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Altruism or Exchange?
Experimental Evidence on the Motives behind Private Transfers in Sri Lanka

Takeshi Aida* and Yasuyuki Sawada†

Abstract

This study develops a new approach to the classical question of whether private transfers are motivated by altruism or exchange. We combine artefactual field experiments and standard household survey data, to directly measure the degree of altruism and trust (i.e., exchange) and to analyze their impact on the co-movement of consumption between dyadic pairs of respondents. We find that higher altruism toward lower income partners and their income differentials reduces observed differences in consumption, which supports the altruism hypothesis as a motive for private transfers.

Keywords: Private transfer, altruism, exchange, artefactual field experiment, dyadic data

JEL Classification: O15, D64, C93

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1. Introduction

Consumption smoothing by mutual private transfers is an important issue, especially in developing countries where formal institutions are weak. However, there are two competing hypotheses relating to the motives behind private transfers: altruism or exchange (Cox 1987). In the case of altruism-motivated private transfers, people transfer money or resources because their partner's utility is included in their own utility function (Becker 1974). In contrast, exchange-driven private transfers are given because people expect positive reciprocity (Bernheim et al. 1985). Distinguishing between these two motives is important because each model leads to different policy implications concerning whether public transfers crowd out private transfers or not. Indeed, whether the motive behind private transfer is altruism or exchange has been analyzed extensively in a number of studies (e.g., Lucas and Stark 1985; Cox 1987; Cox and Rank 1992; Cox et al. 1994; 1998; Cox and Jimenez 1998; Fafchamps and Gubert 2007; Schechter and Yuskavage 2011; Attanasio et al. 2012; Ligon and Schechter 2012). These studies compared the altruism and exchange models by testing their predicted implications, but the results proved to be rather mixed. In addition, this approach is difficult to apply when altruistic and exchange motives co-exist. More recently, several studies have analyzed this issue using economic experiments. For example, Ligon and Schechter (2012) use variants of the dictator game, finding that the observed variation in sharing across individuals depends on incentive-related motives. Lin et al. (2014) find that altruism motivates private transfers and affects the crowding-out effect of formal insurance on informal income transfers. Other related studies have employed dyadic data to investigate the determinants of risk sharing network formation. Fafchamps and Gubert (2007) develop a dyadic regression approach, finding that social and geographical proximity plays an important role in the receipt of gifts and loans. Schechter and Yuskavage (2011) show that the formation of social networks, especially unreciprocated networks, is not based on altruism. Finally, Attanasio et al. (2012) find that

people are more likely to form a risk-pooling group with close friends and families having similar risk attitudes.

We combine these lines of thought and provide a new approach to analyzing the motive behind private income transfers. Using standard artefactual field experiments based on dictator and trust games, we measure the degree of altruism and trust (i.e., foreseeing positive reciprocity). By combining these experimental results with actual consumption and income data, we can directly test the altruism and exchange hypotheses relating to private transfers. In addition, our approach allows us to bridge the difference between the analysis of private transfers and the canonical full risk sharing test (Townsend 1994). Another important feature of our study is to analyze the co-movement of consumption using dyadic data and the pairwise structure of the dictator and trust games.

The remainder of this paper is organized as follows. First, we describe the dataset and our empirical strategy. Then we discuss the estimation results on the motives of private transfers. The final section offers a summary and concluding remarks.

2. Data

This study uses a dataset collected by JICA/JBIC under the project “Impact Assessment of Infrastructure Development on Poverty Alleviation in Sri Lanka” (JBIC 2007). The study site is situated in the Walawe Left Bank (WLB) area of southern Sri Lanka. In this area, the Sri Lankan government started to construct irrigation canals in 1995, using Japanese ODA loans. The construction started in the north and gradually extended to the south part of the area. This area is divided into six blocks: Sevenagala Irrigated, Sevanagala Rainfed, Sooriyawewa, Kiriibanwewa, Mayurapura, and Tissapura. Each block has distribution canals (D-canals) to draw irrigation water from the main canal to each farm plot, and each D-canal is managed by the farms surrounding it. Since the study site is a newly settled area and farmers were given irrigated plots

of similar size, we do not need to consider the classical patron-client type risk sharing in this study.

In order to assess the socio-economic impact of the irrigation project, JICA (formerly JBIC) conducted eight rounds of household surveys from 2001 to 2009.[1] The first five rounds covered 858 households with approximately 75,000 residents from the whole WLB area, and these were selected using a block-level stratified random sampling strategy. The following two rounds covered a subset of 193 households randomly selected from the 858. As a part of this project, we conducted artefactual field experiments in March 2009. The participants were 268 people selected by a D-canal-level stratified random sampling strategy that included the above-mentioned 193 households.[2] Figure 1 shows the sampling scheme. Subsequently, in May 2009, we conducted a household survey covering all the households included in the artefactual experiments. The survey data includes four retrospective seasonal income and consumption datasets: 2007 Yala (dry season), 2007-08 Maha (wet season), 2008 Yala, 2008-09 Maha. As a result, we can construct a seasonal panel dataset for our analysis. By combining this data with the experimental game results, we are able to directly analyze the impact of altruism and exchange motives on private transfers.

The artefactual field experiments comprised a dictator game, a trust game, and a risk game.[3] In both the dictator game and trust game, the initial endowment was Rs. 500, and the players were asked to fill in the amount $x \in \{0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500\}$ to send to four types of partners. The partners were three non-anonymous players in the same D-canal, an anonymous player in the same D-canal, an anonymous player in the same block, and an anonymous player in a different block. In the trust game, the amount sent to the partner was

[1] See Sellamuttu et al. (2014) and Aoyagi et al. (2014) for detail.
[2] Though we originally invited each household head and its members to the experiment, 7 households sent a son or daughter living separately in another city. We dropped these samples from our main analysis. Note that whether an agent player participated or not is not correlated with the head's age, education level, sex, or irrigated land size as a proxy for their wealth ($F = 0.50$).
[3] Detailed descriptions of the artefactual field experiments and actual implementation procedures are available upon request.

tripled and he/she had an option to send this back to the first mover. Note that the Nash equilibrium of both games is to send nothing, and the deviation from this equilibrium is interpreted as altruism and trust, respectively (Camerer and Fehr 2004; Levitt and List 2007).[4] We utilize the results of three non-anonymous cases to elicit altruism and trust directed to specific partners.[5] Since the results of a trust game are known to be confounded with altruism and risk preferences (Cox 2004; Schechter 2007), we need to control for these effects to elicit the degree of foreseeing positive reciprocity, which is equivalent to the exchange motive in the previous literature. In addition to this, we also asked the amount they expected their partners to return in the trust game. As a robustness check, we also use this variable as another proxy for the degree of exchange motives.

In order to elicit risk preference, we conducted a risk game based on Schechter (2007). The initial endowment was also Rs. 500, and each player could choose how much of this money he/she wanted to invest in a dice game. The final payoff was determined by the results of rolling a dice with six different faces, each of which corresponds to the payoff $\{0, 0.5x, x, 1.5x, 2x, 2.5x\}$, where x is the invested amount.

In the following empirical analysis, we use the share of the sending amount to the initial endowment Rs.500 in each game as a proxy for their innate altruism, trust, and risk attitudes.[6] As for the expected return in the trust game, we define expected trustworthiness as the share of the expected return to the partner's received amount.

[4] As a caveat to this approach, it might not be possible to distinguish the results of the dictator game from socially embedded reciprocal relationships, or an emotion from a social norm requiring people to behave in an altruistic manner. However, this problem is beyond the scope of this study.

[5] In this way we observe directed altruism and trust toward a randomly selected 3 partner set in the same D-canal, which ensures the representativeness of these variables.

[6] Recent studies suggest that these parameters themselves can be endogenously determined (see for example Fehr and Hoff 2011). However, it is in general very difficult to capture time-variant preference parameters precisely. Thus, we treat these variables as time-invariant innate parameters, and the endogeneity issue of these variables remains our future task.

3. Empirical Strategy

Our empirical strategy is to measure the degree of altruism and exchange motives using the results of the dictator and trust games. Based on the standard literature relating to experimental economics, the sending amounts in the dictator and trust games are interpreted as altruism and trust foreseeing positive reciprocity, respectively (Camerer and Fehr 2004; Levitt and List 2007). In the case of private transfers, altruism motivates donors to transfer in order to satisfy their altruistic feelings. In contrast, exchange motives facilitate transfer because they expect something in return (Cox et al. 1998). Thus, the parameters captured by the results of these experimental games correspond to the motives behind private transfers. In the case of field laboratory experiments, Barr (2003) shows that first mover behavior in trust games is motivated by expectations of trustworthiness. Ligon and Schechter (2012) use a dictator game with randomly selected anonymous partners and with self-selected non-anonymous partners to measure the degree of altruism and trust foreseeing positive reciprocity, respectively. Our interpretation is in line with these studies.

We utilize the pairwise structure of the dictator and trust games and the seasonal panel income and consumption data in this study. Though it is possible that the transfer is in both directions, our main interest lies in the "net transfer," which is expected to be given from the richer to the poorer partner for consumption smoothing. As a result, the altruism or exchange motives of the richer participant matter for this purpose. Specifically, if higher altruism or trust towards lower income partners facilitates income transfers, the difference in consumption should shrink. In order to test this hypothesis, we estimate the following model:

$$\begin{aligned}\left|c_{it}-c_{jt}\right| = {} & \beta_1 altruism_{ijt}\left|y_{it}-y_{jt}\right| + \beta_2 trust_{ijt}\left|y_{it}-y_{jt}\right| + \beta_3 risk_{ijt}\left|y_{it}-y_{jt}\right| \\ & + \beta_4\left|y_{it}-y_{jt}\right| + \gamma_1 altruism_{ijt} + \gamma_2 trust_{ijt} + \gamma_3 risk_{ijt} + \delta\left|x_i - x_j\right| + \tau_t \\ & + \eta_{ij} + \epsilon_{ijt},\end{aligned} \tag{1}$$

where c_{it} and y_{it} are real consumption and income level per adult male equivalent of household *i* at time *t*, respectively, and x_i is a set of *i*'s other control variables.[7] τ_t is time-specific fixed effect and η_{ij} is block, D-canal, experimental session, or individual fixed effect based on De Weerdt (2004), i.e., $\eta_{ij} = \eta_i + \eta_j$ (two fixed effects), which control for time-invariant heterogeneities.[8]

By including fixed effects, we focus on the temporal income changes which are measured as the deviation from the mean. In order to elicit the degree of altruism, trust, and risk preference of the richer partners, we define these variables as follows: $altruism_{ijt} = I(y_{it} > y_{jt}) \cdot dictator_{ij} + I(y_{it} < y_{jt}) \cdot dictator_{ji}, trust_{ijt} = I(y_{it} > y_{jt}) \cdot trust_{ij} + I(y_{it} < y_{jt}) \cdot trust_{ji}$, and $risk_{ijt} = I(y_{it} > y_{jt}) \cdot risk_i + I(y_{it} < y_{jt}) \cdot risk_j$, where I (•) is an indicator function, $dictator_{ij}$and $trust_{ij}$ are the share of the sending amount from *i* to *j* in the dictator game and the trust game, respectively, and $risk_i$ is *i*'s invested amount in the risk game.[9] Since observations of the pair (*i*, *j*) and (*j*, *i*) are the same within the same time period, standard errors need to be corrected. Based on Attanasio et al. (2012), we clustered the standard errors by experimental session. This approach enables us to control for the heterogeneity across the dyadic pairs within the experimental session as well as within the dyadic pairs.

Our parameters of interest are β_1 and β_2. Based on previous studies (e.g., Cox 1987), altruistic motive facilitates private transfers when the recipient's income is low. Holding the donor's income constant, this implies that the amount of transfer is larger under the altruistic motive when the difference in income is larger, which results in a smaller consumption difference. Thus, β_1 is expected to be negative. In contrast, the exchange motive facilitates transfer when the recipient's income is higher. This implies that smaller income differences

[7] Consumption and income are adult-equivalent based on the age and sex weights in Townsend (1994). Also, they are adjusted for the price index based on 2002 Sri Lankan Rupees (Source: http://www.statistics.gov.lk/price/ccpi(2002)/Movementsof%20CCPI(N).pdf).

[8] The pair fixed effect is not used because there is little variation in $I(y_{it} > y_{jt})$ or $I(y_{it} < y_{jt})$ within a pair, which means that the effect of altruism or trust cannot be correctly estimated.

[9] Note that altruism, trust, and risk variables are captured in one-shot experiments. Thus, the variation across time comes solely from the rich and poor combination within a pair at time *t*.

facilitate transfers under the exchange motive so that the consumption difference shrinks. Thus, β_2 is expected to be positive. By testing these coefficients, we can directly ask which of altruism or exchange motives is more salient in private transfers.

4. Results

4.1. Summary Statistics

Table 1 details the summary statistics of all the variables used in this study. Panel A shows the results of the artefactual experiments. Note that the sending amounts in the dictator and trust games and the expected return in the trust game are stacked for three non-anonymous partners. In addition, we also have data on whether a paired partner is a relative or not. But because of the difference in perception and reporting errors, the answers are not necessarily symmetric. Thus, we use dummy variables when only one of them reported that the partner is a relative ("one recognized"), and when both of them answered so ("both recognized") separately. Including these links, about 24.5% of the pairs are connected in terms of kinship. Panel B shows the summary statistics of four-seasonal consumption and the income level per adult male equivalent. As the table shows, both the mean and the standard deviation of income differences are larger than the consumption differences. This casual observation is consistent with the standard risk sharing literature such as Townsend (1994). Panel C shows the summary statistics of the other controlling variables.

4.2. Analysis of Consumption Smoothing

Table 2 shows the main estimation results. Most notably, the cross term of altruism toward the lower income partner and their income differences has a negative impact on consumption differences, implying that altruism facilitates income transfers from the richer to the poorer within a pair. In contrast to these significant results, the cross term of trust and income difference is not statistically significant. Hence, our estimation results support the hypothesis that altruism

is the main motive for private transfers. The difference in income itself explains only 31-35% of the difference in consumption. This suggests that idiosyncratic income shocks affect consumption only partially, which is consistent with the literature on partial risk sharing within a network (Townsend 1994; Ligon, 2008).

The model (1) is flexible in the sense that both altruism and trust can affect consumption by changing the intercept and the magnitude of income differences. As a first robustness check, we estimate the model with either altruism/trust dummy or their interaction with income difference. The first four columns of Table 3 show the results where altruism and trust affect only the slope of the income difference curve. All of the coefficients on altruism and income difference are negative and significant, implying that higher altruism and income differences shrink consumption differences. In contrast, the coefficients on the cross term of trust and income difference are insignificant in all specifications. The last four columns show the results where altruism and trust dummies are included without interacting with income difference. Though the effect is insignificant in all cases, altruism itself negatively affects consumption difference except for the results in column (8). Thus, altruistic motives facilitate private transfers, especially for a pair whose income difference is large.

As a second robustness check, in Table 4 we replace the trust variable with expected trustworthiness, which is defined as the share of the expected return from the partner in the trust game. Thus, this variable also captures the degree of foreseeing positive reciprocity, i.e., the exchange motive. However, the qualitative results are virtually unaffected (see Table 2). Higher altruism and larger income differences lead to smaller consumption differences, whereas expected trustworthiness has no impact on consumption smoothing. This finding also supports the view that altruism rather than exchange is the motive for private transfers.

4.3. Analysis of Actual Bilateral Transfers

Though our main focus is on the co-movement of consumption within a pair, it is also important to analyze specific bilateral transactions to understand the channel of private transfers. We have data on whether respondents made bilateral in-kind and monetary gifts, and/or loans within a three year period. Using these data, we estimate a linear probability model to analyze real-world decision making within the channels of private transfers. In order to fully utilize the bi-directionality of these transfers, we include the altruism, trust, and risk attitudes of player *i* and the cross term of whether *i* is richer than *j*, instead of looking at the preference parameters of the rich players only. By doing so, we can test the validity of looking at the net transfer from the rich to the poor. Since we cannot observe income differences for the previous three years, we restrict the pairs in which rich-poor composition did not change over the whole sample period, to elicit the altruism and trust of the richer person within a pair. Panel D of Table 1 shows the summary statistics of these bilateral transactions and Table 5 shows the estimation results. The results show that altruism and trust do not affect in-kind gifts or informal loans. Intriguingly, the altruism of higher income people has a positive impact on giving monetary gifts, whereas neither altruism nor trust itself has a positive impact. This implies that altruism facilitates monetary transfers from the rich to the poor, resulting in smaller consumption differences within a pair. In contrast, the risk attitude of the rich has a negative impact on monetary transfers, because risk loving people make fewer transfers (Kimball 1988; Coate and Ravallion 1993). Another finding is that people tend to give in-kind transfers if the partners are their relatives, which is also consistent with previous studies (e.g., Fafchamps and Gubert 2007; Schechter and Yuskavage 2011).

5. Concluding Remarks

This study provides a new approach to the classical question of whether private transfers are motivated by altruism or by exchange. By combining artefactual field experiments and standard household survey data, we directly elicit the degree of altruism and trust (i.e., exchange) and are able to analyze the impact of these factors on the co-movement of consumption. We find that higher altruism toward lower income partners and their income differences reduces the differences in consumption, which supports the altruism hypothesis as the motive for private transfers. In contrast, the exchange motive is not necessarily an important factor in the facilitation of such transfers, though we cannot strongly reject this hypothesis in some specifications. By analyzing bilateral transfer data, we find that the altruism of the rich facilitates monetary transfers toward the poor, which can be a channel for private transfers. Hence, our findings are in line with the hypothesis that formal insurance programs crowd-out private transfers. Thus, carefully designed policy interventions are necessary to achieve the originally targeted consumption level of the poor households.

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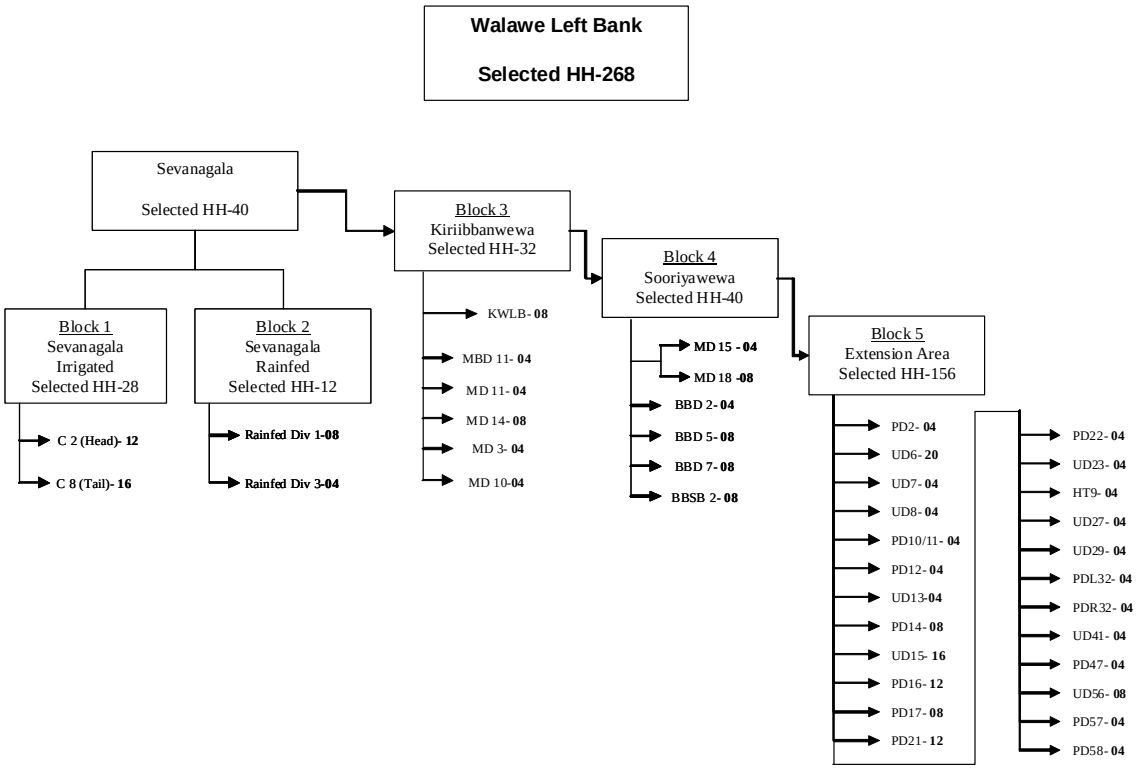

Figure 1: Sampling structure (after Aoyagi et al. 2014)

Table 1. Summary statistics

Panel A: Experimental variables	Count	Mean	Std. Dev.
Altruism	718	0.326	0.219
Trust	718	0.425	0.270
Expected trustworthiness	718	0.444	0.253
Risk attitude	239	0.405	0.245
One recognized relative dummy	718	0.178	0.383
Both recognized relative dummy	718	0.067	0.250
Panel B: Panel variables	Count	Mean	Std. Dev.
Consumption level	2824	8314.419	4340.599
Income level	2824	9805.065	6377.124
Yala 2007 dummy	2824	0.249	0.432
Maha 2007-2008 dummy	2824	0.252	0.434
Yala 2008 dummy	2824	0.254	0.436
Panel C: Individual characteristics	Count	Mean	Std. Dev.
Age difference	239	52.230	10.997
Education level difference	239	6.314	3.347
Sex difference (male=1)	239	0.879	0.327
Panel D: Bilateral transfer	Count	Mean	Std. Dev.
In-kind gift dummy	484	0.306	0.461
Monetary gift dummy	484	0.101	0.302
Loan dummy	484	0.085	0.279
Labor exchange dummy	484	0.126	0.332

Note: The sample size is larger for altruism, trust, expected trustworthiness, and relative dummies because of stacking observations for experimental partners.

Table 2. The effect of altruism and exchange motives on consumption difference

VARIABLES	(1)	(2)	(3)	(4)
Altruism × income difference	-0.472***	-0.474***	-0.417***	-0.493***
	(0.153)	(0.135)	(0.132)	(0.113)
Trust × income difference	-0.0280	-0.0705	-0.0656	-0.0341
	(0.127)	(0.129)	(0.126)	(0.129)
Risk × income difference	0.0497	0.116	0.125	0.232
	(0.202)	(0.202)	(0.205)	(0.255)
Altruism	2,323*	1,829	1,513	2,788**
	(1,212)	(1,382)	(1,425)	(1,363)
Trust	266.8	938.1	616.1	58.01
	(830.6)	(1,018)	(1,206)	(1,211)
Risk game	2,491*	1,321	1,008	-1,214
	(1,325)	(1,059)	(1,084)	(942.3)
Income difference	0.340***	0.350***	0.323***	0.311**
	(0.114)	(0.109)	(0.0975)	(0.128)
One recognized relative	101.4	-4.998	-109.3	-616.7
	(448.6)	(432.6)	(434.5)	(700.7)
Both recognized relative	-167.1	-1,033	-1,355	19.48
	(541.9)	(1,448)	(1,606)	(852.6)
Age difference	77.94***	69.47***	47.19*	92.66*
	(21.75)	(24.26)	(26.88)	(53.38)
Education level difference	60.38	19.85	16.15	18.19
	(68.93)	(71.55)	(71.31)	(63.01)
Sex difference	838.9*	726.1	660.4	-1,515**
	(482.3)	(479.9)	(606.7)	(585.5)
Constant	-269.9	576.9	-1,530	4,501***
	(995.0)	(683.6)	(1,086)	(1,681)
Season FE	YES	YES	YES	YES
Additional FE	NO	D-canal	Session	Individual
Observations	2,824	2,824	2,824	2,824

Clustered standard errors at experimental session level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
The dependent variable is the difference in consumption of each pair.

Table 3. The effect of altruism and exchange motives on consumption difference (restricted specification)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Altruism × income difference	-0.307***	-0.348***	-0.317***	-0.375***				
	(0.109)	(0.111)	(0.113)	(0.112)				
Trust × income difference	-0.0153	-0.0135	-0.0310	-0.0368				
	(0.109)	(0.115)	(0.103)	(0.121)				
Risk × income difference	0.234	0.205	0.182	0.182				
	(0.189)	(0.178)	(0.191)	(0.246)				
Altruism					-1,250	-1,575	-1,503	73.43
					(1,022)	(1,240)	(1,246)	(1,334)
Trust					-30.78	435.4	156.1	-32.84
					(745.1)	(901.5)	(936.2)	(1,108)
Risk game					2,987**	2,021*	1,660	-38.34
					(1,461)	(1,199)	(1,362)	(1,106)
Income difference	0.202*	0.244**	0.248***	0.291**	0.183***	0.199***	0.198***	0.218***
	(0.108)	(0.0992)	(0.0839)	(0.119)	(0.0552)	(0.0535)	(0.0475)	(0.0659)
One recognized relative	191.0	20.36	-48.10	-558.0	138.4	-77.76	-133.6	-700.7
	(484.2)	(447.8)	(427.7)	(712.0)	(451.5)	(446.8)	(435.7)	(709.0)
Both recognized relative	-222.2	-1,030	-1,289	69.33	-224.0	-1,053	-1,406	191.3
	(479.0)	(1,451)	(1,614)	(801.7)	(486.9)	(1,384)	(1,559)	(882.1)
Age difference	79.25***	73.38***	47.00*	91.44	81.35***	72.04***	45.85	86.76
	(22.60)	(25.10)	(27.09)	(56.85)	(24.04)	(25.87)	(27.66)	(53.65)

Education level difference	62.32	9.639	11.66	12.63	52.23	-2.395	-0.669	-0.313
	(69.81)	(70.60)	(70.54)	(68.51)	(72.68)	(74.18)	(76.44)	(70.01)
Sex difference	878.8*	823.9	686.7	-1,711***	908.9*	954.4*	832.1	-1,826***
	(503.5)	(506.0)	(608.8)	(566.8)	(512.3)	(551.5)	(626.4)	(591.3)
Constant	1,598***	1,902***	-744.9	-1,945	792.8	1,624***	-692.5	-1,820
	(556.0)	(440.0)	(813.3)	(1,602)	(799.2)	(553.5)	(925.3)	(1,624)
Season FE	YES	YES	YES	YES	YES	YES	YES	YES
Additional FE	NO	D-canal	Session	Individual	NO	D-canal	Session	Individual
Observations	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824

Clustered standard errors at experimental session level in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is the difference in consumption of each pair.

Table 4. The effect of altruism and expected trustworthiness on consumption difference

VARIABLES	(1)	(2)	(3)	(4)
Altruism × income difference	-0.495***	-0.514***	-0.453***	-0.513***
	(0.175)	(0.163)	(0.151)	(0.148)
Expected trustworthiness	0.0384	-0.0385	-0.0451	0.0313
× income difference	(0.143)	(0.129)	(0.134)	(0.153)
Risk × income difference	0.0303	0.117	0.132	0.215
	(0.200)	(0.188)	(0.190)	(0.258)
Altruism	2,485**	2,408**	1,908	2,788**
	(1,167)	(1,135)	(1,239)	(1,216)
Expected trustworthiness	29.24	24.27	-121.1	183.7
	(972.3)	(884.7)	(900.4)	(1,121)
Risk game	2,613*	1,403	1,043	-1,214
	(1,362)	(1,055)	(1,092)	(906.6)
Income difference	0.329**	0.349***	0.324***	0.298**
	(0.128)	(0.113)	(0.103)	(0.144)
One recognized relative	68.44	-19.19	-117.1	-613.6
	(441.0)	(421.8)	(433.4)	(693.1)
Both recognized relative	-149.8	-996.7	-1,332	12.72
	(544.5)	(1,441)	(1,589)	(858.0)
Age difference	77.79***	70.33***	47.29*	90.61*
	(22.04)	(24.64)	(27.27)	(52.89)
Education level difference	59.31	17.86	15.05	13.82
	(68.80)	(71.55)	(70.77)	(67.25)
Sex difference	845.9*	727.2	689.0	-1,529***
	(472.5)	(477.1)	(616.5)	(525.6)
Constant	-272.2	777.4	-1,359	-2,339
	(1,140)	(885.2)	(940.6)	(1,694)
Season FE	YES	YES	YES	YES
Additional FE	NO	D-canal	Session	Individual
Observations	2,824	2,824	2,824	2,824

Clustered standard errors at experimental session level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The dependent variable is the difference in consumption of each pair.

Table 5. The effect of altruism and exchange motives on bilateral transactions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Gift								
VARIABLES	In-kind	In-kind	In-kind	Monetary	Monetary	Monetary	Loan	Loan	Loan
Altruism	-0.170	-0.128	-0.0838	-0.0120	0.0380	-0.0429	-0.0492	-0.0887	-0.130
	(0.185)	(0.188)	(0.264)	(0.0727)	(0.0784)	(0.118)	(0.156)	(0.162)	(0.214)
Trust	0.0965	0.0704	-0.0232	-0.0185	-0.0791	-0.0325	0.0348	0.00188	-0.0255
	(0.175)	(0.183)	(0.254)	(0.106)	(0.108)	(0.148)	(0.147)	(0.157)	(0.195)
Risk game	0.204	0.127	0.147	0.124	0.144	0.153	0.00466	0.00851	0.0417
	(0.141)	(0.168)	(0.228)	(0.0911)	(0.101)	(0.137)	(0.0838)	(0.0955)	(0.124)
Altruism × $I(y_i > y_j)$	0.0711	-0.0789	-0.133	0.289**	0.256*	0.254	-0.183	-0.145	-0.0335
	(0.215)	(0.208)	(0.281)	(0.140)	(0.140)	(0.230)	(0.203)	(0.204)	(0.228)
Trust × $I(y_i > y_j)$	0.158	0.189	0.340	-0.0498	0.0251	0.0501	0.244	0.280	0.277
	(0.234)	(0.250)	(0.326)	(0.114)	(0.120)	(0.200)	(0.185)	(0.199)	(0.231)
Risk game × $I(y_i > y_j)$	0.0445	0.0713	0.0285	-0.309**	-0.375**	-0.361*	0.0775	0.00641	-0.0506
	(0.218)	(0.249)	(0.342)	(0.139)	(0.155)	(0.201)	(0.127)	(0.142)	(0.182)
$I(y_i > y_j)$	-0.0261	-0.00444	-0.0346	0.0943*	0.100	0.0850	-0.0726	-0.0717	-0.0819
	(0.0944)	(0.0967)	(0.149)	(0.0562)	(0.0657)	(0.0887)	(0.0484)	(0.0483)	(0.0598)
One recognized relative	0.110*	0.188***	0.102	-0.00662	0.00642	0.163	0.00263	0.0321	-0.0539
	(0.0640)	(0.0689)	(0.197)	(0.0307)	(0.0331)	(0.0987)	(0.0307)	(0.0334)	(0.139)

Both recognized relative	0.387***	0.408***	0.847**	0.214*	0.187	0.171	0.224*	0.229*	0.482*
	(0.121)	(0.135)	(0.398)	(0.122)	(0.135)	(0.198)	(0.114)	(0.117)	(0.283)
Age difference	-0.00457**	-0.00684***	-0.000925	-0.00221*	-0.00417**	-0.00275	0.000194	0.000162	0.00143
	(0.00180)	(0.00251)	(0.00445)	(0.00127)	(0.00160)	(0.00273)	(0.00144)	(0.00150)	(0.00230)
Education level difference	0.00103	0.00322	-0.0197	-0.000236	0.00183	0.00281	-0.00725	-0.00405	-0.00734
	(0.00698)	(0.00847)	(0.0207)	(0.00485)	(0.00484)	(0.00918)	(0.00570)	(0.00652)	(0.0111)
Sex difference	-0.130***	-0.181***	-0.387***	-0.0233	-0.0265	0.0557	-0.0251	-0.00533	0.169***
	(0.0470)	(0.0562)	(0.0911)	(0.0476)	(0.0488)	(0.0524)	(0.0288)	(0.0291)	(0.0564)
Constant	0.236*	0.123*	0.355*	-0.0142	0.0430	-0.127	0.134	-0.00834	-0.135
	(0.128)	(0.0725)	(0.178)	(0.0465)	(0.0546)	(0.103)	(0.0834)	(0.0510)	(0.118)
Additional FE	D-canal	Session	Individual	D-canal	Session	Individual	D-canal	Session	Individual
Observations	484	484	484	484	484	484	484	484	484

Clustered standard errors at experimental session level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Abstract (in Japanese)

要約

私的所得移転の背後にあるメカニズムが、利他性と互恵性のいずれであるかという古典的問題に対して、本研究は新しい分析アプローチを提示するものである。人工的フィールド実験により相手に対する利他性と信頼度を直接計測し、これらが現実の消費の共変動に与える影響を分析した。その結果、自分よりも所得が低い相手に対する利他性が高く、相手との所得の差が大きいほど、消費の差が縮小することを示した。この結果は、私的所得移転における利他的動機の重要性を支持するものである。

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