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Fredrik Carlsson, University of Gothenburg, Sweden[A]

Olof Johansson-Stenman, University of Gothenburg, Sweden[B]

Pham Khanh Nam, University of Gothenburg, Sweden,and Ho Chi Minh City University of Economics, Vietnam[C]

[A] Department of Economics, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden; Ph +46 31 786 41 74; Fax +46 31 786 10 43; E-mail: fredrik.carlsson@economics.gu.se.

[B] Department of Economics, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden; Ph +46 31 786 25 38 Fax +46 31 773 10 43; E-mail: olof.johansson@economics.gu.se.

[C] Faculty of Development Economics, University of Economics Ho Chi Minh city, 1A Hoang Dieu Street, Phu Nhuan District, Ho Chi Minh city, Vietnam; Ph +84 838448222; Fax +84 838453897; E-mail: khanhnam@ueh.edu.vn.

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Fredrik Carlsson, University of Gothenburg, Sweden[A]

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Abstract

We use a combination of two natural experiments and one field experiment tomeasure people's prosocial behavior in terms of voluntary money and labor time contributions to an archetypicalpublic good – a bridge – in rural Vietnam, at three different points in time from 2005 to 2010. Since the experiments are far apart in time, potentially confounding effects of moral licensing and moral cleansing are presumably small, if at all existent. We find a strong positive and statistically significant correlation between voluntary contributions in these experiments, whether correcting for other covariates or not.This result suggests that prosocial preferences are at least partly stable over long periods of time.

JEL classification: C93, H41

Keywords: Natural experiment, field experiment, preference stability, social preferences, moral licensing, moral cleansing.

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[A] Department of Economics, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden; Ph +46 31 786 41 74; Fax +46 31 786 10 43; E-mail: fredrik.carlsson@economics.gu.se.

[B] Department of Economics, University of Gothenburg, Box 640, 405 30 Gothenburg, Sweden; Ph +46 31 786 25 38 Fax +46 31 773 10 43; E-mail: olof.johansson@economics.gu.se.

[C]Faculty of Development Economics, University of Economics Ho Chi Minh city, 1A Hoang Dieu Street, Phu Nhuan District, Ho Chi Minh city, Vietnam; Ph +84 838448222; Fax +84 838453897; E-mail: khanhnam@ueh.edu.vn.

1. Introduction

An overwhelming amount of psychological and behavioral economics research shows that the *Homo Economicus* characterization of human behavior, in terms of complete selfishness in a narrow material sense, is often wrong; human behavior is indeed in part prosocial. At the same time, a large heterogeneity in prosocial behavior is typically found. Several studies have consequently attempted to categorize people, as revealed by their experimentally observed behavior, in terms of different types of social preferences, e.g., as free-riders, conditional cooperators, and unconditional cooperators (Fischbacher et al., 2001), as selfish versus inequity averse individuals(Fehr and Schmidt, 1999), and asnon-sharers, reluctant sharers, and willing sharers (Lazear et al., 2010).Yet, from these studies one cannot conclude that people are inherently of different types. An alternative explanation is that people simply act differently at different moments in time, and that different people's degree of cooperativeness, or non-selfishness, is approximately constant*on average*. Indeed, that people's prosocial actions vary over time is obvious since most of us sometimes contribute to a certain charity and sometimes do not. Yet, how much of the observed heterogeneity in social preferences that can be explained by within-people variations is not clear, nor is it clear whether an individual who acted cooperatively in one moment in time is significantly more likely to act cooperatively in a similar task several years later. The present paper aims to investigate the stability of social preferences by utilizing data on people's voluntary contributions to an archetypical public good, a bridge, in rural Vietnam.

To what extent preferences, and in particular social preferences, are stable across decision environments has been studied in a number of papersusing different methodologies.A sub-set of these studies have looked at the differences in prosocial behavior between similar experiments conducted at different points in time.For example, Brosig et al. (2007) conduct dictator and public good games with the same subjects at several points in time during one week. Other-regarding behavior is found to decrease over time, and in the final experiments the subjects' behavior was close to what would be predicted by conventional economic theory. Subjects who behave selfishly are found to be the only ones who behave stable over time. This pattern is similar to what is typically obtained with repeated publicgood games.[1]De Oliveira et al. (2009), on the other hand, find that preferences regarding contributions to public goods are positively related both across different

[1] See, e.g., Isaac et al. (1984), Andreoni (1995), and Fehr and Gächter (2000). Different explanations have been proposed, including initial confusion and learning (e.g., Andreoni, 1988) andsome versions of conditional cooperation (e.g., Fischbacher et al., 2001; Fischbacher and Gächter, 2010).

experimental decision contexts and to self-reported donations and volunteering outside the laboratory. Cesarini et al. (2009) use twin studies combined with modified dictator experiments in order to determine the extent to which giving is heritable; their best point estimate suggests that genes explain about 20% of the variation in behavior among subjects.

Other studies have compared contributions in the lab and the field. Benz and Meier (2008) conduct a dictator game with two social funds as external recipients, and find a positive, albeit relatively weak, correlation between behavior in a lab experiment and actual charitable giving by the same subjects. Laury and Taylor (2008) find mixed evidence regarding the correlation between non-selfish behavior in laboratory experiments and contribution to a naturally occurring public good. While they find that some measures of altruistic behavior in the lab can be predictive of contributions to naturally occurring public goods, the relationships are generally weak, and some measures of altruism were even negatively correlated with contribution to the naturally occurring public good. Karlan (2005) findsthat based on a trust game in Peru, subjects identified as trustworthy, i.e., receivers who return a relatively large share of what they received from the senders tend to repay their micro credit loans to a larger extent than those who are identified as not trustworthy. No significant correlation between those identified as trusting, i.e., senders who sent a relatively large share to the receivers, and repayment of the loans was obtained.

In summary, there is no consistent pattern from existing studies regarding to what extent social preferences are stable over time. One possible explanation to the observed variation relates to what psychologists denote *moral licensing* (Monin and Miller, 2001), which suggests that people who have undertaken a praiseworthy actionget an implicit license tosubsequently conduct a more selfish act. There is a great deal of empirical support for such licensing effects. For example, Mazar and Zhong (2010) find experimentally that people become less altruistic after purchasing environmentally friendly products than after purchasing conventional products. Similarly, and symmetrically, there is also a great deal of evidence of *moral cleansing*, referring to compensatory behavior when people's moral self-worth has been threatened (e.g.,Carlsmith and Gross, 1969; Tetlock et al., 2000). In a recent economics experiment, Gneezy and Imas (2010) find, in line with moral cleansing, that people who lie or do not return money they have received by mistake are more likely than others to donate to charity.

Moral licensing and moral cleansing effects taken together suggest that people want to preserve a certain image in the moral domain, an image that, in turn, largely depends on undertaken actions. This implies that we have a possible confounding effect when testing for stability of social preferences. Consider for example a case where a number of people act as senders in two identical dictator experiments (with different receivers). Based on inherent differences in social preferences, one would expect that those who sent more in the first round would also send more in the second. Yet, based on moral licensing or moral cleansing (depending on the reference points for bad versus good actions), one would expect that an individual who sent more in the first round would as a result send less in the second. One way around this confounding effect would be to set up the tests with a relatively longtime span in between, so that moral licensing and moral cleansing effects can be ignored. This is the strategy used in the present study.

Another advantage of the long time span is that we can test whether the underlying preferences are the same for long periods. After all, that the underlying preferences would be approximately constant with the time frame of a couple of days is what we would expect. Whether the same can be said based on a time frame of several years is much less obvious.

In the present paper we use observations on subjects' prosocial behavior in three related eventsseparated by reasonably long time periods.Two of the events are naturally occurring ones where we simply observed the behavior, and may hence be classified as natural experiments, while the remaining (intermediate) one was designed by the authors.[2]The first two concern monetary contributions to a local public good in terms of the construction of a much neededbridge in the middle of a village, while the last experiment concerns labor contributions to the construction of the same bridge. Although all the experiments use voluntary contribution mechanisms, there are a number of contextual differences, yet for all three events we observe the behavior of the same 200 subjects, representing all households in the village. The paper is organized as follows. Section 2briefly describes the experiments,Section 3 provides corresponding background statistics and experimental design, andSection 4 presents the results.We find a strong positive and statistically significant correlation between voluntary contributions in these experiments, whether correcting for other

[2]In this experiment, the local people conducted acts that were rather natural to them and that they might have been asked to conduct without any university study involved. At the same time, however, some elements of the study might have been perceived as slightly unnatural, such as estimating others' contributions, implying that it does not completely fulfill the Harrison and List (2004) criteria for being labeled a natural field experiment.

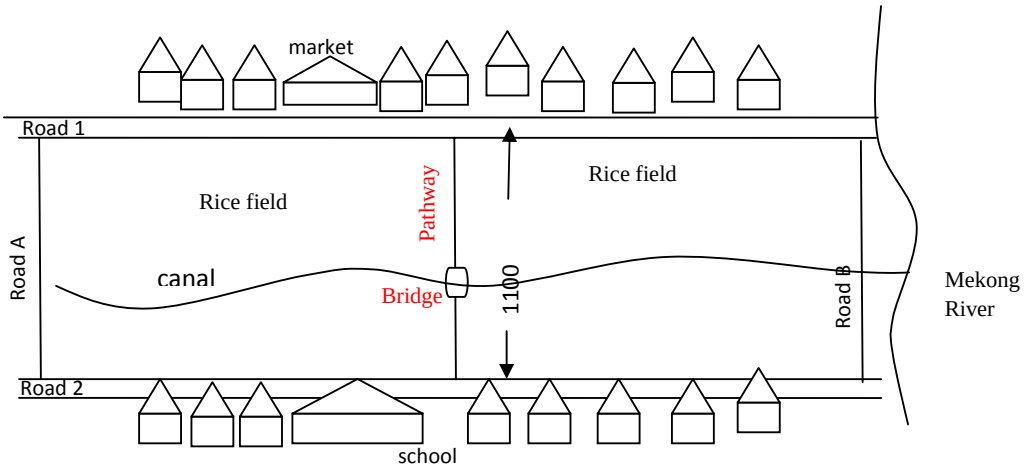
covariates or not, which suggests that prosocial preferences are at least partly stable over long periods of time. Section 5 briefly discusses order of magnitudes and concludes the paper.

2.The Three Experiments

The experiments were undertaken in the Giong Trom village in the Mekong River Delta of Vietnam in 2005, 2009, and 2010.[3]There are about 200 households in the village, most of which engage in rice cultivating activities. All of these households are included in our three experiments. The village suffers one of the typical problems in the Mekong River Delta: the lack of basic infrastructure such as rural roads, bridges, and irrigation canals. The government only provides larger public goods such as roads between villages. The small-scale infrastructure within a villageisconsidered to be the village's responsibility. All three experiments concern the funding of a bridge for the village.

2.1 The bridge and the three experiments

The bridge is important for the village because villagers use it to go to the rice fields, to the market, to visit friends, and to get to school. If they do not use the bridge, they have to use alternative routes,either road A or road B, which are located parallel to and about 1,200 meters from the bridge's pathway; see the following map.



In the first experiment in 2005, households in the village contributed to build the bridge. Since they could not afford to build a more durable concrete bridge, the village council decided to build a wooden bridge funded by voluntary contributions. Yet, the bridge became degraded relatively quickly, and in 2009 its shape was as seen in the picture below:

[3] A village is a small commune or part of a commune, and consists of around 100 to 300 households.

As can be seen, the wooden bridge was highly degraded and could obviously not be used for tractors and motorbikes. In 2009, we setup a field experiment, the second experiment in this paper, which included a threshold public good game concerning funding of a concrete bridge. Since the households contributed enough to reach the threshold, the new bridge was built in early 2010; see the picture below:

Even though the money collected was sufficient for the construction of the bridge, some related physical work was needed and decided upon by the villagecouncil in 2010. Data on voluntary time contributions by different households was collected by the council and then shared with us.

As mentioned, all three experimentswere related to the bridge in the village. The first experiment concerned monetary contributions to build a small wooden bridge in 2005;the second one, in 2009,concerned monetary contributions to build a new and better concrete bridge; and the third experiment concerned voluntary labor contributions related to the new concrete bridge in 2010. The settings of these three experiments are summarized in Table 1.

Table 1. Characteristics of the threeexperiments

Characteristics	Experiment 1	Experiment 2	Experiment 3
Time	July 2005	August 2009	March 2010
Contribution mechanism	Voluntary	Voluntary	Voluntary
Anonymity	No	Yes	No
Framework	Fundraising campaign	Threshold public good game	Fundraising campaign
Windfall money	No	Yes	No
Contribution range	[0, .) thousand dong	[0, 400] thousand dong	[0, 3.5] labor days
Organizer	Local government	Outside NGO	Local government
Reference contribution	Yes	Yes in some treatments	Yes

2.2 The 2005 experiment

In the first experiment in 2005, the villagecouncil had decided to try to build a bridge and that it should be funded by voluntary contributions. A group of three delegated persons visited every household in the village to present the plan to build the bridge and asked for voluntary contributions. Probably in order to persuade villagers and increase contributions, the delegated people showed a list of names, contribution amounts, and signatures of those who had already contributed. The villagecouncil did not set the upper contribution limit. The highest contributed amount was 300,000 dong[4]. Since the total contribution was not sufficient for building a concrete bridge, the VillageCouncil decided to build a wooden bridge.

2.3 The 2009 experiment

In 2009we conducted a field experiment in collaboration with an NGO. More exactly, we employed a threshold public good gamethat concerned the funding of a new bridge for the village.For a detailed description of the experiment and the results, see Carlsson et al. (2010). The main objective of the experiment was to investigate the role of social influence for voluntary contributions to public goods. The authors devised a threshold public good game in which villagers received an endowment from the NGO and had the option of keeping money for themselves or contributing some or everything to the funding of the bridge.In the experiment, identical endowments of 400,000 dong were provided to 200 household subjects. The threshold level was set at 40 million dong, implying that if villagers together would contribute a total of 40 million dong or more, the bridge would be built. The experiment involved five treatments of which one treatment served as a reference case and the other four

[4] At the time of the experiment, 100,000 dong = 5 USD.

treatments varied in terms of presence of reference contributions and default options. In all treatments, the contributions were anonymous to everybody except the solicitors.

2.4 The 2010 experiment

The experiment in 2009 resulted in the construction of the bridge in 2010 since the total contributions were higher than the threshold. In preparing for the construction, we had a meeting with the head of the village and representatives from the Farmers'Association. At the meeting, we were informed that they planned to ask the villagers to contribute labor to connect the road with the new bridge. We took this opportunity to collect another naturally occurring contribution data set. The construction work required everyone to work together in a short time period. Several specific days were set for this joint work. Two persons from the villagecouncil visited the households in the village to invite villagers to contribute labor related to the new bridge. An important difference compared to the previous two experiments is that instead of being asked for monetary contributions, the households were asked for labor contributions. Not all households were asked to make contributions, since some households were not expected to be able to contribute any labor at all, mainly due to old age. In total 19 percent of the households were not asked to make any labor contribution.[5]At this time, households were not told anything about what others were contributing, so there were obviously no reference points available. We hired an external supervisor to monitor the construction progress and quality, and recorded villagers' labor contributions. Thus, what we observe here is the amount of actual labor contributions and not what they promised when they were asked to contribute.

2.5 Household characteristics

Although we designed only one of the three experiments (the second one regarding the construction of the concrete bridge in 2009), we have data for three different points in time, 2005, 2009 and 2010, for the same subjects. Table 2 reports background statistics, as of 2009, of the households.

[5] Estimating a binary probit model where the dependent variable is equal to one if they were not asked to contribute, we find, as expected, that small and poor households and households with an old head or a female head were more likely not to be asked. We also find that the probability of not being asked is positively correlated with the contribution in 2005 and negatively with the contribution in 2009.

Table 2. Household characteristics

Variables	Definition	Mean	Std. dev.
Household size	Number of household members	3.84	1.61
No labor	=1 if household cannot provide labor for community work	0.19	
Age	Age of household head in year	48.9	13.8
Male	= 1 if household head is male	0.63	
Education	Highest level of education attained: 1 = No schooling (5%); 2 = Grade 1-5 (54%); 3 = Grade 6 – 9 (31.5%); 4 = Grade 10 – 12 (9%); 5 = Vocational school and above (0.5%)	2.46	0.76
Monthly income	Monthlyhousehold monetary income in hundred thousand dong	18.13	12.78
Use the bridge everyday	= 1if use bridge everyday	0.19	
Use the bridge 1 – 3 times a week[6]	=1 if about 1 – 3 times a week	0.10	
Use the bridge twice a month	= 1 if about 2 times a month	0.17	
Use the bridgeonce a month	= 1 if about 1 time a month	0.30	
Member of the communist party	= 1 if at least one household member is a member of the communist party	0.10	
Association	= 1 if at least one household member is a member of a local association	0.49	
Rice land	Total size of rice land currently being cultivated; in congs (1 cong = 1/10 hectare)	4.69	3.13

The mean monthly income is around 1.8 million dong per month, which corresponds to about 95 USD per month and less than 1 USD per household member and day. Thus, the households in the study are poor. In addition, their average education level is very low. The average size of land a family is currently cultivating rice on is also rather small, approximately half of a hectare.

[6] The options for the question regarding the current use of the bridge were: 1 = Every day, 2 = Around two to three times a week, 3 = Around once a week, 4 = Around twice a month, 5 = Around once a month or less, 6 = Currently do not use the bridge at all. Since relatively few answered options 2 and 3, we merged them in the descriptive statistics and in the analysis.

3. Results

3.1Average contributions in the three experiments

Before looking at the correlations between the contributions, let us briefly look at the average contributions in each of the experiments,as presented in Table 3. Since not all households were asked to contribute labor in the experiment in 2010, we present the contribution statistics both for the whole sample and for the restricted sample of households that had the possibility to contribute in 2010.

Table 3. Descriptive statistics of contribution variables in three experiments

Experiment	Mean	Std. dev.	Share zero	Min	Max
2005 (thousand dong)	39.45	55.80	0.47	0	300
2009 (thousand dong)	270.85	127.52	0.02	0	400
2010 (labor days, whole sample)	0.40	0.85	0.77	0	3.5
2010 (labor days, restricted sample)	0.50	0.92	0.71	0	3.5

By first comparing the monetary contributions in 2005 and 2009, there are strikingly large differences. The average contribution in 2009 was almost seven times as large as in 2005, and while almost everyone contributed something in 2009, almost half of the households chose to free-ride in 2005. While there may be many different explanations to this observation, two clearly stand out: First, contrary to in 2005, the 2009 experiment involved a matching contribution by the involved NGO. Such matching contributions or seed money have been shown to increase voluntary contributions substantially(e.g.,List and Lucking-Reiley, 2002; Karlan and List,2007). Second, and again contrary to the 2005 experiment, the experiment in 2009 contained a windfall endowment provided by the NGO involved in the experiment.[7]

Moving to the 2010 experiment, we can observe that even fewer chose to contribute anything compared to in the 2005 experiment. In 2010, the average contribution of labor was 0.4 labor days per household, which corresponds to about 32,000 dong based on an average daily labor wage of 80,000 dong.

[7] There are a few studies on the effects of windfall endowments in public good experiments. Cherry et al. (2005) and Clark (2002) find no evidence of a windfall-gain effect on contributions, while Kroll et al. (2007) find significant differences in a public good experiment with heterogeneous endowment.

3.2 Raw contribution correlations between the experiments

As described above, we observe the contributions in each of the experiments at the household level. As a first step, we therefore analyze the simple pair-wise correlations between the three experiments. Remember that we have three observations of contributions to the bridge for each household. We present correlation coefficients for the whole sample and for the restricted sample of households that were able to contribute in 2010.We set the contribution of those who were not asked to make labor contributions to zero when we calculate the correlations for the whole sample.Table 4 presents the pair-wise correlation coefficients.

Table 4. Correlation coefficients, contributions in the experiments

	Whole sample (N = 200)		
	Contribution 2005	Contribution 2009	Contribution 2010
Contribution 2005	1.00		
Contribution 2009	0.30***	1.00	
Contribution 2010	0.41***	0.19***	1.00
	Restricted sample (N = 163)		
	Contribution 2005	Contribution 2009	Contribution 2010
Contribution 2005	1.00		
Contribution 2009	0.31***	1.00	
Contribution 2010	0.41***	0.23***	1.00

*, **, and *** denote that the coefficient is statistically significant at the 10%, 5%, and 1% levels, respectively.

Despite the large differences in contributions, including in the size of the fraction who did not contribute anything, the correlation coefficients between the three experiments are substantial and in all cases statistically significant at the one percent level. The correlation coefficients are larger the farther apart in time the experiments are, i.e., the coefficient is the largest between 2005 and 2010 and the smallest between 2009 and 2010,although the latter coefficient increases somewhat if we only include households that were able to contribute labor in 2010. Moral licensing and moral cleansing are possible explanations to this pattern, suggesting, respectively, that those who contributed a lot in 2009 for this reason felt less obliged to contribute much in 2010, whereas those who did not contribute anything or contributed very little in 2009felt obliged to contribute more in 2010. In addition, the experiments in 2009 and 2010 concerned the same concrete bridge, while the one in 2005 concerned the wooden bridge.

3.3 Econometric analysis

Although the strong positive correlation coefficients obtained are interesting per se, one should be hesitant to interpret them as clear evidence of stability of social preferences. Indeed, there are several possible interpretations behind the positive correlations reported above. For example, suppose that there is actually no difference in prosocial preferences among the households, but that the households who use the bridge the most are also willing to contribute the most. Since the households are the same in all experiments, we would obtain a positive correlation between contributions in the three experiments even if there were no differences among the households in terms of underlying social preferences.

One way to deal with this problem is to use regression techniques in order to correct for possible explanatory variables that can be assumed to vary among the households but that at the same time are presumably independent of underlying differences in social preferences. The most obvious variable here is the extent of the use of the bridge.

In this section, we therefore deal with such potential problems by correcting for explanatory variables by means of regression analysis. More specifically, we use multivariate tobit regressions since we have non-negligible shares of subjects who either contribute the full amount or do not contribute at all; hence, we use truncations at both zero and the full amount (except for the 2005 experiment when there was no upper limit). Using a multivariate model we estimate the correlation coefficients of the error terms for each experiment. These error terms are assumed to reflect the part of social preferences that cannot be explained by our explanatory variables used in the regressions.Moreover, simple correlations do not take into account that there were different treatments in the experiment in 2009. In order to deal with these issues,we estimate a multivariate tobit model where three separate equations are estimated simultaneously, allowing for a correlation between the error terms of each of the equations, and the dependent variables contributions are censored.

We present three sets of regressions: In the first set we use no explanatory variables except for an intercept. In the second set we use only variables reflecting the use of the bridge, since these variables presumably vary among the households and at the same time are independent of underlying differences in social preferences. Finally we present a third set, which includes all relevant explanatory variables. In this last set, we thus face the risk of "over-compensation" in the sense that there may exist variables, such as age or income, whichare correlated with true underlying social preferences. For example, suppose that all

variation in social preferences is determined by gender. If we then correct for gender in the regressions, we will find that there is no stability of social preferences over time, even though there may perfectly well exist a certain degree of stability in reality (through gender). Yet, as is the case when not including any explanatory variables, it constitutes a natural benchmark case.

Here we focus mainly on the sample of households that had the possibility to contribute labor in 2010. However, we also report the results based on the full sample, where we have hence set the contribution of labor to zero in 2010 for those who were not asked to contribute. As can be observed, the results are almost the same.[8]Table 5 presents the resultsfor our three sets of multivariate tobit regressions for each experiment separately.In the main text we report the estimated correlation coefficients only, since this of main interest. In the Appendix we report the coefficient estimates for the two models including covariates for the restricted sample.[9] As seen in Table 5, the pair-wise correlation coefficients are consistently positive, substantial, and statistically significant. Consequently, even when controlling for a number of observable differences among households and the treatment effects, there are strong correlations in behavior between the three experiments.

[8] We have also estimated a bivariate tobit model where we only include the monetary contributions in 2005 and 2009 based on the full sample of 200 subjects. The results do not differ in any substantial way compared with what we will present in the main text here and are thus not reported, yet are available upon request.

[9]Few of the household characteristics have a significant impact on the contributions in any of the experiments. Furthermore, there is no consistent pattern across the three experiments. The contributions in 2005 are positively correlated with the size of the land and with whether any household member is a member of the communist party. The contributions in 2009 are only positively correlated with the use of the bridge. In addition, some of the treatment dummy variables, not reported here, are statistically significant. The contributions in 2010 are positively correlated with the size of the land, membership in local associations, and use of the bridge and negatively correlated with age of the household head.

Table 5. Estimated pair-wise correlation coefficients between the error terms from multivariate tobit regressions (number of draws = 200), dependent variables are contributions in the three experiments.

	No variables (except intercept)			Only use-the-bridge variables			All variables		
	2005	2009	2010	2005	2009	2010	2005	2009	2010
Treatment dummy variables	No	No	No	No	Included	No	No	Included	No
Experimentalist dummy variables	No	No	No	No	Included	No	No	Included	No
Socio-economic variables	No	No	No	No	No	No	Yes	Yes	Yes
				Restricted sample (N = 163)					
2005	1			1			1		
2009	0.29(0.08)***	1		0.26 (0.09)***	1		0.21 (0.09)**	1	
2010	0.50(0.08)***	0.31(0.09)***	1	0.47 (0.08)***	0.27 (0.10)***	1	0.42 (0.09)***	0.21 (0.10)**	1
LR test of independence	45.389			35.181			24.169		
p-value	0.000			0.000			0.000		
				Whole sample (N = 200)					
2005	1			1			1		
2009	0.30(0.07)***	1		0.27 (0.08)***	1		0.22 (0.08)**	1	
2010	0.51(0.07)***	0.27(0.09)***	1	0.48 (0.08)***	0.25 (0.09)***	1	0.44 (0.09)***	0.19 (0.10)**	1
LR test of independence	50.439			40.487			27.759		
p-value	0.000			0.000			0.000		

The relative sizes of these coefficients follow expectations in that they are generally the largest when we do not correct for any variables and the smallest when we include the full set of variables. Yet, the differences between when we correct for the use-of-the-bridge variables and when we do not are small. In each set of correlation coefficients, we can also observe that the size is the largest for the experiments where the time distance is the largest, i.e., between the 2005 and the 2010 experiments. These large coefficients are interesting also from the perspective that the units of contributions are very different, i.e., contributed money versus contributed labor time. One possible explanation, when only reflecting on this finding, is that this pattern is due to moral licensing or moral cleansing. Yet, when reflecting over the very similar correlation coefficients between 2005 and 2009 as between 2009 and 2010, despite the large difference in time distance, this explanation appears not to be the major one. Rather, it seems that a time difference of about seven months – the time between the 2009 and the 2010 experiments – may be sufficient to avoid a great deal of moral licensing and moral cleansing effects. Overall, the results support the idea that a substantial part of observed social preferences are stable over time. The results are also broadly consistent, although not directly comparable, with the recent finding of Cesarini et al. (2009), who use twin studies combined with modified dictator experiments in order to determine the extent to which giving is heritable; their best point estimate suggests that genes explain about 20% of the variation among subjects, whereas we find that the correlation coefficients between the error terms in our regressions vary from 0.26 to 0.47, for the case where we correct for the use-of-the-bridge variables, and are all highly significant.

4. Discussion and Conclusions

Using a combination of two natural experiments and a field experiment,we have compared voluntary contributions to a public good, a bridge in rural Vietnam, in a sample consisting of 200 households in a village over a 5 year period. By using a relatively long period, we have been able to avoid the potentially confounding factor due to moral licensing and moral cleansing when measuring the extent of prosocial stability over time. Our preferred specification, the one with only variables for the extent of use of the bridge, suggests that the correlation coefficients between the error terms, reflecting prosocial preferences, for the different experiments in the regression range from 0.26 to 0.47 and are statistically significant. The results suggest that prosocial preferences are at least partly stable over long periods of time.

Are these correlation coefficients large? We argue that they are, although they are clearly far from unity. Indeed, even if social preferences would be completely constant over time, we would observe correlation coefficients well below one. To see this, consider a population divided equally intotwo types only, selfish and altruistic ones. The altruistic type gives to a charity 20% of the times an opportunity is given, whereas the selfish type never gives anything. Suppose also for simplicity that there is only one type of charity (where we can normalize the contribution possibility to unity). Consider now two charities in a sufficiently long period such that we can ignore moral licensing and moral cleansing effects, and that hence the probability that the altruistic type will give is 20% on each occasion, independently of whether the individual contributed on the previous occasion or not. What correlation coefficients between the contributions to these two charities would arise?

From the definition of the correlation coefficient we have that $\rho = \frac{\text{cov}(x_1, x_2)}{\text{std}(x_1)\text{std}(x_2)} = \frac{E(x_1 x_2) - E(x_1)E(x_2)}{\text{std}(x_1)\text{std}(x_2)} = \frac{0.02 - 0.01}{0.09} \approx 0.11$, where x_i is contribution to charity i.[10] Thus, although we have here a case where the underlying social preferences are completely fixed, the correlation coefficient between the charity contributions is as low as 0.11. The reason for this relatively low value is of course that also the altruistic type often gives zero. In this perspective, the correlation coefficients obtained here are clearly substantial, although we cannot provide a very precise answer to the question of how stable social preferences are over time.

Let us end with some caveats: As is often the case with natural experiments as well as field experiments, the experimental control is far from perfect. Moreover, we have socio-economic data only for one of the years (2005) and have hence been forced in the regressions to implicitly assume that these relative numbers are approximately fixed over the five-year period. Finally, the sample of 200 subjects is rather limited, even though it was limited by the number of households in the village. We encourage further experimental studies in the field in order to test the robustness of our findings.

[10] From our assumptions it follows that $E(x_1 x_2) = 0.5 \cdot 0.2 \cdot 0.2 = 0.02$, $E(x_1) = E(x_2) = 0.5 \cdot 0.2 = 0.1$, and $\text{std}(x_1)\text{std}(x_2) = \left(\text{std}(x_1)\right)^2 = \text{var}(x_1) = 0.1 \cdot 0.9^2 + 0.9 \cdot 0.1^2 = 0.09$.

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Appendix

Table A1. Marginal effects (standard errors) from multivariate tobit regressions; dependent variables are contributions in the three experiments. Number of observations = 163; number of draws = 200.

	Only use-the-bridge variables			All variables		
	2005	2009	2010	2005	2009	2010
Use the bridge everyday	30.6 (12.6)**	134.3 (29.6)***	0.55(0.19)***	25.4(12.4)**	131.0 (29.5)***	0.45 (0.17)***
Use the bridge around 1 -3 times a week	25.5 (15.4)*	93.6(35.9)***	0.48(0.23)**	18.2(15.1)	82.3(35.7)**	0.49 (0.20)**
Use the bridge around twice a month	-3.1(13.5)	63.7 (28.6)**	-0.05(0.22)	-4.0(13.2)	62.6 (28.3)**	-0.054 (0.19)
Use the bridgearound once a month	13.8(11.4)	21.0 (25.5)	-0.03 (0.18)	9.9(11.1)	23.3 (25.4)	0.008 (0.16)
Household size				-1.6 (2.9)	8.4 (6.6)	-0.007 (0.04)
Age				-0.04(0.39)	-0.40 (0.88)	-0.014 (0.01)**
Male				-7.5 (9.5)	10.3 (20.8)	-0.24(0.13)*
Education				5.1(5.7)	13.5 (13.3)	-0.11 (0.08)
Monthly income				-0.15 (0.33)	0.82 (0.77)	0.003(0.004)
Rice land				2.7(1.3)**	-0.15 (3.1)	0.043(0.02)**
Member of the communist party				24.4(14.0)*	31.7 (32.8)	0.21 (0.19)
Association				9.9(8.8)	30.8 (20.5)	0.22(0.12)*
Treatment dummy variables	No	Included	No	No	Included	No
Experimentalist dummy variables	No	Included	No	No	Included	No