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The Effect of Fiscal Transparency on the Provision of a Public Good: An Experimental Analysis**

Abstract

This paper presents a model and experimental results of a public good game to explore the effects of fiscal transparency on the provision of a public good. Two types of fiscal transparency are explored. The first is the transparency of the decision-making process and the second is the transparency of government spending. To answer this question a model for the public good "city district quality" with heterogeneous agents is set up and the design and the results of the experiment are presented.

Keywords: public good game, experiment, voting, fiscal illusion, endogenous taxation
(JEL: H41, C91, D72)

Introduction

Public infrastructure has a wide variety of effects on property values, retail sales, rents and different kinds of economic activity. This economic activity is not only influenced by the existence of public infrastructure but also by the quality of the public infrastructure (Garcia, Montolio & Raya, 2010; Haughwout, 2002).

Public infrastructure is typically owned by the state and financed through taxes and levies to avoid the free-rider problem. This method of financing leads in theory to a crowding-out of voluntary private investments in the public good (Andreoni, 1988; Bergstrom et al., 1986). Experimental studies have shown that public financing of a public good is not a total crowd-out. Instead, they reveal a wide variety of outcomes in the levels of crowding-out and some even show crowding-in (Andreoni & Payne, 2011; Gronberg et al., 2012; Kingma, 1989; Manzoor & Straub, 2005).

One source of crowding-out can be fiscal transparency. Eckel et al. (2005) showed that fiscal transparency can have an adverse effect on the subject's private contribution to a charity. In the case of fiscal transparency, in which the subjects knew they were taxed, Eckel et al. (2005) found nearly total crowding-out. In the case of fiscal illusion, no crowding-out could be observed.

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Even if the subjects are aware of being taxed, they still can be subject to varying degrees of fiscal transparency. The subject could be unaware of the reasoning for the implementation of the tax, how transparent the government is in spending the money or the decision-making process that leads to its implementation. This paper explores transparency of the decision-making process and how transparent the money is spent by a municipality. The subjects in the experiment will be confronted with a situation in which a municipality imposes a levy to finance the local public good "city district quality". In the case of a non-transparent government, the levy is imposed exogenously without providing any information about the decision-making process. In the case of a transparent government, the subjects are involved in the decision-making process by voting on the tax. The vote in question is not on the amount levied from the subjects. It's only a vote on the implementation of the proposed levy and a simple framing device. In theory, it shouldn't matter if the levy is imposed exogenously or endogenously when the amount levied is the same. But it's feasible that being included in the decision-making process has positive effects on the happiness of a subject in an experiment and could result in higher investments in a public good (Frey & Stutzer, 2002). Stutter and Weck-Hannemann (2004) found the effect in the opposite direction. If the majority couldn't agree on a beneficial tax for all participants, voluntary investment in the public good fell by 15 % below the Nash-Solution compared to a situation in which the majority approved the tax.

Even if voting on taxes is uncommon, there are several examples in reality. Such forms of direct democracy can be observed in Switzerland. Also in recent history, the concept of a business improvement district has been used to increase the funding for the public good "city district quality". A business improvement district is a private organization which charges a levy on local businesses. The difference between a normal levy and the one paid to the business improvement district is the occurrence of a vote on the implementation of a levy (Hecker, 2010).

Model

This section sets up a model of a residential district. Two types of agents, who use and finance the public good "city district quality", exist. The municipality owns the public infrastructure and provides basic funding for the public good. The other type is heterogeneous landlords that rent out apartments. The amount of rent a landlord can charge depends on the public good "city district quality". Higher quality means more parking spaces, a good connection to other city districts via public transport or more cultural offerings for its residents. The higher the quality of the public good, the more people are willing to pay to live there.

The landlords are a heterogeneous group with two types of landlords. The first group are type r landlords. They mostly own apartments subsidized by the govern-

ment with a fixed rent. They can't increase the rent of their apartments if the quality of the city district is increased.

The other group of landlords are called type$w$. They mostly own normal apartments. If the demand for their apartments increases due to an increase in the quality of the public good, they can charge a higher rent. In the residential district are n^r type r and n^w type w landlords and the total number of landlords (n) is:

$$n = n^r + n^w \tag{1}$$

The income (π) of a landlord depends therefore on the rent they can charge for normal and subsidized apartments. The income generated from rents of subsidized apartments are called R and of normal apartments W. The income R is different for the two types of landlords but the income is constant and independent of the city district quality (G). In contrast, W is a function which depends on$G$. The income of both types of landlords are:

$$\pi^r = R^r + W^r \tag{2}$$

$$\pi^w = R^w + W^w \tag{3}$$

The following applies because of heterogeneity: $R^r > R^w$ and$W^r < W^w$.

The quality of the public good depends on the funding by the municipality and private contributions (g) by the landlords. They can invest in the quality of the city district. The quality of the public good depends on the sum of each investment factor:

$$G = \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i}\right) \tag{4}$$

The following applies for the parameters who regulate the impact of investment on the public good city district quality: $0 < c_1,\ 0 < a < 1$ and $0 < c_2 < 1$.

The municipality doesn't have an investment factor instead its funding is represented in each investment factor in the way that the factor is greater than zero even when private investment is equal to zero.

$$G = \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 0}\right) > 0 \tag{5}$$

This function was chosen for two reasons. First, to incorporate the basic funding of the municipality. Second, to represent the properties of the public good "city district quality". The quality of a city district depends on the amount of money that is invested in it, but also how it's invested. One big investment in one small part on the district has a different effect then investing the same amount in the district as a whole. For example, the quality of the district increases more if all potholes in all streets are repaired in comparison to renovating one street completely. The same amount invested in one factor alone increases G by less than if the amount would have been split and invested overall investment factors.

Each landlord has a basic income b resulting from renting out all their normal apartments. The basic income is then modified by the city district quality. The basic income of a type r landlord is smaller than the basic income of a type w landlord ($b^r < b^w$). W^r and W^w are:

$$W^r = b^r G \tag{6}$$

$$W^w = b^w G \tag{7}$$

And the total incomes are:

$$\pi^r = R^r + b^r G = R^r + b^r \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i}\right) \tag{8}$$

$$\pi^w = R^w + b^w \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i}\right) \tag{9}$$

Each of the n landlords is the sole owner of their apartments; they receive the total income and have a budgetσ. Each landlord can maximize its utility by using his budget for consumption (x) or to invest it in the city district quality to increase his income. Each landlord is subject to the same budget constraint:

$$\sigma = x + g \tag{10}$$

Since there are two types of landlords, there are two different utility functions (U):

$$U^r = x + \pi^r = \ \sigma - g + \pi^r \tag{11}$$

$$U^w = \ \sigma - g + \pi^w \tag{12}$$

Inserting the respective income yields:

$$U^r = \ \sigma - g + R^r + b^r \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i}\right) \tag{13}$$

$$U^w = \ \sigma - g + R^w + b^w \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i}\right) \tag{14}$$

And the utility-maximizing investment decision $\left(g_{opt}\right)$ of a landlord is:

$$g^r_{opt} = \frac{log\left(-\frac{1}{b^r c_1 c_2 ln(a)}\right)}{c_2 log(a)} \tag{15}$$

$$g^w_{opt} = \ \frac{log\left(-\frac{1}{b^w c_1 c_2 ln(a)}\right)}{c_2 log(a)} \tag{16}$$

If the optimal investment (g_{opt}) is greater than the budget (σ) of a landlord, the optimal investment under this constraint is:

$$g^r_{opt} = \sigma \tag{17}$$

$$g^w_{opt} = \sigma \tag{18}$$

A levy (t) constraints the budget of a landlord and is modelled as a forced investment into the public good:

$$\sigma = x + g + t \tag{19}$$

$$G = \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i + c_2 t}\right) \tag{20}$$

Which yields a new utility function:

$$U^r = \sigma - g + R^r + b^r \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i + c_2 t}\right) \tag{21}$$

$$U^w = \sigma - g + R^w + b^w \sum_{i=1}^{n} \left(1 - c_1 a^{c_2 g_i + c_2 t}\right) \tag{22}$$

The optimal investment doesn't change if $g_{opt} \geq t$. In the case of $g_{opt} < t$ the optimal investment is:

$$g^r_{opt} = t \tag{23}$$

$$g^w_{opt} = t \tag{24}$$

Experimental Design and Parametrization

The objective of the experiment is to compare different degrees of fiscal transparency. The municipality can be transparent about how it spends the levy, it can be transparent in its decision-making process or both. This yields five different treatments.

Table 1. Treatment Structure

Treatment	1	2	3	4	5
Levy	no	yes/no	yes	yes/no	yes
Vote	no	yes	no	yes	no
Spending	-	transparent	transparent	non-transparent	non-transparent

The experiment is a between-subject and one-shot design. Every participant only takes part in one of the treatments. The experiment uses the landlord framing of the model and in every treatment, a participant is part of a society that consisted of two type W and two type R landlords. Treatment 1, 3 and 5 only have one stage namely the investment decision while treatment 2 and 4 have two stages. In the first stage, the subjects vote on the implementation of the levy. Each vote can have two results. The landlords can accept the proposed levy, which will be called the yes-result or they can reject the levy, which will be called the no-result. If 50 % of a society votes "no" the levy is rejected. The second stage is the investment stage. The investment decisions in treatment 2 and 4 are obtained using the strategy method. After casting their vote, they have to decide to invest in the public good under the premise that the vote result is "yes" and under the premise that the vote result is "no" without knowing the actual result (Brandts & Charness, 2011; Selten, 1967). The order of investment decisions (no- and yes-result) is randomized.

The voting process presents a unique challenge for the design. The two different types of landlords need to be designed in such a way that the two results (no and yes) are possible. This means it should be optimal for the type r landlord to reject any proposed levy to be a reliable no-vote $\left(g_{opt}^{r} = 0\right)$ and vice versa the type w landlord needs to be a reliable yes-vote$\left(g_{opt}^{w} \geq t\right)$. In this case, forcing all landlords to pay the levy has a negative effect on the utility of type r and a positive effect on the utility of type w landlords. The following parametrization is chosen to ensure this.

Table 2. Parametrization

Parameter	α	c_1	c_2	t	R^r	R^w	b^r	b^w	δ
	0,52	0.9	0.5	5	45	0	0.25	35	15

This parametrization and the strategy method allow the expansion of the between-subject design with a within-subject analysis for type W participants in treatment 2 and 4. The Nash Solution with or without a levy is identical for the yes-result and no-result for w landlords. Theoretically, a vote on a levy shouldn't make a difference in this case.

Treatment 2, 3 differ from treatment 4, 5 in the degree of how transparent the municipality is in spending the levy. The difference is achieved by a simple change in how the levy is framed and displayed for the participant. The participants have to make their investment decision after they're informed about the levy and that the municipality will use the money to increase the quality of the city district. In all treatments with a levy the participant can invest between 0 and$\sigma - t = 10$, but there are two different ways to display this investment decision to the participant. In the case of the non-transparent municipality, the slider to adjust the invested amount on the computer screen shows the additional investment a participant can make (slider range is from 0 to 10). In the case of the transparent municipality

(slider range is from 5 to 15) the total amount is shown (see figure 1 and 2 in the appendix).

The experiment starts with an introduction to the scenario, followed by a test decision to offer the participants an opportunity to familiarize themselves with the investment screen. Afterwards, the participants are informed about their specific situation (treatment 1–5), make their investment decision and fill out a short questionnaire (gender, age, income and similar socio-demographic characteristics). The only part of the experiment that isn't performed on a PC is the vote on the levy. It is done using a paper ballot as it's still customary in Germany.

For all proposed hypotheses see Table A-1 and A-2 in the appendix.

Experiment Results

The experiment was conducted during the 2018 conference of the Association of North German housing companies[1] in Rostock, Germany. This makes every participant an expert in the chosen scenario. Participants either rent out apartments or work for a company which does this. 124 participants of the conference took part in the experiment. 62 % of participants were male and the average participant was 49 years old. They were paid 5€ for their participation and had a 10 % chance to get paid the result of their investment decision[2]. The average payout was 18€ and the experiment took on average 25 minutes to complete. Table 4 and 5 show the result of the experiment and table 6 shows all rejected null hypotheses (see Table A-3 in the appendix for all tests of all proposed hypotheses).

Table 4. Investments in the Public Good by Type W Participants

Treatment	1	2		3	4		5
Votel	-	no	yes	-	no	yes	-
N	13	12	12	14	12	12	13
Nash	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Mean	7.54	6.67	6.83	7.07	4.92	7.67	9.85
Median	7.00	6.50	6.50	7.00	5.50	7.00	9.00
Std. Dev.	2.93	3.11	2.25	2.06	2.50	1.88	3.21
Minimum	3.00	2.00	5.00	5.00	0.00	5.00	6.00
Maximum	12.00	12.00	12.00	12.00	8.00	11.00	15.00

N: Number of participants in that treatment

1 Verband norddeutscher Wohnungsunternehmen (VNW).

2 All values during the experiment were increased by a factor of 1000. The experiment used 'monetary units' with an exchange rate of 1000 $MU = 1€$. In the case of the voting treatments 2 and 4 the participant was paid the result of their investment decision after the actual vote results were taken into account.

Vote: All participants in treatment 2 and 4 had to make two investment decisions. In one scenario they had to assume that the outcome of the vote was the no-result and in the other the yes-result.

Nash: Is the theoretical utility-maximizing investment decision if only whole-numbers can be invested.

Table 5. Investments in the Public Good by Type R Participants

Treatment	1	2		3	4		5
vote	-	no	yes	-	no	yes	-
N	11	12	12	12	12	12	13
Nash	0.00	0.00	5.00	5.00	0.00	5.00	5.00
Mean	4.09	3.58	6.42	6.83	4.00	7.67	7.92
Median	3.00	3.00	5.00	6.50	3.50	6.00	8.00
Std. Dev.	4.16	3.29	2.07	1.90	4.07	3.28	1.85
Minimum	0.00	0.00	5.00	5.00	0.00	5.00	5.00
Maximum	13.00	9.00	10.00	11.00	14.00	15.00	10.00

N: Number of participants in that treatment
Vote: All participants in treatment 2 and 4 had to make two investment decisions. In one scenario they had to assume that the outcome of the vote was the no-result and in the other the yes-result.
Nash: Is the theoretical utility-maximizing investment decision if only whole-numbers can be invested.

Table 6. Rejected Null Hypotheses

Null Hypothesis	Test	Sig.
The median of the investment in the public good of a ***R*** participant in treatment 1 is equal to the theoretical Nash solution (0.00).	Wilcoxon Signed Rank Test	.008
The median of the investment in the public good of a ***R*** participant in treatment 2 is equal to the theoretical Nash solution (0.00) if the assumed vote result is 'no'.	Wilcoxon Signed Rank Test	.008
The median of the investment in the public good of a ***R*** participant in treatment 2 is equal to the theoretical Nash solution (5.00) if the assumed vote result is 'yes'.	Wilcoxon Signed Rank Test	.042
The median of the investment in the public good of a ***R*** participant in treatment 3 is equal to the theoretical Nash solution (5.00).	Wilcoxon Signed Rank Test	.011
The median of the investment in the public good of a ***W*** participant in treatment 4 is equal to the theoretical Nash solution (7.00) if the assumed vote result is 'no'.	Wilcoxon Signed Rank Test	.021
The median of the investment in the public good of a ***R*** participant in treatment 4 is equal to the theoretical Nash solution (0.00) if the assumed vote result is 'no'.	Wilcoxon Signed Rank Test	.008

Null Hypothesis	Test	Sig.
The median of the investment in the public good of a ***R*** participant in treatment 4 is equal to the theoretical Nash solution (5.00) if the assumed vote result is 'yes'.	Wilcoxon Signed Rank Test	.024
The median of the investment in the public good of a ***W*** participant in treatment 5 is equal to the theoretical Nash solution (7.00).	Wilcoxon Signed Rank Test	.009
The median of the investment in the public good of a ***R*** participant in treatment 5 is equal to the theoretical Nash solution (5.00).	Wilcoxon Signed Rank Test	.002
The distribution of investments by participants of the type ***W*** in the public good are the same across treatment 1 and 4 if the assumed vote result in treatment 4 is 'no'.	Mann-Whitney U Test	.040
The distribution of investments by participants of the type ***W*** in the public good are the same across treatment 3 and 5.	Mann-Whitney U Test	.014
The distribution of investments by participants of the type ***W*** in the public good in treatment 4 are the same for both assumed vote results.	Mann-Whitney U Test	.020

Sig.: All null hypotheses are rejected using a statistical significance level of 5 %.

Table 6 shows that all participants who took the role of a type ***R*** landlord invest significantly more in all treatments than the theoretical Nash solution even if a levy is implemented exogenously or endogenously. This behaviour to accept a monetary loss for a higher income of the society as a whole is also shown in the voting behaviour of type ***R*** participants. Two-thirds of them vote to implement a levy while only one type ***W*** deviates from the predicted behaviour and rejects a levy. Type ***W*** participants only deviate from the Nash solution in two situations. If they assume in treatment 4 that the levy is rejected, they accept a monetary loss to possibly punish the society as a whole by investing less than the individual rational solution. The other situation in which type ***W*** participants deviate from the Nash solution occurs in treatment 5. An exogenously imposed levy by non-transparent municipality results in a significant increase in investments. This is also the case if treatment 3 and 5 are compared with each other. The small change in how the investment slider is displayed leads to a significant increase in investments in treatment 5 compared to treatment 3.

If the no-result of treatment 4 is compared to treatment 1, we see a significant decrease in voluntary investments by type ***W*** participants, who would have benefited from the rejected levy. In this case, letting the public participate in the decision-making process has a negative effect on the quality of the inner city and it would have been more efficient for the municipality to do nothing or implement the levy exogenously. This could mean having a voice in the decision-making isn't the deciding factor, but having your voice heard is. This is also shown if the investments by type ***W*** participants for the no-result in treatments are compared to the yes-result

in treatment 4. If the participants assume a yes-result they invest significantly more than if they assume a no-result. This result is similar to the result obtained by Sutter and Weck-Hannemann (2004). The main difference is participants in their experiment didn't have to assume a no-result but experienced it. Additionally, no participant in the Sutter and Weck-Hannemann experiment would be hurt individually by a tax or levy. Type *R* participants show no significant change in their behaviour between treatments. This isn't surprising if their voting behaviour is taken into account. Two-thirds of them voted to implement a levy.

Conclusion

The goal of this paper was to design an experiment to test different types of fiscal transparency. To achieve that a theoretical model for a residential district with heterogeneous agents was set up and the public good was defined as the city district quality.

The next step included setting up a treatment structure, a parametrization for the model and presenting the results from the experiment. The results show that participants take the income of the whole society into account and invest in a public good even if they don't benefit directly from the investment. The results also show letting the public decide on implementing a levy can be risky for the government. If the levy is rejected, it can reduce voluntary investments below a comparable situation, in which the vote never occurred. Small changes in how a levy or tax is presented to a participant can have a huge impact on the behaviour of the participant. In this case, changing a simple slider from showing the total investment (levy + voluntary contribution) to the additional investment (voluntary contribution only) increases the investments in the public good significantly.

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Appendix

Figure 1. Presentation of the investment slider in the case of a transparent municipality (treatments 2 and 3)[3]

Figure 2. Presentation of the investment slider in the case of a non-transparent municipality (treatment 4 and 5)

3 The experiment was conducted in German and all displayed values were scaled by a factor of 1000. "Ihre Investition" shows the invested amount in bold and "Ihr Ergebnis" shows the amount in monetary units a participant would earn if they would invest the amount of the "Ihre Investition" row. The columns to the left and the right of the column in the middle show what would happen if the participant would move the slider one tick to the left or right.

Table A-1. Hypotheses About the Observations in Comparison to the Nash Solution

Hypothesis	
T1/W	The median of the investment in the public good of a W participant in treatment 1 is equal to the theoretical Nash solution (7.00).
T1/R	The median of the investment in the public good of a R participant in treatment 1 is equal to the theoretical Nash solution (0.00).
T2/W/n	The median of the investment in the public good of a W participant in treatment 2 is equal to the theoretical Nash solution (7.00) if the assumed vote result is 'no'.
T2/W/y	The median of the investment in the public good of a W participant in treatment 2 is equal to the theoretical Nash solution (7.00) if the assumed vote result is 'yes'.
T2/R/n	The median of the investment in the public good of a R participant in treatment 2 is equal to the theoretical Nash solution (0.00) if the assumed vote result is 'no'.
T2/R/y	The median of the investment in the public good of a R participant in treatment 2 is equal to the theoretical Nash solution (5.00) if the assumed vote result is 'yes'.
T3/W	The median of the investment in the public good of a W participant in treatment 3 is equal to the theoretical Nash solution (7.00).
T3/R	The median of the investment in the public good of a R participant in treatment 3 is equal to the theoretical Nash solution (5.00).
T4/W/n	The median of the investment in the public good of a W participant in treatment 4 is equal to the theoretical Nash solution (7.00) if the assumed vote result is 'no'.
T4/W/y	The median of the investment in the public good of a W participant in treatment 4 is equal to the theoretical Nash solution (7.00) if the assumed vote result is 'yes'.
T4/R/n	The median of the investment in the public good of a R participant in treatment 4 is equal to the theoretical Nash solution (0.00) if the assumed vote result is 'no'.
T4/R/y	The median of the investment in the public good of a R participant in treatment 4 is equal to the theoretical Nash solution (5.00) if the assumed vote result is 'yes'.
T5/W	The median of the investment in the public good of a W participant in treatment 5 is equal to the theoretical Nash solution (7.00).
T5/R	The median of the investment in the public good of a R participant in treatment 5 is equal to the theoretical Nash solution (5.00).

Table A-2. Hypotheses Regarding the Comparison of Treatments

Hypothesis	
T12/W	The distribution of investments by participants of the type W in the public good are the same across treatment 1 and 2 if the assumed vote result in treatment 2 is 'no'.
T12/R	The distribution of investments by participants of the type W in the public good are the same across treatment 1 and 2 if the assumed vote result in treatment 2 is 'no'.
T13/W	The distribution of investments by participants of the type W in the public good are the same across treatment 1 and 3.
T14/W	The distribution of investments by participants of the type W in the public good are the same across treatment 1 and 4 if the assumed vote result in treatment 4 is 'no'.
T14/R	The distribution of investments by participants of the type W in the public good are the same across treatment 1 and 4 if the assumed vote result in treatment 4 is 'no'.
T15/W	The distribution of investments by participants of the type W in the public good are the same across treatment 1 and 5.
T22/W	The distribution of investments by participants of the type W in the public good in treatment 2 are the same for both assumed vote results.
T23/W	The distribution of investments by participants of the type W in the public good are the same across treatment 2 and 3 if the assumed vote result in treatment 2 is 'yes'.
T23/R	The distribution of investments by participants of the type R in the public good are the same across treatment 2 and 3 if the assumed vote result in treatment 2 is 'yes'.
T24/W/n	The distribution of investments by participants of the type W in the public good are the same across treatment 2 and 4 if the assumed vote result is 'no'.
T24/W/y	The distribution of investments by participants of the type W in the public good are the same across treatment 2 and 4 if the assumed vote result is 'yes'.
T24/R/n	The distribution of investments by participants of the type R in the public good are the same across treatment 2 and 4 if the assumed vote result is 'no'.
T24/R/y	The distribution of investments by participants of the type R in the public good are the same across treatment 2 and 4 if the assumed vote result is 'yes'.
T35/W	The distribution of investments by participants of the type W in the public good are the same across treatment 3 and 5.
T35/R	The distribution of investments by participants of the type R in the public good are the same across treatment 3 and 5.
T44/W	The distribution of investments by participants of the type W in the public good in treatment 4 are the same for both assumed vote results.
T45/W	The distribution of investments by participants of the type W in the public good are the same across treatment 4 and 5 if the assumed vote result in treatment 4 is 'yes'.
T45/R	The distribution of investments by participants of the type R in the public good are the same across treatment 4 and 5 if the assumed vote result in treatment 4 is 'yes'.

Table A-3. Test Results of All Hypotheses

Hypothesis	Test	Sig.	Decision
T1/W	One-sample Wilcoxon Signed Rank Test	.438	Retain the null hypothesis.
T1/R	One-sample Wilcoxon Signed Rank Test	**.008**	**Reject the null hypothesis.**
T2/W/n	One-sample Wilcoxon Signed Rank Test	.720	Retain the null hypothesis.
T2/W/y	One-sample Wilcoxon Signed Rank Test	.629	Retain the null hypothesis.
T2/R/n	One-sample Wilcoxon Signed Rank Test	**.008**	**Reject the null hypothesis.**
T2/R/y	One-sample Wilcoxon Signed Rank Test	**.042**	**Reject the null hypothesis.**
T3/W	One-sample Wilcoxon Signed Rank Test	.791	Retain the null hypothesis.
T3/R	One-sample Wilcoxon Signed Rank Test	**.011**	**Reject the null hypothesis.**
T4/W/n	One-sample Wilcoxon Signed Rank Test	**.021**	**Reject the null hypothesis.**
T4/W/y	One-sample Wilcoxon Signed Rank Test	.202	Retain the null hypothesis.
T4/R/n	One-sample Wilcoxon Signed Rank Test	**.008**	**Reject the null hypothesis.**
T4/R/y	One-sample Wilcoxon Signed Rank Test	**.024**	**Reject the null hypothesis.**
T5/W	One-sample Wilcoxon Signed Rank Test	**.009**	**Reject the null hypothesis.**
T5/R	One-sample Wilcoxon Signed Rank Test	**.002**	**Reject the null hypothesis.**
T12/W	Mann-Whitney U Test	.503	Retain the null hypothesis.
T12/R	Mann-Whitney U Test	.833	Retain the null hypothesis.
T13/W	Mann-Whitney U Test	.574	Retain the null hypothesis.
T14/W	Mann-Whitney U Test	**.040**	**Reject the null hypothesis.**
T14/R	Mann-Whitney U Test	1.00	Retain the null hypothesis.
T15/W	Mann-Whitney U Test	.091	Retain the null hypothesis.
T22/W	Mann-Whitney U Test	1.00	Retain the null hypothesis.
T23/W	Mann-Whitney U Test	.667	Retain the null hypothesis.
T23/R	Mann-Whitney U Test	.443	Retain the null hypothesis.
T24/W/n	Mann-Whitney U Test	.219	Retain the null hypothesis.
T24/W/y	Mann-Whitney U Test	.242	Retain the null hypothesis.
T24/R/n	Mann-Whitney U Test	.932	Retain the null hypothesis.
T24/R/y	Mann-Whitney U Test	.443	Retain the null hypothesis.
T35/W	Mann-Whitney U Test	**.014**	**Reject the null hypothesis.**
T35/R	Mann-Whitney U Test	.152	Retain the null hypothesis.
T44/W	Mann-Whitney U Test	**.020**	**Reject the null hypothesis.**
T45/W	Mann-Whitney U Test	.087	Retain the null hypothesis.
T45/R	Mann-Whitney U Test	.503	Retain the null hypothesis.