

# ONLINE APPENDIX

## Does Moral Transgression Promote Anti-social Behavior? Evidence from Lab-in-the-Field Experiments

### A. Supplementary Tables

Table A1: Variables Definitions

Variables	Descriptions of variables
<b>Outcome Variables</b>	
Socially irresponsible behavior (SIRB)	Dummy: =1 If the respondent purchased/chose product/distribution with negative externality, =0 otherwise
Anti-social behavior	Dummy: =1 If the respondent decided to burn partner's income, =0 otherwise Continuous: Amount of money (Birr) burned
<b>Treatments</b>	
Market Baseline	Dummy: =1 If the respondent comes from the market baseline treatment, =0 otherwise
No Market condition	Dummy: =1 If the respondent comes from the no market treatment, =0 otherwise
<b>Socio-demographic Characteristics</b>	
Age	Continuous: Age of the household head (years)
Male	Dummy: =1 If the household head is Male, =0 Female
Household size	Continuous: Number of persons in the household
Education	Dummy: =1 If the household head attend formal education, =0 otherwise
Livestock	Continuous: Total livestock holding in tropical livestock units
Iddir member	Dummy: =1 If the household head is member of funeral association, =0 otherwise
Eqqub member	Dummy: =1 If the household head is member of rotating credit and saving association, =0 otherwise
PSNP member	Dummy: =1 If the household head is member of Productive Safety Net Program, =0 otherwise
Religiosity	Dummy: =1 If the household head perceive himself/herself as religious person, =0 otherwise
Market exposure	Continuous: Average trips to markets in a typical month
Village distance to market	Continuous: Village distance to nearest weekly market in km
Village exposure to drought	Continuous: Number of years the village exposed to drought in the past 30 years

Table A2: Summary Statistics

	Mean	Std. Dev.	Min.	Max.	N
Socially irresponsible behavior (SIRB)	0.464	0.5	0	1	192
Anti-social behavior	0.234	0.425	0	1	192
Money burned (in Birr)	4.543	9.462	0	40	192
Age	45.141	11.738	24	82	192
Sex	0.745	0.437	0	1	192
Household size	5.885	2.18	1	11	192
Education	0.547	0.499	0	1	192
Livestock	4.045	3.813	0	25.355	192
Iddir member	0.776	0.418	0	1	192
Eqqub member	0.49	0.501	0	1	192
PSNP participation	0.479	0.501	0	1	192
Religiosity	0.901	0.299	0	1	192
Market exposure	3.208	3.018	0	28	192
Village distance to market	11.754	5.552	4	22	192
Village exposure to drought	5.298	3.847	0	15	192

Table A3: Effect of past socially irresponsible behavior on subsequent anti-social behavior

	(1)	(2)	(3)	(4)	(5)	(6)
Socially irresponsible behavior	4.432*** (1.116)				3.607*** (1.104)	3.774*** (1.195)
Belief		8.596*** (2.931)			7.044** (2.832)	7.034** (2.676)
Player's earning			0.236*** (0.071)			
Partner's earning				-0.087*** (0.022)		
Age						0.296 (0.329)
Age square						-0.003 (0.004)
Male						-0.049 (1.200)
Household size						0.297 (0.202)
Education						0.330 (1.180)
Iddir member						-2.105 (1.341)
Eqqub member						-2.183** (1.062)
PSNP						0.723 (1.174)
Religiosity						-0.152 (0.978)
Market exposure						0.139 (0.116)
Village distance to market						0.074 (0.094)
Village exposure to drought						-0.123 (0.169)
Constant	0.001 (0.001)	1.404*** (0.501)	-16.528*** (5.205)	5.200*** (1.315)	-0.135 (0.125)	-6.803 (6.478)
Observations	96	96	96	96	96	96
R-squared	0.165	0.169	0.132	0.159	0.274	0.373

Notes. The dependent variable in all models is the amount of money burned in the JOD experiment. Socially irresponsible behavior is a binary variable takes a value of 1 if a buyer or player B purchased or chose an unfair product or distribution, 0 otherwise. Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A4: Buyers' unfair product purchase &amp; subsequent anti-social behavior

	1	2	3	4	5	6
Socially irresponsible behavior	3.857*** (1.205)				3.065** (1.217)	4.698** (2.246)
Belief		7.841** (3.716)			6.935* (3.849)	6.679* (3.588)
Player's earning			0.277** (0.135)			
Partner's earning				-0.077*** (0.024)		
Age						1.032* (0.531)
Age square						-0.012** (0.006)
Male						5.668** (2.628)
Household size						-0.030 (0.461)
Education						-3.729 (2.784)
Iddir member						-1.705 (2.272)
Eqqub member						-3.940* (2.288)
PSNP						2.626 (2.183)
Religiosity						5.573 (4.118)
Market exposure						0.214 (0.200)
Village distance to market						-0.121 (0.187)
Village exposure to drought						-0.086 (0.312)
Constant	0.001 (0.001)	2.159** (0.875)	-19.984* (10.751)	4.629*** (1.446)	0.001 (0.001)	-26.595** (12.656)
Observations	48	48	48	48	48	48
R-squared	0.076	0.122	0.078	0.076	0.169	0.395

Notes. The dependent variable in all models is the amount of money burned in the JOD experiment. Socially irresponsible behavior is a binary variable takes a value of 1 if a buyer in the market experiment purchased an unfair product, 0 otherwise. Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A5: Player B's selection of unfair distribution & subsequent anti-social behavior

	1	2	3	4	5	6
Socially irresponsible behavior	6.667** (2.780)				5.372* (2.698)	6.370** (2.865)
Belief		9.333* (4.841)			6.588 (4.092)	6.743* (3.917)
Player's earning			0.227* (0.114)			
Partner's earning				-0.120** (0.052)		
Age						-0.269 (0.448)
Age square						0.004 (0.005)
Male						-2.988** (1.312)
Household size						0.287 (0.170)
Education						2.226 (1.636)
Iddir member						-1.099 (2.274)
Eqqub member						-2.291 (1.429)
PSNP						0.548 (1.701)
Religiosity						-0.091 (1.076)
Market exposure						0.125 (0.102)
Village distance to market						0.023 (0.081)
Village exposure to drought						-0.062 (0.184)
Constant	-0.001 (0.001)	0.667 (0.497)	-15.733* (8.092)	7.200** (3.101)	-0.169 (0.136)	3.780 (9.146)
Observations	48	48	48	48	48	48
R-squared	0.351	0.265	0.190	0.308	0.470	0.615

Notes. The dependent variable in all models is the amount of money burned in the JOD experiment. Socially irresponsible behavior is a binary variable takes a value of 1 if participant B in the non-market experiment chose an unfair distribution, 0 otherwise. Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A6: Buyers or Player B's unfair distribution & subsequent anti-social behavior

	1	2	3	4	5	6
Socially irresponsible behavior	-0.339*** (0.086)				-0.261*** (0.081)	-0.239*** (0.087)
Market	-0.079 (0.080)	0.091 (0.062)	-0.020 (0.079)	-0.064 (0.079)	-0.048 (0.069)	-0.040 (0.078)
Belief		0.617*** (0.176)			0.516*** (0.169)	0.559*** (0.166)
Player's earning			0.016*** (0.005)			
Partner's earning				-0.006*** (0.002)		
Constant	0.359*** (0.099)	0.045 (0.033)	-1.132*** (0.364)	0.403*** (0.112)	0.263*** (0.091)	0.186 (0.468)
Controls	No	No	No	No	No	Yes
Observations	96	96	96	96	96	96
R-squared	0.195	0.243	0.147	0.184	0.339	0.469

Notes. The dependent variable in all models is the amount of money burned in the JOD experiment. Socially irresponsible behavior is a binary variable takes a value of 1 if participant B in the non-market experiment chose an unfair distribution, 0 otherwise. The variable Market is a dummy variable taking a value of 1 if a subject comes from Market treatment and 0 if a subject comes from No Market treatment. Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A7: Buyers or Player B's unfair distribution &amp; subsequent anti-social behavior

	1	2	3	4	5	6
Socially irresponsible behavior	-0.444** (0.169)				-0.358** (0.167)	-0.295* (0.170)
Market	-0.187 (0.185)	0.092 (0.061)	-0.444 (0.826)	-0.171 (0.210)	-0.153 (0.183)	-0.105 (0.190)
Socially irresponsible behavior X Market	0.187 (0.185)				0.165 (0.182)	0.075 (0.207)
Belief		0.622** (0.280)			0.439* (0.224)	0.400* (0.234)
Belief X Market		-0.009 (0.361)			0.117 (0.325)	0.280 (0.307)
Player's earning			0.014** (0.006)			
Player's earning X Market			0.005 (0.011)			
Partner's earning				-0.008** (0.003)		
Partner's earning X Market				0.003 (0.004)		
Constant	0.444** (0.169)	0.044 (0.031)	-0.990** (0.454)	0.480** (0.190)	0.347** (0.168)	0.208 (0.484)
Controls	No	No	No	No	No	Yes
Observations	96	96	96	96	96	96
R-squared	0.207	0.243	0.151	0.192	0.348	0.479

Notes. The dependent variable in all models is the amount of money burned in the JOD experiment. Socially irresponsible behavior is a binary variable takes a value of 1 if participant B in the non-market experiment chose an unfair distribution, 0 otherwise. The variable Market is a dummy variable taking a value of 1 if a subject comes from Market treatment and 0 if a subject comes from No Market treatment. Robust standard errors in parentheses, \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## B. Experimental Instructions

Good morning!

Thank you all for taking the time to come today.

Today, you will participate in some activities, which may take 4 to 5 hours. If you think that you will not be able to stay that long, please let us know now. In today's session, you will be participating in some activities with real money. That is, the amount of money you earn in these activities will be yours to keep and take home. You will receive 20 Birr for your participation. Besides, you will earn additional money based on your decisions and/or those of the other participants. After all activities are finished, you will receive your earnings in cash, including the show-up fee of 20 Birr in private. But you should know that this is not my own personal money. This money comes from the Netherlands Fellowship Program (NFP) to use for research.

All your responses will be kept secret. That is, other participants will neither learn your identity nor your decisions anytime. In addition, no one learns about the amount of money you earn in today's activities. Thus, your identity, decisions, and payments will be kept anonymous.

Please note that it is not allowed to communicate with other participants. It is very important that you obey this rule. If you do not obey the rule, you will be excluded from these activities. If you have any questions, please raise your hand, and we will come to you and answer your question in private. Do not worry if you do not completely understand these activities as we go through some examples here in the group. Moreover, it is important that you listen to the instructions as carefully as possible, because only people who understand the activity will actually be able to participate.

Your participation in these activities is entirely voluntary. If at any time, you find that this is something that you do not wish to participate in for any reason, you can withdraw at any time without asking permission regardless of whether we have started the activity or not.



## B.1. Market Game

In this activity, there are three types of participants: participants A, B, and C. In total, 16 people will participate in this activity: 4 participants A, 6 participants B, and 6 participants C. **Participants A are sellers, participants B are buyers, and participants C are neither sellers nor buyers, but they can incur losses due to the transactions between participants A and B.**

Participants will be randomly assigned a role either as participant A, participant B, or participant C at the beginning of the activity. The activity consists of **10 rounds** and participants' role will remain **unchanged** throughout the activity. For **real payment**, one round will be randomly selected and paid in cash at the end of the session. Because you do not know which round will be selected randomly, you must consider your decisions in all rounds very carefully.

Participants A will decide to produce either a product **with no effect on participant C** or a product **with a loss for participant C**. The product with no effect on participant C costs **20 Birr** to produce for participant A but the product with a loss for participant C costs **0 Birr** to produce.

Irrespective of the type of the product, the value of the product is always **40 Birr** for participant B.

In this activity, first, participants A will decide which product to produce and determine its corresponding price. The price of either product should be always between (including) **0 and 40 Birr**. Participants A will be given 3 minutes to decide which type of product to produce and determine its corresponding price. Each participant A can sell his/her product to a maximum of 3 participants B. This means there is a possibility that 6 participants B can purchase from only 2 participants A.

Next, each participant B will decide whether he/she would accept the offer made by participants A. Maximum of 3 participants B can purchase from a single participant A. In case more than 3 buyers accept the offer from a single participant A, the 3 participants B who accepted the offer quickly will purchase the product and the remaining participants B will be given a chance to buy from the other participants A.

The participants C will neither sell nor buy a product throughout the activity. At the beginning of the activity, each of the 6 participants B will be randomly matched to each of the 6 participants C. If participant B purchases the product with a loss for participant C, the randomly matched participant C will **incur a loss of 50 Birr**. On the other hand, if participant B either purchases a product with no effect on participant C or does not purchase a product at all, the randomly matched participant C will **incur no loss**.

### Payment

At the beginning of each round, each participant will be given an initial endowment of 60 Birr. The payment of each participant A (seller), participant B (buyer), and participant C in each round will be determined as follows:

#### Participant A's payment

- If participant B accepts participant A's offer

$$\text{Payment} = 60 \text{ Birr} + \text{quantity}(\text{price of the product} - \text{costs of production})$$

- while the production cost for a “product without effect on participant C” is 20 Birr, the production cost for a “product with a loss for participant C is 0 Birr.

- If no participant B accepts participant A's offer

$$\text{Payment} = 60 \text{ Birr}.$$

#### Participant B's payment

- If participant B accepts participant A's offer

$$\text{Payment} = 60 \text{ Birr} + 40 \text{ Birr} - \text{price of the product}$$

- If participant B does not accept participant A's offer

$$\text{Payment} = 60 \text{ Birr}.$$

#### Participant C's payment

- If the randomly matched participant B purchases a product with a loss for participant C,

$$\text{Payment} = 60 \text{ Birr} - 50 \text{ Birr} = 10 \text{ Birr}$$

- If the randomly matched participant B either purchases a product with no effect on participant C or does not purchase a product,

Payment = **60 Birr**

## The procedure

### Step 1: Participant A's activities

- Participants A will simultaneously decide which of the two products to produce
  - A product with a loss for participant C
  - A product with no effect on participant C
- Participants A will then determine the price of the product they decided to produce.

The price of the product -----

- The price of both products, a product with a loss for participant C and a product without effect on participant C, should be between (including) 0 to 40 Birr.

### Step 2: Participant B's activities

Once all participants A have made their decisions,

- All participants B will see the type of products produced by participants A and the corresponding prices.
- Participants B will then **simultaneously** decide whether to select one of the offers made by the participants A or decide not to purchase.

Once all participants B made their decisions, each participant B will learn his/her own payment, the payment of the randomly matched participant C and the payment of participant A from whom he/she purchased the product.

Each participant A will also learn his/her own payment, once all participants B made their decisions.

Participants C, who have no any active role in the activity, will learn their payment after the participants A and participants B made their decisions.

After all participants learn their payments in a given round, the next round will begin.

*Do you have any question? If yes, please raise your hand. We will come to you and answer your question in private. Otherwise, we ask you to answer the following control questions.*

### **Control Questions**

- Suppose that participant A offers a product with a loss on participant C at the price of 20 Birr and participant B accepts the offer.

How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_

- Suppose that participant A offers a product with no effect on participant C at the price of 20 Birr and participant B accepts the offer.

How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_

- Suppose that participant A offers a product with no effect on participant C at the price of 40 Birr and no participant B accepts the offer.

How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_

- Suppose that participant A offers a product with a loss on participant C at the price of 40 Birr and no participant B accepts the offer.

How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_

- Suppose that participant A offers a product with a loss on participant C at the price of 30 Birr and participant B accepts the offer.

How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_

- Suppose that participant A offers a product with no effect on participant C at the price of 30 Birr and participant B accepts the offer.

How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_

## B.2. No Market Condition

In this activity, there are three types of participants: participants A, B, and C. The participants are divided into groups of 3 people. There is one **participant A**, one **participant B**, and one **participant C** in each group.

Participants will be randomly assigned as participant A, participant B, or participant C at the beginning of the activity. The activity consists of **10 rounds** and participants' role will remain **unchanged** throughout the activity. For **real payment**, one round will be randomly selected and paid out in cash at the end of the session. Because you do not know which round will be selected randomly, you must consider your decisions in all rounds very carefully.

In each round, participants A, B, and C first receive an endowment of 60 Birr.

**The Participant B in a group can select a different distribution of Birrs.** In case of a new distribution, the sum of the payments that participants A and B receive is 20 or 40 Birr on the top of the initial endowment of 60 Birr each.

There are two types of distributions: **a distribution with no effect on participant C** and **a distribution with a loss for participant C**.

If a participant B selects a distribution with a loss for participant C, the assigned participant C incurs **a loss of 50 Birr**. If a participant B selects a distribution with no effect on participant C or does not opt for a new distribution, the assigned participant C will not incur any loss.

In case of a distribution with a loss for participant C, the sum of the payments for participant A and participant B is 40 Birr higher than if no new distribution is chosen, for example **80 Birr for participant A** and **80 Birr for participant B** (and  $60 - 50 = 10$  Birr for participant C).

In case of a distribution without effect on participant C, the sum of the payments for participant A and participant B is 20 Birr higher than if no new distribution is chosen, for example **75 Birr for participant A** and **65 Birr for participant B** (and 60 Birr for participant C).

If a participant B does not opt for a new distribution, the payments for **participants A, B, and C is 60 Birr**.

## Payment

At the beginning of each round, each participant will be given an initial endowment of 60 Birr. The payment of each participant A, participant B, and participant C in each round will be determined as follows:

### Participant A's payment

- If the randomly assigned participant B selects a new distribution  
Payment = **Payment in the new distribution**
- If participant B does not select a new distribution  
Payment = **60 Birr**

### Participant B's payment

- If participant B selects a new distribution  
Payment = **Payment in the new distribution**
- If participant B does not select a new distribution  
Payment = **60 Birr**

### Participant C's payment

- If the randomly matched participant B chooses a distribution with loss for participant C,  
Payment = **60 Birr - 50 Birr = 10 Birr**
- If the randomly matched participant B chooses a distribution with no effect on participant C or does not select a new distribution,  
Payment = **60 Birr**

## The procedure

Once all participants B made their decisions, the assigned participants A and C will be informed of the decision and each participant A, B, and C will learn their payments.

**Participants A and C cannot** make any decisions during this activity.

After all participants learn their payments in a given round, the next round will begin.

*Do you have any question? If yes, please raise your hand. We will come to you and answer your question in private. Otherwise, we ask you to answer the following control questions.*

### **Control Questions**

1. Suppose that participant B chooses a new distribution without effect on participant C  
How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_
2. Suppose that participant B chooses a new distribution with a loss on participant C How much are the payments for: Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_
3. Suppose that participant B chooses no new distribution How much are the payments for:  
Participant A: \_\_\_ Participant B: \_\_\_ Participant C: \_\_\_

### B.3. Joy of Destruction Game

In this activity, you are matched with the participant who was randomly matched with you in the fourth activity. Yet, none of you will learn each other's identity. But, you will learn your partner's role, decision and earning in the fourth activity and vice versa your partner will learn about your role, decision and earning in the fourth activity.

In this activity, you will earn money and the amount of money you will earn depends on your decision and the decision of your partner who you are matched with. This activity consists of only one round. This means, both of you will play this activity only once.

At the beginning of the activity, you and your partner both receive an endowment of 40 Birr. You then have to decide whether to reduce your partner's income or to leave it as it is. Reducing your partner's income by 3 Birr will cost you 1 Birr. This means, by paying 1 Birr, you can reduce your partner's income by 3 Birr. Your partner simultaneously takes the same decision. He/she can also choose between leaving your income as it is or reducing it by any amount he/she wants to reduce. Your partner will incur the same cost of 1 Birr if he/she decides to reduce your income by 3 Birr.

To better understand the activity, let us do the following examples.

1. If both of you choose to reduce the other person's income by 30 Birr, both of you will earn 0 Birr (40-30-10).
2. If you choose not to reduce your partner's income, but your partner chooses to reduce your income by 15 Birr, you will earn 25 Birr (40-15-0) and your partner will earn 35 Birr (40-0-5).
3. If both of you choose to leave the other person's income as it is, both of you will earn 40 Birr (40-0).
4. If you decide to reduce your partner's income by 30 Birr, but your partner decides not to reduce your income, you will earn 30 Birr (40-0-10) and your partner will earn 10 Birr (40-30-0).

Do you have any questions? **Now you may start**

*Please keep in mind that the decisions are private and that your decision will not be disclosed to anybody else.*