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Lab-in-the-Field Experiment in Cambodia**

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Friederike Lenel

University of Göttingen

Susan Steiner

Leibniz University of Hannover and IZA

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ABSTRACT

Insurance and Solidarity: Evidence from a Lab-in-the-Field Experiment in Cambodia*

This paper investigates the crowding out of informal support among peers by the introduction of formal insurance. We show that the availability of insurance changes people's intrinsic motivation to support others. We report results from a lab-in-the-field experiment conducted in Cambodia. Half of the subjects face the risk to lose a large proportion of their endowment. It is varied whether they can purchase an insurance before the loss is determined. The other half of the subjects can transfer part of their endowment to those who lose. We find that significantly lower transfers are provided to subjects who had the option to purchase insurance but did not use this option than to subjects who did not have the insurance option available. We show that the reduction in transfers is not affected by whether subjects were informed about the possibility of informal support when making their insurance decision. Our findings indicate that the extent of crowding out may be larger than previously thought, because insurance does not only change economic incentives but also affects intrinsic motivations.

JEL Classification: D03, C91, O12

Keywords: insurance, informal support, crowding-out, social preferences, Cambodia

Corresponding author:

Susan Steiner
Institute for Development and Agricultural Economics
Leibniz Universität Hannover
Königsworther Platz 1
30167 Hannover
Germany
E-mail: steiner@ifgb.uni-hannover.de

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1 Introduction

Given the dearth of insurance markets in developing countries, many governments, the private sector and the donor community have made considerable efforts over the last years to design appropriate insurance products and to expand people's coverage with formal insurance. A growing literature deals with the consequences for informal support, i.e. monetary transfers provided by relatives, neighbors and friends, when insurance is introduced (Attanasio and Rios-Rull 2000; Hintz 2010; Landmann, Vollan, and Frölich 2012; Boucher and Delpierre 2014; Lin, Liu, and Meng 2014; Klohn and Strupat 2015). This literature investigates the extent of crowding out: if insurance crowds out informal support and delivers only incomplete risk coverage (for example, because not everybody gets insured, insurance does not fully compensate losses, or not all risks are insurable), introducing insurance does not necessarily lead to welfare improvements. A clear understanding of the conditions under which crowding out occurs is crucial to design insurance contracts that avoid such unintended consequences.

Informal support can be explained by economic incentives and intrinsic motives, such as altruism or inequity aversion (Leider et al. 2009; Ligon and Schechter 2012; Binzel and Fehr 2013). The crowding out literature typically investigates the impact of insurance on informal support through a change in economic incentives; the intrinsic motivation to support is assumed to be unaffected.¹ The following mechanisms of crowding out are identified. Insurance payouts substitute informal transfers (Lin, Liu, and Meng 2014); insurance increases the value of living in autarky and thus reduces people's commitment to engage in informal support (Attanasio and Rios-Rull 2000; Lin, Liu, and Meng 2014); and, insurance encourages people to take more risk, which is counteracted by a reduction in informal support in order to curtail excessive risk-taking (Boucher and Delpierre 2014).

In this paper, we suggest an additional mechanism of crowding out. In contrast to the previous literature, we consider the possibility that the intrinsic motivation to support changes when insurance becomes available. We focus on solidarity transfers, i.e. informal support that is solely intrinsically motivated. We assume that individuals have internalized solidarity norms which prescribe the adequate transfer to a person in need. We hypothesize that the adequate transfer to a person who could have avoided her loss by purchasing insurance is lower than that to a person who did not have an insurance option.

To investigate this hypothesis, we conducted a lab-in-the-field experiment. We designed a

¹We are aware of only two other studies that discuss the possibility of a change in intrinsic motivations when insurance is introduced (Hintz 2010; Landmann, Vollan, and Frölich 2012). Both studies provide evidence for crowding out, but the settings of these studies render it difficult to identify the underlying mechanism.

novel game, the transfer game, that borrows both from the dictator game and the solidarity game. The transfer game is a one-shot game. Players are randomly assigned the role of provider or recipient. All receive the same endowment. Recipients can lose a large proportion of their endowment due to a random idiosyncratic shock. We vary whether recipients have the option to purchase insurance which avoids the loss from the shock. Each provider is anonymously matched with one recipient. Providers are asked how much of their endowment they would transfer if their matched recipient loses, both in case the recipient had the option to purchase insurance and in case the recipient did not have this option. We expect that lower transfers are provided if recipients had the option to avoid their neediness by purchasing insurance (Hypothesis 1). In addition, we vary whether recipients are informed that each of them is matched with a provider. We argue that if recipients know that solidarity transfers may be forthcoming, risking to become needy can be interpreted by providers as free-riding on their solidarity. We thus expect that providers respond to an informed decision against the insurance option with a stronger withdrawal of solidarity transfers compared with an uninformed decision (Hypothesis 2).

We conducted our experiment with Cambodian villagers. Cambodia is a country with an under-developed insurance market (UNDP 2013; Microinsurance Network 2016). At the time of our experiment, the only noteworthy form of insurance supplied was health insurance provided by non-governmental organisations (available only in parts of the country) or the National Social Security Fund (available only to civil servants). As a consequence, the majority of the population was not insured with any form of insurance. Instead, informal support plays a pivotal role in coping with the consequences of economic shocks and misfortunes. Cambodian villages are characterized by strong reciprocal relationships and solidarity between households (Kim 2011). Villagers support each other in farming, building houses, lending money and rice, caring for the sick, and in several other ways (Crochet 2011).

A number of experimental studies suggest that people condition their transfers to another person on this person's prior choices. These studies report results from two-stage dictator or solidarity games conducted in conventional laboratory settings. In the first stage, subjects engage in a real-effort task (Konow 2000; Cappelen, Sørensen, and Tungodden 2010; Cappelen et al. 2013b) or decide between lotteries that vary in risk (Trhal and Radermacher 2009; Cappelen et al. 2013a; Bolle and Costard 2015). In the second stage, either the subjects themselves or uninvolved spectators are asked to redistribute the income resulting from the first stage. A large proportion of players is found to allocate less to an individual who exerted little effort in the real-effort task or who chose a risky lottery. One study investigates changes in redistribution decisions in response to insurance uptake (Mollerstrom, Reme, and Sørensen 2015). Subjects face both an insurable and an uninsurable shock that determines

their payout. Uninvolved spectators are asked to redistribute income between randomly matched pairs of subjects. The authors find that spectators are less willing to redistribute income to subjects who did not purchase insurance and then experienced a shock, even if this shock was uninsurable.

Our study differs from the previous literature in three regards: two related to the experimental design and one to the research setting. First, in our experiment, we investigate conditionality on an available but unseized opportunity (i.e. the option of insurance), not on an action (i.e. the decision to forego insurance) as, for example, Mollerstrom, Reme, and Sørensen (2015) do. In other words, we study how people condition their transfers on which choice a needy person *had*, not which choice a needy person *made*. Only the first type of conditionality is adequate for our research question. We are interested in the crowding out of informal support when insurance gets introduced and thus compare transfers when insurance is available with transfers when insurance is unavailable.

Second, prior experiments do not vary the extent to which subjects are informed in the first stage - when they make their choices - about the later redistribution stage. Either all subjects are informed (Konow 2000; Trhal and Radermacher 2009; Cappelen, Sørensen, and Tungodden 2010; Cappelen et al. 2013a; Cappelen et al. 2013b; Bolle and Costard 2015) or all subjects remain uninformed (Mollerstrom, Reme, and Sørensen 2015). Varying the extent of information allows us to differentiate between the providers' response to the recipient's ex-ante choice of insurance *per se*, and the providers' response to the recipient's perceived intention that drives the insurance decision.

Third, conducting the experiment in Cambodia leads to a fundamentally different setting from that in the university laboratories of the previous literature. The key difference is that the students make decisions (effort levels, risk choices, uptake of insurance) that are familiar to them. In contrast, the villagers were confronted with a situation (availability of insurance) which was new to many. The setup of our sample allows us to shed light on the question whether providers condition their solidarity transfers on another person's option even if they are unfamiliar with that option. Previous studies suggest that preferences are context dependent and that past experiences matter for the formation of preferences (for an overview see Fehr and Hoff (2011)). We deliberately sampled villagers in one province where health insurance was available at the time of our experiment and in another province where health insurance was virtually unavailable. We categorise providers according to their familiarity with insurance and examine their response to the recipient foregoing the insurance option within the experiment.

The providers in our experiment transfer, on average, 13% of their endowment to recipients who lost most of their endowed money and had no option to insure. In line with

Hypothesis 1, we find a significant reduction in transfers when recipients can be held accountable for their neediness: providers reduce their transfers by 28%, on average, when recipients had the option to insure. Not every provider reduces transfers but 45% do so; among them, the reduction amounts to even 65%. We find suggestive evidence that familiarity with the concept of insurance helps to explain why some providers condition their solidarity transfers on the insurance option and others do not. In villages where insurance is uncommon providers are less likely to reduce their solidarity transfers when the recipients had the option to take up insurance. This suggests that people are more likely to condition their solidarity on an available choice when they are more familiar with the choice in question. To our surprise, there is no effect of information on average. Providers equally reduce their transfers towards recipients who were informed about the potential transfer from providers and towards recipients who were not informed. It seems that free-riding is not sanctioned or that foregoing insurance is not perceived as free-riding. Only 20% of the providers behave in line with Hypothesis 2.

Our findings have important implications for policy-making because the potential for crowding out of informal support by introducing insurance may be larger than previously thought. Insurance does not only crowd out informal support through changes in economic incentives but also, as we show, through a change in intrinsic motives. Furthermore, informal support is not only crowded out to individuals who purchase insurance but also to individuals who do not purchase insurance. This is because people apply different norms of solidarity with and without insurance available. Consequently, they deem different levels of informal support to be adequate when others have the option to get insured compared with when there is no insurance option. This behavior is concerning if certain segments of the population lack the financial resources to pay for insurance premiums. They are then worse off after the introduction of insurance because they neither have insurance nor enjoy the same level of informal support as before. Policy-makers, in Cambodia and beyond, need to design insurance products which avoid such crowding out to the extent possible.

The remainder of this paper is structured as follows. In Section 2, we introduce the transfer game, derive the main hypotheses and present the experimental design. In Section 3, we describe the implementation of the experiment in the field. The results are presented in Section 4. We first present average treatment effects and then turn to the heterogeneity in the treatment effects. Section 5 concludes.

2 Conceptual Framework and Experimental Design

2.1 The Transfer Game

We designed a game, which we call the transfer game, to investigate the extent to which people condition their solidarity transfers on the insurance option of others. The transfer game is a one-shot game. There are two players, the provider and the recipient, with incomes x and y , respectively. The players have the same initial income, i.e. $x^e = y^e$. However, the recipient faces the possibility of an income shock that occurs with probability π ; with $0 < \pi < 1$. If a shock occurs the recipient's income is reduced to y^s , with $y^s < y^e$. The provider does not face an income shock. In case the recipient experiences a shock, the provider can decide to transfer part of her income, T , to the recipient (with $0 \leq T \leq x^e$).

In the transfer game, treatments vary along two dimensions:

1. Information of the recipient

- *The recipient is uninformed about the provider*

The recipient is informed only about her own role in the game. She is not informed about the existence of the provider who might transfer to her in case of an income shock.

- *The recipient is informed about the provider*

At the beginning of the game, the recipient is informed about the existence of the provider who has the possibility to transfer to her in case she experiences an income shock.

2. Option of insurance

- *The recipient has no insurance option*

The recipient has no option to avoid the potential loss. Her income is y^s in case the shock occurs and y^e in case no shock occurs.

- *The recipient has an insurance option*

Before the shock is determined, the recipient has the option to purchase insurance which covers the loss resulting from the income shock.

The price of insurance is p with $p \leq \pi \cdot (y^e - y^s)$; i.e. insurance is not more expensive than the actuarially fair price. If the recipient purchases insurance, her income is $y^e - p$ independent of whether a shock occurs or not. If the recipient does not purchase insurance, her income is y^e in case no shock occurs and y^s in case the shock occurs. Note that the provider always has full information and that a transfer from the provider to the recipient can only take place

if the recipient's income is reduced to y^s . Combining the information and the insurance treatments, there are four different states in which the recipient's income can be reduced to y^s and a transfer can take place. These states and the corresponding transfers are depicted in Figure 1. The uninformed case describes the two states in which the recipient has no information about the provider, the informed case the two states in which the recipient does have information. We refer to the provider as A in both the uninformed case and the informed case. The recipient is called $B1$ (without insurance option) or $B2$ (with insurance option) in the uninformed case and $C1$ (without insurance option) or $C2$ (with insurance option) in the informed case.

In the *uninformed case*, the provider is asked to make two strategic transfer decisions:

- The amount she would transfer to $B1$ in case this recipient experiences an income shock and is left with y^s [T^{00}].
- The amount she would transfer to $B2$ in case this recipient experiences an income shock and is left with y^s [T^{01}].

The provider is then randomly matched with either $B1$ or $B2$. If the matched recipient experiences an income loss, the respective transfer decision is implemented.

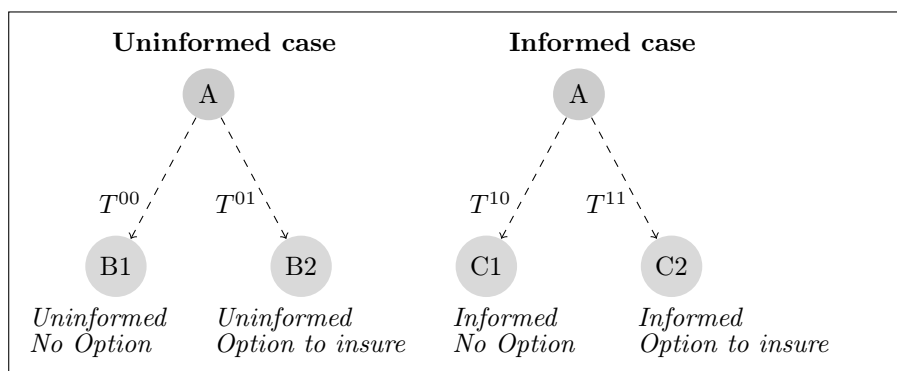


Figure 1: Transfer Decisions of Providers

In the *informed case*, the provider is asked to make the following two strategic transfer decisions:

- The amount she would transfer to $C1$ in case this recipient experiences an income shock and is left with y^s [T^{10}].
- The amount she would transfer to $C2$ in case this recipient experiences an income shock and is left with y^s [T^{11}].

The provider is then randomly matched with either $C1$ or $C2$. If the matched recipient experiences an income loss, the respective transfer decision is implemented.

We assume that when making her transfer decisions the provider is motivated by her own income as well as the desire to behave in line with her solidarity norm. We specify her utility as follows:²

$$U(\cdot) = v(x - T) - f(\phi - T) \quad (1)$$

$v(\cdot)$ is the provider's utility from her material payoff after the transfer, with $v'(\cdot) > 0$ and $v''(\cdot) < 0$. ϕ describes the provider's solidarity norm, which specifies the amount that the provider perceives to be the adequate transfer to the recipient. This solidarity norm can be affected by both personal and social norms. It depends on the income allocation, (x, y) , and the context under which this income allocation was achieved, i.e., the information and the insurance option of the recipient. $f(\cdot)$ describes the cost that the provider incurs when her transfer T deviates from the level of solidarity she perceives as adequate. Following the literature, we assume $f'(\phi - T) \cdot (\phi - T) > 0$ for $\phi \neq T$, and $f''(\cdot) > 0$ (Cappelen et al. 2007; Konow 2010). The provider maximizes her utility with respect to T . With the assumed utility specification in equation (1), the provider's solidarity norm has a direct impact on her optimal transfer decision, as $0 < \frac{dT^*}{d\phi}|_{x=cons.} < 1$ (Konow 2010). The underlying solidarity norm determines the transfer provided.

We allow for the provider's solidarity norm to differ across the four states in the transfer game. If solidarity norms differ across states, this must necessarily result from the variation in the context, namely the four combinations of the information and insurance option treatments, because the income allocation that initiates a transfer from the provider to the recipient is always (x^e, y^s) . This implies that differences in solidarity norms describe the extent to which the provider conditions her solidarity transfers on the information and the insurance option of the recipient.

We do not observe the provider's solidarity norms directly. However, the observed transfers from the provider to the recipient provide an indication for the provider's underlying norms. The difference between T^{00} and T^{01} is the change in transfers when an uninformed recipient could have avoided the loss by purchasing insurance. The difference between T^{10} and T^{11} is the change in transfers when an informed recipient could have avoided the loss by purchasing insurance. Based on the previous literature (Trhal and Radermacher 2009; Cappelen et al. 2013a; Mollerstrom, Reme, and Sørensen 2015), we expect that the provider

²We assume a specification of social preferences that is common in the literature, modeled as a trade off between self-interest and an internalized allocation norm (e.g. see Cappelen et al. 2007; Konow 2010; Cappelen et al. 2013a).

reduces her support when the recipient had the option to insure herself. We should thus observe the provider to transfer less to $B2$ than to $B1$ in the uninformed case and less to $C2$ than to $C1$ in the informed case (Table 1).

Table 1: Transfer Decisions and Hypotheses

	Recipient informed of provider	
	<i>no</i>	<i>yes</i>
Recipient had option to insure	<i>no</i> T^{00}	<i>yes</i> T^{10}
	<i>yes</i> T^{01}	T^{11}
<i>Hypothesis 1</i>	$T^{01} - T^{00} < 0$ $T^{11} - T^{10} < 0$	
<i>Hypothesis 2</i>	$T^{01} - T^{00} > T^{11} - T^{10}$	

Hypothesis 1 - Choice Conditionality

On average providers send lower transfers to a recipient who had the option to insure than to a recipient who had no option of insurance (regardless of the level of information of the recipient); i.e.

$$T^{01} - T^{00} < 0, \quad \text{if recipient not informed}$$

$$T^{11} - T^{10} < 0, \quad \text{if recipient informed.}$$

The difference in the transfer differences, $(T^{01} - T^{00}) - (T^{11} - T^{10})$, then reflects to which extent the provider's choice conditionality depends on the level of information available to the recipient. Whereas an uninformed recipient is not aware that she might receive a transfer from the provider in case she foregoes the insurance option, an informed recipient has full information. The provider may thus perceive the informed foregoing of insurance of the recipient as deliberate reliance on her support, or as free-riding on her solidarity, and may not approve of this intention. Recent studies show that, under certain circumstances, individuals deliberately do not take up insurance and instead free-ride on the support of their peers (De Janvry, Dequiedt, and Sadoulet 2014; Janssens and Kramer 2016). We here analyze how the peers react to such free-riding. In line with Falk and Fischbacher (2006)'s theory of intention-based reciprocity, we hypothesize that the provider's solidarity norms

are influenced by the recipient's intentions. We expect that the provider in the informed case reduces her transfer by more in case the recipient had the ex-ante option to purchase insurance than the provider in the uninformed case.

Hypothesis 2 - Information Effect

On average providers reduce their transfers to an informed recipient who had the option to insure by more than to an uninformed recipient who had the option to insure; i.e.

$$T^{01} - T^{00} > T^{11} - T^{10}.$$

2.2 Experimental Procedure

We conducted the experiment in 21 villages (one session per village) in Cambodia. In each village, the experiment was run with 32 subjects: 16 providers and 16 recipients. There were two groups of providers (with 8 subjects per group) and four groups of recipients (with 4 subjects per group). All subjects played two rounds of the transfer game. Before the game was played, subjects were randomly allocated to one of the six groups; the group determined the role each subject would play in Round 1 and Round 2 (Table 2). In Round 1, one of the provider groups played the uninformed case, i.e. with uninformed recipients, and the other provider group played the informed case, i.e. with informed recipients. In Round 2, providers switched the roles. This means that all providers made all four transfer decisions depicted in Figure 1 over the course of the two rounds. The recipient groups played the role of player $B1$, $B2$, $C1$ and $C2$ in Round 1 and the role of player $B2$, $B1$, $C2$ and $C1$ in Round 2, respectively.

Each group played in a separate room and subjects only observed the treatment of the group they belonged to. Neither communication nor interaction between the subjects within a room and between the rooms were allowed. Subjects were at no time told the purpose of the experiment and no feedback was provided to the subjects between the rounds. The experiment was implemented in an anonymous setting. Subjects did not know the identity of the subjects they were matched with and the research assistants supervising the games did not observe the subjects' decisions. Those research assistants that could link the subjects' decisions in the game to their identity did not interact with the subjects until the final payout. The parameters of the game were specified as follows:

- Initial income $x^e = y^e = 16,000$
- Probability of shock $\pi = 0.5$
- Income after shock $y^s = 2,000$

Table 2: Overview of Player Roles

	Groups of Providers		Groups of Recipients			
	1	2	3	4	5	6
Round 1						
Role	A (Uninformed case)	A (Informed case)	B1	B2	C1	C2
Transfer decisions	T^{00} and T^{01}	T^{10} and T^{11}	-	-	-	-
Information	-	-	no	no	yes	yes
Insurance option	-	-	no	yes	no	yes
Round 2						
Role	A (Informed case)	A (Uninformed case)	B2	B1	C2	C1
Transfer Decisions	T^{10} and T^{11}	T^{00} and T^{01}	-	-	-	-
Information	-	-	no	no	yes	yes
Insurance Option	-	-	yes	no	yes	no
No. of subjects per session	8	8	4	4	4	4
Total no. of subjects (21 sessions)	168	168	84	84	84	84

- Price of insurance³ $p = 6,000$

Figure 7 in Appendix A illustrates the resulting outcome tree for the transfer game.

The detailed procedure for recipients **B1**, **B2**, **C1** and **C2** was as follows:

1. Each recipient received an initial income of 16,000 Riel in sixteen 1,000 Riel bills in play money.⁴
2. Recipients were explained that each of them would roll a dice. The outcome would determine how much they could keep of the initial income. If the dice showed 1, 2 or 3, they would lose 14,000 Riel; if the dice showed 4, 5 or 6, they would keep the 16,000 Riel.
3. Recipients of type *B2* and recipients of type *C2* were explained the insurance option: they had the option to purchase a private insurance for the price of 6,000 Riel. If a recipient decided to purchase the insurance, she would keep 10,000 Riel independent of the outcome of the dice.

³Note that this price is below the actuarially fair insurance price which would be 7,000 Riel. We intended to put a value on the insurance such that in expectation 50% of the recipients would purchase insurance. Pilot tests conducted with villagers as well as students in Cambodia suggested a price of 6,000 Riel for 50% uptake. However, in the actual experiment insurance uptake was higher.

⁴4,000 Riel are worth approximately 1US\$. As a benchmark: The average per capita income in rural Cambodia was about 2US\$ in 2014, according to the Cambodia Socio-Economic Survey (National Institute of Statistics 2015). For the participants in our experiment, the average daily income per household was slightly more than 5US\$ (including the income of all household members, remittances, state assistance etc.), the median daily household income was below 2US\$.

4. Recipients of type *C1* and recipients of type *C2* were informed that each of them was matched with a player in a different room, that these players had a safe endowment of 16,000 Riel, but could decide to transfer part of it to their partner (i.e., to the *C1* and *C2* recipients) in case this person lost.
5. Each recipient was asked questions to test her understanding of the game.
6. Each recipient of type *C1* and type *C2* was asked to note down how much transfer she expected from her partner player in case of loss. The beliefs were noted down in private behind a cardboard and then collected. Recipients were told that their partner would never see these beliefs and that the beliefs had thus no impact on the actual transfer decisions.
7. Recipients of type *B2* and recipients of type *C2* were asked to go outside the room one by one to make their insurance purchase decision with a research assistant sitting outside.⁵ Recipients were not allowed to reveal their decision to the others when they came back into the room.
8. Each recipient rolled the dice. The outcome was noted down. In case a recipient lost, she handed 14,000 Riel of her play money to a research assistant. The remaining money was inserted in an envelope and collected; recipients were told that this money would be transferred to their personal ‘game account’. This money together with any potential transfer of the provider determined the payout of the recipients for this round.

Then groups switched rooms and roles for the second round (as shown in Table 2).

The procedure for providers **A** was as follows:⁶

1. Each provider received an initial income of 16,000 Riel in sixteen 1,000 Riel bills in play money.
2. Providers were explained the situation of the recipients. Specifically, providers in the uninformed case were explained the situation of *B1* and *B2* recipients, and providers in the informed case were explained the situation of *C1* and *C2* recipients. Providers were shown one of the overview illustrations depicted in Figure 2 as well as a detailed illustration (see Figures 8-11 in Appendix B.4).
3. Providers simulated the situation of the recipients, first of type *B1* [*C1*], then of type

⁵Note that this was the only decision that was not made in private. However, the research assistants responsible for the insurance sale were not part of the team of research assistants who supervised and explained the game, and they had not interacted with the subjects before.

⁶For the script of the instructions for providers in the uninformed case and in the informed case, see Appendix B.2 and B.3, respectively.

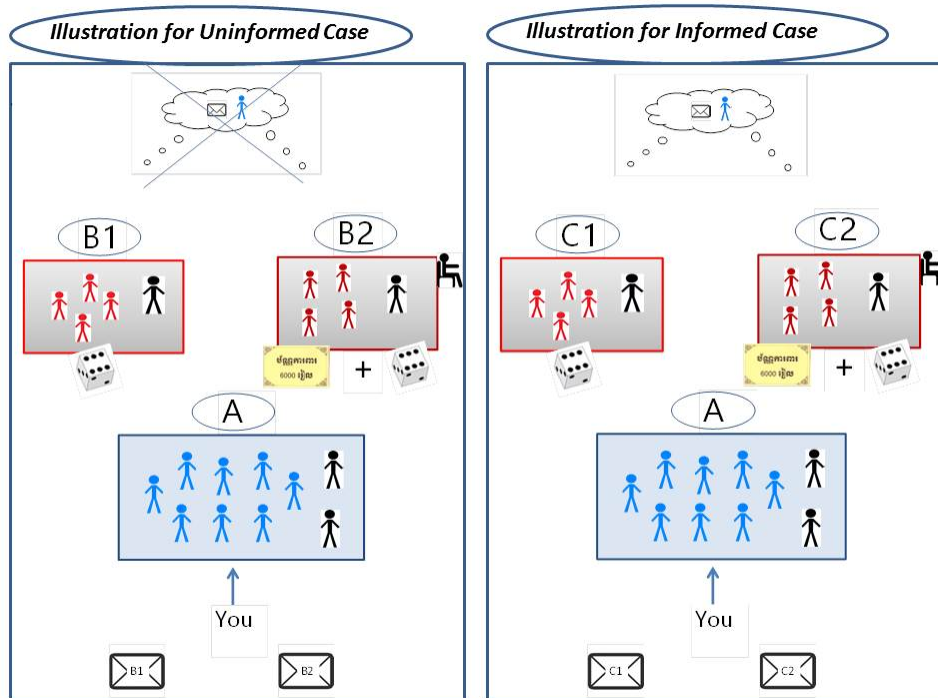


Figure 2: Illustrations for Providers

- $B2$ [$C2$]. During this simulation, each provider was asked questions to test her understanding of the game.
4. Providers were explained the random partner matching and the following transfer procedure. It was emphasized that transfers would only take place in case the partner lost money after rolling the dice and, for a recipient of type $B2$ and $C2$, had not bought insurance. Again, each provider was asked questions to test her level of understanding of the transfer procedure.
 5. Each provider was asked to write down in private (behind cardboards) on two separate sheets the following transfer decisions (see decision sheets in Figures 12-15 in Appendix B.5):
 - In case your partner was of type $B1$ [$C1$] - how much of your 16,000 Riel would you transfer if your partner loses?
 - In case your partner was of type $B2$ [$C2$] - how much of your 16,000 Riel would you transfer if your partner loses?
 6. After decisions were noted down, providers had time to check both decisions and to make final changes; then, pencils were collected.

7. Each provider was asked to draw an envelope from a box. On the envelope was a sign indicating the player type of the partner and a unique ID for the partner (unidentifiable to the providers). Each provider was asked to insert into the envelope the relevant decision sheet and the amount of bills she had noted on the sheet.⁷
8. Providers were given a second envelope in which they placed the remaining amount of bills. They were told that this money would be transferred to their personal ‘game account’ and that in case their partner had not lost they would also receive back the amount they had transferred. This money would determine their payout for this round.
9. All decision sheets and envelopes were collected by the research assistants.

Then the two provider groups switched rooms and roles for the second round. That is subjects who played providers in the uninformed case in Round 1 played providers in the informed case in Round 2, and vice versa. Subjects did not receive any feedback about the actual outcome of their partner. The procedure of Round 2 was the same as in Round 1. Only the simulation of the recipients’ situation and the related test questions for the providers were skipped. Thus, over the two rounds, each provider made four transfer decisions.

3 Implementation of the Experiment in the Field

We ran the experiment between August and October 2015. The 21 experimental villages are located in Banteay Meanchey and Siem Reap provinces in Northwestern Cambodia (Figure 3). In Siem Reap, community-based health insurance had been introduced in 2012 by a local NGO. 11% of the experimental participants in this province were insured in 2015; yet, insurance uptake varied from 0% to 27% across villages. This variation is partly driven by differences in the NGO’s engagement across the villages. In Banteay Meanchey, community-based health insurance was not available at the time of our experiment.⁸ We selected villages at the border of the two provinces as this makes the villages comparable in terms of geographic and socio-economic conditions. Selection criteria included the size of the village, the level of migration and remoteness.

Two weeks before the experiment took place in a village, a detailed household survey was conducted with approximately 60 randomly selected households of the village as well as a

⁷Providers were told that the amount they inserted would be double-checked with the amount indicated on the decision sheet and that, in case there was a difference, the amount indicated on the decision sheet would determine the transfer.

⁸In both provinces, a few experimental participants (at most, 4% per village) reported to be insured with other types of insurance. This is mostly health insurance for civil servants provided by the National Social Security Fund.

community survey with the village head. In total, 1,272 households were interviewed. The survey focused on basic socio-economic information, employment, support networks within and outside the village, labor migration, access to formal risk management tools, such as insurance, savings and credit, as well as perceptions of solidarity and accountability.

At the end of each interview, the respondent was asked whether he or she was able and willing to participate in an upcoming experiment. If the respondent answered affirmatively, he or she was included in the pool of potential experimental participants for this particular village. We sorted the list of potential participants according to their age and literacy level (youngest and most educated first) and sampled from this list in the resulting order. Our original target participant was literate and between 18 and 65 years old. However, as the literacy rate in this region is very low and labor migration of the young in some villages particularly high, illiterate and older respondents had to be included. Importantly, our group of experimental participants is not representative of the village population: the participants are younger and more educated than the average villager. For detailed characteristics of the experimental participants, see Appendix C.2.



Figure 3: Map of Cambodia (Source: United Nations, 2004)

The experiment took place in a school building either in the village itself or in a neighboring village. It was conducted with the assistance of 10 Khmer research assistants, who were different from those who had conducted the household survey. The experiment had five parts: registration and introduction; the first game (with two rounds) which is the focus of this paper; a network questionnaire that elicited the relationships among the participants and a short break; a second game (with four rounds) which is analyzed in a separate paper; closing remarks and payout.

At the registration, each participant drew blindly a participant badge from a bag: a colored card with a number from 1 to 32, the participant ID. The color determined the group the participant was allocated to.⁹ After the registration, all participants were gathered in one room for a brief introduction where the general rules of the games and the payout modalities were laid out and the research team was introduced (for instructions for the introduction, see Appendix B.1). In particular, participants were explained that each of them would receive a show-up fee of 4,000 Riel; and that they could earn additional money over the course of the experiment which consisted of several rounds. How much they would keep at the end of each round would be dependent on their luck, their choices and the choices of others. Participants were told that they would not receive any feedback between the rounds. At the end, only one round would be selected for payout by the draw of a ball; hence, their decisions in one round should not be affected by their decisions or their outcomes in other rounds. Participants were ensured that their decisions would be kept anonymously and would not be observed by any of the other participants or the research assistants they interacted with. Participants were told that they were not allowed to communicate with each other during the course of the experiment, and that if they disobeyed the rules they would need to leave. After making sure that the rules were understood, the participants split into their groups according to the colors of their participant badges and were accompanied by the research assistants to their rooms.

The first game was conducted as described in Section 2.2. The four rooms with the recipients were each supervised by one research assistant (with two additional assistants sitting outside the room for insurance sale), the two rooms with the providers by two research assistants, respectively. The explanation of the game was done in front of all participants of each group. However, participants wrote their decisions in private and unobserved by the research assistants behind cardboard boxes. Although the literacy rate was low, most of the participants could read and write numbers. 13% of the providers needed help from the research assistants in writing their transfer decisions. We take this into account in the analysis. Low literacy constituted a challenge for us to explain the game in such a way that it could be understood by the participants. We employed several measures, such as using graphical illustrations and simulating the role of the other players, to increase the level of understanding. We also asked different sets of test questions during the instructions, the results of which can be regarded as an indicator for the level of understanding. Given that we are interested in the providers' behavior, it is important to us that they clearly understood

⁹We compare the socioeconomic characteristics of the two provider groups in Table 10 in the Appendix C.2. We find no overall significant differences, with the only exception of *bank account*. This is an indication that randomization was successful and that we can pool the transfer decisions for the analysis.

the game and the implications of their transfer decisions. 44% of the providers gave correct answers to all test questions. Part of the analysis below will be restricted to these providers.

At the end of the experiment, all participants were gathered in one room for the closing remarks. One participant was asked to draw blindly one ball from a bag that contained six different balls; each ball symbolizing one round (i.e. two rounds of Game 1 and four rounds of Game 2). The drawn ball determined which round would be paid out. The participants were then asked one by one to a separate room where they received their payout which consisted of the outcome of the round that was drawn and their show-up fee. The average payout amounted to 17,000 Riel, equivalent to US\$ 4.25 or slightly more than twice the average per capita income in rural areas (National Institute of Statistics 2015). The full experiment from registration until payout lasted, on average, 4.5 hours.

4 Results

4.1 Treatment Effect Analysis

Over Round 1 and Round 2, each of the 336 subjects who played the role of the provider made four transfer decisions, two as a provider in the uninformed case (to an *uninformed* recipient with and without insurance option) and two as a provider in the informed case (to an *informed* recipient with and without insurance option). Hence, there are 1,344 observations in total (4×336).

Figure 4 and Figure 5 depict the frequency distribution of the transfer decisions. We separately show the transfer decisions to recipients who were uninformed about the transfer possibility (Figure 4) and to those who were informed (Figure 5). For simplicity, the transfers are divided by 1,000 in these figures and in all following tables. The amount of transfer varies considerably; with the majority of providers transferring 1,000 or 2,000 Riel. Only a very small number of providers are willing to transfer 7,000 Riel, which would result in an equal split of the endowment such that both provider and recipient ended up with 9,000 Riel.¹⁰ There is a considerable shift to zero transfers when the recipients had the option to insure: the number of providers in the uninformed case who transfer zero when insurance is

¹⁰This fact makes our results different from Cappelen et al. (2013a) and Mollerstrom, Reme, and Sørensen (2015) who observe a tendency of the providers to equalize income. It is important to note that our experimental design is quite different from that of Cappelen et al. (2013a) and Mollerstrom, Reme, and Sørensen (2015). These studies rely on dictator games, in which dictators or uninvolved spectators have to decide how to distribute the *total* amount of two incomes (i.e. of the dictator and of the recipient). It is likely that this procedure makes the norm of an equal split more salient. In contrast, comparable studies that use solidarity games, rather than dictator games, also do not observe an equalization of incomes (Bolle and Costard 2015; Trhal and Radermacher 2009).

available increases more than threefold, the number of providers in the informed case more than fivefold. The distribution of transfers to uninformed recipients is not much different from the distribution of transfers to informed recipients, with a slightly higher proportion of providers in the uninformed case transferring zero.

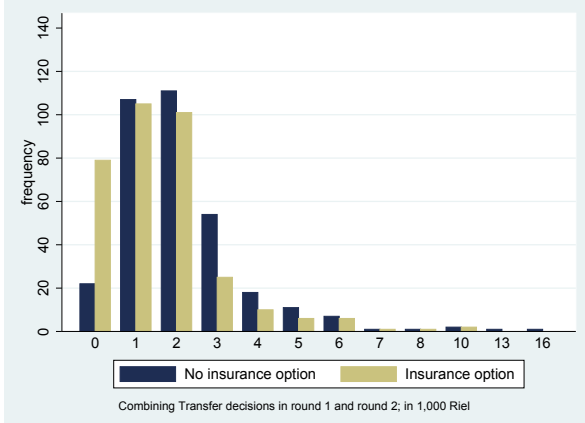


Figure 4: Transfer Distribution for Providers in the Uninformed Case

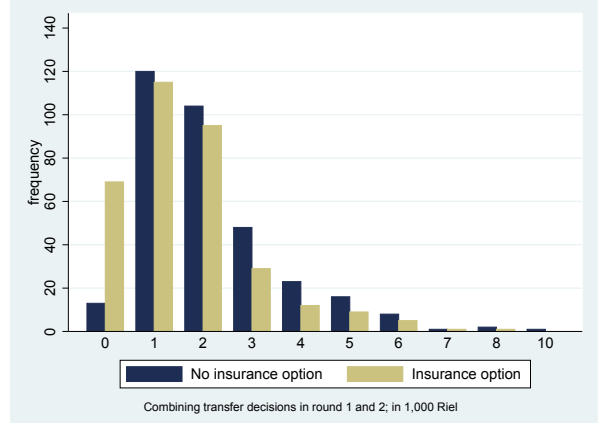


Figure 5: Transfer Distribution for Providers in the Informed Case

In order to test for the prevalence of choice conditionality and the information effect as outlined in Hypothesis 1 and Hypothesis 2 we exploit the within-subject and orthogonal treatment design and specify the transfer decision of provider i in treatment t as follows:

$$transfer_{i,t} = \theta + \beta Inf_t + \gamma Opt_t + \eta InfOpt_t + \epsilon_{i,t} \quad (2)$$

Opt_t is equal to one if recipients had the option to insure and zero otherwise. Inf_t is equal to one if recipients were informed about the transfer possibility and zero otherwise. $InfOpt_t$ is an interaction term, equal to one if recipients were informed about the transfer possibility *and* had the option to take up insurance and zero otherwise. We can break down the transfer decisions of providers as depicted in Table 3 (mirroring Table 1). In line with Hypothesis 1, we expect $\gamma < 0$ and $\gamma + \eta < 0$; and in line with Hypothesis 2, we expect $\eta < 0$.

We estimate specification (2) using OLS with standard errors clustered at the level of the provider groups.¹¹ To account for corner solution response and for unobserved heterogeneity at the individual level, we also estimate a Tobit model with the outcome variable censored at zero (Table 11 in Appendix D.1). We here report the results of the OLS estimation for the ease of interpretation.

¹¹Due to the orthogonal treatment design, fixed effects and random effects models come to the same results as standard OLS (Oaxaca and Dickinson 2005).

Table 3: Transfer Decisions and Regression Coefficients

	Recipient informed of provider		
		<i>no</i>	<i>yes</i>
Recipient had option to insure	<i>no</i>	θ	$\theta + \beta$
	<i>yes</i>	$\theta + \gamma$	$\theta + \beta + \gamma + \eta$
<i>Hypothesis 1</i>		$\gamma < 0$	$\gamma + \eta < 0$
<i>Hypothesis 2</i>		$\eta < 0$	

Estimation results are reported in Table 4. In column (1), we report the basic results. Starting in column (2), we control for round effects, i.e. level changes in transfer decisions when providers played the transfer game a second time. From column (3) on, village fixed effects are included. In column (4), the sample is restricted to those providers who did not need support in writing their transfer decisions (292 out of 336 providers). In column (5), we restrict the sample to providers who answered all test questions correctly (149 providers). In column (6), we exclude the 24 providers who made extreme transfer decisions; these are providers who indicated to transfer more than 7,000 Riel in at least one treatment.

The average baseline transfer (θ), i.e. how much is sent to recipients who experienced an income loss but had no insurance option and were not informed, is 2,155 Riel in column (1). Hence, the providers transfer 13.5% of their endowment. Introducing the insurance option has a significantly negative effect on the transfers. Providers reduce their transfers to recipients who forewent the insurance option by 28% in case the recipient is uninformed (γ as a proportion of θ) and by 27% in case the recipient is informed ($\gamma + \eta$ as a proportion of $\theta + \beta$). Both γ as well as the joint effect of $\gamma + \eta$ are significantly negative, which is support for our first hypothesis. We find no evidence that the extent to which solidarity transfers are conditioned on the insurance option depends on the level of information available to the recipients. η is close to zero and statistically insignificant. On average, information does not seem to matter. There is neither a significant change in transfers in response to information per se (β) nor a change in the response to foregoing the insurance option (η). Introducing round effects in column (2) and village fixed effects in column (3) and restricting the sample in columns (4)-(6) does not change the results by much.¹² The baseline transfer

¹²There are round effects. Subjects reduce their baseline transfers from Round 1 to Round 2; yet, the

Table 4: Effect of Insurance Option and Information on Transfers - Pooled OLS

	(1)	(2)	(3)	(4)	(5)	(6)
	Transfer	Transfer	Transfer	Transfer	Transfer	Transfer
Inf (β)	0.003 (0.111)	0.003 (0.104)	0.003 (0.079)	0.008 (0.123)	0.092* (0.053)	0.097** (0.048)
Opt (γ)	-0.598*** (0.102)	-0.598*** (0.103)	-0.598*** (0.084)	-0.596*** (0.115)	-0.738*** (0.115)	-0.533*** (0.076)
InfOpt (η)	0.018 (0.082)	0.018 (0.082)	0.018 (0.081)	-0.048 (0.100)	-0.007 (0.055)	-0.024 (0.055)
Constant (θ)	2.155*** (0.138)	2.275*** (0.145)	2.414*** (0.418)	2.425*** (0.127)	2.201*** (0.547)	1.832*** (0.342)
Round FE	No	Yes	Yes	Yes	Yes	Yes
Village FE	No	No	Yes	Yes	Yes	Yes
Observations	1344	1344	1344	1168	596	1320
Adjusted R2	0.034	0.039	0.090	0.087	0.190	0.107
F	15.036	19.514	6.794	20.179	13.359	19.917

OLS estimator; s.e. in paranthesis, clustered at provider group level

(1)-(3) for all subjects; (4) excluding subjects who needed support in writing;

(5) excluding subjects who made at least one mistake at test questions;

(6) excluding subjects who made at least one transfer above 7,000 Riel.

Transfers in terms of 1,000 Riel.

varies between 1,800 Riel and 2,400 Riel (11%-15% of the endowment) across these columns. γ as well as $\gamma + \eta$ are always significantly negative; but η alone is statistically insignificant. The magnitude of γ and $\gamma + \eta$ amounts to between 24% and 31% and is thus comparable to that in column (1). When excluding providers with extreme transfer decisions (column (6)), β becomes statistically significant. Providers react to the information on the side of the recipients: in the absence of an insurance option, providers transfer 5% more to informed than to uninformed providers.

A potential concern with these results arises from the fact that providers make their transfer decisions strategically: They know the transfer will only be enacted if recipients actually lose. In the transfer game, the probability of a transfer being implemented varies across the treatments with and without the insurance option. When recipients have no insurance option, there is a 50% probability of losing and thus of transfers. When recipients have an insurance option, the probability decreases as soon as some recipients take up insurance and thus have a zero probability of a loss, making transfers impossible. In our experiment, insurance uptake was relatively high, namely 75%. Hence, the probability of a transfer was

treatment effect of the insurance option as well as the information remain unchanged. We analyze the rounds separately in Table 12 in Appendix D.2.

$0.75*0+0.25*0.5=12.5\%$ in the treatments with the insurance option. If providers expected high insurance uptake, they may have indicated a relatively high transfer amount in the treatments with the insurance option because they did not expect a transfer would take place. Such behavior would be particularly likely if providers were not only motivated by solidarity norms but also by a desire to ‘look good’ in the eyes of the research assistants, the other experimental participants or themselves; i.e. by their social or self image. As described in Section 2.2, we tried to limit concerns for social image by using an anonymous setting in which neither the research assistants nor the other participants could observe the transfer decisions. Nevertheless, providers might still be motivated by their self image (Dana, Weber, and Kuang 2007). If this was the case, then differences in transfers would be larger in a non-strategic setting. The transfer differences that we observe should thus be interpreted as a lower bound for the true extent of choice conditionality.

In sum, we find support for Hypothesis 1, but no support for Hypothesis 2. On average, providers reduce their transfers significantly when recipients had the choice of insurance and hence the option to avoid the loss. The reduction in transfers to recipients who forewent the option to insure informedly is *not* larger than that to recipients who forewent the option to insure uninformedly. These results are stable across all columns in Table 4 (OLS results) and Table 11 (Tobit random effects results). This finding is an indication that people tend to condition their solidarity transfers on the ex-ante options their peers had. They hold others accountable for not seizing an opportunity; yet it seems irrelevant whether or not the peers had known about the potential support before foregoing the insurance option.¹³

4.2 Heterogeneous Treatment Effects

Are the observed average transfer changes driven by just a few providers in our sample or do they represent a pattern common to the whole provider sample? To answer this question, we investigate the distribution of treatment effects across providers. We first take a look at choice conditionality and then look at the information effect. From the following analysis we exclude those five providers (i.e., 1.5%) who transferred zero in each treatment as they behave purely payoff maximizing and do not show any sign of solidarity.

Table 5 depicts the distribution of the change in transfers to an uninformed recipient in response to foregoing insurance (γ).¹⁴ Column (1) reports the distribution for all providers

¹³Since we conducted the experiment in relatively small villages and subjects saw each other during introduction before the game, reciprocity concerns could be at play as well. We elicited the real-life social ties between subjects with the help of a network questionnaire. We can thus test whether subjects with more social ties show different levels of solidarity in the experiment. We do not find this to be the case.

¹⁴The distribution of the change in transfers to an informed recipient in response to foregoing insurance ($\gamma + \eta$) is very similar to that in Table 5.

and column (2) restricts the sample to providers who responded correctly to all test questions.

Table 5: Heterogeneity in γ

	(1)	(2)
	Proportion (<i>All subjects</i>)	Proportion (<i>Subjects with all test questions correct</i>)
$\gamma = 0$	42.30	45.21
$\gamma < 0$	44.71	47.95
$\gamma > 0$	12.99	6.85
Observations	331	146

Excluding subjects who always transferred zero

Indeed, not all providers exhibit choice conditionality. 45% of providers reduce their transfers when recipients had the option to insure ($\gamma < 0$); in fact, these providers reduce their transfers by 65%. In contrast, 42% of providers do not condition their transfers on whether recipients had a choice ($\gamma = 0$). This means these subjects transfer the same amount independent of whether recipients had the option to insure. 13% of the providers transfer *more* when recipients forewent the insurance option ($\gamma > 0$). This proportion reduces to 7% when we restrict the sample to subjects who responded correctly to the test questions. This reduction suggests that some of the observations are caused by erratic decisions by providers who did not clearly understand the experiment.¹⁵

The proportion of providers who condition their transfers on whether recipients had the opportunity to avoid their loss in our experiment is comparable to the proportions of subjects who condition their transfers on the choices of others in Thal and Radermacher (2009), Cappelen et al. (2013a), Mollerstrom, Reme, and Sørensen (2015) and Bolle and Costard (2015). In these studies, between one third and two thirds of experimental participants conditioned their transfers on the past decisions of the co-players. The studies also identify other types of conditionality that we do not observe due to our different experimental design. Interestingly, the proportion of subjects who always transfer the same amount is considerably smaller in the other studies than in our experiment.

The distribution of responses to the information of recipients (η) is illustrated in Table

¹⁵In order to better understand the reasoning behind the transfer behavior, we conducted qualitative interviews with participants after the experiment in one third of the villages. Of the interviewed providers, 19 increased their transfers when the recipients had had the option to take up insurance. The majority of these providers seemed to not have understood the situation of the recipients or confused the order of the two decisions. Four providers stated they felt more pity with recipients who decided against the insurance and lost, than with recipients who just lost due to pure misfortune. One provider responded she expected the recipient would take up the insurance anyway and thus did not care about the transfer. And one provider stated he ‘just did not care about the money’.

6. Again, there is considerable heterogeneity. The majority of providers (61%) do not condition their response to foregoing the insurance option on the information available to recipients ($\eta = 0$); i.e. providers adjust their transfers by the same amount for informed and uninformed recipients. It seems that either they do not regard the informed recipients' behavior as free-riding on their solidarity or they do not consider that free-riding on solidarity should be punished.¹⁶

Table 6: Heterogeneity in η

	(1)	(2)
	Proportion (<i>All subjects</i>)	Proportion (<i>Subjects with all test questions correct</i>)
$\eta = 0$	60.73	67.12
$\eta < 0$	20.24	17.12
$\eta > 0$	19.03	15.75
Observations	331	146

Excluding subjects who always transferred zero

20% of the providers behave in line with our Hypothesis 2 ($\eta < 0$). They reduce their transfers by *more* to recipients who forewent the insurance option informedly. Surprisingly, the proportion of providers who respond positively ($\eta > 0$) is approximately as high as the proportion of providers who respond negatively. 19% reduce their transfers by *less* when the recipients did not make use of the insurance option informedly. This share reduces only slightly to 16% when we restrict the sample to those providers who responded correctly to all test questions. Thus, problems with understanding the experiment do not seem to be the root cause of this behavior. These providers may instead be driven by different motives than the others. Possibly, they wish to reward the foregoing of the insurance option of the informed recipients as they advocate the institution of informal support. Such behavior is still in line with intention-based reciprocity but providers apply a positive, rather than a negative, reciprocal response. An indication for this interpretation may be that providers with $\eta > 0$ have considerably higher baseline transfers (θ) of 2,651 Riel compared with 2,150 Riel among providers with $\eta < 0$ and 1,701 Riel among providers with $\eta = 0$. Given that they are willing to make larger transfers than others, they seem to value informal support highly. An alternative motive is guilt aversion (Charness and Dufwenberg 2006; Battigalli and Dufwenberg 2007): providers may wish to comply with the expectations of recipients,

¹⁶In fact, the insurance uptake of the uninformed recipients is only slightly higher than that of the informed recipients: 79% vs. 71%. This indicates that there is some free-riding among recipients but not very much. If providers expect little free-riding, it seems reasonable that they do not make a difference between foregoing the insurance option informedly and foregoing the insurance option uninformedly.

who made the choice against the insurance in reliance on their support. With the data currently at hand, we cannot say anything about the plausibility of these interpretations. We did not elicit the perception of intentions or the second-order beliefs of the providers in our experiment. Hence, we do not know whether the providers regarded the recipients' behavior as intentionally good or bad and whether they took the recipients' expectations into account when making transfer decisions.

4.3 Familiarity with insurance

One objective of our sampling strategy was to investigate whether people have to be familiar with a specific context in order to make their solidarity transfers conditional. More specifically, are providers, who are familiar with the insurance concept, more likely to condition their solidarity transfers on the recipient's insurance option? The concept of insurance differs substantially from that of traditional informal support arrangements (Platteau 1997).¹⁷ Individuals who are not familiar with the concept of insurance might not perceive insurance as a valuable instrument and might be less likely to reduce their support to another person if this person had the option of insurance. Note that we never used the term 'insurance' in the experiment; any correlation between choice conditionality and insurance familiarity should thus be due to familiarity with the insurance concept not with the term as such.

The unique setting of our experiment allows us to measure the familiarity with insurance in three ways: 1) being currently insured, 2) living in a village with above average insurance uptake (i.e. more than 8% of households in the village are insured), and 3) living in Siem Reap province. Note that familiarity with insurance does not imply a higher level of understanding the experimental instructions. There is no significant difference in understanding between providers familiar with insurance and providers unfamiliar with insurance. We analyze whether the proportion of providers who reduce their solidarity transfers in response to the recipient's insurance option (i.e. the proportion with $\gamma < 0$) increases with the familiarity with insurance. Results are depicted in Table 7. For all three measurements of familiarity, the proportion of choice conditional providers is larger among providers familiar with insurance. However, the difference between the proportion of providers familiar with insurance and that of providers unfamiliar with insurance is statistically significant only in panel (2). In villages where insurance uptake is above average, 55% of the providers reduce

¹⁷While informal support builds on 'balanced reciprocity' - i.e. support is provided under the expectation that "there will be a tangible quid pro quo for [the] present generosity" (Platteau 1997, p.768) - insurance presupposes a willingness to pay in order to reduce the mere possibility of a negative outcome. "[People] must agree that, if they are themselves lucky (no misfortune has befallen them), the risk premiums they have paid to get rid of an unhappy prospect will serve to compensate the unlucky participants for the damage suffered" (Platteau 1997, p.767).

their solidarity transfers in response to the insurance option whereas 39% of the providers do so in villages where insurance uptake is below average.¹⁸

Table 7: Insurance Familiarity and Choice Conditionality

		Proportion		Observations
		$\gamma < 0$		
(1)	Insured	48.39	(9.12)	31
	Not insured	44.33	(2.87)	300
	Difference (ttest)	4.05	(9.41)	
(2)	Above average insurance uptake	55.36	(4.72)	112
	Below average insurance uptake	39.27	(3.31)	219
	Difference (ttest)	16.08***	(5.72)	
(3)	Siem Reap	48.30	(3.78)	176
	Bantey Meanchey	40.65	(3.96)	155
	Difference (ttest)	7.65	(5.48)	

Excluding subjects who always transferred zero. Standard error in parentheses.

The still relatively high proportion of providers who exhibit choice conditionality in villages with below average insurance uptake suggests that familiarity with insurance is not a precondition for choice conditionality. Yet, it may contribute to explaining heterogeneity in providers' behavior. One interpretation of the observed pattern is that individual responsibility becomes more salient with insurance familiarity. Familiarity with the concept of insurance might raise people's expectations for others to take individual precautions to avoid neediness. However, the fact that the NGO's targeting strategy of the villages where insurance was promoted and individuals' insurance uptake are not exogenous in real life renders a causal interpretation problematic. Unobserved factors might explain both the likelihood of insurance uptake in real life and the providers' inclination to condition their solidarity transfers on the insurance option in the experiment. In order to investigate a causal link underlying the observed pattern, a setting is needed where insurance availability (and thus insurance familiarity) is truly exogenous. This is direction for future research.

4.4 External Validity

In order to investigate our research question, we chose to conduct a lab-in-the-field experiment because it would have been difficult, if not impossible, to cleanly analyze choice conditionality in combination with the information effect through survey questions. A major limitation of lab experiments is, however, that they are artificial. As laid out by Levitt

¹⁸Changing the cut-off point of the uptake rate to 5% or 10% leads to similar results. The difference in the proportion of providers is 11.82 (p-value: 0.03) and 16.25 (p-value: 0.007) percentage points, respectively.

and List (2007), several characteristics of lab experiments make extrapolation of behavior in the lab to behavior outside the lab questionable. We designed our experiment in such a way that it eases extrapolation to the extent possible. For example, the decisions of the providers and recipients were not observed by the research assistants who interacted with them. This reduced the pressure to act pro-socially in order to look good in front of the research assistants. Moreover, we played with high stakes, which made the decisions more relevant. Nevertheless, the fact that subjects did not earn their income, that they played anonymously and were not allowed to communicate with each other made the setting rather artificial.

We address the external validity of our experiment in two ways. First, we contrast the providers' transfer decisions in the experiment with their survey response to a vignette situation on accountability.¹⁹ Second, we study the beliefs of the recipients in the experiment. In a first step, we analyze whether the recipients' beliefs about providers' transfers match the actual transfer decisions of the providers. In a second step, we correlate average recipients' beliefs and providers' transfer decisions per village.

4.4.1 Providers' behavior outside the lab

In the survey, we confronted the respondents with a vignette situation in order to analyze their perceptions of accountability in a situation which was familiar to them. Respondents were asked to consider two different situations:

- Situation 1 (S1): *"The household head of a poor household in this village dies of sudden illness. All other households are asked once to support the household. How much money would you contribute?"*
- Situation 2 (S2): *"The household head of a poor household in this village dies after a motorbike accident. He had behaved very risky on the road. All other households are asked once to support the household. How much money would you contribute?"*

80% of the providers report in the survey that they would contribute the same amount in both situations ($S1 = S2$). 19% report to provide less in Situation 2, where the outcome is the result of choice, i.e. careless driving ($S1 > S2$). Only 1% (4 providers) indicate to provide more in Situation 2.

Of course, the situation that individuals face in the experiment is very different from the situation they face in the survey. Death is a much more severe circumstance than the loss of

¹⁹Note that the survey was conducted two weeks before the experiment. It is therefore highly unlikely that the participants' behavior in the experiment was diluted by their responses to the survey questions.

money due to the roll of a dice. Furthermore, death plays a special role in Buddhist culture, and money collection after the passing of a village member has a long standing tradition in Cambodia. Finally, in the vignette situation the help goes to the family of the deceased and not to the person liable for the loss. These differences may explain the high proportion of providers who report to contribute the same amount in both situations. Nevertheless, we expect that those providers who reported lower contributions in case of irresponsible behavior in the survey to also reduce their solidarity transfers by more when recipients could have avoided their loss in the experiment.

Indeed we find that providers, who respond in the survey to contribute less when the outcome was a result of choice, are significantly more likely to condition their solidarity transfers on the recipient's insurance option in the experiment compared with providers, who respond to contribute the same (Table 13 in Appendix D.3). On average, providers who report in the survey to transfer less in case the outcome was affected by deliberate choice reduce their solidarity transfers in the experiment by 40% in case the recipient had had the option to insure while providers who report to transfer the same amount reduce their solidarity transfers by only 25% (Table 14 in Appendix D.3). This is an indication that the transfer behavior observed in the experiment is motivated by solidarity norms that are applied in real-life decision making.

4.4.2 Recipients' expectations

Those recipients who were informed about the transfer possibility (recipients of type $C1$ and $C2$) were asked to write down how much transfer they expected from the providers. We are interested in whether or not these beliefs change with the insurance option. If the recipients with the insurance option expected lower transfers from the providers than the recipients without the insurance option, the providers' behavior as illustrated above would be directly reflected in the recipients' beliefs.

Among all recipients who were informed, the average expected transfer amounts to 3,840 Riel without the option to insure and to 3,390 Riel with the option to insure (column (1) of Table 8). The difference in the expected transfer of about 450 Riel is significantly larger than zero at the 5% level. Notably, this difference is close to the actual reduction in transfers by the providers when insurance becomes available, i.e. the roughly 600 Riel reduction in Table 4. This finding indicates that the recipients anticipated that providers condition their solidarity transfers on the insurance option.

Table 8: Expected Transfer by Recipients

	Expected Transfer
No Insurance Option	3.837 (0.234)
Insurance Option	3.392 (2.638)
Difference in Expected Transfers (between rounds)	0.446** (0.194)
Observations	166

Response to Belief Questions in Round 1 and Round 2; s.e. in parentheses
Transfers in 1,000 Riel

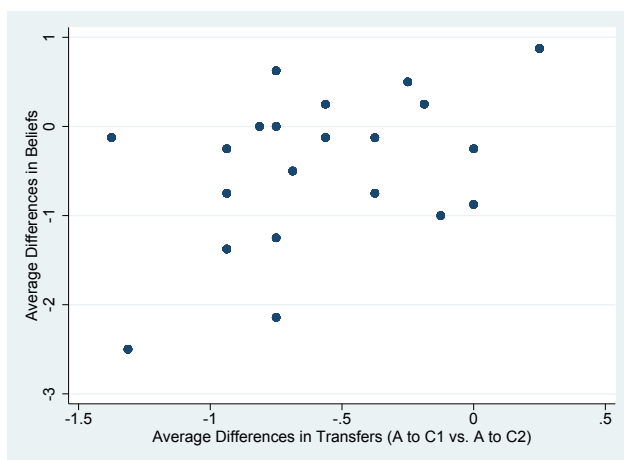


Figure 6: Differences in Beliefs and Transfers in Response to Insurance (Across Villages)

We now relate the average changes in providers' transfers in response to the insurance option to the average changes in recipients' beliefs at the village level. Figure 6 illustrates a strong correlation between these two measures. The Pearson correlation coefficient is 0.41 with a p-value of 0.06. A simple regression without controls for village characteristics finds that the average change in transfers explains more than one sixth of the average change in beliefs. We argue that this correlation of providers' transfers and recipients' beliefs at the village level is likely driven by the existence of village-level social norms on solidarity. Social norms, according to Bicchieri (2005), guide individuals' behavior through the expectation that others behave in line with the norm and also expect oneself to do so. If social solidarity norms, which generally guide villagers' behavior in real life, are here applied to the less familiar situation of the experiment, the correlation between providers' and recipients' behavior provides support for the external validity of our findings.

5 Conclusion

In this study, we show that insurance can crowd out informal support through changing people’s intrinsic motivation to support their peers. This mechanism of crowding out is fundamentally different from those previously suggested in the literature as these focus on a change in the incentive structure. In a lab-in-the field experiment conducted in Cambodia, we find that providers hold recipients accountable for not seizing an available insurance opportunity. While the providers transfer a considerable share of their endowment to a recipient who lost most of her endowed money due to bad luck, they reduce the transfer by close to one third when the recipient could have purchased insurance. We find that this reduction is a response to the ex-ante available insurance option; it is not affected by whether the recipient was aware of the potential support when making her insurance decision.

After the experiment, we asked a sample of the providers for the motives behind their transfer decisions. Most of them reported that they had felt pity with the recipient. This suggests that the solidarity norms of our providers are shaped by empathy rather than by fairness concerns.²⁰ But why do providers feel less empathy with a recipient who had the ex-ante option to insure? We suggest that the introduction of insurance has a framing effect: it affects how a decision situation is represented and prescribes a new appropriate behavior (Bowles 2008). The introduction of insurance is interpreted as a signal that economic security becomes an individual responsibility, which reduces the moral obligation to support others (Landmann, Vollan, and Frölich 2012). This explanation is supported by our finding that villagers who are more familiar with insurance in real life are more likely to reduce their transfers when insurance becomes available in the experiment. It also relates to findings by Hintz (2010) who analyzes the implementation of a life-insurance product in rural Indonesia. Hintz finds that in villages, where the insurance was introduced, the willingness to provide help declined substantially after the insurance scheme was established. Hintz describes a paradigm shift: the insurance led to an “individualization of risk management ... (furthering) the erosion of social cohesion” (Hintz 2010, p. 232).

Our findings have potential implications for intrinsically motivated support in developing countries. Often people provide support, e.g. to ill or disabled relatives or friends, without anticipating any transfers in return (De Weerd and Fafchamps 2011). Such support might be reduced when insurance becomes available. This would be particularly concerning if support was reduced in cases of shocks that are not insurable or to people who are too poor to pay for insurance premiums.

²⁰A number of studies suggest that empathy is one of the driving motives explaining pro-social behavior (e.g. see Andreoni and Rao (2011)).

In Cambodia, like in other countries, the government, international donors and private insurance companies are currently engaged in establishing different forms of social and private insurance. Most needed is comprehensive health insurance that covers those 60% of the population who work in the informal sector. When such health insurance gets introduced, people could be held accountable for not getting insured even if they lack the financial resources to pay for insurance premiums. They could then be worse off after the introduction of health insurance because they can neither afford health insurance nor do they enjoy the same level of informal support as before. This concern would be a strong call for making health insurance mandatory or complementing health insurance with social safety nets targeted at the poorer segments of society. Our experiment cannot speak to this concern directly as we did not vary the endowment of the recipients. Nonetheless, our results show that it is crucial to consider the indirect effects of insurance when designing new insurance schemes and when evaluating the impact of existing insurance products.

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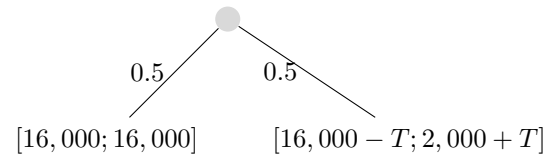
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A Game Design

Outcome without insurance option [provider;recipient]



Outcome with insurance option [provider;recipient]

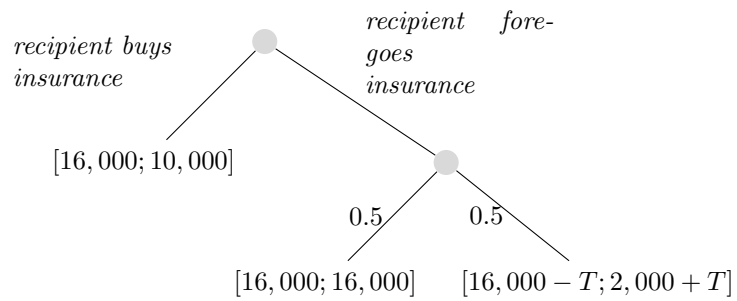


Figure 7: Outcome Tree of Transfer Game

B Instructions

B.1 Instruction for the ‘General Introduction’

[All 32 participants sit, at the front two RAs, the other RAs stand ready with their color sign boards]

Thank you all for coming today. My name is XXX. Let me briefly introduce our team to you. *[Introduce each RA.]* And this is Friederike who is a researcher at a university in Germany.

This workshop today has 2 games and 6 rounds in total. During the workshop you can earn a considerable amount of money that you are permitted to keep and take home. In the six different rounds you will have to make decisions that will influence your personal earning, but each of you will be given a show-up fee of 4,000 Riel at the end for sure. *[Show money.]* The remaining procedure, from now on, will last around three hours. Thank you in advance for your effort and time.

You should understand that the money you can earn in this workshop is not Friederike’s own money. It is money given to her by the German government to do a research study. Friederike is working together with other researchers who are carrying out similar workshops all around the world.

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. If you already feel uncomfortable, or you already know that you will not be able to stay for the three hours, then you should tell us now.

It is very important that you understand each round. 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 ask the assistants to explain them. But if you cannot answer the test questions after explaining them twice, we will have to exclude you from the workshop and you receive only the show-up fee. But don’t worry: we will do our best to help you understand.

The workshop is structured as follows: we have one game with two rounds, then a break during which you will be asked to answer a short questionnaire and then a second game with four rounds. After this there will be the payout. It is very important for our research that you answer all questions of the questionnaire seriously.

After knowing these rules, is there anybody who does not like to participate? *[Wait some moments.]*

There will be six rounds that are slightly different from each other. At the beginning of each round, each of you will be given 16,000 Riel as endowment. These 16,000 Riel are play money. But they will be exchanged to real money at the end of the workshop. In each round you might lose some of this money. How much you keep and eventually your final earnings of this workshop depend on your decisions, decisions of others and luck. The show-up fee of 4,000 Riel is always untouched. We will at no time inform you about the outcome of other participants.

Friederike administers the accounts for each participant. *[Show template sheet with accounts for each participant.]* After each round, the amount each participant earned will be reported to Friederike. We play 6 rounds. Each round is named after a fruit. We have Mango, Pineapple, Orange 1, Orange 2, Apple 1, Apple 2. But you might play them in a

different order. Only one of the 6 rounds determines the final payout for you. At the end of the workshop, we will draw a ball to determine which of the 6 rounds will be paid out to you. [*Show 6 balls with the fruit names.*] Just one of the 6 rounds is finally paid out. [*Shows example sheet with accounts for each participants.*] This is an example for the account sheet. Each row specifies the outcome for a specific participant in each round. [*Show.*] Let us assume we draw this ball. [*Draw a ball, show the name on it.*] How much will be the payout of this participant? [*Show participant number on sheet.*] And how much of this? [*Show a different number.*] Let us assume we draw this ball. [*Draw a ball, show the name on it.*] How much will be the payout of this participant? [*Show participant number on sheet.*] And how much of this? [*Show a different number.*] [*Repeat until understood.*]

The outcomes in one round have absolutely no influence on the outcomes of another round or another game. They are completely independent from each other. So, if you make your decision in one round, don't worry what happened in the rounds before or what will happen in the following rounds. Just take each round seriously on its own, because it might be the one that is paid out.

In the rounds you have to make decisions about small sums of money. Each decision you make is good – there are no wrong decisions. Your decisions will be kept in private, so just choose the option YOU like best!

After we finished the six rounds, one by one will come to Friederike, who will hand out the earnings of the round drawn plus the show-up fee to you and you sign the receipt.

You all received a colour badge and a participant number. The participant number is your personal number. You keep this number for all six rounds of the workshop and have to show it at the end in order to get paid. So always remember to take the color badge with you.

There are some more rules for communication. During the rounds talking is strictly prohibited. You cannot ask questions to the other participants or talk about the rules with other participants while we are in the process of the round. 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 workshop anymore and get no earnings from the workshop.

We will now start. Please go to the assistant that shows a signboard with your colour. This is your group. For all 6 rounds of this workshop you will stay in this group.

[*RAs collect the participants, go with them to the respective rooms.*]

B.2 Instruction - Providers in the Uninformed Case

Welcome again. I am YYY and this is ZZZ. We will assist you in this round. Let me reiterate what XXX stated in the introduction: Talking is strictly prohibited. You must not ask questions to the other participants or talk about the rules with other participants while the round is in progress. If you have any questions, please raise your hand and wait until I or my colleague comes to answer your question in private. If you do not follow the rule you cannot participate in the workshop anymore and get no earnings from the workshop.

Let me first hand out your endowment. [*Hand out bags with money to each participant.*] You will find in the bag 16,000 Riel in play money. This is your endowment. Remember, while we use play money now, this translates to real money later.

You are lucky; you can keep all your money. This was determined through a random draw that allocated participants to their roles. People in the other rooms are less lucky. They also receive 16,000 Riel in play money. But then each of them rolls the dice – like this [Show.]. If the dice shows 4, 5 or 6, they can keep their 16,000 Riel. But if the dice shows 1, 2 or 3 they lose 14,000 Riel and can keep only 2,000 Riel.

Each of you will be matched randomly with one partner from the other rooms. You can support your partner in the case that she loses 14,000 Riel. Thus, you can decide whether you want to transfer part of your money to your partner if she rolls a 1, 2 or 3, and therefore suffers a loss of 14,000 Riel. Please note that you will *never* be informed about the name of your partner.

Your partner *does not know* that she has a partner. She *does not know* that she might receive support from someone in case of a loss. If you decide to transfer something in case you partner loses, this amount will be added to her account. But she will *never* be informed about you and your name.

There are two different groups [Show on illustration.] and your partner is in one of the two groups:²¹

In the group 'khâ' the participants have the possibility to purchase a guarantee before they play the dice game. The guarantee costs 6,000 Riel. They receive a guarantee certificate. [Show example.] If they purchase the guarantee, they have only 10,000 Riel left, but they will not lose anything in the dice game. That is, nothing happens to them if the dice falls on 1, 2, or 3.

In the other group, 'kâ', participants do not have the possibility to buy a guarantee. They just play the dice game and they will either lose money or not.

[Round 1: Test Questions Simulation Group 'khâ' and Test Questions Simulation Group 'kâ']

Each of you will be matched randomly with a partner in either the 'khâ' group or in the 'kâ' group. Before the partner matching is determined, you are therefore asked to make two independent decisions: “Suppose you have your partner in group 'kâ' and your partner loses 14,000 Riel in the dice game, thus she has only 2,000 Riel left. Will you transfer part of your money to your partner? If so, how much?” You will note this down in private on a sheet. [Show the sheet.]

And then: “Suppose on the other side, your partner is not in group 'kâ', but in group 'khâ'. Thus your partner had the option to purchase a guarantee. However, your partner *decided not* to purchase the guarantee and loses 14,000 Riel in the dice game, thus she has only 2,000 Riel left. Will you transfer part of your money to your partner? If so, how much?” You will note this down in private on another sheet [Show sheet]. You will then still have time to look through both decisions.

For each of you we then determine in which group your partner is. You will receive an envelope. You put the amount of money that you decided to transfer to your partner into the envelope. The amount of money must be the exact same as noted on the decision sheet. The amount will be double checked. In case there is any difference the amount you indicated

²¹We used two Khmer letters to refer to the recipients without the insurance option and to those with the insurance option, letter 'kâ' for recipients of type B1 and C1 and letter 'khâ' for recipients of type B2 and C2.

on the sheet will determine the transfer. After you put the amount in the envelope, we will collect the envelopes. The money in the envelope will be transferred to your partner in case she loses part of her endowment. If she does not lose anything, you will keep the money in the envelope. All remaining money will determine your personal earnings for this game.

[Round 1 and Round 2: Test Questions Transfers]

Your decisions are anonymous in two ways: First, your name will never be revealed to your partner and your partner's name will never be revealed to you. Second, you will do your transfer decision in private using this cardboard *[Show cardboard.]* We will not look at the decision sheets or on the envelopes. In fact, we will not even touch the sheets or envelopes. You will put them in this basket *[Show basket.]* and we will bring the basket directly to Friederike. Hence your transfer decisions will not be observed by the other participants and not by us.

Remember, that the transfer decision is yours and only yours – there are no wrong decisions. You can transfer nothing or 1,000 Riel, 2,000 Riel, 3,000 Riel, etc. as you wish. Your transfers will be kept in private, *so just choose the amount YOU like best! And remember it's real money!*

Remember, you partner does not know that she has a partner. She is not expecting anything.

Let us start. *[Hand out the decision sheet for each participant and pencils.]* Please assume your partner is in Group 'kâ', thus your partner has no possibility to buy a guarantee. She rolls the dice and loses 14,000 Riel. She has only 2,000 Riel left. Would you like to transfer part of your 16,000 Riel? Please write in the box how much money you would like to transfer. If you do not want to transfer anything you write 0. *[Wait.]* Please put the sheet next to you.

[Hand out the other decision sheet to each participant.] Now, please assume your partner is in Group 'khâ', your partner decided *not* to purchase the guarantee, she rolls the dice and loses 14,000 Riel. She only keeps 2,000 Riel. Would you like to transfer part of your 16,000 Riel? Please write in the box how much money you would like to transfer. If you do not want to transfer anything you write 0. *[Wait.]*

Now, please have a look at your two decisions. One of the two decisions will be enacted in case your partner loses 14,000 Riel. Are you satisfied with your decisions? Then please fold the sheets and lay them in front of you like this *[Show with name on the top.]* *[Collect pencils.]*

I will now hand out the partner envelope. *[Go from one participant to the other, each draws one white envelope with the partner's group name and a player id written on it.]* Please look at the envelope. It tells you in which group your partner is. Please now take your decision sheet for this group *[Collect the other decision sheet which is not relevant with a basket.]*, look at it and add the money exactly according to your decision in the envelope. This amount will be transferred to your partner if she loses. *[Wait. Then ask each participant to put the envelope in a basket and hand out brown envelopes with the player number of the player.]* Now, here you put your remaining money. This will be transferred to your account.

[Ask each participant to put the envelope in the other basket. Finish.]

B.3 Instruction - Providers in the Informed Case

Welcome again. I am YYY and this is ZZZ. We will assist you in this round. Let me reiterate what XXX stated in the introduction: Talking is strictly prohibited. You must not ask questions to the other participants or talk about the rules with other participants while the round is in progress. If you have any questions, please raise your hand and wait until I or my colleague comes to answer your question in private. If you do not follow the rule you cannot participate in the workshop anymore and get no earnings from the workshop.

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Your partner knows that she might receive support from someone in this group in case of a loss. They are asked how much they expect to receive. But they, too, will *never* be informed about your name.

There are two different groups [*Show on illustration.*] and your partner is in one of the two groups:

In the group '*khâ*' the participants have the possibility to purchase a guarantee before they play the dice game. The guarantee costs 6,000 Riel. They receive a guarantee certificate. [*Show example.*] If they purchase the guarantee, they have only 10,000 Riel left, but they will not lose anything in the dice game. That is, nothing happens to them if the dice falls on 1, 2, or 3.

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And then: "Suppose on the other side, your partner is not in group '*kâ*', but in group '*khâ*'. Thus your partner had the option to purchase a guarantee. However, your partner decided *not* to purchase the guarantee and loses 14,000 Riel in the dice game, thus she has only 2,000 Riel left. Will you transfer part of your money to your partner? If so, how much?"

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[*Round 1 and Round 2: Test Questions Transfers*]

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Remember, that the transfer decision is yours and only yours – there are no wrong decisions. You can transfer nothing or 1,000 Riel, 2,000 Riel, 3,000 Riel, etc. as you wish. Your transfers will be kept in private, *so just choose the amount YOU like best! And remember it's real money!*

Let us start. [*Hand out the decision sheet for each participant and pencils*.] Please assume your partner is in Group 'kâ', thus your partner has no possibility to buy a guarantee. She rolls the dice and loses 14,000 Riel. She has only 2,000 Riel left. Would you like to transfer part of your 16,000 Riel? Please write in the box how much money you would like to transfer. If you do not want to transfer anything, you write 0. [*Wait*.] Please put the sheet next to you.

[*Hand out the other decision sheet to each participant*.] Now, please assume your partner is in Group 'khâ', your partner decided *not* to purchase the guarantee, she rolls the dice and loses 14,000 Riel. She only keeps 2,000 Riel. Would you like to transfer part of your 16,000 Riel? Please write in the box how much money you would like to transfer. If you do not want to transfer anything you write 0. [*Wait*.]

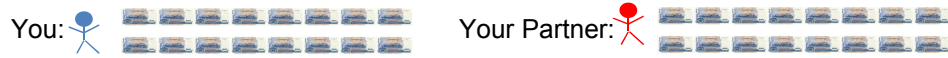
Now, please have a look at your two decisions. One of the two decisions will be enacted in case your partner loses 14,000 Riel. Are you satisfied with your decisions? Then please fold the sheets and lay them in front of you like this [*Show with name on the top*]. [*Collect pencils*.]

I will now hand out the partner envelope. [*Go from one participant to the other, each draws one white envelope with the partner's group name and a player id written on it*.] Please look at the envelope. It tells you in which group your partner is. Please now take your decision sheet for this group [*Collect the other decision sheet which is not relevant with a basket*.], look at it and add the money exactly according to your decision in the envelope. This amount will be transferred to your partner if she loses. [*Wait. Then ask each participant to put the envelope in a basket and hand out brown envelopes with the player number of the A*

player.] Now, here you put your remaining money. This will be transferred to your account.
[*Ask each participant to put the envelope in the other basket. Finish.*]

B.4 Illustrations

Figure 8: Illustration for Provider - Recipient B1



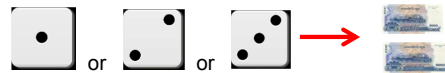
Your partner 

1. Explained the dice game
2. Rolls the dice

If the dice shows “4”, “5” or “6”, she keeps all her money, she keeps 16.000 Riel.



If the dice shows “1” or “2” or “3”, she loses 14.000 Riel and has only 2.000 Riel left







You: 

Can decide how much money to transfer to your partner in case your partner has only 2.000 Riel left

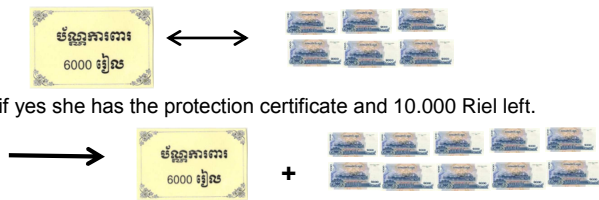


Figure 9: Illustration for Provider - Recipient B2

You:   Your partner:  

Your partner: 

1. Explained the dice game
2. Decides whether to purchase protection for **6.000 Riel**...



...if yes she has the protection certificate and 10.000 Riel left.

3. Rolls the dice:

A. 

If the dice shows "4", "5" or "6", she keeps all her money, she keeps **16.000 Riel**



If the dice shows "1" or "2" or "3", she loses 14.000 Riel and has only **2.000 Riel** left



B. 

Independent of the dice, she keeps **10.000 Riel**

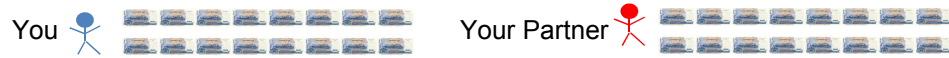


You: 

Can decide how much money to transfer to your partner in case your partner has only **2.000** Riel left.



Figure 10: Illustration for Provider - Recipient C1



Your Partner 

1. Explained the dice game

Informed that she has a partner who might support her in case she loses



Asked, how much she expects that the partner transfers to her in case she loses

2. Rolls the dice

If the dice shows “4”, “5” or “6”, she keeps all her money, she keeps **16.000 Riel**



If the dice shows “1” or “2” or “3”, she loses **14.000 Riel** and has only **2.000 Riel** left



You 

Can decide how much money to transfer to your partner in case your partner has only **2.000 Riel** left



Figure 11: Illustration for Provider - Recipient C2



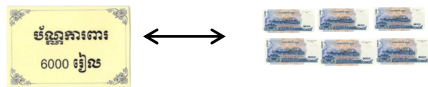
Your partner: 

1. Explained the dice game
2. Informed that she has a partner who might support her in case she loses



Asked, how much she expects that the partner transfers to her in case she loses

3. Decides whether to purchase protection for **6.000 Riel**...



...if yes she receives the protection certificate and she has 10.000 Riel left.



4. She rolls the dice:

A. 

If the dice shows "4", "5" or "6", she keeps all her money, she keeps **16.000 Riel**

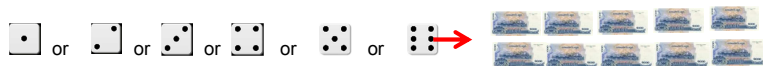


If the dice shows "1" or "2" or "3", she loses 14.000 Riel and has only **2.000 Riel** left



B. 

Independent of the dice, she keeps **10.000 Riel**




You: 

Can decide how much money to transfer to your partner in case your partner has only **2.000 Riel** left.








B.5 Decision Sheets


Figure 12: Decision Sheet for Provider - Recipient B1

Game 1 - DS_NG_C - Decision Sheet -  - Room 6 - Group 1c and 1d - Rose and Orange - RA 7, RA 8

Participants ID: _____

Your Partner is in Group 

You:   Your Partner:  

Your partner 

1. Explained the dice game
2. Rolls the dice

If the dice shows “4”, “5” or “6”, she keeps all her money, she keeps **16.000 Riel**.


•
•

or

•
•
•

or

•
•
•
•

→


If the dice shows “1” or “2” or “3”, she loses **14.000 Riel** and has only **2.000 Riel** left


•

or

•
•

or

•
•
•


→


Decision:

Suppose your partner rolls the dice and loses 14.000 Riel. She only keeps 2.000 Riel. Would you like to transfer part of your money?





Please write in the box how much you would like to transfer (write in terms of 1.000 Riel). If you do not wish to transfer anything, you write “0”. Remember, this is real money!


Figure 13: Decision Sheet for Provider - Recipient B2

Game 1 - DS_G_C - Decision Sheet -  - Room 6 - Group 1c and 1d - Rose and Orange - RA 7, RA 8



Participants ID: ____

Your Partner is in Group 2



You:   Your partner:  


Your partner: 

- Explained the dice game
- Decides whether to purchase protection for 6,000 Riel...






↔


...if yes she has the protection certificate and 10,000 Riel left.





→

+

- Rolls the dice:


A. 

If the dice shows "4", "5" or "6", she keeps all her money, she keeps **16,000 Riel**








 or
  or
 
→


If the dice shows "1" or "2" or "3", she loses 14,000 Riel and has only **2,000 Riel** left

 or
  or
 
→


B. 

Independent of the dice, she keeps **10,000 Riel**

 or
  or
  or
  or
  or
 
→


Decision:

Suppose your partner did **not** purchase protection. She rolls the dice and loses 14,000 Riel. She only keeps 2,000 Riel. Would you like to transfer part of your money?





Please write in the box how much you would like to transfer (write in terms of 1,000 Riel). If you do not wish to transfer anything, you write "0". Remember, this is real money!


Figure 14: Decision Sheet for Provider - Recipient C1

Game 1 - DS_NG - Decision Sheet - 𐄂 - Room 5 - Group 1a and 1b - Blue and Purple - RA 5, RA 6

Participants ID: _____


Your Partner is in Group 𐄂

You   Your Partner  

Your Partner 

1. Explained the dice game


Informed that she has a partner who might support her in case she loses




Asked, how much she expects that the partner transfers to her in case she loses

2. Rolls the dice

If the dice shows "4", "5" or "6", she keeps all her money, she keeps **16.000 Riel**



If the dice shows "1" or "2" or "3", she loses **14.000 Riel** and has only **2.000 Riel** left



Decision:

Suppose you partner rolls the dice and loses 14.000 Riel. She only keeps 2.000 Riel. Would you like to transfer part of your money?





Please write in the box how much you would like to transfer (write in terms of 1.000 Riel). If you do not wish to transfer anything, you write "0". Remember, this is real money!


Figure 15: Decision Sheet for Provider - Recipient C2

Game 1 - DS_G - Decision Sheet - 2 - Room 5 - Group 1a and 1b - Blue and Purple - RA 5, RA 6


Participants ID: ____

Your Partner is in Group 2

You:   Your Partner:  



Your partner: 

1. Explained the dice game
2. Informed that she has a partner who might support her in case she loses






Asked, how much she expects that the partner transfers to her in case she loses





3. Decides whether to purchase protection for 6,000 Riel...


↔


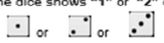




...if yes she receives the protection certificate and she has 10,000 Riel left.

→

+

4. She rolls the dice:
 - A. 







If the dice shows "4", "5" or "6", she keeps all her money, she keeps **16,000 Riel**


or

or

→


If the dice shows "1" or "2" or "3", she loses 14,000 Riel and has only **2,000 Riel** left


or

or

→

 - B. 

Independent of the dice, she keeps **10,000 Riel**


or

or

or

or

→


Decision:

Suppose you partner did **not** purchase protection. She rolls the dice and loses 14,000 Riel. She only keeps 2,000 Riel. Would you like to transfer part of your money?

Please write in the box how much you would like to transfer (write in terms of 1,000 Riel). If you do not wish to transfer anything, you write "0". Remember, this is real money!

C Descriptive Statistics

C.1 Characteristics of Experimental Participants

Table 9 provides an overview of the socio-economic characteristics of the experimental participants. The information is based on the data collected in the survey that was conducted two weeks before the experiment. The participants are a homogenous group in terms of ethnicity and religion, with all but a few being Khmer and Buddhists (not displayed in the table). 68% of the participants are female. In all but two villages, the female participants outweigh the male participants. The imbalance is largely due to the fact that men are more likely to work outside the village (either abroad or within Cambodia); furthermore, at the time of the survey many rice farmers were engaged in rice transplantation which is typically done by men. Participants are between 18 and 77 years old with a mean age of 39 and a median age of 37. Most participants (86%) are married and about half (45%) head their respective households. Two thirds were born in the village where they are now living. The level of education is rather low. The majority of the participants went less than three years to school; 30% never attended school. Correspondingly, only 66% of the participants report to be able to read and write in Khmer. Most of the participants (86%) are self-employed, the majority as rice farmers.

A household consists on average of six people. Many of the participants are poor. One in two participants report a household income of US\$50 or less in the last month. 21% of the participants come from a household that is officially classified as poor.²² There is a substantial amount of formal and informal borrowing. 60% of the participants' households have outstanding loans. 44% report to have borrowed money from another household in the village in the last 2 years; 33% borrowed from a financial institution, typically a microfinance institution. Only a small proportion (5%) have a bank account but one fifth participate in an informal savings group. 9% have a formal insurance (mostly, health insurance). The majority of participants (57%) live in a household where at least one household member either worked abroad in the past 2 years or is currently working abroad. 51% of the households receive remittances. The households of all participants own land, with greatly varying land sizes. Average land size is 2.7 hectares. More than two thirds of the participants live in a household without access to electricity.

²²The so-called IDPoor program was established in Cambodia in 2006 and was meant to provide information on the poor population to facilitate targeting of state programs and NGO assistance. The poverty status is determined based on observable assets, family composition and exposure to shocks and is renewed every 3-4 years. Being identified as poor provides, in particular, free access to basic health services.

Table 9: Characteristics of the Experimental Participants

	mean	sd	min	max	p50
<i>Individual Characteristics</i>					
Female	0.68	0.47	0	1	1
Age	39.46	12.15	18	77	37
Married	0.86	0.34	0	1	1
Household Head	0.45	0.50	0	1	0
Born in this village	0.67	0.47	0	1	1
Literate	0.66	0.47	0	1	1
Schooling years	2.91	3.02	0	16	2
Self-employed	0.86	0.35	0	1	1
<i>Household Characteristics</i>					
Household size	5.65	2.34	1	18	5
Monthly income (US\$)	160.66	363.05	0	5,000	50
ID Poor status	0.21	0.41	0	1	0
Indebted	0.60	0.49	0	1	1
Borrowed from other households	0.44	0.50	0	1	0
Borrowed from financial institution	0.33	0.47	0	1	0
Bank account	0.05	0.21	0	1	0
Member in a saving group	0.20	0.40	0	1	0
Insurance	0.08	0.28	0	1	0
Migrant	0.57	0.49	0	1	1
Remittances	0.51	0.50	0	1	1
Landownership (ha)	2.67	2.26	.016	30	2
No electricity	0.71	0.45	0	1	1
Observations	672				

C.2 Randomization of Providers

Table 10: Mean Comparison Test: Differences in Characteristics of the Provider Groups

<i>Individual Characteristics</i>		
Female	0.02	(0.64)
Age	2.07	(0.12)
Married	-0.02	(0.64)
Household Head	0.02	(0.66)
Born in this village	0.01	(0.91)
Literate	-0.02	(0.64)
Schooling years	-0.15	(0.64)
Self-employed	-0.04	(0.33)
<i>Household Characteristics</i>		
Household size	-0.37	(0.17)
Monthly income (US\$)	-24.73	(0.55)
ID Poor status	-0.05	(0.27)
Indebted	-0.04	(0.44)
Borrowed from other households	-0.05	(0.33)
Borrowed from financial institution	-0.01	(0.91)
Bank account	0.05**	(0.03)
Member in a saving group	0.02	(0.58)
Insurance	-0.03	(0.35)
Migrant	0.04	(0.51)
Remittances	0.07	(0.31)
Landownership (ha)	-0.08	(0.77)
No electricity	-0.01	(0.81)
Observations	336	

p-values in parentheses

D Treatment Effect Analysis

D.1 Tobit Estimation

Table 11: Treatment Effect Analysis - Tobit, censored at 0

	(1)	(2)	(3)	(4)	(5)	(6)
	Transfer	Transfer	Transfer	Transfer	Transfer	Transfer
Inf (β)	0.025 (0.113)	0.026 (0.105)	0.025 (0.105)	0.040 (0.124)	0.122** (0.056)	0.116** (0.050)
Opt (γ)	-0.776*** (0.136)	-0.776*** (0.136)	-0.778*** (0.136)	-0.773*** (0.150)	-0.909*** (0.154)	-0.682*** (0.099)
InfOpt (η)	0.027 (0.092)	0.028 (0.092)	0.030 (0.092)	-0.060 (0.111)	-0.005 (0.066)	-0.015 (0.063)
Constant (θ)	2.100*** (0.144)	2.236*** (0.149)	2.420*** (0.097)	2.429*** (0.105)	2.193*** (0.621)	1.833*** (0.385)
sigma						
Constant (θ)	1.723*** (0.133)	1.717*** (0.133)	1.657*** (0.127)	1.714*** (0.135)	1.401*** (0.119)	1.422*** (0.065)
Round f.e.	No	Yes	Yes	Yes	Yes	Yes
Village f.e.	No	No	Yes	Yes	Yes	Yes
Observations	1344	1344	1344	1168	596	1320
ll	-2467.316	-2463.238	-2415.448	-2127.494	-978.226	-2204.969
r2_p	0.013	0.014	0.033	0.034	0.072	0.040
F	14.090	16.117	17.820	15.268	12.812	14.748

Tobit estimator; censored at 0; s.e. in paranthesis, clustered on provider group level.

(1)-(3) for all subjects; (4) excluding subjects who needed support in writing;

(5) excluding subjects who made at least one mistake at test questions;

(6) excluding subjects who made at least one transfer above 7,000 Riel.

Transfers in terms of 1,000 Riel.

D.2 Round Effects

In Section 4.1, we noticed that there are round effects in our experiment but these round effects did not seem to influence our coefficients of interest. To provide further evidence, we here split our sample by rounds and run the OLS estimation of specification (2) separately for Round 1 (column (1)) and Round 2 (column (2)). Table 12 reports the results.

Table 12: Effect of Insurance Option and Information on Transfer Decisions, split by Round

	(1)	(2)	(1) - (2)
	Transfer - Round 1	Transfer - Round2	Effect Comparison
Inf (β)	-0.268 (0.173)	0.274 (0.180)	-0.542** (0.250)
Opt (γ)	-0.565*** (0.102)	-0.631*** (0.133)	0.066 (0.168)
InfOpt (η)	-0.048 (0.146)	0.083 (0.167)	-0.131 (0.222)
Constant (θ)	2.411*** (0.124)	1.900*** (0.144)	0.511*** (0.190)
Observations	672	672	
R2	0.043	0.048	
F	24.93	23.04	

OLS estimator; s.e. in parentheses, clustered on provider group level.

(1) Participants who played Round 1

(2) Participants who played Round 2

Transfers in 1,000 Riel

There is a substantial round effect in the baseline transfer (i.e. θ). Providers with an uninformed recipient without the insurance option send on average 500 Riel less in Round 2 than in Round 1. Yet, there is no significant difference in the transfer sent to informed recipients without the insurance option (i.e. $\theta + \beta$) between Round 1 and Round 2. Most importantly for our analysis, the coefficients of interest, γ and η , do not change significantly across rounds. Thus, a within-subject analysis combining the two rounds is unproblematic.

D.3 External Validity

Table 13: Survey Response and Choice Conditionality

	Proportion		Observations
	$\gamma < 0$		
$S1 < S2$ †	54.69	(6.27)	64
$S1 = S2$ ‡	42.32	(3.03)	267
Difference (ttest)	12.37*	(6.91)	

Excluding subjects who always transferred zero. s.e. in parentheses.

(†) Reporting in survey to contribute less.

(‡) Reporting in survey to contribute the same.

Table 14: Treatment Effect Analysis, by Survey Response

	(1)	(2)	(1) - (2)
	Transfer if $S1 = S2$	Transfer if $S1 > S2$	Effect Comparison
Inf (β)	-0.007 (0.123)	0.046 (0.134)	-0.053 (0.258)
Opt (γ)	-0.528*** (0.089)	-0.908*** (0.266)	0.380* (0.223)
InfOpt (η)	-0.004 (0.088)	0.108 (0.165)	-0.112 (0.196)
Constant (θ)	2.139*** (0.145)	2.292*** (0.266)	-0.153 (0.321)
Observations	1068	260	
R2	0.030	0.067	
F	21.508	7.810	

OLS estimator; s.e. in parentheses, clustered on provider group level

(1) Participants who report in survey to contribute the same

(2) Participants who report in survey to contribute less

Transfers in 1,000 Riel