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Windfall vs. Earned Money in the Laboratory: Do They Affect the Behavior of Men and Women Differently?

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Abstract

We experimentally investigate, using a dictator game, if the effects of windfall and earned endowments on behavior differ between men and women genders. In line with previous studies, we find that windfall endowments significantly increase the amount donated. The impact of moving from earned to windfall endowment on behavior is larger for females, yet the gender difference is statistically insignificant. Thus, we do not find evidence that the change in how the endowment is obtained in a laboratory experiment affects male and female behavior differently.

Key words: dictator game; experiment; earned endowment; gender; windfall gain

JEL classification: C91, C93, D64

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1. Introduction

A key component of laboratory experiments is that subjects are monetarily rewarded and that the rewards are linked to their actions. In most experiments, subjects receive an endowment as a windfall gain and then make their decisions using the endowment, while in some cases subjects have to earn their endowment to be used in the experiment. A reason for using earned endowment is that the origin of the endowment may alter behavior. Thus, earned endowment makes the endowment more likely to be considered as a part of the subject's wealth than a windfall gain, and therefore making it preferable to use in experiments. In experiments involving issues such as altruism, fairness, and pro-social behavior, it is possible that how the endowment is obtained affects subject behavior. Using dictator games, a number of studies suggest that subjects behave differently when the endowment is earned as compared to when receiving a windfall endowment. For example, Cherry et al. (2002) find that if the endowment has to be earned by the subject, it legitimizes the endowment and invokes a more selfish behavior compared to the case with a windfall endowment. Oxoby and Spraggon (2008) use an experimental design in which they endow the senders with the money earned by the receivers in a dictator game. In this case, they even find offers in excess of an equal split. Reinstein and Riener (2009a) disentangle endowment tangibility in terms of when the endowment money is made available and how it is obtained, and find that both matter in a dictator game with a charitable giving context. Moreover, they argue that the result of Cherry et al. (2002) might be largely driven by a cash payment prior to the distribution decision. Thus, subjects in dictator game experiments seem to consider earned money differently than windfall gains.[1]

[1] Behavioral difference yielded by windfall and earned endowments has also been found in the contexts of capital expenditure (Keasey and Moon, 1996) and auctions (Ackert et al., 2006). However, in public good game experiments, no significant effect of windfall gain on contribution levels has been found (e.g., Clark, 2002,

At the same time, there is evidence that women are more altruistic and contribute more than men in dictator games (see, e.g., Croson and Gneezy, 2009; Eckel and Grossman, 1998; Engel, 2010), and that women are even expected to give more or at least no less than men in a dictator game (Aguiar et al., 2009). Moreover, Saad and Gill (2001) examine the effect of recipient gender on allocation behavior in a modified dictator game and find that both men and women give more to women. Reinstein and Riener (2009b) conduct a two-stage dictator game to investigate how the first mover influences the second mover's donation by revealing the first mover's donation and gender, and find the female first movers are more influential than male first movers. In the psychological literature, it has been suggested that women's higher sensitivity to changes in experimental design and implementation is due to women being more sensitive to social cues, which might be implied in experimental conditions (see, e.g., Gilligan, 1982). In an overview paper on behavioral differences between genders in laboratory experiments, Croson and Gneezy (2009) argue that this is one potential explanation to differences found. Therefore, the more relevant question to laboratory experimental design is whether the gender difference in behavior is also present when the endowment is changed from a windfall gain to earned money. The objective of the present paper is to investigate gender differences in donations in a dictator game when the endowment is either earned or a windfall gain using a between sample design. In our dictator game experiment, we use a charitable organization as the recipient. We use a 2×2 experimental design, where the two dimensions are how the endowment is received (windfall or earned) and the gender of the subjects.

Our results provide evidence that the impact of changing the type of endowment is larger

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although Harrison, 2007, finds a significant effect when re-analyzing the same data; Cherry et al., 2005), and even a negative effect of windfall gain on contribution has been found (Spraggon and Oxoby, 2009). Nevertheless, the nature of a public good game is different from that of a dictator game, and Spraggon and Oxoby (2009) explain these differences in findings with what they call "anticipatory reciprocity".

for women, although the gender difference is statistically insignificant. The rest of the paper is organized as follows. Section 2 introduces the experimental design and Section 3 reports the experimental results. Section 4 concludes the findings.

2. Experimental design

The experiment was conducted in the fall of 2008 at Renmin University of China in Beijing. It consisted of four treatments using a 2×2 design with the dimensions being whether the endowment is earned or a windfall gain and the gender of the subjects. Table 1 depicts the experimental design

<Table 1 to be here>

The subjects, 54 male and 54 female university students were recruited a few days before the experiment from a supermarket at campus by asking whether they would like to participate in an economic research study with a 10 Chinese yuan[2] show-up fee. Upon their arrival to the lab, the subjects who were randomly assigned to the windfall endowment treatments were given an endowment of 50 yuan in ten five-yuan bills. The subjects who were in the earned endowment treatments were asked to answer a lengthy survey to earn the same endowment before proceeding.[3]

In both treatments, after the subject had received the money, the experimenter presented the opportunity to donate to the China Foundation for Poverty Alleviation[4] using the money they had received. The experimenter explained how the money would be used if donated. In

[2] At the time of the experiment, 1 US dollar = 6.85 Chinese yuan.

[3] They were asked to answer a survey lasting 20 minutes before receiving compensation of 50 yuan. No one refused to answer.

[4] This is a well-known and the largest charitable organization for poverty alleviation in China.

order to ensure that the decisions were made anonymously, we put up a booth in which the subjects could make their decisions privately. The subjects were asked to leave any donation in a supplied envelope and keep the remaining money, then seal and put the envelope in an official donation box from the foundation. Finally, they were asked to collect the show-up fee and leave. In Table 1, we summarize the experimental design.

3. Results

First we present the descriptive statistics of the donations in all treatments in Table 2. The mean donation and the share of subjects donating the whole endowment of 50 yuan vary considerably across treatments.[5] In the windfall treatments, the mean donation is 39.3 yuan for females and 35.0 yuan for males, while the mean donation in the earned treatments is 12.1 yuan for females and 16.9 yuan for males. The mean donations in our experiment are relatively high compared to other similar dictator games. One explanation to this could be that China had just experienced several large natural disasters, which has resulted in a general increase in charitable giving.[6]

<Table 2 to be here>

Table 3 reports the statistical test results of the effects of earned endowment for females, males, and the entire sample. We conduct a t-test for equal mean as well as a Wilcoxon rank-sum test for equal distribution of donated amount across treatments. We can reject the hypotheses of no difference in donations between the windfall treatments and the earned

[5] Since we did not limit the individual donations to 50, we have two subjects who donated more than 50 yuan. We truncate these donations at 50 yuan.

[6] In 2008, the total amount of individual charitable donation was more than 13 times the amount in 2007 (Chinese Ministry of Civil Affairs, 2008, 2009).

treatments for females, males and the entire sample, respectively, based both on the t-test and Wilcoxon rank-sum test.[7] The mean donation is significantly lower when subjects earned their endowment. Consequently, our results are in line with previous findings that earned endowments results in substantially lower donations in dictator games. This holds for both men and women.

<Table 3 to be here>

However, on average, females donate more than males in windfall treatments, while females donate less than males in the earned treatment. Therefore, the remaining question is whether or not males and females are affected differently when moving from earned to windfall endowments. To answer this question, we estimate an OLS model where the donation is the dependent variable

$$\text{Donation} = \alpha + \beta_1 \text{Female} \times \text{Windfall} + \beta_2 \text{Male} \times \text{Windfall} + \beta_3 \text{Female} \times \text{Earned} + \varepsilon. \quad (1)$$

The reference category in the regression is the treatment with male subjects and earned endowments. We can examine whether there are differences between the genders by testing the following two hypotheses H_0: $\beta_1 - \beta_2 = 0$ and H_0: $\beta_3 = 0$ for the windfall treatments and earned treatments, respectively. We then test the hypothesis that the difference in donation between the windfall and earned treatments is the same for males and females. The coefficient β_2 and $\beta_1 - \beta_3$ show the differences in donations between windfall and earned treatments for males and females, respectively. Thus, the explicit null hypothesis tested is: H_0: $\beta_2 = \beta_1 - \beta_3$. Table 4 reports the regression results and statistical test results.

[7] We further test the hypothesis of equal shares of zero-yuan and 50-yuan donations and find that the main difference between the windfall and earned treatments for both males and females is the share of subjects donating the whole endowment, which is significantly higher in the windfall treatments for both females (p-value < 0.001) and males (p-value < 0.001) using proportional tests.

<Table 4 to be here>

The size and significance of the coefficients confirm, as expected, the non-parametric test results in Table 3: there are large and significant differences between the windfall and earned treatments. However, within each type of treatments there are no significant differences between males and females, although the size of the differences is non-negligible ($\beta_1 - \beta_2 = 4.26$ for windfall treatments and $\beta_3 = -4.81$ for earned treatments). The difference between males and females with respect to the effects of moving from windfall to earned endowment is also non-negligible in size ($\beta_2 - (\beta_1 - \beta_3) = 8.34$), but we cannot reject the null hypothesis of no difference.[8]

4. Conclusions

This study has examined the influence of how the endowment is obtained on donations in a dictator game with a special focus on a potential gender difference. In line with previous studies (e.g., Cherry et al., 2002; Reinstein and Riener, 2009a), we find that a windfall endowment results in significantly higher donations than if the endowment is earned. However, with respect to both within windfall or earned treatments and across windfall and earned treatments, we find that the differences in donation between males and females are insignificant, although the sizes of the differences are non-negligible. Our main finding is that there is a sizeable gender difference in donations related to how the endowment is obtained, although in statistical terms we cannot reject that windfall and earned endowments affect men and women in the same way. Consequently, we think it is premature to rule out that there is indeed a difference in effects. This means that any comparison between the genders might be

[8] We also estimate a tobit model with the same model specification, and the results are similar to those of the OLS model.

context dependent, and we should therefore think carefully about the context when designing studies aiming at experimentally investigating gender differences.

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Tables

Table 1. Summary of the experimental design

	Windfall endowment	Earned endowment
Female	Treament 1	Treament 3
Male	Treament 2	Treament 4

Table 2. Description of donation behavior for each treatment

Treatment	Windfall female	Windfall male	Earned female	Earned male
Mean	39.26	35.00	12.11	16.93
Standard Deviation	17.30	18.34	13.40	15.70
Share of zero donations	0.0%	0.0%	7.4%	3.7%
Share of 50 donations	66.7%	55.6%	7.4%	7.4%
Number of observations	27	27	27	27
Mean (if donations are above zero and below 50)	17.78	16.25	9.87	14.88
Standard deviation (if donations are above zero and below 50)	13.94	10.25	7.94	12.92
Number of observations	9	12	23	24

Table 3. Tests of differences between windfall and earned endowment treatments

	Windfall vs. Earned		
	Female	Male	Entire sample
Differences in mean	27.15	18.07	22.61
t-test (p-value)	<0.001	<0.001	<0.001
Rank sum test (p-value)	<0.001	<0.001	<0.001

Table 4. OLS regression results of donation amount and tests of gender effects

Variables	Description	Coef.
Constant	-	16.93*** -5.40
Female×Windfall endowment	=1 if the subject is male	22.33*** -5.04
Male×Windfall endowment	=1 if the endowment is earned	18.07*** -4.08
Female×Earned endowment	-	-4.81 -1.09
No. of obs.		108
Adjusted/Pseudo R-squared		0.34
Gender differences for each treatment		**P-value**
H_0: No gender difference in windfall endowment treatments (β_1-β_2=0)		0.34
H_0: No gender difference in earned endowment treatments (β_3=0)		0.28
Gender differences between treatments		**P-value**
H_0: No gender difference between windfall and earned endowment treatments (β_2=β_1−β_3)		0.15

Notes: 1. t-statistics in parentheses; 2. *** p<0.01, ** p<0.05, * p<0.1; 3. β_1, β_2, and β_3 are the coefficients of the first, second, and third independent variables of the OLS model, respectively.