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### Conference Paper

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# **An Online Experiment on Cooperation and Groupishness across Urban Districts**

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**Abstract:** We present experimental evidence that illuminates the trade-off between efficiency considerations and social identity concerns in an inter-city multilevel public goods game. In total, 616 inhabitants of Heidelberg and Mannheim take part in an online experiment in which they can allocate an initial endowment between a private account, an excludable (local) public good, and a non-excludable (regional) public good. We vary the efficiency of the two public goods and find that participants substitute contributions away from the local to the regional public good if the latter is more efficient. To investigate the role of social identity considerations we compare a condition in which the group composition is unknown to a decision in which participants are informed that they share the local public good with three other participants from their own neighborhood. We do not find that a salient common social affiliation affects participants' behavior per se. If the common local affiliation is revealed through a label, only citizens perceiving a strong local identification adjust their contribution behavior and contribute more to the excludable local public good. Revealing the local affiliation becomes even more effective in a priming condition when participants are reminded of their common local affiliation before they indicate their contribution decision.

**Keywords:** Experiment, excludable public good, non-excludable public good, social identity

**JEL:** C9, D7, H4

# 1. Introduction

Solving social dilemma situations requires voluntary cooperation at different scales. Some of these dilemmas, like the absorption capacity of the atmosphere shaping the global climate, can be considered as fully non-rival and non-excludable, in line with the formal criteria of a global public good. In contrast, many other public goods like water quality, infrastructure or urban parks mainly offer local benefits and are thus confined in their scope. As a consequence, decision makers are often asked to divide their scarce resources among multiple public goods with different degrees of excludability. The provision of public goods may therefore involve choosing between local, regional, national or even global programs. From a perspective of standard economics, the allocation of scarce resources between different public goods should follow efficiency considerations in order to maximize social welfare. However, there is evidence from social identity theory that individuals do not exclusively follow efficiency considerations but share emotional involvements within groups (Akerlof and Kranton, 2000). Individuals who strongly identify with their in-group members could be prone to shift their contributions towards the excludable – usually less efficient – public good. The experimental literature provides ample evidence for the tendency of in-group favoritism even in so called “minimal” groups (e.g., Tajfel and Turner, 1979; Bernhard et al., 2006; Chen and Li, 2009). The degree to which individuals prefer to devote resources to an excludable or to a non-excludable public good may therefore depend on how strongly they identify with the local beneficiaries relative to a spatially and socially more dispersed group of individuals. If such preferences for local public good provision conform to those of the median voter, local politicians will typically try to satisfy these preferences. In a decentralized political system in which each neighborhood forms the lowest level of political decision making and therefore provides some political leeway, this might reduce social welfare. In line with these general considerations, theoretical models also point out how the existence of multiple public goods can lead to inefficient allocation decisions (Cornes and Itaya, 2010).

It is still an open question under which conditions individuals will prefer the local and excludable over the non-excludable regional public good. It is especially unclear, whether such preferences prevail, even if they are costly in terms of total efficiency. The experimental literature on multilevel public goods games has shown that individuals are more willing to contribute to an excludable public good than to a non-excludable public good when both goods provide the same total benefits (Blackwell and McKee, 2003; Fellner and Lünser, 2014). Moreover, individuals increase their contributions to this good, either at the expense of

contributions to their private account (Blackwell and McKee, 2003) or to the excludable public good (Fellner and Lünser, 2014) when the social return from the non-excludable public good is higher. These findings have been derived in experiments in which participants were completely uninformed about the group composition. Chakravarty and Fonseca (2013) highlight the importance of group composition and social identity when deciding between a non-excludable and an excludable public good. In a minimal group design these authors find that contributions to the excludable public good remain positive even when this leads to a net loss in efficiency. By using a minimal group design to induce a shared group identity they, however, deliberately abstract from the existence of real social ties which are seen as an important element of natural groups and found to form rapidly especially under intense within-group interaction (e.g., Goette et al., 2006, 2012). Moreover, they do not contrast different levels of group identity but rather apply one group formation mechanism in all treatments. In this paper we now turn to study naturally occurring groups, which holds the potential benefit of providing important insights into the economic implications of social identity effects in a relevant field setting.

We combine these different strands of literature and ask whether identification with members of one's own local subgroup affects the efficient provision of public goods as soon as individuals can divide their resources between an excludable local and a non-excludable regional public good. We assess cooperative behavior in a multilevel public goods game administered in an online experiment. We explore the role of social identity in a natural group design in which we observe participants from two different municipal districts from two neighboring German cities.<sup>1</sup> As "urban social identity theory" postulates, urban spaces provide a set of shared features allowing inhabitants to differentiate themselves from inhabitants of other surroundings. Therefore, municipal districts create an important source of common group affiliation and thus provide room for social identification leading many residents to derive a sense of identity from their own neighborhood (Valera and Guàrdia, 2002). Municipal districts obviously represent only a very specific source of social identification within a broader range of other potential sources including e.g., strong (emotional) attachments like those for sport clubs. However, municipal districts form an electoral unit in the respective city council elections and therefore represent an important unit of economic decision making in the context of local public goods. Moreover, social urban identity within municipal districts provides an interesting experimental setting since it allows

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<sup>1</sup> In other settings neighborhoods had been used to analyze trust discrimination (Falk and Zehnder, 2013) or donations to local non-profit organizations (Li et al., 2014).

both the consideration of physical (including local-public goods) and social features within the milieu (Pol 1997, Valera and Guárdia, 2002).

By means of an online platform, we gather observations from more than 600 inhabitants from Heidelberg and Mannheim in an artefactual field experiment. The participants' municipal district serves as the common group affiliation we use to invoke a feeling of shared identity. We select two different municipal districts in each of the two cities. In the experimental task, participants can allocate their initial endowment between a private account, an excludable (local) public good which generates benefits only for members of their own neighborhood, and a non-excludable (regional) public good that provides benefits to a larger and more diverse group from the study population. We vary the information structure in different treatments, either informing subjects about the local affiliations of the group members or not, to study the effect of the local identity. The study closest to our experimental design is Buchan et al. (2009) who report results from a multilevel public goods game with subjects drawn from the general population in six different countries. Their findings indicate that a higher level of identification with the world as a whole is positively correlated with contributions to the non-excludable global public good. Our paper differs from this setting along two important dimensions. First, focusing on efficiency considerations, we compare a situation in which both public goods do not differ in terms of their social efficiency to a condition where social efficiency gains are larger for contributions to the non-excludable public good. This comparison allows us to investigate the effects of revealing local affiliations conditional on the relative efficiency of the local public good. Second, our design enables us to subtly vary the information on subjects' common local affiliation in three different treatments. We distinguish between a condition in which participants receive no information about the group composition, a condition in which subjects are informed that the three other members in their local group are from their own neighborhood and a condition in which we additionally prime participants via a questionnaire either on their common local or regional identity, prior to their contribution decision.

Our experimental results provide evidence that efficiency considerations are an important driver of individual behavior. As soon as the efficiency level of the non-excludable regional public good exceeds that of the excludable local one, participants substitute contributions away from the local to the regional account. In contrast to previous experimental results based either on minimal (e.g. Chen and Li, 2009), randomly assigned real groups (e.g., Goette et al., 2006), or natural groups (e.g. Buchan et al., 2009) we do not find that simply being informed about a common group membership is sufficient to affect average behavior. This finding

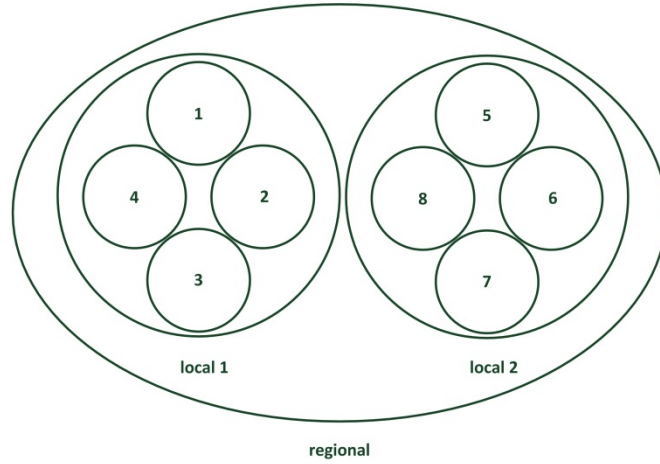
applies both to the case where both public goods are equally efficient and to the case where the excludable local public good is less efficient. The absence of an average treatment effect is not due to the fact that municipal districts are no source of group identity. When we account for heterogeneous degrees of identification with the members of the local group, we find differences in cooperative behavior and treatment effects. Revealing the common local affiliation has the strongest effect on those participants who perceive a strong identification with their own neighborhood. These “*local patriots*” contribute a larger share to the local public good when their common local affiliation is revealed. Contributions to the private account remain quite stable. Participants only substitute contributions away from the non-excludable to the excludable public good while keeping constant their contribution to their private account. Priming participants on their common local affiliation increases the contributions to the local public good in the aggregate and even in case the non-excludable regional public good is socially more efficient. In our experiment social identity does not affect efficiency negatively on average, as participants do not only take from the regional but also from their private account to contribute to the local public good. If at all, efficiency considerations are only affected when participants are primed on their local identity, which is in line with previous results in minimal group settings.

The remainder of the paper is organized as follows. Section 2 describes the experimental design and derives our theoretical predictions. Section 3 contains a detailed description of the experimental protocol. We present the experimental results in Section 4. The last section summarizes our main findings and concludes.

## **2. Experimental Design & Theoretical Predictions**

*Experimental Design* – Our experimental design is based on a multilevel public goods game where subjects can allocate an initial endowment either to a private account, to an excludable *local* public good that generates benefits to a subgroup only or to a non-excludable public good which provides benefits to all. In our experiment, eight subjects form a *regional* group consisting of two local subgroups of four subjects each. Each local group consists of four participants recruited from the same municipal district. Two local groups from different districts are then combined into a regional group. Figure 1 illustrates the group composition.

**Figure 1: Group composition**



Consequently, each of the eight subjects is both a member of the regional group and of one of two local subgroups. Their task is to decide how to allocate an initial endowment of 8 EUR between their private account, a local public good and a regional public good. Subjects keep all amounts they allocate to their private account for themselves. Contributions to the local account generate benefits that exclusively accrue to members of the local group, whereas contributions to the regional account generate additional benefits for all subjects in the regional group. More formally, given the contribution decisions of all remaining seven subjects the payoff to subject  $i$ ,  $\pi_i$ , is, given by:

$$\pi_i = e - q_i^l - q_i^r + \alpha^l \sum_{j=1}^4 q_j^l + \alpha^r \sum_{k=1}^8 q_k^r$$

where  $e$  denotes the initial endowment,  $q_i^l$  the contribution of subject  $i$  to the local public good, and  $q_i^r$  the contribution to the regional public good.  $\alpha^l$  is the marginal per capita return (MPCR) from the local public good and  $\alpha^r$  denotes the MPCR from the regional public good. To ensure that contributions to both public good accounts are efficient but free-riding is a dominant strategy for selfish decision makers, we set  $\alpha^l < 1$  so that  $4\alpha^l > 1$  and  $\alpha^r < 1$  so that  $8\alpha^r > 1$ . Furthermore, we consider total benefits (TB) to measure social efficiency associated with contributions to the local and the regional public good. The TB from both public goods are given by  $TB^l = 4\alpha^l$  and  $TB^r = 8\alpha^r$  respectively.

Our experimental design involves randomly assigning subjects to two out of six treatment conditions. Treatments differ in two dimensions. First, we vary the MPCR of the non-excludable regional public good in order to investigate contributions patterns at different levels of relative efficiency. As in Blackwell and McKee (2003), we compare a situation in which contributions to the excludable local and the non-excludable regional public good are

equally socially efficient, i.e.,  $EQ\_EFF$ :  $\alpha^l = 0.5 < \alpha^r = 0.25$  such that  $TB^l = TB^r = 2$ , with a situation in which contributions to the non-excludable public good are more socially efficient, i.e.,  $UEQ\_EFF$   $\alpha^l = \alpha^r = 0.5$  such that  $TB^l = 2$  and  $TB^r = 4$ . Second, we exogenously vary the information on the subjects' local affiliation. In the unframed “*no label*” condition, subjects are simply informed that they form a group with eight participants and a subgroup with four participants without referring to local affiliations at all. In contrast, in the “*label*” condition, we reveal the common neighborhood of the local group to allow for effects of the common local identity. Compared to a “minimal group paradigm” (e.g., Tajfel and Turner 1979; Chen and Li 2009), our procedure explicitly acknowledges the endogenous nature of natural groups and in particular the existence of social ties in such groups. In our last treatment variation, we *prime* participants either on their common local or their regional affiliation by means of a questionnaire including a short writing task. Table 1 provides an overview over the different treatment conditions and associated parameters.

**Table 1: Experimental Parameter**

Treatment	Local Public Good (LPG)			Regional Public Good (RPG)		
	#	$\alpha^l$	$TB^l$	#	$\alpha^r$	$TB^r$
EQ_EFF	4	0.5	2	8	0.25	2
UEQ-EFF	4	0.5	2	8	0.5	4

In each treatment condition subjects take their one-shot contribution decision twice without receiving feedback on the decisions of the other subjects in-between (see Table 2). For each regional group, one of the two decisions was randomly chosen to determine pay-offs at the end of the experiment. Between the two decisions, subjects complete a questionnaire that contains an extensive set of questions concerning their neighborhood and their involvement in neighborhood activities. This questionnaire forms the basis of a within-subjects variation in which we prime the concept of local affiliation. The short writing task consists of one open question in which participants had to list positive aspects of living in their specific neighborhood or region.



**Table 2: Experimental Summary**

	Decision 1 before prime		Decision 2 after prime	
	no label	label	no label	label
	#	#	#	#
EQ_EFF	192	160	82	270
UEQ_EFF	128	136	91	173

Note: Samples are not balanced as we added the regional prime treatment in EQ\_EFF as an extension and thus continued to collect data in selected other conditions to control for potential time effects.

*Hypotheses* – Purely selfish individuals are expected to keep their full endowment in the private account. However, summarizing the experimental literature on public goods, Ledyard (1995), Zelmer (2003) and Chaudhuri (2011) report individuals to exploit free-riding opportunities to a significantly lower degree than predicted in the standard Nash equilibrium. If players decide to contribute at all, they will either contribute to the excludable local or the non-excludable regional public good. While the local public good generates benefits to a subgroup of participants only, the regional public good provides benefits for all members of the regional group. Since these two accounts differ in the number of potential beneficiaries, we base our predictions on Andreoni’s framework of congestible giving (Andreoni 2007): Individuals may value both the total and the average benefits of a contribution to either the local or regional public good. The total benefits of a contribution to the local and the regional public good are given by  $4\alpha^l$  and  $8\alpha^r$ , respectively. The average benefit of a contribution to the local or the regional public good, however, are given by  $\alpha^l$  and  $\alpha^r$ . Following Andreoni (2007) and depending on the weight for the total benefit ( $b$ ) and the average benefit ( $1 - b$ ), subjects’ value of contributions to either the local or the regional public good is given by  $g^l = (4\alpha^l)^b(\alpha^l)^{1-b} = 4^b\alpha^l$  and  $g^r = (8\alpha^r)^b(\alpha^r)^{1-b} = 8^b\alpha^r$ . Given our experimental parameters the value of contributing can be derived as follows: In EQ\_EFF, the value of contributing to the local public good is given by  $g_{EQ}^l = 4^b * 0.5$  and exceeds the value of contributing to the regional public good  $g_{EQ}^r = 8^b * 0.25 \forall b \in (0,1)$ . That is, we expect altruistic players to contribute more to the local than to the regional public good. In contrast, in the unequal treatment conditions (UEQ\_EFF) we expect individuals to rather contribute to the regional public good, since  $g_{UEQ}^l = 4^b * 0.5 < g_{UEQ}^r = 8^b * 0.5 \forall b \in (0,1)$ .<sup>2</sup> We can summarize these propositions for altruistic players as follows:

<sup>2</sup> Based on experimental data from 120 subjects, Andreoni estimates an average value of  $b = 0.68$ . If the same value of  $b$  is assumed to hold in our setting, this gives in all EQ\_EFF conditions a value of contributing to the local public good of 1.28 which exceeds the value of contributing to the regional public good of 1.03. In all UEQ\_EFF conditions contributions to the local public good generates a value of 1.28 which is below the benefit of a contribution to the regional public good of 2.06.

## **Hypothesis 1**

### **Hypothesis 1a**

*Individuals will prefer to contribute to the local public good if it is socially as efficient as the regional public good.*

### **Hypothesis 1b**

*Individuals will prefer to contribute to the regional public good if it is socially more efficient than the local public good.*

A large body of literature on social identity, based on either “minimal” (e.g., Chen and Li 2009) or natural group designs (e.g., Goette et al. 2006) suggests that a common group identity affects individuals’ cooperative behavior. Individuals from a group become more concerned with the welfare of those sharing the same affiliation. Therefore, we expect individuals to behave differently depending on the salience of their common local affiliation. We expect a tendency to contribute more to the local public good if individuals’ common local affiliation is known, at least for those who strongly identify with their own neighborhood. We expect this tendency to further increase as soon as individuals are primed on their common local affiliation. Our propositions for altruistic individuals can be summarized as two further hypotheses:

## **Hypothesis 2**

*If the common local group affiliation is revealed, individuals will contribute more to the excludable local public good, at least those who strongly identify with their own neighborhood.*

## **Hypothesis 3**

*If individuals are primed upon their common local group affiliation, we expect the tendency of contributing more to the excludable local public good to further increase, at least for those who strongly identify with their own neighborhood.*

## **3. Experimental Procedure & Background Information**

We conduct an inter-city multilevel public goods experiment with groups of eight players. We assigned individuals to local and regional groups based on their current place of residence. To do so, we recruited participants from two specific districts within two neighboring cities in Germany, Heidelberg and Mannheim. Both cities are located next to each other in the

northwestern part of German’s federal state Baden-Württemberg. Heidelberg consists of 15 districts and has approximately 150,000 inhabitants and is the fifth-largest city of Baden-Württemberg. Mannheim is the third-largest city of Baden-Württemberg with a population of over 330,000 and consists of 17 districts.

Assuming that a necessary prerequisite to form a common local identity is to share a common local affiliation, we selected two neighborhoods in Heidelberg and Mannheim each. In Heidelberg, we recruited participants from two separated districts, Bahnstadt and Neuenheim (see Figure 2 and Table 3, left side). Bahnstadt is the most recent extension to the city covering a relatively small area of about 1 km<sup>2</sup>. It was developed by urban planners in early 2000 on a former railway area. Its population is rather young (average age 32). Most of its more than 2,200 inhabitants moved in from 2010 onwards which is also reflected in a high fluctuation rate (69%) and a larger share of people moving in than moving out. In comparison, Neuenheim is one of the most established inner-city districts with an extension of 6 km<sup>2</sup>, incorporated to the city of Heidelberg in the 1890s. The average age with 42 years is higher than in Bahnstadt. Neuenheim has around 13,460 inhabitants with a fluctuation rate of 44% with nearly the same number of people moving in and moving out (see Table 3).

**Figure 2: Map of Heidelberg and Mannheim**



Note: Map of Heidelberg (left) and Mannheim (right).<sup>3</sup>

<sup>3</sup> The map of Heidelberg is based on data of the city of Heidelberg, Geographisch Technisches Informations Systems der Stadt Heidelberg. The map of Mannheim is based on data of the city of Mannheim, Kommunale Statistikstelle, 2015.

In Mannheim we recruited participants from Feudenheim and Schwetzingenstadt/Oststadt (see Figure 2 and Table 3, right side). Feudenheim is located more towards the outskirts with a size of around 6 km<sup>2</sup> and over 15,000 inhabitants with an average age of 47 years. Schwetzingenstadt/Oststadt is an inner-city district (4 km<sup>2</sup>) close to the main station and the city center with almost 25,000 inhabitants with an average age of 43. Feudenheim has a low fluctuation rate (17%), approximately half the size of that in Schwetzingenstadt/Oststadt (32%). In both districts, however, inflow and outflow of people are almost balanced (see Table 3, right side). The share of female citizens is in all four districts nearly 50%.

**Table 3: Descriptive Overview – Population and Sample Characteristics**

		Total	Heidelberg		Mannheim	
			Bahnstadt	Neuenheim	Schwetzingenstadt / Oststadt	
Population Characteristics	<i>Inhabitants (in #)</i>		2,271	13,459	15,146	24,912
	<i>Size (in km<sup>2</sup>)</i>		1.1	5.7	6.07	4.41
	<i>Age (in years)</i>		31.9	41.8	46.9	42.5
	<i>Females (in %)</i>		45.6	53.7	53.1	50.6
	<i>Moving in (in # of 2014)</i>		1,184	2,860	1,342	3,964
	<i>Moving out (in # of 2014)</i>		390	3,094	1,300	3,930
	<i>Turnover (in % of 2014)</i>		69.31	44.24	17.44	31.69
	<i>Moving in (in % of 2014)</i>		52.14	21.25	8.86	15.91
	<i>Moving out (in % of 2014)</i>		17.17	22.99	8.58	15.78
Sample Characteristics	<i>Subjects (in #)</i>	616	146	177	109	184
	<i>Age (in years)</i>	35.6	29.0	38.1	47.2	31.5
	<i>Female (in %)</i>	45.7	47.9	48.9	42.6	42.6
	<i>Income (in EUR)</i>	2,087	2,027	2,117	2,550	1,832
	<i>Education (in years)</i>	14.8	14.4	15.4	14.3	15.0
	<i>Region (in years)</i>	17.5	7.4	19.5	35.2	13.2
	<i>Neighborhood (in years)</i>	8.9	1.6	10.8	20.6	5.9
	<i>Local Identity Index</i>	-0.04	-0.12	-0.05	0.29	-0.16
<i>Local Patriots (in %)</i>	49	45	47	65	44	

Notes: Population Characteristics: Information about Heidelberg is based on: Amt für Stadtentwicklung und Statistik, ‚Bahnstadt auf einen Blick‘ and ‚Neuenheim auf einen Blick‘, last access February 2016 (state of data 31.12.2014). Information about Mannheim is based on Municipal Statistics Office, <https://www.mannheim.de/stadt-gestalten/stadtbezirks-und-stadtteil-daten-einen-blick>, last access February 2016 (state of data: 31.12.2014). Average age of Bahnstadt and Neuenheim, Heidelberg, is based on predictions for the year 2020, Amt für Stadtentwicklung und Statistik, Bevölkerungsentwicklung. Size = km<sup>2</sup> of district, Age = average age of population. Females = % share of female population. Moving in (#) = number of people moving in in the year 2014. Moving out (#) = number of people moving out in the year 2014. Turnover (%) = ratio of people moving and whole population. Moving in (%) = ratio of people moving and whole population in district. Moving out (%) = ratio of people moving out and whole population in district.

Sample Characteristics: Data is based on the average of participants. Age = average age of participants. Female = percentage share of female participants. Income = average income in Euro of participants. Education = average years of education of participants. Region = average years residency in the region. Neighborhood = average years of residency in the neighborhood., Local identity index = average degree of affiliation to the neighborhood based on an index on local identity with five questions concerning participants' affiliation with the neighborhood: 'deliberately decided to live in district', 'happy to live in district', 'proud to live in district', 'feel comfortable to live in district', and perceived identification with their own neighborhood each measured on a five-point likert scale from 1 'not at all' to 5 'extremely'. Local Patriots = percentage share of participants with a local identity index above the median value.

In order to recruit participants, we distributed around 12,000 invitation letters via mail to up to 3,000 randomly selected households in each of the four districts.<sup>4</sup> All potential participants were asked to take part in a scientific study on individual decision making, conducted by the University of Heidelberg and the Centre for European Economic Research (ZEW) in Mannheim. They were told that only one individual per household and those at least 18 years of age would be considered for taking part in the study. In addition, we informed households that their participation would be rewarded with a 5 EUR show-up fee and that they could earn additional individual payments in the course of a 15 minute study.

All in all, 616 individuals from Heidelberg (323) and Mannheim (293) took part in the online experiment by following a link in the invitation letter with their personal electronic device.<sup>5</sup> To log-in and to start the experiment, participants had to enter an individual access code also provided in the invitation letter. After going through a series of detailed instructions on the procedures, the decision task, and a set of numerical examples, participants could make their decision.<sup>6</sup> The average participant completed the experiment in approximately 15 minutes. We used an ex-post matching protocol to calculate final payoffs and participants earned €18.38 on average. The individual payment was realized through a personalized voucher which could be used in a large variety of online stores, large retail chains and petrol stations.<sup>7</sup> The vouchers were distributed by mail to all participants approximately four weeks after the experiment was finished. The specifics of the payment procedures were revealed to subjects prior to their first decision.

After the decision tasks a post-questionnaire was administered to collect information on core demographics (age, sex, income, education, religiousness). In addition, we elicited how long participants live within the metropolitan area (*years region*) and within their neighborhood (*years neighborhood*). In order to measure participants' local identity, we use a five-item measure to assess participants' local identity (*local identity index*). The identity measure is based on whether participants deliberately decided to live in their neighborhood; whether they are happy, proud and comfortable to live in their neighborhood as well as their perceived identification with their own neighborhood. Responses to each item were made with a 5-point likert scale from 1 (*not at all*) to 5 (*very strongly*). The local identification score was

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<sup>4</sup> Since Bahnhof district is considerably smaller than the other three districts we distributed invitation letters to all 2,000 households living in this district. We provide a translated version of the invitation letter in the supplementary material.

<sup>5</sup> The programming was completed in LimeSurvey, a free open source software tool. The design was optimized for either the use of a personal computer, a laptop, a tablet or a smartphone. In addition to the conventional link, the invitation letter contained a QR code to facilitate access to the online experiment.

<sup>6</sup> We provide a diagram of the experimental procedures, a translated version of the instructions and the screenshots in the supplementary material.

<sup>7</sup> This procedure allowed us to pay subjects in an incentive compatible way without having to personally interact with them which would be problematic both for reasons of anonymity and logistics.

calculated by summing and standardizing responses to all five items. Cronbach's alpha of the five local identity items is 0.78. Furthermore, we classify participants with a comparatively high local identity, more precisely with a local identity index above the median value, as local patriots.

In Table 3 (lower half), we provide a brief overview of the demographic and local affiliation variables and show how they are distributed across the different cities and neighborhoods. Most importantly, Table 3 shows that the different districts are sufficiently heterogeneous in terms of variables which are plausibly influencing participants' local identity. While participants on average have lived in the metropolitan region for 17.5 years, participants from Bahnstadt have only lived there for 7.4 years while participants from Feudenheim have spent 35.2 years in the region. Similarly, inhabitants of Bahnstadt recently moved into their neighborhood (1.6 years), whereas inhabitants in Feudenheim have been living for 20.6 years in their own neighborhood. Overall, we find a positive correlation between the time that participants have lived in the neighborhood and the stated identification with the neighborhood (Spearman's  $\rho = 0.240$ ,  $p = 0.000$ ). People in Feudenheim stated particularly strong levels of identification (and show the highest *local identity index* (0.29)). The average age of households in our sample is – except for Feudenheim – is significantly lower than in the full population of the respective neighborhood. The share of females in our sample is for the districts in Heidelberg not significantly different from those in the population, while in Mannheim the female share is on a 5% level significantly lower in the sample compared to the share in the population.

## 4. Experimental Results

Our experimental design enables us to explore how individual decision behavior is affected by the relative social efficiency level of contributions to the non-excludable regional public good, whether participants have a general tendency towards contributing to an excludable local public good, and how this tendency depends on their information status regarding their common local affiliation.

### 4.1. First Contribution Decision

We begin our analysis by pooling data across all participants in the first contribution decision. While 32.8% of the sample contribute their full endowment either to the local (LPG) or the regional public good (RPG) and leave nothing in their private account, a small share of 6.1% of participants fully free-rides on the contributions of others. The left half of Figure 3 plots

participants' average contributions in the no label setting across EQ\_EFF and UEO\_EFF conditions and therefore provides a first assessment of the importance of efficiency considerations both within and between treatments. In EQ\_EFF, where contributions to the LPG and the RPG do not differ in their total efficiency, we observe nearly equal average contributions to the private account (2.3), the LPG (2.8) and the RPG (2.9). This differs from the results of Blackwell and McKee (2003) and Fellner and Lünser (2014), who find significantly higher contributions to the LPG than to the RPG. However, in line with previous experiments, contributions to the RPG increase significantly (2.9 vs. 4.6,  $p = 0.000$ , MWU-Test) when the RPG becomes socially more efficient compared to the LPG. This increase is not due to additional contributions from the private account since the share within the private account is statistically indistinguishable for both treatment conditions (2.3 vs 2.1,  $p = 0.309$ , MWU-Test). Rather the significant increase in contributions to the RPG goes hand in hand with a significant reduction of contributions to the LPG (2.8 vs. 1.3,  $p = 0.000$ , MWU-Test). Put differently, when the total benefits of contributing to the RPG increase, participants substitute their contributions away from the excludable local and towards the non-excludable regional public good. This observation is well in line with the findings of Fellner and Lünser (2014), but contrasts with Blackwell and McKee (2003) who find that contributions are substituted from the private account towards the non-excludable public good.<sup>8</sup>

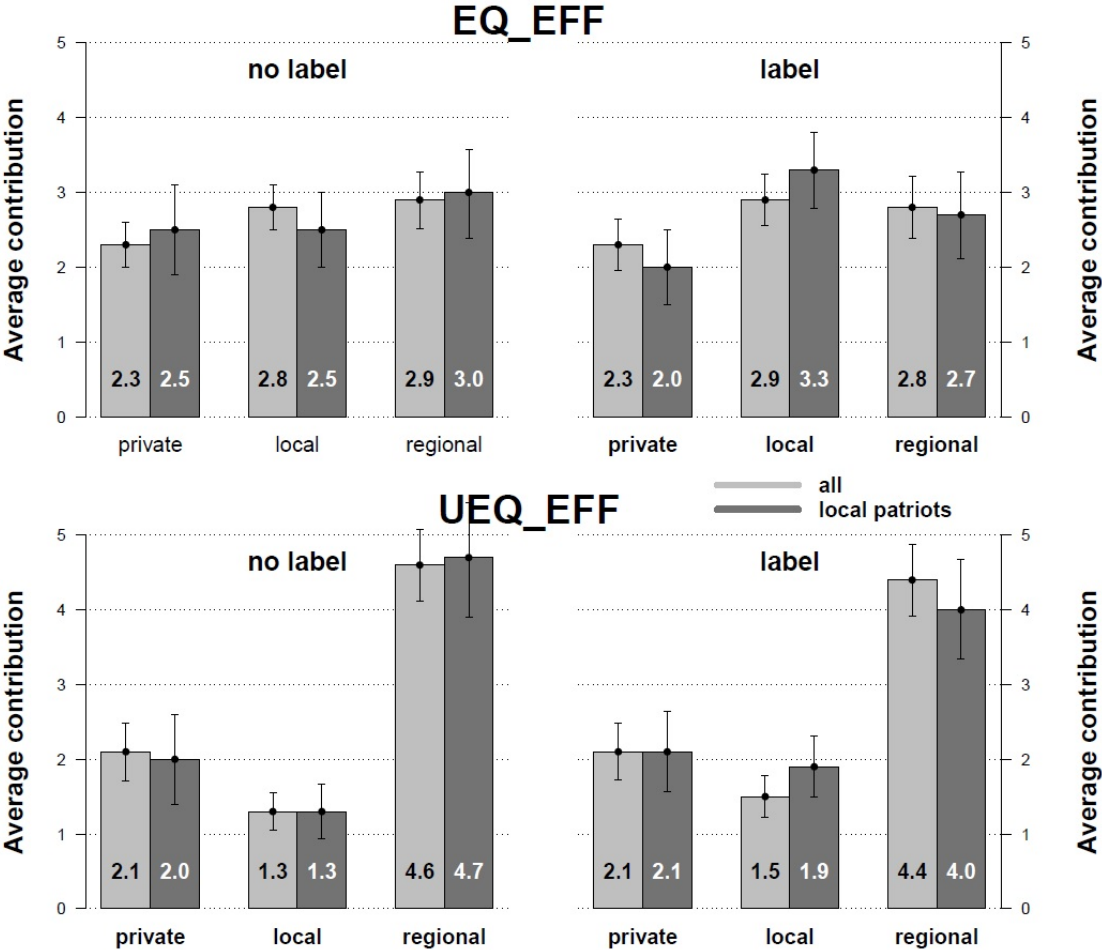
These first observations reflect our theoretical predictions as follows: In line with pure self-interest, about 25% of the initial endowment of eight euros remains in the private account irrespective of the total benefits of contributing to the RPG. In EQ\_EFF there is an equal split between contributions to the LPG and RPG rather than contributions to the LPG only. Based on this observation we reject our hypothesis H1a. As soon as the social efficiency of contributions to the RPG increases, contributions to the LPG drop by 50% such that more than 50% of all tokens are allocated to the more efficient RPG. This confirms our hypothesis H1b. In line with Blackwell and McKee (2003) and Fellner and Lünser (2014), our results indicate that (altruistic) participants take efficiency considerations into account when deciding about their contribution level. Hence, in our *no label* treatments, we find that the tendency to contribute to the excludable public good at the expense of the non-excludable public good is strongly influenced by efficiency considerations. As soon as the non-excludable public good is more efficient subjects only contribute a small fraction of their endowment to the excludable public good. However, based on the extensive social identity literature (e.g., Tajfel

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<sup>8</sup> As already noticed by Fellner and Lünser (2014), the results of Blackwell and McKee (2003) have to be interpreted with some caution as they are derived from only one independent observation per treatment.

and Turner, 1979; Chen and Li, 2009) we expect this fraction to increase when participants are informed that they share their local account with members from their own neighborhood.

**Figure 3: First contribution decision: no label vs. label by EQ\_EFF and UEQ\_EFF**



Note: Average contributions to private, local and regional account in the no label (left half) and label (right half) of EQ\_EFF (upper half) and UEQ\_EFF (lower half) for the whole sample (light grey) and restricted to *local patriots* (dark grey). Confidence intervals at the 95%-level.

In a second step, we now provide a more detailed look into how assigning a label to the local account influences participants’ allocation decisions. To do so, we compare contributions in the *no label* and *label* treatments separately for the EQ\_EFF (Figure 3, upper half, light grey) and UEQ\_EFF (Figure 3, lower half, light grey) conditions. Remarkably, we do not find that revealing their common local affiliation affects participants’ behavior per se. Most importantly, there is no substantial difference in average contributions to the LPG between those participants who have been informed about the local affiliation of the other group members, and those who have not been informed, neither in EQ\_EFF (2.8 vs. 2.9,  $p = 0.266$ , MWU-Test) nor in UEQ\_EFF (1.3 vs. 1.5,  $p = 0.363$ , MWU-Test). This indicates that living



in the same neighborhood does not per se induce a common social identity which is strong enough to affect subjects' cooperative behavior.

However, it is reasonable to assume that the effect of revealing participants' common local affiliation depends on their perceived local identity. As shown in Table 3, the level of how strong participants identify with their own neighborhood differ and it might be the case that even citizens who strongly identify with their own neighborhood are not affected by revealing the common group affiliation. Alternatively, those who do not identify at all with their own neighborhood might reduce their contributions to the local account in the label condition and thereby offset a positive treatment effect for those who strongly identify. To test this proposition we use an index measure for local patriotism (compare Table 3) and define those above the median index value as *local patriots*. When we restrict our analysis to these local patriots with strong identification, we observe a weak but significant influence of the label on participants' contribution behavior. In the EQ\_EFF conditions, a salient common local affiliation affects contribution behavior of *local patriots* (see Figure 3, upper half) in the following way: In the label condition individuals contribute significantly more to the LPG (2.5 vs. 3.3,  $p = 0.010$ , MWU-Test). Some of these additional contributions come from the private account and some from reduced contributions to the RPG. Neither of these changes in contribution behavior is statistically significant (Private: 2.5 vs. 2.0,  $p = 0.446$ , MWU-Test; RPG: 3.0 vs. 2.7,  $p = 0.493$ , MWU-Test). Are *local patriots* willing to give up efficiency gains in order to benefit subjects from their own neighborhood? To test this proposition we compare average contributions of *local patriots* to the LPG in the UEQ\_EFF condition between the no label and label condition (see Figure 3, lower half). As in the EQ\_EFF condition, for this subgroup contributions to the LPG are significantly larger when the common local affiliation is revealed (1.3 vs. 1.9,  $p = 0.045$ , MWU-Test).

For those participants with a comparatively weak local identity (*non-local patriots*), we do not observe an effect of revealing the information on the origin of the participants in case both public goods are socially equally efficient. If anything, non-local patriots even tend to reduce their contribution to the LPG (3.0 vs. 2.5,  $p = 0.267$ , MWU-Test), but not at a significant level. In the UEQ\_EFF condition the label does not affect contribution decisions of non-local patriots.

**Table 4: First contribution decision, Tobit regression on individual contributions in EQ\_EFF**

	EQ_EFF					
	Private Account		Local Account		Regional Account	
	$q^p$		$q^l$		$q^r$	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	2.966** (1.262)	2.862*** (1.048)	2.516* (1.452)	2.698* (1.470)	0.988 (1.556)	1.000 (1.639)
Label (1 = Yes)	0.0546 (0.400)	0.524 (0.569)	0.0476 (0.368)	-0.938* (0.484)	-0.129 (0.467)	0.298 (0.614)
Local Patriot (1=Yes)		0.449 (0.575)		-0.844 (0.514)		0.145 (0.627)
Label x Local Patriot		-0.958 (0.803)		2.008*** (0.719)		-0.862 (0.935)
Age(Years)	-0.0190 (0.0207)	-0.0194 (0.0210)	0.0003 (0.019)	0.0021 (0.020)	0.0300 (0.0245)	0.0281 (0.0248)
Female (1=Yes)	-0.110 (0.411)	-0.157 (0.418)	0.698* (0.367)	0.802** (0.375)	-0.102 (0.459)	-0.177 (0.472)
Income (Euro)	-0.0000 (0.0001)	-0.0000 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	-0.0001 (0.0002)	-0.0001 (0.0002)
Years of Education	-0.0299 (0.0726)	-0.0329 (0.0725)	-0.0231 (0.0625)	-0.0182 (0.0614)	0.00904 (0.0819)	0.00843 (0.0819)
Religious (1-5)	-0.235 (0.167)	-0.245 (0.167)	0.142 (0.155)	0.166 (0.154)	0.134 (0.193)	0.126 (0.193)
Years Neighborhood	-0.0145 (0.0191)	-0.0153 (0.0192)	0.00854 (0.0194)	0.00986 (0.0196)	-0.00678 (0.0249)	-0.00699 (0.0249)
Years Region	0.0258 (0.0181)	0.0277 (0.0182)	-0.00728 (0.0152)	-0.0119 (0.0155)	-0.00223 (0.0199)	0.00107 (0.0203)
Bahnstadt (1=Yes)	-0.183 (0.579)	-0.170 (0.581)	-1.345** (0.548)	-1.366** (0.540)	1.509** (0.691)	1.518** (0.688)
Feudenheim (1=Yes)	-0.108 (0.563)	-0.139 (0.563)	-0.292 (0.509)	-0.243 (0.510)	0.618 (0.660)	0.619 (0.665)
Schwetzingenstadt (1=Yes)	0.353 (0.568)	0.311 (0.559)	-0.483 (0.526)	-0.397 (0.520)	0.383 (0.618)	0.347 (0.623)
# of observations	341	341	341	341	341	341

Notes: Tobit regressions  $q^p, q^l, q^r \in [0,8]$ . Robust standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$  and \*\*\* $p < 0.01$ .

Variables: Label = 1 if subject  $i$  played the label treatment, 0 else. Local identity index = average degree of affiliation to the neighborhood based on an index on local identity with five questions concerning participants' affiliation with the neighborhood: 'deliberately decided to live in district', 'happy to live in district', 'proud to live in district', 'feel comfortable to live in district', and perceived identification with their own neighborhood each measured on a five-point likert scale from 1 'not at all' to 5 'extremely'. Age = age of participant  $i$  in years. Female = 1 if subject  $i$  is female, 0 else. Income = income of subject  $i$  based on 7 categories using the mean of each category as absolute number (250; 750; 1250; 1750; 2500; 3500; 4500). Education = years of education of subject  $i$ . Religious = degree of religious affiliation based on a five-point likert scale from 1 'not at all' to 5 'extremely'. Neighborhood = years of residency of subject  $i$  in the neighborhood. Region = years of residency of subject  $i$  in the metropolitan region.

To complement our analyses of the first contribution decision, we use a series of regressions. More precisely, we estimate Tobit models of participants' contributions to either the private, local or regional account. We use a dummy variable (*Label*) indicating whether participants have been randomized to the treatment condition. In order to account for unobservable heterogeneities across neighborhoods, we include neighborhood fixed effects. Based on post-questionnaire data we also control for individual demographics (age, sex, income, education and religiousness) as well as the stated time of living in the respective neighborhood

(*Neighborhood*) and the metropolitan region (*Region*). Table 4 reports the results in case the excludable local and the non-excludable regional public good are socially equally efficient and Table 5 in case the regional public good is more efficient. In both tables, columns (1), (3) and (5) report the model for the average treatment effect of assigning a *label* controlling for individual characteristics. Furthermore, in columns (2), (4) and (6) we test for a heterogeneous treatment effect by additionally controlling for the participants' stated identification with their neighborhood based on an index measure for local patriotism constructed from five questionnaire items, using both a dummy variable (*Local Patriots*) and its interaction with our main treatment variable (*Label*).

First, we look at participants' contribution behavior in case both public goods are socially equally efficient (see Table 4). Estimates in columns (3) and (4) on contributions to the excludable public good provide additional evidence that, while there is no average treatment effect (3), participants with a comparatively high local identity contribute more to the LPG in case their common identity is revealed. More precisely, our regression results in column (4) suggest that local patriots do contribute more to the local public good in case they are randomized to the label condition ( $p = 0.006$ ; joint coefficient test [ $Label + Label \times Local Patriot = 0$ ],  $p = 0.048$ ). In contrast, non-local patriots decrease their contributions to the local public good (column 4,  $p = 0.054$ ). As shown in the remaining columns, there is no significant effect of the label on contribution to the private or the regional account.

Results in Table 5 suggest that the effect of revealing the common local identity is weaker in the UEQ\_EFF case. The contributions of local patriots to the LPG in the *label* condition are no longer significantly different from those of other participants (column 4,  $p=0.287$ ). However, for this subgroup the label still induces weakly higher LPG contributions compared to the case without a label (column 4, joint coefficient test [ $Label + Label \times Local Patriot$ ],  $p = 0.078$ ). On the other hand, participants with a low local identity index do not show significant changes (column 4,  $p = 0.835$ ).

In sum, we find that assigning a label and thereby revealing the local affiliation does not significantly alter contributions to the local account for the average participant. However, this does not exclude that social identity still affects decision making in our setting. In fact, for those participants who strongly identify with their own neighborhood we observe higher contributions to the local account in the label condition, even when these contributions are costly in terms of efficiency.

**Table 5: First contribution decision, Tobit regression on individual contributions in UEQ\_EFF**

	UEQ_EFF					
	Private Account		Local Account		Regional Account	
	$q^p$		$q^l$		$q^r$	
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	2.312*** (0.419)	2.401*** (0.613)	-0.799 (1.192)	-0.736 (1.339)	5.139*** (0.828)	5.034*** (0.764)
Label	0.104 (0.478)	-0.0703 (0.681)	0.479 (0.349)	0.105 (0.503)	-0.452 (0.543)	-0.0106 (0.789)
Local Patriot		-0.283 (0.678)		-0.00100 (0.475)		0.208 (0.778)
Label x Local Patriot		0.360 (0.976)		0.717 (0.672)		-0.891 (1.103)
Age	0.0223 (0.0272)	0.0219 (0.0275)	0.0338* (0.0185)	0.0330* (0.0185)	-0.0443 (0.0284)	-0.0432 (0.0289)
Female	0.312 (0.473)	0.319 (0.474)	0.927*** (0.329)	0.885*** (0.330)	-0.616 (0.537)	-0.586 (0.540)
Income	-0.0004** (0.0002)	-0.0004** (0.0002)	-0.0002* (0.0001)	-0.0002 (0.0001)	0.0005** (0.0002)	0.0005** (0.0002)
Years of Education	-0.147* (0.0820)	-0.144* (0.0831)	-0.0523 (0.0538)	-0.0489 (0.0532)	0.165* (0.0909)	0.160* (0.0915)
Religious	0.128 (0.188)	0.125 (0.189)	0.230* (0.127)	0.220* (0.126)	-0.285 (0.209)	-0.275 (0.210)
Years Neighborhood	-0.0379 (0.0296)	-0.0362 (0.0302)	-0.0229 (0.0175)	-0.0212 (0.0178)	0.0373 (0.0305)	0.0343 (0.0315)
Years Region	0.0159 (0.0212)	0.0158 (0.0214)	0.0108 (0.0131)	0.00820 (0.0131)	-0.0118 (0.0230)	-0.00956 (0.0232)
Bahnstadt	0.578 (0.715)	0.585 (0.716)	0.113 (0.545)	0.0830 (0.539)	-0.687 (0.863)	-0.665 (0.862)
Feudenheim	1.203* (0.702)	1.190* (0.704)	0.886* (0.465)	0.824* (0.459)	-1.947** (0.752)	-1.881** (0.752)
Schwetzingenstadt	0.808 (0.628)	0.814 (0.630)	-0.283 (0.467)	-0.271 (0.467)	-0.714 (0.756)	-0.732 (0.758)
# of observations	261	261	261	261	261	261

Notes: Tobit regressions  $q^p, q^l, q^r \in [0,8]$ . Robust standard errors in parentheses; \* $p < 0.1$ , \*\* $p < 0.05$  and \*\*\* $p < 0.01$ .

Variables: Label = 1 if subject  $i$  played the label treatment, 0 else. Local identity index = average degree of affiliation to the neighborhood based on an index on local identity with five questions concerning participants' affiliation with the neighborhood: 'deliberately decided to live in district', 'happy to live in district', 'proud to live in district', 'feel comfortable to live in district', and perceived identification with their own neighborhood each measured on a five-point likert scale from 1 'not at all' to 5 'extremely'. Age = age of participant  $i$  in years. Female = 1 if subject  $i$  is female, 0 else. Income = income of subject  $i$  based on 7 categories using the mean of each category as absolute number (250; 750; 1250; 1750; 2500; 3500; 4500). Education = years of education of subject  $i$ . Religious = degree of religious affiliation based on a five-point likert scale from 1 'not at all' to 5 'extremely'. Neighborhood = years of residency of subject  $i$  in the neighborhood. Region = years of residency of subject  $i$  in the metropolitan region.

## 4.2. Second Contribution Decision

In line with the argument of focusing on local patriots, one might insist that neighborhood feelings principally exist – and as shown affect contribution behavior for these local patriots – but are simply not sufficiently stimulated in our experimental setting. It could be the case that mentioning the different neighborhoods only – as we do in the label treatments – does not provide a sufficiently large stimulus. If this was true, our label treatments would

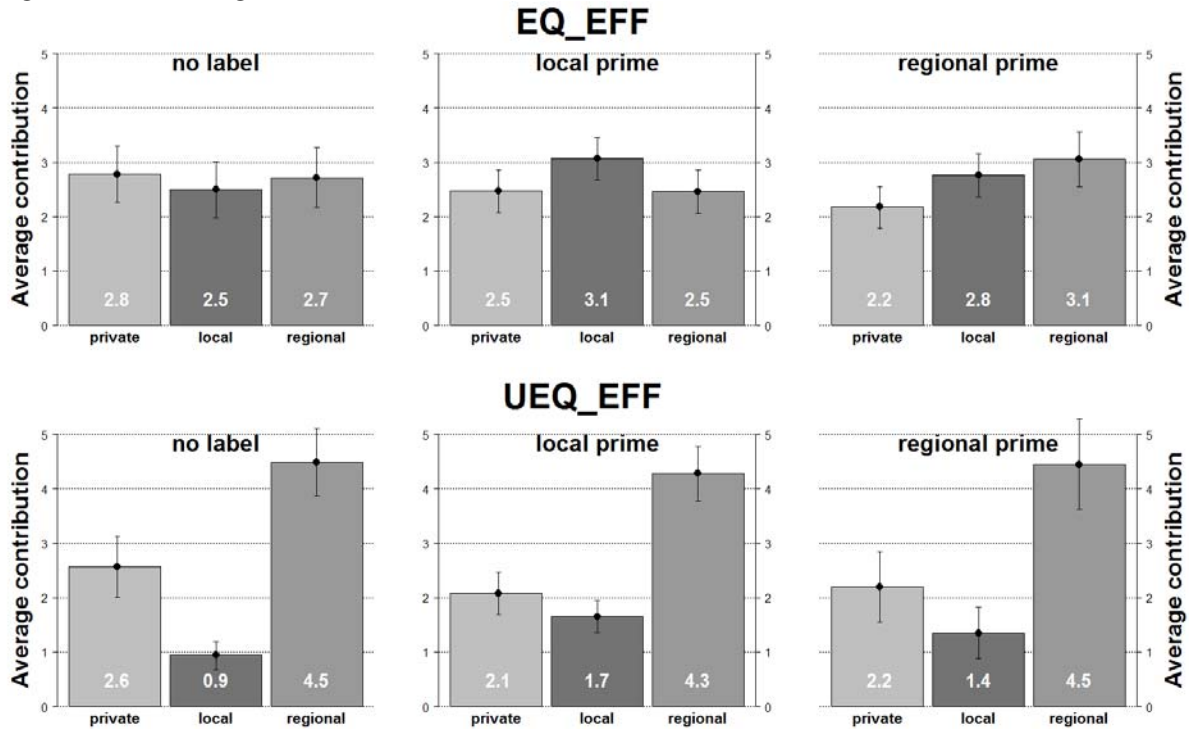
underestimate the true effect of social identity on average efficiency considerations. In order to provide a stronger test we therefore introduce a prime either on the participants' local or regional affiliation. Priming allows us to subtly stimulate the activation of a neighborhood identity that goes beyond the effect of assigning a label to the local account only. Similar to Li et al. (2014) and Chen et al. (2014) we used a questionnaire to prime participants. In particular, subjects were asked to answer the questionnaire between their first and second contribution decision. The last questionnaire item was a task in which participants were asked to state positive attributes of either their neighborhood (local prime) or the metropolitan region (regional prime). Figure 4 plots contribution decisions within the label treatment after participants have been primed. Subjects who have not been informed about the affiliations of the other group members (no label condition) neither in the first nor in the second contribution decision serve as the control group in this comparison. Our results indicate that a local prime affects participants' cooperative behavior both in case the LPG and the RPG do not differ in their social efficiency (see Figure 4, upper half) as well as in case the regional public good is socially more efficient (see Figure 4, lower half). Subjects who were primed on their common local affiliation do on average contribute significantly more to the LPG compared to subjects in the no label condition. This effect is present in the EQ\_EFF (3.1 vs. 2.5,  $p = 0.054$ , MWU-Test) and even more pronounced in the UEQ\_EFF (1.7 vs. 0.9,  $p = 0.001$ , MWU-Test) condition. While in EQ\_EFF these additional contributions to the LPG accrue at the expense of lower contributions to both the private account (-0.3) and the RPG (-0.2), in UEQ\_EFF we find additional contributions to the LPG primarily driven by lower contributions to the private account (-0.5) and a moderate increase RPG contributions (-0.2).

*Local patriots* contribute significantly more to the LPG, both in EQ\_EFF (2.1 vs. 3.1,  $p = 0.017$ , MWU-Test) and in UEQ\_EFF (1.1 vs. 1.9,  $p = 0.012$ , MWU-Test). In contrast, we confirm this tendency for subjects with a weak local identification only for the UEQ\_EFF case (0.7 vs. 1.4,  $p = 0.019$ , MWU-Test) but not for EQ\_EFF (3.0 vs 3.1,  $p = 0.766$ , MWU-Test). We do however not find any major differences in contribution patters when applying the regional prime. Only in EQ\_EFF we observe a mild effect on the private account leading to slightly reduced contributions to the regional account (2.8 vs 2.2,  $p=0.109$ ). This effect seems to be driven by local patriots (3.0 vs 1.9,  $p = 0.029$ , MWU-Test) who at the same time increase contributions to the local account (2.1 vs 3.0,  $p = 0.047$ , MWU-Test). These observations do not carry over to non-local patriots.

Using average contributions, we do not find efficiency effects of the prime. Interestingly, after the prime, payoffs in the label condition are even slightly smaller than in the no-label

condition (EQ\_EFF: 13.7 vs. 13.2; UEW\_EFF: 22.7 vs 22.4) due reductions in the private account.

**Figure 4: Second contribution decision, no label vs. local prime vs. regional prime by EQ\_EFF and UEQ\_EFF**



Note: Average contributions to private, local and regional account in no label (left side), local prime (middle) and regional prime (right side) of EQ\_EFF (upper half) and UEQ\_EFF (lower half). Confidence intervals at the 95%-level.

## 5. Summary & Concluding Remarks

In this paper we report evidence from a web-based artefactual field experiment with more than 600 participants from two neighboring German cities. We investigate the effect of a common local identity on the private provision of multilevel public goods. We take advantage of naturally formed groups where a subject's neighborhood within a municipal district serves as a common affiliation for each participant and therefore gives rise to potential effects of a common local identity. In the experimental task, participants could allocate their initial endowments either to a private account, a local public good which generates benefits only for members of their own neighborhood, or to a regional public good that provides benefits to a larger and more diverse group from the study population. Our experimental design is based on two treatment variations. First, we vary the social efficiency of contributions to the non-excludable regional public good relative to contributions to the excludable local public good. Second, we vary the information on participants' common local affiliation.

The experimental results are in line with our theoretical considerations and suggest efficiency considerations to be decisive on average. As soon as the efficiency of the non-excludable regional public good exceeds that of the excludable local one, participants substitute contributions away from the local to the regional account. Most importantly, in contrast to previous experiments (e.g, Chen and Li 2009 and Goette et al. 2006), we do not find that a salient common group membership affects participants' behavior per se. Our results rather suggest that a common group membership is necessary, but maybe not sufficient to affect average contributions as far as we focus on belonging to different municipal districts. Heterogeneity in participants' perceived local identity explains this effect in our context. If the common local affiliation is revealed through a label, citizens perceiving a strong local identification adjust their contribution behavior and contribute more to the excludable local public good. Furthermore, our findings indicate that these participants substitute contributions away from the non-excludable to the excludable public good. In addition, our results indicate that revealing the local identity becomes even more effective in a priming condition when participants are reminded of their common local affiliation before they indicate their contribution decision.

Our results imply that parochial interests and preferences do on average not interfere with an efficient provision of multilevel public goods within the setting of our inter-city experiment. Despite a common local identity could affect participants' behavior, efficiency considerations outweigh this effect.

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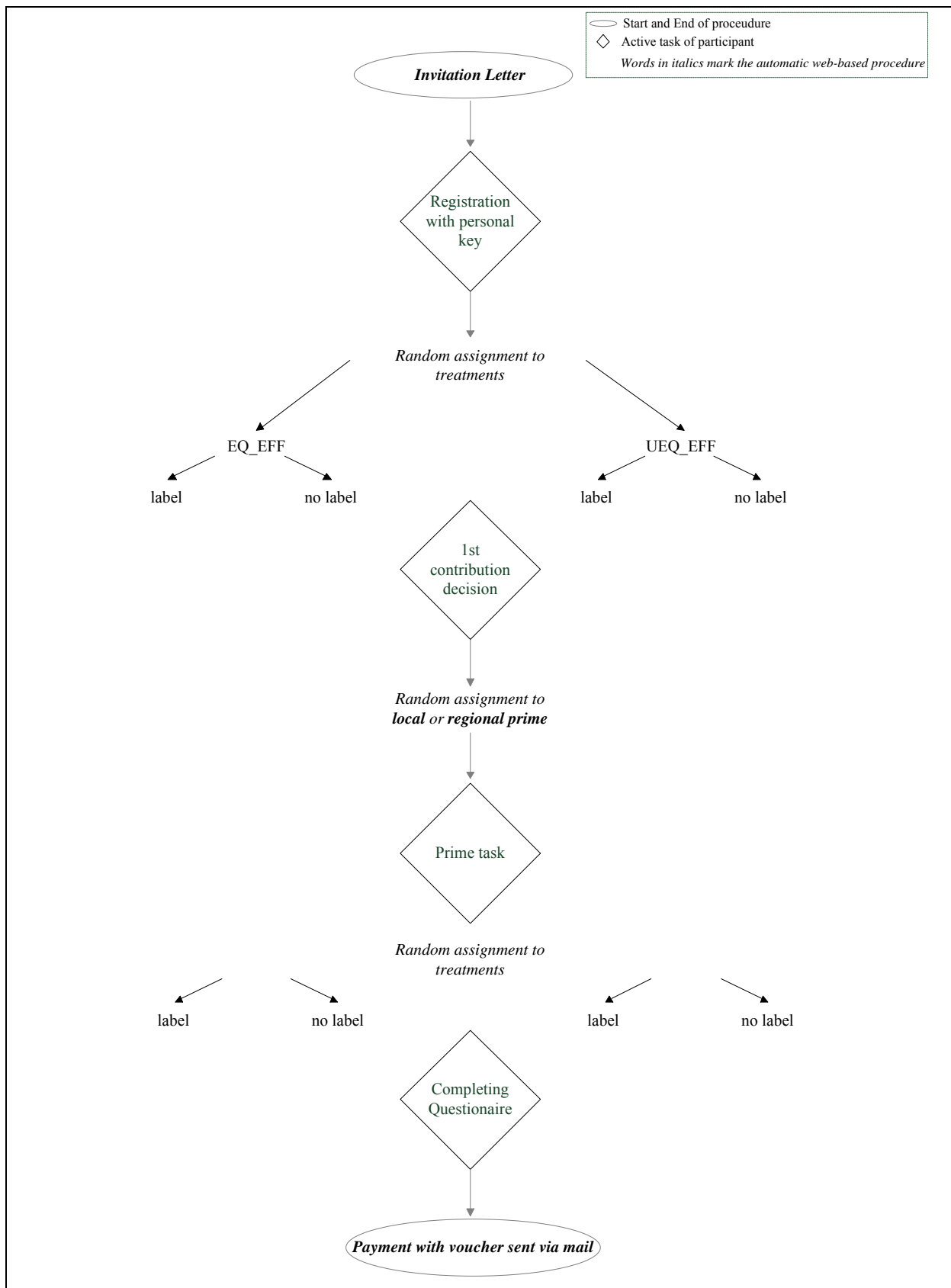


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# Supplementary Material

## Schematic Diagram Experimental Procedures



## Invitation Letter (translated from German)



UNIVERSITÄT  
HEIDELBERG  
ZUKUNFT  
SEIT 1386

# ZEW

Zentrum für Europäische  
Wirtschaftsforschung GmbH

– Invitation –

June 2015

### Invitation to participate in a scientific study

Dear Sir or Madam,

The University of Heidelberg and the Centre for European Economic Research (ZEW) in Mannheim are jointly carrying out a scientific study on individual choice behaviour. This research project is funded by the Federal Ministry of Education and Research.

Your household has been chosen randomly to actively support our research project by participating in a 15-minute online survey. You will receive a **reward** of **5 euros** for your participation in any case. The choices you will make in the online survey will further increase the amount of money.

No special previous knowledge is required. Please note that only one person per household can participate in this study and this person needs to have attained full age.

You may immediately start with the online survey. To do so, please, register at the following website:

**[www.zew.de/umfrage2015](http://www.zew.de/umfrage2015)**

Your personal access key (valid until 28.06.2015) is: <<**CODE**>>

Please, contact Dr Daniel Römer if you have any questions by calling 0621/1235-214 or send an email to [umfrage@zew.de](mailto:umfrage@zew.de). For further information, please, refer to the **back of the page**.

We are looking forward to your participation in this survey that surely is also of interest to you, and thank you very much for supporting this research project.

Prof Timo Goeschl, Ph.D.

Research Centre for Environmental Economics  
Alfred Weber Institute of Economics  
University of Heidelberg

Dr Daniel Römer

Environmental and Resource Economics,  
Environmental Management  
Centre for European Economic Research

## **Information sheet on content and procedure of the study**

### **Who is organising this study?**

This study is part of a joint research project of the University of Heidelberg and the Centre for European Economic Research (ZEW) in Mannheim. The University of Heidelberg is a public institute for education and research of the federal state Baden-Wuerttemberg. The ZEW is a non-profit research institute and member of the Leibniz Association. This research project is funded by the Federal Ministry of Education and Research.

### **How can I participate?**

You may participate starting from today until at the latest 28.06.2015 (as long as the maximum number of participants has not been reached). You only need a device (e.g. computer, laptop, tablet or smartphone) with internet access and internet browser (e.g. Internet Explorer, Firefox, Safari, Chrome).

- *Computer/laptop:* To register, please, enter [www.zew.de/umfrage2015](http://www.zew.de/umfrage2015) into the address bar of your internet browser. It leads you to the start screen where you need to enter your personal access key. The access key is on the first page of the invitation letter. This access key allows you to participate in the study one time only. The online survey starts immediately after you have entered the key.
- *Tablet/smartphone:* To register, please, enter [www.zew.de/umfrage2015](http://www.zew.de/umfrage2015) into the address bar of your internet browser. Alternatively, you may also use an adequate app to read the QR code beside this paragraph. Both options lead you to the start screen where you need to enter your personal access key. The access key is on the first page of the invitation letter. This access key allows you to participate in the study one time only. The online survey starts immediately after you have entered the key.



### **What about my data?**

The information you give is exclusively used for research purposes and analysed anonymously. Your personal data are exclusively used to transfer your reward to you and are neither related to the information given in the survey nor given to any third-party.

### **What influences the amount of reward I will receive?**

Your reward consists of a standard reward and an additional reward. In any case, you will receive the standard reward of 5 euros for participating. The amount of the additional reward depends on your own choices and those of the other participants.

### **How will I receive my reward?**

We want to transfer your reward to you without you having to give us your bank data. Therefore, you will receive a shopping voucher by mail about 4 weeks after participating. The value of the voucher equals the total amount of your reward (standard reward of 5 euros plus additional reward). You may use the voucher in many different local stores and online shops to pay for your shopping (e. g. Galeria Kaufhof, Karstadt, Media Markt, Saturn – for the complete list of stores accepting the voucher, please, refer to this website: <http://www.edenred.de/produkte/ticket-shopping-card/akzeptanzpartner.html>)

## Instructions and Questionnaire (translated from German)

*Explanation: Please note that the square brackets [] indicate an alternative version of the different treatments and the label/no-label framing, respectively. The term city district (set in italics) stands for one of the four different city districts Bahnstadt, Feudenheim, Neuenheim, and Schwetzingenstadt/Oststadt, depending on where the respective participant is located.*

-Screen 1-

### Welcome to our research study!

Dear participant,

Thank you for showing your interest in this research study. You can start with the tasks immediately. Here you can find the most important information regarding your participation:

- The participation takes on average 15 minutes.
- It includes two tasks and questionnaires.
- All tasks will be precisely explained to you in the course of the study.
- All explanations are carried out as described:
  - By “money” we mean real amounts of money which will be paid out definitely.
  - By “other participants” we mean real people who participate in this study just like you.

**Note:** Please always use the provided buttons and **not** your internet browser for navigation because otherwise a successful completion of the survey is not guaranteed.

-Screen 2-

### Your expense allowance consists of two parts:

In any case, you will receive a lump sum amounting to 5 Euros if you complete both tasks and completely fill out the questionnaires.

- In task 1 or task 2, additional payments will arise for you and the other study participants.
- By coincidence, there will be a decision situation (comparable with a coin flip) following the study about whether you will receive the payment from either task 1 or task 2. Both are equally probable.
- We will definitely choose and pay out one of the two payments. You will receive the respective payment additionally to the lump sum.

Thus, your total payment for participating in the study consists of the following:

Your total payment = 5 Euros + payment of either task 1 **or** task 2

-Screen 3-

On the next screen, the first decision task starts. Please carefully read through the following explanations as it describes how your payment and the payments of the other study participants are dependent on your decision.

-Screen 4-

### **Explanation and procedure of task 1**

In this section, you can earn money additionally to the lump sum.

#### **Who are the other participants?**

All in all, 8 attendees participate in this decision task, namely you and 7 more participants. [Apart from you, 3 other participants are inhabitants of *city district*. The other 4 participants are not inhabitants of *city district* but of another area located in the Rhine-Neckar Metropolitan Region.]

#### **What is your task?**

In this task, you and all other participants are provided with **8 Euros at your free disposal**. Please note that you receive this amount of money in addition to the lump sum. Your task is to decide on how to distribute the 8 Euros to the three different pots. It is important to know that the whole amount of 8 Euros has to be distributed completely to the three different pots. Please note that the other participants have to face the same situation of decision-making as you do.

#### **How do the pots differ from each other?**

At the end of the study, the total sum of the amounts of money from all three pots are paid out to you and to the other participants according to the rules explained below. It depends on the pot (A, B, or C) if either you, or you and 3 other participants, or you and 7 other participants benefit from the payment. In addition, the total sum of certain pots is multiplied before receiving any payment.

**Pot A (private): Only you** can put an amount of money into this pot. For every Euro that is put into the pot, you will receive **1 Euro**. The 7 other participants **do not receive** any payment from your pot. However, every participant equally owns a respective pot A.

**Pot B (4 participants [city district]): Apart from you, there are 3 more participants** [from *city district*] (in total 4 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled** and the respective sum will be **equally** distributed to all 4 participants. For every Euro that is put into Pot B, you and the **3 other participants** will consequently receive **0.50 Euros each**. The other group, which also comprises 4 participants, will not receive any payment from your Pot B. However, the other group also owns a respective Pot B.

**Pot C (8 participants [Rhine-Neckar Metropolitan Region]):** Apart from you, there are 7 other participants [from the Rhine-Neckar Metropolitan Region] (in total 8 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled [quadrupled]** and the respective sum will be **equally [unequally]** distributed to all

8 participants. For every Euro that is put into Pot C, you and the 7 other participants [from the Rhine-Neckar Metropolitan Region] will consequently receive **0.25 Euros [0.50 Euros] each**. [For every Euro that is put into Pot C, you and the 3 other participants with whom you also share Pot B will receive 0.25 Euros [0.75] each. In return, the 4 participants of the opposite group, who also own a respective Pot B, receive 0.75 Euros [0.25] each.]

If task 1 is chosen for payment, your total payment is composed of the following elements:

Total payment = 5 Euro (lump sum) + 1.0 x (sum of Euros of Pot A) + 0.5 x (sum of Euros of Pot B)

+ 0.25 [0.50, 0.75] x (sum of Euros of Pot C)

-Screen 5-

Please enter the amount of money you want to put into the three pots. Please remember that you are provided with 8 Euros at your free disposal for this task of decision-making and you can decide on how to distribute this amount of money to the three different pots. For this purpose, please fill in the gaps by entering an amount between 0 and 8 Euros.

Pot A (private): \_\_\_ €

Pot B (4 participants [*city district*]): \_\_\_ €

Pot C (8 participants [Rhine-Neckar Metropolitan Region]): \_\_\_ €

**Pot A (private): Only you** can put an amount of money into this pot. For every Euro that is put into the pot, you will receive **1 Euro**. The 7 other participants **do not receive** any payment from your pot. However, every participant equally owns a respective pot A.

**Pot B (4 participants [*city district*]): Apart from you, there are 3 more participants** [from *city district*] (in total 4 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled** and the respective sum will be **equally** distributed to all 4 participants. For every Euro that is put into Pot B, you and the **3 other participants** will consequently receive **0.50 Euros each**. The other group, which also comprises 4 participants, will not receive any payment from your Pot B. However, the other group also owns a respective Pot B.

**Pot C (8 participants [Rhine-Neckar Metropolitan Region]):** Apart from you, there are 7 other participants [from the Rhine-Neckar Metropolitan Region] (in total 8 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled [quadrupled]** and the respective sum will be **equally [unequally]** distributed to all 8 participants. For every Euro that is put into Pot C, you and the 7 other participants [from the Rhine-Neckar Metropolitan Region] will consequently receive **0.25 Euros [0.50 Euros] each**. [For every Euro that is put into Pot C, you and the 3 other participants with whom you also share Pot B will receive 0.25 Euros [0.75] each. In return, the 4 participants of the opposite group, who also own a respective Pot B, receive 0.75 Euros [0.25] each.]

-Screen 6-

Before doing task 2, we would like to gather some information about your district.

-Screen 7-

Now we would like you to answer the following questions.

-----  
1. How strongly do you identify yourself with the Rhine-Neckar Metropolitan Region?

Please choose one of the following answers:

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----  
2. How strongly do you identify yourself with the district of *city district*?

Please choose one of the following answers:

Not at all     Slightly     Moderately     Very     Extremely     No statement

-Screen 8-

Now we would like you to answer the following questions.

1. Please indicate how much you, as an inhabitant of *city district*, agree with the following statements.

-----  
a) I deliberately decided to live in *city district*.

Please choose one of the following answers:

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----  
b) I actively participate in local organizations and groups which mainly consist of members who are inhabitants of *city district*.

Please choose one of the following answers:

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----  
c) I am happy to live in *city district*.

Please choose one of the following answers:

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----  
d) I participate in neighborhood activities together with other inhabitants of *city district*.

Please choose one of the following answers:

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----  
e) Recently, many new inhabitants have moved to *city district*.

Please choose one of the following answers:

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----  
2. Please describe the positive aspects of *city district* briefly in your own words.



Answer \_\_\_\_\_

-Screen 9-

On the next screen, the second decision task starts. Please carefully read through the following explanations as it describes how your payment and the payments of the other study participants are dependent on your decision.

-Screen 10-

### **Explanation and procedure of task 2**

In this part of the study, you can also earn money additionally to your lump sum. Regarding the procedure, the second task is similar to the first task. The only difference is that the participants form new groups in the second task.

#### **Who are the other participants?**

All in all, 8 attendees participate in this decision task, namely you and 7 more participants. **These 7 participants are not the same persons as in task 1 since the groups were newly formed for task 2.** [Apart from you, 3 other participants are inhabitants of *city district*. The other 4 participants are not inhabitants of *city district* but of another area located in the Rhine-Neckar Metropolitan Region.]

#### **What is your task?**

In this task, you and all other participants are provided with **8 Euros at your free disposal**. Please note that you receive this amount of money in addition to the lump sum. Your task is to decide on how to distribute the 8 Euros to the three different pots. It is important to know that the whole amount of 8 Euros has to be distributed completely to the three different pots. Please note that the other participants have to face the same situation of decision-making as you do.

#### **How do the pots differ from each other?**

At the end of the study, the total sum of the amounts of money from all three pots are paid out to you and to the other participants according to the rules explained below. It depends on the pot (A, B, or C) if either you, or you and 3 other participants, or you and 7 other participants benefit from the payment. In addition, the total sum of certain pots is multiplied before receiving any payment.

**Pot A (private): Only you** can put an amount of money into this pot. For every Euro that is put into the pot, you will receive **1 Euro**. The 7 other participants **do not receive** any payment from your pot. However, every participant equally owns a respective pot A.

**Pot B (4 participants [*city district*]): Apart from you, there are 3 more participants** [from *city district*] (in total 4 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled** and the respective sum will be **equally** distributed to all 4 participants. For every Euro that is put into Pot B, you and the **3 other participants** will consequently receive **0.50 Euros each**. The other group, which also

comprises 4 participants, will not receive any payment from your Pot B. However, the other group also owns a respective Pot B.

**Pot C (8 participants** [Rhine-Neckar Metropolitan Region]): Apart from you, there are 7 other participants [from the Rhine-Neckar Metropolitan Region] (in total 8 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled** [**quadrupled**] and the respective sum will be **equally** [**unequally**] distributed to all 8 participants. For every Euro that is put into Pot C, you and the 7 other participants [from the Rhine-Neckar Metropolitan Region] will consequently receive **0.25 Euros** [**0.50 Euros**] each. [For every Euro that is put into Pot C, you and the 3 other participants with whom you also share Pot B will receive 0.25 Euros [0.75] each. In return, the 4 participants of the opposite group, who also own a respective Pot B, receive 0.75 Euros [0.25] each.]

If task 1 is chosen for payment, your total payment is composed of the following elements:

Total payment = 5 Euro (lump sum) + 1.0 x (sum of Euros of Pot A) + 0.5 x (sum of Euros of Pot B)

+ 0.25 [0.50, 0.75] x (sum of Euros of Pot C)

-Screen 11-

Please enter the amount of money you want to put into the three pots. Please remember that you are provided with 8 Euros at your free disposal for this task of decision-making and you can decide on how to distribute this amount of money to the three different pots. For this purpose, please fill in the gaps by entering an amount between 0 and 8 Euros.

Pot A (private): \_\_\_ €

Pot B (4 participants [*city district*]): \_\_\_ €

Pot C (8 participants [Rhine-Neckar Metropolitan Region]): \_\_\_ €

**Pot A (private): Only you** can put an amount of money into this pot. For every Euro that is put into the pot, you will receive **1 Euro**. The 7 other participants **do not receive** any payment from your pot. However, every participant equally owns a respective pot A.

**Pot B (4 participants** [*city district*): **Apart from you, there are 3 more participants** [from *city district*] (in total 4 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled** and the respective sum will be **equally** distributed to all 4 participants. For every Euro that is put into Pot B, you and the **3 other participants** will consequently receive **0.50 Euros each**. The other group, which also comprises 4 participants, will not receive any payment from your Pot B. However, the other group also owns a respective Pot B.

**Pot C (8 participants** [Rhine-Neckar Metropolitan Region]): Apart from you, there are 7 other participants [from the Rhine-Neckar Metropolitan Region] (in total 8 participants) who can put an amount of money into this pot. Every Euro which is put into this pot will be **doubled** [**quadrupled**] and the respective sum will be **equally** [**unequally**] distributed to all

8 participants. For every Euro that is put into Pot C, you and the 7 other participants [from the Rhine-Neckar Metropolitan Region] will consequently receive **0.25 Euros [0.50 Euros] each**. [For every Euro that is put into Pot C, you and the 3 other participants with whom you also share Pot B will receive 0.25 Euros [0.75] each. In return, the 4 participants of the opposite group, who also own a respective Pot B, receive 0.75 Euros [0.25] each.]

-Screen 12-

After having made your decisions, we are interested in how you assess the behavior of the other participants in **task 2**.

-----  
1. Regardless of your own decision: In your opinion, which decision did the other participants from *city district* make on average when they had to face the same situation of decision-making as you did?

Pot A: \_\_\_€ Pot B: \_\_\_€ Pot C: \_\_\_€

-----  
2. Regardless of your own decision: In your opinion, which decision did the other participants from the Rhine-Neckar Metropolitan Region make on average when they had to face the same situation of decision-making as you did?

Pot A: \_\_\_€ Pot B: \_\_\_€ Pot C: \_\_\_€

-Screen 13-

Now we would like to know your opinion about the comprehensibility of the tasks. .

-----  
1. Please indicate how much you agree with the following statement: The instructions for the tasks were clearly explained.

*Please choose one of the following answers:*

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----  
2. Regardless of your actual decision: How would you have distributed the 8 Euros to Pot A, Pot B and Pot C in task 2 if it had been your aim to maximize the expense allowance for yourself?

Pot A: \_\_\_€ Pot B: \_\_\_€ Pot C: \_\_\_€

-----  
3. Regardless of your actual decision: How would you have distributed the 8 Euros to Pot A, Pot B and Pot C in task 2 if it had been your aim to maximize the expense allowance for all 8 participants in the decision task?

Pot A: \_\_\_€ Pot B: \_\_\_€ Pot C: \_\_\_€

-Screen 14-

Thank you very much, you are almost done. Finally, we would like to ask you for some personal details.

-Screen 15-

Now we would like you to answer the following questions.

-----

1. Please indicate how much you, as an inhabitant of the *city district*, agree with the following statements.

-----

a) I am proud to live in the district of *city district*.

*Please choose one of the following answers:*

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----

b) I feel comfortable in the district of *city district*.

*Please choose one of the following answers:*

Not at all     Slightly     Moderately     Very     Extremely     No statement

-----

2. Self-assessment of your personality: In general, are you a person willing to take risks or are you more risk-averse?

*Explanation about the scale: 0 (risk-averse) to 5 (prepared to take risks)*

*Please choose one of the following answers:*

0     1     2     3     4     5     No statement

-----

3. What is your opinion about the following three statements?

a) In general, people can be trusted.

*Please choose one of the following answers:*

Strongly Disagree     Disagree     Agree     Strongly Agree     No statement

-----

b) Nowadays people are no more reliable.

*Please choose one of the following answers:*

- Strongly Disagree       Disagree       Agree       Strongly Agree       No statement

-----

c) If you are dealing with strangers, it is better to be cautious before you trust them.

*Please choose one of the following answers:*

- Strongly Disagree       Disagree       Agree       Strongly Agree       No statement

-----

4. Do you think that most people...

*Please choose one of the following answers:*

- ... would take advantage of you if they had the possibility to do so...  
 ...or would rather try to be fair to you?  
 No statement

-----

5. In your opinion, would you say that most of the time people...

*Please choose one of the following answers:*

- ... try to be helpful...  
 ...or only pursue their own interests?  
 No statement

-----

6. Please specify your gender:

*Please choose one of the following answers:*

- Male  
 Female

-----

7. How old are you? \_\_\_\_\_ years

-----

8. How long have you been living in the Rhine-Neckar Metropolitan Region?

For approximately \_\_\_\_\_ years

-----

9. How long have you been living in the district of *city district*?

For approximately \_\_\_\_\_ years

-----

10. Do you consider yourself a member of a certain religious community?

*Please choose one of the following answers:*

- Not at all     Slightly     Moderately     Very     Extremely     No statement

-----

11. What are your native languages? \_\_\_\_\_

-----

12. In total, how much money does your household have at your disposal (net income) per month?

*Please choose one of the following answers:*

- Up to less than 500€     500€ to 1,000€     1,000€ to 1,500€     1,500€ to 2,000€     2,000€ to 3,000€     3,000 to 4,000€     4,000€ or more     No statement

-----

13. Which party would you vote for if the parliamentary elections were held next Sunday?

*Please choose one of the following answers:*

- CDU/CSU     FDP     I do not vote  
 SPD     Die Linke     No statement  
 Bündnis 90/Die Grünen     AfD     Other: \_\_\_\_\_

-----

14. What is the highest level of education you have received?

*Please choose one of the following answers:*

- No qualification  
 Hauptschule (Secondary School Leaving Certificate)  
 Mittlere Reife (O level)  
 Fachhochschulreife (Advanced Technical College Certificate)  
 Abitur (A level / Higher Education Entrance Qualification)  
 Completed apprenticeship  
 University Diploma / Polytechnic Degree  
 No statement  
 Other qualification: \_\_\_\_\_

-Screen 16-

You will definitely receive 5 Euros for your participation. For the additional payment, there will be a decision situation (comparable with a coin flip) which randomly selects whether you will receive the additional payment either from task 1 or task 2. Both are equally probable.

We definitely choose and pay one of the two payments. You will receive the respective payment additionally to the lump sum.

Your total payment = 5 Euros + payment from either task 1 **or** task 2

As soon as all participants have made their decisions, we will inform you about the resulting total payment.

-----

In order to enable you to receive the expense allowance without providing your personal bank data, you will receive a shopping voucher by mail approximately 4 weeks after your participation. The value of the voucher corresponds to your total payment. You can use the voucher to cover the costs of your purchase in numerous local shops and online shops (e.g. Galeria Kaufhof, Karstadt, Media Markt, Saturn).

-----

For this purpose, please enter your address:

Note: Your address will be used only for sending the shopping voucher and will not be transferred to third parties. Moreover, the data of the questionnaires will not be linked to your address data. If you have any questions concerning this research procedure, please do not hesitate to contact the directors of the study by calling 0621/1235-214 or by email ([umfrage@zew.de](mailto:umfrage@zew.de)).

Name: \_\_\_\_\_  
Surname: \_\_\_\_\_  
Street Address: \_\_\_\_\_  
Zip Code: \_\_\_\_\_  
City: \_\_\_\_\_

-----

Did you enjoy taking part in this study and do you want to participate in other scientific studies of this type?

We would be pleased to add your name to our member database and would be happy to invite you to further studies. For this purpose, we only need your e-mail address. As a matter of course, your e-mail address is not used for any other purposes and if you wish to withdraw your participation offer at any point, your data will be directly unsubscribed from the database.

E-mail Address: \_\_\_\_\_

*-Screen 17-*

Thank you very much!

Your answers were stored.

