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

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Abstract

Using two lab-in-the-field experiments, we study whether initial transgression promote subsequent anti-social behavior. In the first stage subjects participated in an experimental market game. In the second stage, subjects were given an opportunity to participate in anti-social experiment. We find that subjects who impose a negative externality on uninvolved third parties in the market game are also more likely to burn their partner's income in the second experiment. This finding is consistent with a conscience-numbing effect but could possibly also be explained by participants' preferences for consistency.

JEL Classification: C93, D03, D62, D63, M14

Keywords: Markets; negative externality; conscience numbing; moral licensing, moral cleansing

*

1. Introduction

The concept of moral regulation has been a central theme in the psychological and behavioral economics research and has garnered the attention of researchers over the last two decades. Basic questions such as "Do people engage in good deeds to repent past transgressions?", or, "Do past transgressions numb people's conscience and leads to more anti-social or immoral behavior?" remain centerpiece in the moral regulation research. The existing experimental evidence on this subject is mixed. In some instances, people show consistent moral preferences in the sense that they engage in similar moral activities across different contexts (Cojoc and Stoian, 2014). In other instances people exhibit behavior consistent with the moral cleansing or licensing hypothesis in that people engage in morally acceptable activities to repent their past transgressions or vice versa (Cialdini et al., 1973; Monin and Miller, 2001; Sachdeva et al., 2009; Mazar and Zhong, 2010; Gneezy et al., 2012; Brañas-Garza et al., 2013; Seçilmiş, 2018).

The present study aims to contribute to this small but growing literature and investigates the dynamics of moral preferences among a sample of Ethiopian households. To this end, we utilize unique experimental data on individuals' socially responsible and anti-social behavior using a market game and a joy-of-destruction experiment.

This study complements the existing literature in three ways. First, most existing studies use exogenously manipulated initial transgressions, for example, subjects are randomly assigned into green and conventional stores and examine its effect on a subsequent altruistic behavior (Mazar and Zhong, 2010), inform randomly selected subjects about the chance to donate to a charity in a subsequent game and measure its impact on subjects' cheating behavior in the first stage (Cojoc and Stoian, 2014) etc. We use an endogenously formed initial transgression similar to Seçilmiş (2018) and measure its subsequent implications on behavior in the second game. Second, previous studies use pro-social behavior such as charitable giving or cheating behavior with a material benefit for the subject in the second stage of the experiment, whereas we focus on subjects' anti-social behavior that generate no material benefits for the subjects, but are harmful for the partner. One could conceive that pro-social versus anti-social behavior in the second stage invoke different responses. Finally, research on this topic is almost exclusively ran in Western university laboratories, and we are the first to demonstrate effects in the developing country context of rural Ethiopia.

2. Experimental Design and Procedure

The present study is conducted on a sample of individuals who were part of a larger experiment that focuses on whether or not markets erode socially responsible behavior and the role of regulations and culture on social responsibility in competitive markets[1] (Nigus et al., 2021). We conduct a two stage experiment where stage one asks subjects to participate in the market game. In stage two, subjects played the joy-of-destruction experiment.

Our market game builds on the design by Bartling et al. (2019, 2015) (see instructions in the supplementary material). The market experiment consists of buyers, sellers, and third parties for the market context and Players A, B and C respectively for the non-market context. We explain both contexts below. In the market context sellers decide on which type of product to produce and the price of the product. Sellers can produce either a product with, or without a negative externality, on an uninvolved third party. A single seller can sell to a maximum of three buyers. A product that creates a negative externality (henceforth unfair product) costs nothing to produce but imposes 50 Birr loss on the third party. On the other hand, a product without a negative externality (henceforth fair product) costs 20 Birr to produce and has no effect on the third party. Afterwards, buyers simultaneously decide on which offered product to purchase. Both products have the same value of 40 Birr for buyers. The third parties have a passive role in this experiment i.e. they neither sell nor purchase a product but their earning depends on the decisions of sellers and buyers. The non-market context is similar to the market context, but neutrally framed. This experiment consists of three players labeled as players A, B, and C. Players B choose between two distributions; (i) a distribution with a total gain of 40 Birr for players A and B but a 50 Birr loss for the uninvolved third party (henceforth unfair distribution) (ii) a distribution with no effect on the third party (henceforth fair distribution) that lessens the total gain of players A and B to only 20 Birr. At the beginning of the experiment, each participant was provided with a 60 Birr (equivalent to $2) initial endowment.

In the market experiment, sellers, buyers and third parties earning is calculated as follows.

$$Payoff^{seller} = \begin{cases} 60 + q(p-c), & \textit{if a seller sells its product at price } p \\ 60, & \textit{otherwise} \end{cases}$$

$$Payoff^{buyer} = \begin{cases} 60 + 40 - p, & \textit{if a buyer buys a product at price } p \\ 60, & \textit{otherwise} \end{cases}$$

[1] Our research study protocol was also approved by the Ethical Review Committee Inner City (ERCIC) of Maastricht University (reference no. ERCIC_085_10_05_2018).

$$Payoff^{thirdparty} = \begin{cases} 10, & \textit{if a matched buyer buys unfair product} \\ 60, & \textit{otherwise} \end{cases}$$

First, if the seller produces an unfair product and the buyer decides to purchase this product, a seller earns 60 Birr initial endowment plus the number of products sold multiplied by the price of the product. The buyer earns 60 Birr plus 40 Birr minus price of the product and the third party earns only 10 Birr (60 Birr - 50 Birr of negative externality). Second, if the seller decides on to produce a fair product, the seller earns 60 Birr plus the number of products sold multiplied by the difference between price of the product and 20 Birr production cost and the buyer earns 60 Birr plus 40 Birr minus price of the product. In this case, the third party receives the full 60 Birr initial endowment.

In the non-market experiment, earnings for players A, B and C respectively are computed as follows. If player B (dictator) chooses the unfair distribution, player A earns 60 Birr plus the sum of money given by the dictator out of the 40 Birr, player B earns 60 Birr plus 40 minus the amount of Birr given to player A, and player C earns only 10 Birr (60 Birr - 50 Birr loss). If, however, the dictator selects an unfair distribution, player A's earnings are 60 Birr plus the sum of money given by the dictator out of the 20 Birr, player B earns 60 Birr plus 20 Birr minus the amount of Birr given to player A, and player C earns 60 Birr.

Once all subjects completed the market or non-market experiment, matched buyers (players B)[2] and third parties (players C) participated in the joy-of-destruction (JOD) experiment in Abbink and Sadrieh (2009) and Abbink and Herrmann (2011). The JOD game is a two-players game in which each player is provided with the same amount of endowment and decides whether or not to destroy the partner's income at a cost to oneself. This experiment gauges subject's anti-social behavior. At the beginning of the experiment, both matched players received an endowment of 40 Birr. Destroying partner's income is costly and each subject loses 1 Birr if he wants to destroy the partner's income by 3 Birr. All subjects were made aware of that they would participate in two games but they did not know the exact nature of the JOD game.

The experiments took place in 32 villages in the Tigray region, northern Ethiopia. We

[2]In this study, we consider buyers as causers of the negative externality. This is due to the fact that each of the six buyers was randomly matched with each of the six third parties before the experiment began. We informed buyers that their decision directly affects third parties' earning. While the buyers' decision is a sufficient condition for the third parties to incur the negative externality, the sellers' decision is not. In addition, in the non-market context, while players B make a decision, players A and C remain passive. Thus, to compare the consequences of less socially responsible behavior on the subsequent anti-social behavior in the market and non-market contexts, we need to focus on the decisions of buyers and players B. The third parties knew that sellers and buyers had an option to produce or purchase, respectively, fair or unfair products. They also knew that the seller's decision is not a sufficient condition for incurring a negative externality. Thus, only the decision of the buyer they are matched with is a sufficient condition for third parties to incur (or not) the negative externality.

randomly recruited 544 subjects using a sampling frame obtained from the village chiefs. From the original sample of 544 participants the present study uses the sub-sample of subjects randomly assigned a role as either a buyer or player B in the market resp. non-market experiment. We conducted the experiments in public schools in the villages. Upon arrival, each respondent was greeted, given a unique ID number, and asked to sit in a separate desk. Once situated, the experimenter read the instructions orally to the respondents using a translated local language. To ensure the respondents' understanding of the experiments, we provided them with examples and exercises.

3. Results

Table 1 presents regression results of the effect of past violation of moral norms on subjects' subsequent anti-social behavior. Column (1) shows that past transgressions positively and significantly affect the subject's subsequent anti-social behavior. Put differently, individuals who purchased a product or selected a distribution with a negative externality are more likely to exhibit anti-social behavior. The probability of destroying a partner's income increases by 30 percentage points if the subject exhibits socially irresponsible behavior in the market or non-market experiments. However, participants may decide to destroy their partner's income because the third parties also have the power to destroy their income. To address this concern, we control for the subject's belief about the burning decision of their partners. Column (2) shows a positive and statistically significant effect of belief about a partner's burning decision. Subjects tend to burn their partner's income if they expect them to burn theirs.

Table 1: Effect of past socially irresponsible behavior on subsequent anti-social behavior

	(1)	(2)	(3)	(4)	(5)	(6)
Socially irresponsible behavior	0.295***				0.234***	0.216***
	(0.070)				(0.068)	(0.071)
Belief		0.624***			0.524***	0.569***
		(0.175)			(0.167)	(0.161)
Player's earning			0.016***			
			(0.004)			
Partner's earning				-0.006***		
				(0.001)		
Controls	No	No	No	No	No	Yes
Observations	96	96	96	96	96	96

Notes. The dependent variable in all models takes a value of 1 if buyers and player B's in the Market and non-market contexts, respectively, decide to reduce the third party's income, 0 otherwise. 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. In column (6) we control for age, age square, sex, household size, education, livestock, iddir membership, eqqub membership, participation in PSNP, religiosity, market exposure, village distance to market and village exposure to drought. The full table is available upon request. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

To scrutinize the robustness of our results, we also regress subjects' burning decisions on player's and partner's income from the preceding market or non-market experiment. Player's and partner's income may serve as proxies for whether a buyer (player B) caused a negative externality, and a third party (player C) bore a negative externality, respectively. Columns (3) and (4) show that while a player's income enters positively and significantly, a partner's income is negatively and significantly correlated with the subject's burning decision. In column (6), we control for household and village covariates listed in the table notes and the results remain robust and statistically significant. The results show that if a subject revealed socially irresponsible behavior in the market or non-market experiment, the probability of destroying a partner's income increases by about 22 percentage points in the subsequent anti-social experiment.

To further probe the robustness of our results, we analyzed the effect of past violations of moral norms on the amount of money burnt (intensity of burning). Table A3 in the appendix, reports the results of OLS regressions and shows that subjects who behave less socially responsible burn significantly more money, indicating past transgressions lead to more anti-social behavior in the future. While this result is in line with the conscience numbing hypothesis (Cojoc and Stoian, 2014), it contradicts the moral cleansing (licensing) hypothesis (Cialdini

et al., 1973; Monin and Miller, 2001; Sachdeva et al., 2009; Mazar and Zhong, 2010; Gneezy et al., 2012; Seçilmiş, 2018).

As part of a heterogeneity analysis we disaggregate our sample by subjects' treatment status (having been randomly assigned to the market or non-market context).[3] Table 2 shows that buyers (in the market context) who purchased the unfair product are more likely to destroy their partner's income than those who bought a product with no negative externality on the third parties. Similarly, Table 3 reports that players B (in the non-market context) who selected an unfair distribution are more likely to burn others' income than those who chose an option with no effect on the third party. Tables A4 and A5 in appendix A, also report that past violations of moral norms lead to more anti-social behavior. To be precise, respondents who purchased (selected) a product (distribution) with a negative externality on the third party destroy approximately 5 and 6 Birr (column 6) more than those who preferred the fair product (distribution), respectively.

Table 2: Buyers' unfair product purchase and subsequent anti-social behavior

	(1)	(2)	(3)	(4)	(5)	(6)
Socially irresponsible behavior	0.257***				0.194**	0.256*
	(0.075)				(0.073)	(0.149)
Belief		0.614***			0.556**	0.580***
		(0.227)			(0.235)	(0.211)
Player's earning			0.020**			
			(0.009)			
Partner's earning				-0.005***		
				(0.002)		
Controls	No	No	No	No	No	Yes
Observations	48	48	48	48	48	48

Notes. The dependent variable in all models takes a value of 1 if a buyer in the Market Baseline decides to reduce the third party's income, 0 otherwise. Socially irresponsible behavior is a binary variable takes a value of 1 if a buyer in the Market Baseline purchased an unfair product, 0 otherwise. In column (6) we control for variables mentioned in Table 1. The full table is available upon request. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

[3] Interestingly, Nigus et al. (2021) find no significant difference in the money burning behavior among subjects in the market and non-market contexts.

Table 3: Player C's selection of an unfair distribution & subsequent anti-social behavior

	(1)	(2)	(3)	(4)	(5)	(6)
Socially irresponsible behavior	0.444**				0.358**	0.393**
	(0.169)				(0.167)	(0.158)
Belief		0.622**			0.439*	0.481*
		(0.280)			(0.224)	(0.241)
Player's earning			0.014**			
			(0.006)			
Partner's earning				-0.008**		
				(0.003)		
Controls	No	No	No	No	No	Yes
Observations	48	48	48	48	48	48

Notes. The dependent variable in all models takes a value of 1 if participant B in the Non-Market context decides to reduce player C's income, 0 otherwise. Socially irresponsible behavior is a binary variable takes a value of 1 if participant B selected an unfair distribution, 0 otherwise. In column (6) we control for the variables mentioned in Table 1. The full table is available upon request. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

4. Conclusion

We study the dynamics of moral preferences using two lab-in-the-field experiments, using a market game and joy-of-destruction experiment. In the first stage, respondents participated in a market or non-market experiment with or without negative externality on uninvolved third parties. In the second stage, they were allowed to participate in an anti-social experiment. We find that subjects exhibit consistent moral preferences in the sense that those who sacrificed to avoid negative externality on uninvolved third parties are less likely to burn their partner's income in the subsequent experiment. On the other hand, subjects who imposed a negative externality on others to maximize their own earnings are also more likely to burn their partner's income. This indicates that past violations of moral norms may numb an individual's conscience and lead to more anti-social behavior. Our results are in line with the *conscience numbing* hypothesis while contradicting the *moral cleansing or licensing* hypotheses. The results suggest that pro-social (or anti-social) behavior persists across different contexts. We however cannot rule out an alternative explanation that our results reflect a preference for consistency (as in Falk and Zimmermann (2011)) rather than a conscience numbing effect. Future work may look into the sustainability of effects and disentangling preferences for consistency from conscience numbing effects.

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Declaration of interests

No potential conflict of interest was reported by the authors.

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A. Supplementary Tables

Table A1: **Variables Definitions**

Variables	Descriptions of variables
Outcome Variables	
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
Treatments	
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
Socio-demographic Characteristics	
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***				3.607***	3.774***
	(1.116)				(1.104)	(1.195)
Belief		8.596***			7.044**	7.034**
		(2.931)			(2.832)	(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	1.404***	-16.528***	5.200***	-0.135	-6.803
	(0.001)	(0.501)	(5.205)	(1.315)	(0.125)	(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 & subsequent anti-social behavior

	1	2	3	4	5	6
Socially irresponsible behavior	3.857***				3.065**	4.698**
	(1.205)				(1.217)	(2.246)
Belief		7.841**			6.935*	6.679*
		(3.716)			(3.849)	(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	2.159**	-19.984*	4.629***	0.001	-26.595**
	(0.001)	(0.875)	(10.751)	(1.446)	(0.001)	(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**				5.372*	6.370**
	(2.780)				(2.698)	(2.865)
Belief		9.333*			6.588	6.743*
		(4.841)			(4.092)	(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	0.667	-15.733*	7.200**	-0.169	3.780
	(0.001)	(0.497)	(8.092)	(3.101)	(0.136)	(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.

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
  Payment = **60 Birr + quantity(price of the product - 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
  Payment = **60 Birr**.

Participant B's payment

- If participant B accepts participant A's offer
  Payment = **60 Birr + 40 Birr - price of the product**
- If participant B does not accept participant A's offer
  Payment = **60 Birr**.

Participant C's payment

- If the randomly matched participant B purchases a product with a loss for participant C,
  Payment = **60 Birr − 50 Birr = 10 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 $\mathbf{60 - 50 = 10}$ **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.

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