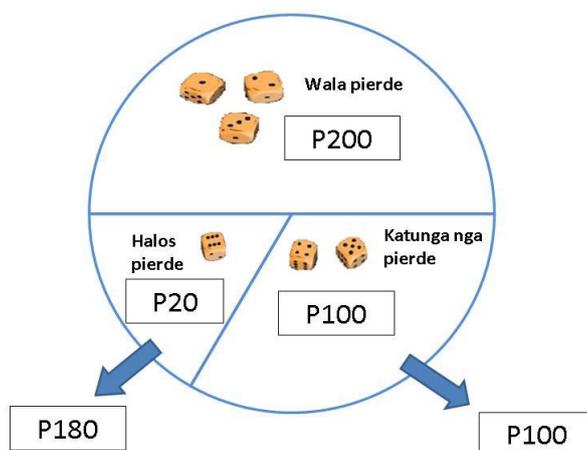
[Show money]

Each of you can experience different situations during this game that influence your financial outcomes: We will randomly determine whether you are exposed to no event, a medium or a catastrophic event. They all occur with different chances. No event happens in 3 out of 6 cases on average. A medium event happens in 2 out of 6 cases on average. A catastrophic event happens once in six times on average. Each of you will roll the dice separately in the dice room.

You go to the *dice room* by yourself where your player number will be checked. To determine whether you face no event, a medium event or a catastrophic event you throw a dice. An event goes along with a loss of some of your initial 200 Pesos. This is dice option **ANGOLA**.

[Explain points at dice poster A]

option ANGOLA:



- Throwing a 1, 2 or 3 means no event:

If you are exposed to no event you do not lose any of your money. You can keep all your 200 Pesos.

<sup>34</sup> Depending on whether group formation was endogenous or exogenous, insert either:

- “You were asked to bring some of your friend or relatives with you to the game. As far as possible we tried to consider this and assign you to the same group”.
- or
- “We have formed groups at random”.

- Throwing a 4 or 5 means a medium event:

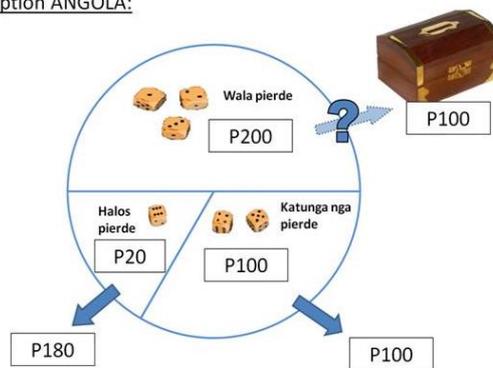
If the medium event occurs you lose 100 of your initial 200 Pesos

- Throwing a 6 means a catastrophic event:

If the catastrophic event occurs you lose 180 Pesos of your initial 200 Pesos.

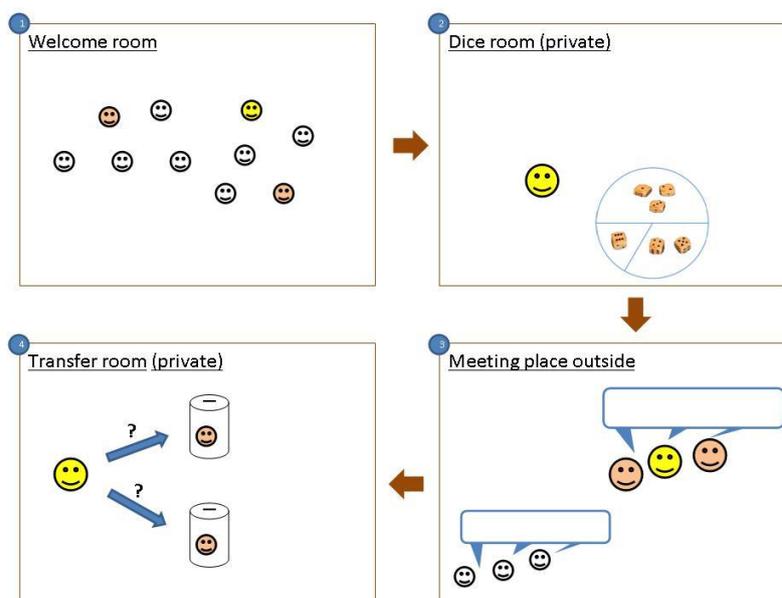
If you face an event the amount is taken away according to the severity of the event. Do you understand how the loss is determined? What happens if you roll a 2? [Wait for an answer.] What happens if you roll a 4? [Wait for an answer.] What happens if you roll a 6? [Wait for an answer.]

option ANGOLA:



However if there was no event occurring to you after rolling the dice you are given the possibility to keep 100 Pesos in a lockbox in the room before meeting again with your group. You can always keep the difference to the medium event in the box. So you take money out of the room as if you had a medium event. You should know that this is your private lockbox and nobody except [researcher] and his assistant will ever know about the amount you put into it. The money will be saved for you for this game. [Researcher] and his assistant are also the ones who will give you your earnings of the game that is paid out – including the lockbox money of that game – at the end of the workshop in private. The others will only be able to see the amount you took with you out of the room. Did you understand this? When can you put money in the lockbox? [Wait for an answer.] Can you put money in the lockbox if you roll a 4? [Wait for an answer.]

[Overview poster]



After you rolled and decided about the lockbox the dice you meet with your group. When the group is complete you have some minutes to talk within your group. Then you individually go to the *transfer room* where the assistant will announce the amount your group members took out of the *dice room*. Afterwards you choose how much you want to transfer to the other group members. Remember that you are not the only one who can transfer, each of your group can transfer to the others. An assistant will ask you whether and how much of your money you transfer to your other group mates. This amount will be collected by the assistant in the *transfer room*. You can freely choose how much of the money you have in your hand you transfer and to which person you transfer. The rest of your money is noted and collected.

When everybody is back at the table, new start money is distributed and a new game is played. You will only get to know which game is paid out after we finished playing all games.

Are there any questions or points that remained unclear and shall be explained in more detail? Otherwise I will now show the procedure again.

[Wait for questions; show overview poster and illustrate one *example round*]

Now we start with this game. Please follow the assistant that calls you.

[Call participants and ask test questions]

[Lead participants one by one to dice room and play *dice option and dice procedure*]

Box: *Dice procedure* (play individually with each of the participants)

[People arrive at *dice room*, enter and close the door]

My name is xxx and you now can roll the dice to determine your outcome according to this chart. [Show lottery chart.] Please show me your player and group number.

[Note player/group number. Give participant the dice and show how to use it. Note result.]

(If no losses, go on. Otherwise, skip lockbox procedure):

Please decide whether you want to keep 100 Pesos in the lockbox. This is your private box and nobody except [researcher] and me will ever know about the amount you put into it. [Researcher] and his assistant are also the ones who will give you your earnings at the end of the workshop in private.

[Let people decide and note result]

So you finally have \_\_\_\_ Pesos in your hand. Please go to the place outside. Do not talk with your group members until the group is complete and the assistant allows you to do so.

[Participant goes to *communication area*]

[Group by group meets outside. When group is complete, announce that they can talk.]

Now you have some minutes to talk, before each of you individually decides what to give to others.

[Give at least 3-5 minutes to talk. Assistants note agreements etc. on their sheet. Proceed if *transfer room* is ready for new group.]

The talking time is over. Please stop talking and follow the assistant if you are called.

[Lead individuals to *transfer room* and play *transfer*.]

Box: Transfer procedure (play individually with each of the participants)  
[people arrive at *transfer room*, enter and close the door]

Hello. My name is xxx and you can now tell me whether you want to give something to your group members. I will note this and the money will be redistributed if this round is going to be paid out. Can you please show me your player and group number?

[Note player/group number.]

I know that ... took ... out of the dice room [read list of money at hand for the 3 members.]

Do you want to give something to (other1)?

(if yes) How much do you want to give? [Note and collect amount]

Do you want to give something to (other2)?

(if yes) How much do you want to give? [Note and collect amount]

You have decided to give \_\_ Pesos to (other1) \_\_ Pesos to (other2). Please go back to your seat.

[Note and collect the rest. Participant is led back to seat in *welcome room*.]

## Normal Risk or Insurance 1 Treatment

Let's turn to the Game. We have formed groups, each consisting of 3 players. [Explain group formation<sup>35</sup>] You will get to know your group members later. They are sitting at another table and you are not allowed to talk with other tables while you wait here in the welcome room

All of you are given 200 Pesos at the beginning of the game. We give you this amount in form of play money. It is already in your plastic bag.

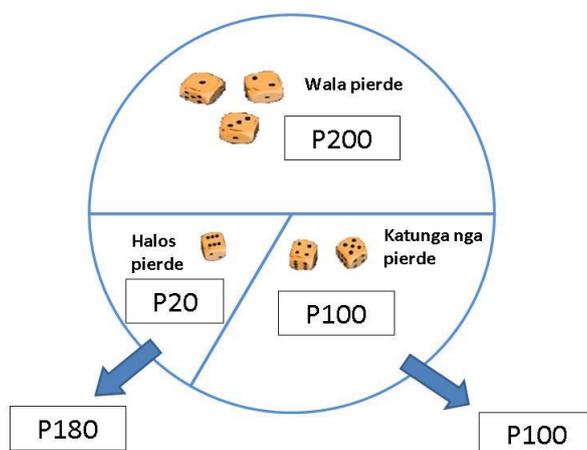
[Show money]

Each of you can experience different situations during this game that influence your financial outcomes: We will randomly determine whether you are exposed to no event, a medium or a catastrophic event. They all occur with different chances. No event happens in 3 out of 6 cases on average. A medium event happens in 2 out of 6 cases on average. A catastrophic event happens once in six times on average. Each of you will roll the dice separately in the dice room.

You go to the *dice room* by yourself where your player number will be checked. To determine whether you face no event, a medium event or a catastrophic event you throw a dice. An event goes along with a loss of some of your initial 200 Pesos. This is dice option **ANGOLA**.

[Explain points at dice poster A]

option ANGOLA:



- Throwing a 1, 2 or 3 means no event:

If you are exposed to no event you do not lose any of your money. You can keep all your 200 Pesos.

<sup>35</sup> Depending on whether group formation was endogenous or exogenous, insert either:

- “You were asked to bring some of your friend or relatives with you to the game. As far as possible we tried to consider this and assign you to the same group”.
- or
- “We have formed groups at random”.

- Throwing a 4 or 5 means a medium event:

If the medium event occurs you lose 100 of your initial 200 Pesos

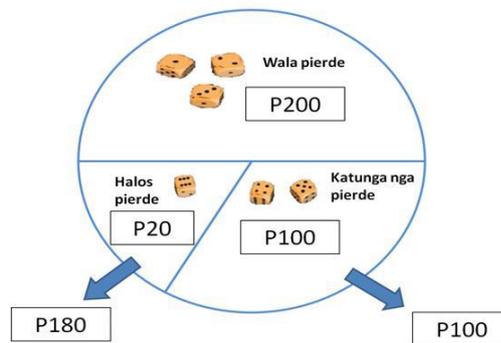
- Throwing a 6 means a catastrophic event:

If the catastrophic event occurs you lose 180 Pesos of your initial 200 Pesos.

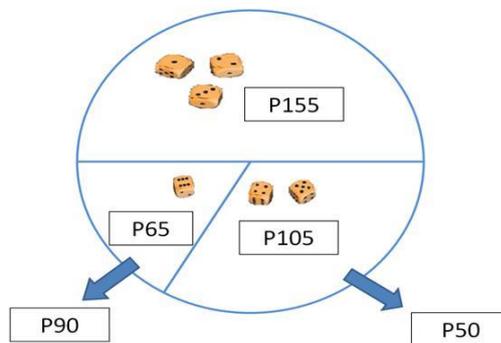
Instead, you have the possibility to purchase dice option **BOTSWANA** at a price of 45 Pesos that you can pay from your initial 200 Pesos. So if you decide to purchase this option, you have 155 Pesos left before rolling the dice.

[Show dice poster AB]

option ANGOLA:



Bayad 45 para sa option BOTSWANA:

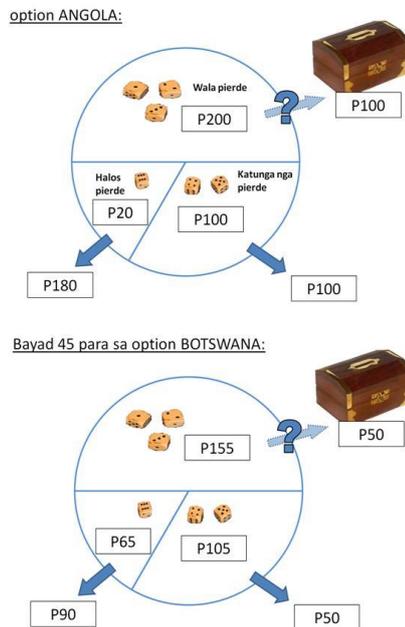


With the dice option your catastrophic loss and your medium event loss are only half of the losses with dice option **ANGOLA**. But you have to pay 45 Pesos for sure.

- E.g. if you roll a 6 and there is a catastrophic event that takes away almost all your initial money with dice option **ANGOLA**, with this dice option you will only lose half. Then you finally would have 200 Pesos minus 45 Pesos to buy this dice option minus 90 remaining loss, which equals to 65 Pesos.
- If you roll a 4 or 5 and there is a medium event occurring to you, you would have to pay 100 Pesos with option **ANGOLA**. With dice option **BOTSWANA** you will only lose 50 Pesos. Finally 105 Pesos would remain for you.
- If you roll a 1, 2 or 3 and no event occurs you finally get 200 Pesos minus 45 Pesos for the **BOTSWANA** option, which is 155 Pesos.

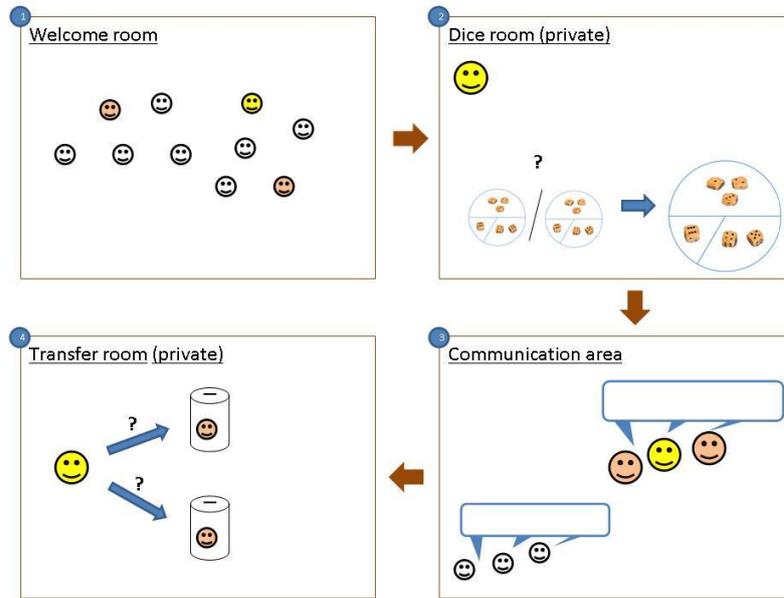
Before rolling the dice you tell the instructor which dice option you prefer. Did you understand all this? Can you decide on the options after you roll the dice? With dice option **ANGOLA** what happens if you roll a 1? [Wait for an answer.] And with option **BOTSWANA** what happens if you roll a 1? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 4? [Wait for an answer.] And with option **BOTSWANA**? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 6? [Wait for an answer.] And with option **BOTSWANA**? [Wait for an answer.] If there are any unclear points with regard to the dice options you can ask the instructor.

So you go to the *dice room* and he will check your player number. You make the decision on the dice option and pay the price if you decide to buy option **BOTSWANA**. Then you determine the event by throwing a dice. Some of your money is taken away according to the event.



However if there was no event occurring to you after rolling the dice you are given the possibility to keep [50/100] Pesos in a lockbox in the room before meeting again with your group. You can always keep the difference to the medium event in the box. So you take money out of the room as if you had a medium event. You should know that this is your private lockbox and nobody except [researcher] and his assistant will ever know about the amount you put into it. The money will be saved for you for this game. [Researcher] and his assistant are also the ones who will give you your earnings of the game that is paid out – including the lockbox money of that game – at the end of the workshop in private. The others will only be able to see the amount you took with you out of the room. Did you understand this? When can you put money in the lockbox? [Wait for an answer.] Can you put money in the lockbox if you roll a 4? [Wait for an answer.]

[Overview poster]



After you rolled the dice and decided about the lockbox you meet with your group. When the group is complete you have some minutes to talk within your group. Then you individually go to the *transfer room* where the assistant will announce the amount your group members took out of the *dice room*. Afterwards you choose how much you want to transfer to the other group members. Remember that you are not the only one who can transfer, each of your group can transfer to the others. An assistant will ask you whether and how much of your money you transfer to your other group mates. This amount will be collected by the assistant in the *transfer room*. You can freely choose how much of the money you have in your hand you transfer and to which person you transfer. The rest of your money is noted and collected.

These were the instructions of the procedure of this game. Are there any questions or points that remained unclear and shall be explained in more detail? We will now show the procedure again.

[Illustrate one *example round*, use overview poster]

Are there any questions? [Wait for questions and answer (individually with assistants)]

Now we start with the game. Please follow the assistant if your number is called.

[Call participants and ask test questions]

[Lead participants one by one to first room and play dice procedure]

Box: Dice option and dice procedure (play individually with each of the participants)

[People arrive at *dice room*, enter and close the door]

Hello. Please show me your player and group number.

[Note player/group number.]

You now can decide whether to purchase the dice option before you roll the dice to determine your event according to these charts, depending on whether you take the option or not. [Show dice poster AB.]

Do you have any questions on this possibility?

[Wait for questions and answer them]

Do you want to purchase the option? [Note option decision, collect premium]

You can now roll the dice to determine your outcome. [Give participant the dice and show how to use it. Note result.]

(If no shock, go on. Otherwise, skip lockbox procedure):

Please decide whether you want to keep [100/50] Pesos in the lockbox

This is your private lockbox and nobody except [researcher] and me will ever know about the amount you put into it. [Researcher] and me are also the ones who will give you your earnings at the end in private.

[Let people decide and note result]

So you finally have \_\_\_\_ Pesos in your hand. Please go to the *communication area*.

[Participant goes to communication area]

[Group by group meets outside. When group is complete, announce that they can talk.]

Now you have some minutes to talk, before each of you individually decides what to give to others.

[Give at least 3-5 minutes to talk. Assistants note agreements etc. on their sheet. Proceed if *transfer room* is ready for new group.]

The talking time is over. Please stop talking and follow the assistant if you are called.

[Lead individuals who have money to *transfer room* and play *transfer*.

Box: *Transfer procedure* (play individually with each of the participants)

[People arrive at *transfer room*, enter and close the door]

Hello. You can now tell me whether you want to give something to your group members. I will note this and the money will be redistributed if this round is going to be paid out. Can you please show me your player and group number?

[Note player/group number.]

I know that ... took ... out of the dice room [read list of money at hand for 3 members.]

Do you want to give something to (other1)?

(if yes) How much do you want to give? [Note and collect amount]

Do you want to give something to (other2)?

(if yes) How much do you want to give? [Note and collect amount]

You have decided to give \_\_\_ Pesos to (other1) \_\_\_ Pesos to (other2). Please go back to your seat.

[Note and collect the rest. Participant is led back to his/her seat.]

## Normal Risk or Insurance 2 Treatment

Let's turn to the game. We have formed groups, each consisting of 3 players. [Explain group formation<sup>36</sup>] You will get to know your group members later. They are sitting at another table and you are not allowed to talk with other tables while you wait here in the welcome room

All of you are given 200 Pesos at the beginning of the game. We give you this amount in form of play money. It is already in your plastic bag.

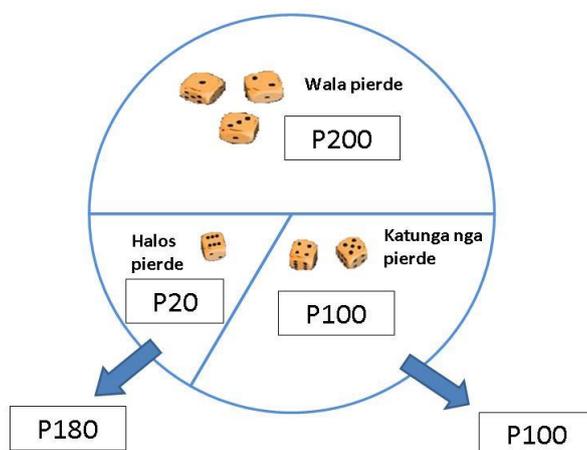
[Show money]

Each of you can experience different situations during this game that influence your financial outcomes: We will randomly determine whether you are exposed to no event, a medium or a catastrophic event. They all occur with different chances. No event happens in 3 out of 6 cases on average. A medium event happens in 2 out of 6 cases on average. A catastrophic event happens once in six times on average. Each of you will roll the dice separately in the dice room.

You go to the *dice room* by yourself where your player number will be checked. To determine whether you face no event, a medium event or a catastrophic event you throw a dice. An event goes along with a loss of some of your initial 200 Pesos. This is dice option **ANGOLA**.

[Explain points at dice poster A]

option ANGOLA:



- Throwing a 1, 2 or 3 means no event:

If you are exposed to no event you do not lose any of your money. You can keep all your 200 Pesos.

<sup>36</sup> Depending on whether group formation was endogenous or exogenous, insert either:

- “You were asked to bring some of your friend or relatives with you to the game. As far as possible we tried to consider this and assign you to the same group”.
- or
- “We have formed groups at random”.

- Throwing a 4 or 5 means a medium event:

If the medium event occurs you lose 100 of your initial 200 Pesos

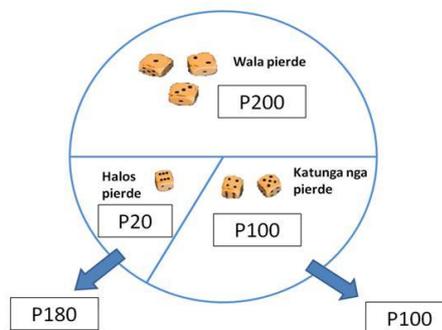
- Throwing a 6 means a catastrophic event:

If the catastrophic event occurs you lose 180 Pesos of your initial 200 Pesos.

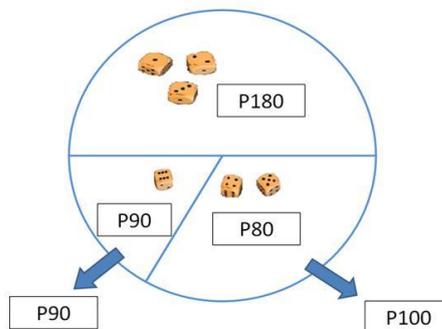
Instead, you have the possibility to purchase dice option **CAMEROON** at a price of 20 Pesos that you can pay from your initial 200 Pesos. So if you decide to purchase this option, you have 180 Pesos left before rolling the dice.

[Show dice poster AC]

option ANGOLA:



Bayad 20 para sa CAMEROON:

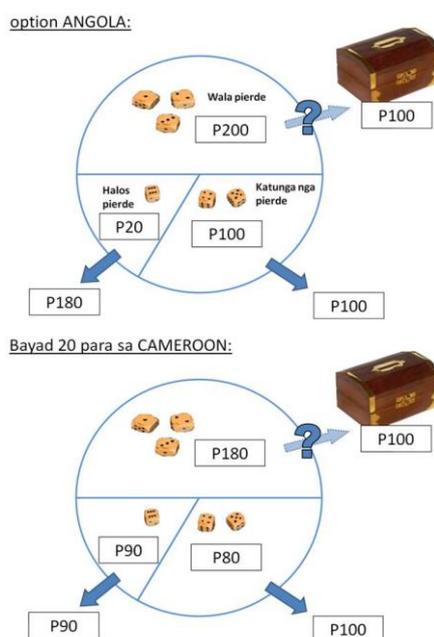


With the dice option your catastrophic loss is only half of the catastrophic loss with dice option **ANGOLA**. But you have to pay 20 Pesos for sure.

- E.g. if you roll a 6 and there is a catastrophic event that takes away almost all your initial money with dice option **ANGOLA**, with this dice option you will only lose half. Then you finally would have 200 Pesos minus 20 Pesos to buy this dice option minus 90 remaining loss, which equals to 90 Pesos.
- If you roll a 4 or 5 and there is a medium event occurring to you, you would have to pay 100 Pesos with option **ANGOLA**. With dice option **CAMEROON** you will also lose 100 Pesos. Finally 80 Pesos would remain for you.
- If you roll a 1, 2 or 3 and no event occurs you finally get 200 Pesos minus 20 Pesos for the option, which is 180 Pesos.

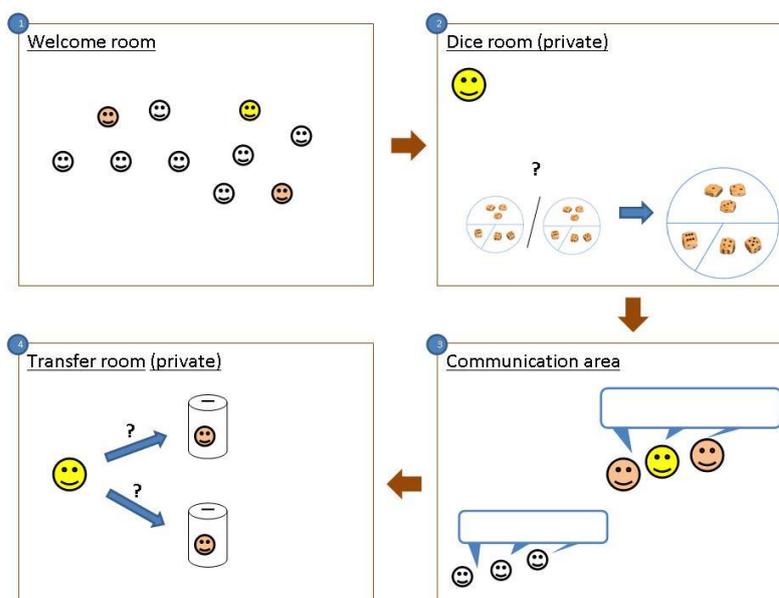
Before rolling the dice you tell the instructor which dice option you prefer. Did you understand all this? Can you decide on the options after you roll the dice? With dice option **ANGOLA** what happens if you roll a 1? [Wait for an answer.] And with option **CAMEROON** what happens if you roll a 1? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 4? [Wait for an answer.] And with option **CAMEROON**? [Wait for an answer.] With dice option **ANGOLA** what happens if you roll a 6? [Wait for an answer.] And with option **CAMEROON**? [Wait for an answer.] If there are any unclear points with regard to the dice options you can ask the instructor.

So you go to the *dice room* and he will check your player number. You make the decision on the dice option and pay the price if you decide to buy option **CAMEROON**. Then you determine the event by throwing a dice. Some of your money is taken away according to the event.



However if there was no event occurring to you after rolling the dice you are given the possibility to keep 100 Pesos in a lockbox in the room before meeting again with your group. You can always keep the difference to the medium event in the box. So you take money out of the room as if you had a medium event. You should know that this is your private lockbox and nobody except [researcher] and his assistant will ever know about the amount you put into it. The money will be saved for you for this game. [Researcher] and his assistant are also the ones who will give you your earnings of the game that is paid out – including the lockbox money of that game – at the end of the workshop in private. The others will only be able to see the amount you took with you out of the room. Did you understand this? When can you put money in the lockbox? [Wait for an answer.] Can you put money in the lockbox if you roll a 4? [Wait for an answer.]

[Overview poster]



After you rolled the dice and decided about the lockbox you meet with your group. When the group is complete you have some minutes to talk within your group. Then you individually go to the *transfer room* where the assistant will announce the amount your group members took out of the *dice room*. Afterwards you choose how much you want to transfer to the other group members. Remember that you are not the only one who can transfer, each of your group can transfer to the others. An assistant will ask you whether and how much of your money you transfer to your other group mates. This amount will be collected by the assistant in the *transfer room*. You can freely choose how much of the money you have in your hand you transfer and to which person you transfer. The rest of your money is noted and collected.

When everybody is back at the table, new start money is distributed and a new game is played. You will only get to know which game is paid out after we finished playing the three games.

[Researcher] and his assistant will pay you the amount you had left after giving to others in the chosen game plus the amount your group members gave to you in that game. Did you understand everything? Will you know after the first game what your group members gave you? [Wait for an answer.] Will you know it after the second game? [Wait for an answer.] Do you want me to explain this again?

These were the instructions of the procedure of this game. Are there any questions or points that remained unclear and shall be explained in more detail? We will now show the procedure again.

[Illustrate one *example round*, use overview poster]

Are there any questions? [Wait for questions and answer (individually with assistants)]

Now we start with the game. Please follow the assistant if your number is called.

[Call participants and ask test questions]

[Lead participants one by one to first room and play dice procedure].

Box: Dice option and dice procedure (play individually with each of the participants)

[People arrive at *dice room*, enter and close the door]

Hello. Please show me your player and group number.

[Note player/group number.]

You now can decide whether to purchase the dice option before you roll the dice to determine your event according to these charts, depending on whether you take the option or not. [Show dice poster AC.] Do you have any questions on this possibility?

[Wait for questions and answer them]

Do you want to purchase the option? [Note option decision, collect premium]

You can now roll the dice to determine your outcome. [Give participant the dice and show how to use it. Note result.]

(If no shock, go on. Otherwise, skip lockbox procedure):

Please decide whether you want to keep 100 Pesos in the lockbox.

This is your private lockbox and nobody except [researcher] and me will ever know about the amount you put into it. [Researcher] and me are also the ones who will give you your earnings at the end in private.

[Let people decide and note result]

So you finally have \_\_\_\_ Pesos in your hand. Please go to the *communication area*.

[Participant goes to communication area]

[Group by group meets outside. When group is complete, announce that they can talk.]

Now you have some minutes to talk, before each of you individually decides what to give to others.

[Give at least 3-5 minutes to talk. Assistants note agreements etc. on their sheet. Proceed if *transfer room* is ready for new group.]

The talking time is over. Please stop talking and follow the assistant if you are called.

[Lead individuals who have money to *transfer room* and play *transfer*.

Box: *Transfer procedure* (play individually with each of the participants)

[People arrive at *transfer room*, enter and close the door]

Hello. You can now tell me whether you want to give something to your group members. I will note this and the money will be redistributed if this round is going to be paid out. Can you please show me your player and group number?

[Note player/group number.]

I know that ... took ... out of the dice room [read list of money at hand for 3 members.]

Do you want to give something to (other1)?

(if yes) How much do you want to give? [Note and collect amount]

Do you want to give something to (other2)?

(if yes) How much do you want to give? [Note and collect amount]

You have decided to give \_\_ Pesos to (other1) \_\_ Pesos to (other2). Please go back to your seat.

[Note and collect the rest. Participant is led back to his/her seat.]