University of Heidelberg

Department of Economics

Discussion Paper Series | No. 630

Leveling up? An inter-neighborhood experiment on parochialism and the efficiency of multi-level public goods provision

Carlo Gallier, Timo Goeschl, Martin Kesternich,
Johannes Lohse, Christiane Reif, Daniel Römer

January 2017

LEVELING UP?

AN INTER-NEIGHBORHOOD EXPERIMENT ON PAROCHIALISM AND THE EFFICIENCY OF MULTI-LEVEL PUBLIC GOODS PROVISION

Carlo Gallier[a,*], Timo Goeschl[a,b], Martin Kesternich[a], Johannes Lohse[c], Christiane Reif[a], Daniel Römer[d]

[a]Centre for European Economic Research (ZEW), Mannheim; [b]Department of Economics, Heidelberg University, Heidelberg; [c]Department of Economics, University of Birmingham, Birmingham; [d]Kreditanstalt für Wiederaufbau (KfW), Frankfurt

This version: January 30, 2017

Abstract: Many public goods can be provided at different spatial levels. Evidence from social identity theory and in-group favoritism raises the possibility that where higher-level provision is more efficient, subjects' narrow concern for local outcomes (parochialism) could harm efficiency. Building on the experimental paradigm of multi-level public good games and the 'neighborhood attachment' concept, we conduct an artefactual field experiment with 600 participants in a setting conducive to parochial behavior. In an inter-neighborhood intra-region design, subjects allocate an endowment between a personal account, a local, and a regional public good account. The between-subjects design varies across two dimensions: One informs subjects that the smaller local group consists of members from their own neighborhood ('neighbors'). The other varies the relative productivity at the two public goods provision levels. We find evidence for parochialism, but contrary to our hypothesis, parochialism does not interfere with efficiency: The average subject responds to a change in relative productivities at the local and regional level in the same way, whether aware of their neighbors' presence in the small group or not. The results even hold for subjects with above-median neighborhood attachment and subjects primed on neighborhood attachment.

Keywords: Social identity; parochialism; multi-level public goods, artefactual field experiment.

JEL: C9, D7, H4

Acknowledgement: Financial support by the German Federal Ministry of Education and Research (FKZ 01UN1204A/C) is gratefully acknowledged. Further details can be obtained from http://kooperationen.zew.de/en/soko/homepage.html.

[*]**Correspondence:** Carlo Gallier, Centre for European Economic Research, gallier@zew.de

1. Introduction

Public goods (PG) can be provided at different spatial levels. As a result, individuals often have to make a decision not just whether to contribute to PG, but how much to contribute at different levels: Should I contribute to wildlife conservation through donating to a conservation area in my neighborhood when I could also contribute to wildlife conservation through a regional wildlife initiative? Should I give more support to my local public radio station – or more to the national network? In the 'level problem', individuals need to come to a decision whether and how much to contribute at different levels, each involving groups of different size and differently sized benefits of contributing for others – and for oneself.

The multi-level public goods game (ML-PGG) is an extension of the standard PGG that experimental economists have been employing for some time now in order to understand more about individual behavior in the level problem (Wachsman 2002, Wit and Kerr 2002, Blackwell and McKee 2003, Buchan et al. 2009, Güth and Sääksvuori 2012, Fellner and Lünser 2014, Chakravarty and Fonseca 2016).[1] While design details differ, the unifying feature of all ML-PGG is the nested structure of social dilemmas: Subjects can privately provide the PG in a smaller group at the lower level and in a larger group at the upper level, and all the smaller groups are fully contained within a larger group. This nested structure is what differentiates the ML-PGG from other extensions of the standard PGG to multiple PGs (e.g. Cherry and Dickinson 2008, Falk et al. 2013, McCarter et al. 2014)[2] and what allows the level problem to be captured by design.

To the public economist, the ML-PGG offers an opportunity to re-examine the behavioral economics of the level problem. The behavioral phenomenon at the heart of the present paper is the possibility that individuals exhibit a narrow concern for their own local group in the level problem, attaching a consequently lower weight to outcomes for the larger group in which the local group is nested. Such parochial concerns could interfere with the efficiency of individuals' contribution decisions across the different levels in major ways, in particular if the provision of public goods technically exhibits economies of scale over some relevant range. Such scale economies are a regular feature of public goods such as education

[1] More recently, the ML-PGG has also been applied in quantitative biology to study the evolution of cooperation (Wang et al. 2011).

[2] ML-PGG designs so far capture the concurrence of PG dilemmas in two different ways. One set of designs involves an allocation tasks for an experimental endowment not just between a private and a single group account, but between a private and two group accounts that differ in group size, marginal per-capita return, and other structural features (Blackwell and McKee 2003, Buchan et al. 2009, Fellner and Lünser 2014, Chakravarty and Fonseca 2016). The other set of designs retains the standard allocation task between one private and one public account, but varies across treatments the externalities that the public account generates to different groups (Engel and Rockenbach 2009, Güth and Sääksvuori 2012).

(Brasington 2003), municipal services (Reingewertz 2012), fire (Duncombe and Yinger 1993) and police services (Finney 1997) and are commonly captured in ML-PGG by higher aggregate returns to contributing to spatially higher levels. The implication is that 'leveling up', i.e. more contributions going to the higher provision level, is in the interest of social efficiency (Buchan et al. 2009, Güth and Sääksvuori 2012, Chakravarty and Fonseca 2016) and that behavioral mechanisms that impede 'leveling up' impose a social cost. Parochialism, the object of our present study, is an obvious candidate for such a mechanism.

The study of parochialism, i.e. favoring one's own group at the expense of efficiencies in the larger group, relates to the recent interest in economics in individuals' social identity or sense of group attachment (Akerlof and Kranton 2000). Such attachment has been shown to have significant impact on contribution decisions in the standard PGG when the design allows group attachment to play a role. When subjects share a social identity through a group, they tend to behave more cooperatively, than on average, towards those they recognize as group members and less cooperatively towards outsiders. Evidence for such in-group favoritism and out-group discrimination can sometimes be generated in standard PGGs in which the shared commonalities in the group are 'minimal' (Tajfel and Turner 1979, Bernhard et al. 2006, Chen and Li 2009)[3] and most reliably in settings in which the shared social identity is naturally grown through direct social interaction (e.g. Charness et al. 2007, Goette et al. 2006) and in which it can lead to potentially significant efficiency losses (e.g. Bernhard et al. 2006, Ruffle and Sosis, 2006). Our study of parochial behavior in the ML-PGG shares with the existing literature on group attachment a focus on in-group favoritism, but also differs because the nested architecture of the ML-PGG does not admit an out-group. Instead, it features several in-groups of different size and distance to the contributor. In such a setting, social identity very well might, but need not necessarily affect PG contributions and create a conflict between parochialism and efficiency.

In the present paper, we build on previous ML-PGG experiments with an allocation task between a personal account, a local public good account, and a regional public good account in order to investigate the presence and magnitude of the 'leveling up' effect. We do so in the setting of an artefactual field experiment[4] that is naturally suited for parochialism to manifest itself and at the same time allows for a controlled variation of both the relative productivities of PG provision at different levels and of the awareness of a shared group attachment in the small (low level) group. The ideal setting for parochialism to assert itself is one in which

[3] 'Minimal' groups are defined by a group identity constructed around an arbitrary membership criterion, such as assignment of a color or a shared taste in art (Turner et al. 1979).

[4] We follow the nomenclature of Harrison and List (2007) in this characterization.

individuals exhibit attachment to naturally grown groups at a local level, but not at a higher level. The experiment implements this setting by offering a choice of providing the PG at two levels, the local level being the neighborhood in which the subject lives and the regional level being the region in which the subjects' neighborhoods are all located. The affiliation of an individual to a neighborhood has a distinguished history in the literature as an identifier of attachment to a naturally grown group. Neighborhood affiliation is a well-established component of social identity in social psychology and sociology. Intensively studied for at least forty years (see Lewicka 2011 for a survey), neighborhood attachment correlates with other measures of 'local social capital', the intensity of neighborhood ties, and the level of involvement of subjects in informal social activities in the neighborhood (Ringel and Finkelstein 1991, Moser et al. 2002, Bonaiuto et al. 2003, Brown et al. 2003, Lewicka 2005). Correspondingly, the neighborhood has since been used in economics as an appropriate level at which to investigate parochialism in trust relationships (Falk and Zehnder 2013, Meier et al. 2016), PG provision (Marschall 2004), and social dilemmas in general (Falk et al. 2013). Neighborhood affiliation is also a particularly meaningful concept in the present context because of the explicitly spatial nature of the ML-PG provision problem in our experimental implementation. Numerous PGs are provided at the neighborhood level because the neighborhoods in our experiment, municipal districts in German cities, are political entities that have their own neighborhood associations, their own physical infrastructure of social interaction such as community halls, and send their own delegates to the city council. The neighborhood therefore provides a direct connection to public decision-making in the real world. Attachment to one's neighborhood contrasts with that to one's region, the other level of PG provision implemented in our experiment. Emotional attachment to regions is generally weak (Lewicka 2011) because regions are considered by their inhabitants to be more abstract (Tuan 1975), spatially fuzzy (Laczko 2005), and often a product of government planning rather than historically grown (Paasi 2003). All of these characteristics apply to the region that is used as the higher provision level in our present experiment, providing the desirable differential in attachment compared to the neighborhood level.

The controlled variation of the awareness of shared group attachment comes from two treatment conditions, one in which subjects learn that the small group contains only members of the subject's own neighborhood and the other in which they do not. The controlled variation in the relative productivities of PG provision at the local and regional level comes from two treatments that differ in the marginal per-capital return (MPCR) of the regional PG. Together with the recourse to naturally grown groups, this two-by-two design allows us to

answer whether parochialism interferes with greater efficiency in ML social dilemmas. This gives rise to three distinct contributions: The first is the exogenous variation of a naturally grown social identity, thereby going beyond minimal (Blackwell and McKee 2003, Chakravarty and Fonseca 2016) and anonymous groups (Fellner and Lünser 2014) and experiments without exogenous variation in place attachment (Buchan et al. 2009). The second is a design that answers to the need for a randomized assignment of subjects to treatments in which *both* the salience of social identity and the relative contribution productivities in the ML-PGG differ. This allows a clean disentangling of the social identity dimension and the efficiency dimension, which is not possible on the basis of existing evidence. Such disentangling is required, however, in order to isolate whether social identity and efficiency (MPCR) interact negatively. Earlier experiments either vary the MPCR of one of the two PGs (Blackwell and McKee 2003, Fellner and Lünser 2014, Chakravarty and Fonseca 2016), vary the salience of the group affiliation at a constant MPCR (Chakravarty and Fonseca 2016), or examine home-grown variations in group affiliation (Buchan et al. 2009). None implements the full factorial design with randomized assignment that is required to test whether groups with a shared social identity at the local level respond less to changes in the MPCR than those without a shared social identity.

The results presented in this paper are based on data collected in an artefactual field experiment of the ML-PGG type in which over 600 participants decide online about the private provision of concurrent and perfectly substitutable public goods at two different levels. Our experimental results are threefold: First, we show that some of the effects of social identity generated in lab-based ML-PGG experiments successfully transfer to our field setting. Our results reaffirm the previous finding (Blackwell and McKee 2003, Fellner and Lünser 2014, Chakravarty and Fonseca 2016) that the level-wise allocation of private contributions to different PG levels is socially inefficient: Average contributions to the small group are positive even when the large group PG generates higher total benefits. We also reaffirm the MPCR effect in ML-PGG of previous studies (Blackwell and McKee 2003, Fellner and Lünser 2014, Chakravarty and Fonseca 2016): Increasing the MPCR of the regional PG attracts higher contributions. Secondly, we exploit our factorial design to challenge interpretations of previous ML-PGG evidence. We show that it is misleading to interpret inefficient level-wise allocations as clear-cut evidence for parochialism. In our experiment, inefficient allocations arise irrespective of whether subjects are aware of a shared neighborhood affiliation in the smaller group or not. ML-PGGs therefore forego some efficiency gains even in the absence of parochialism. Our third and main result is that the

strength of the MPCR effect does not vary with the presence of a naturally grown social identity in the small group. Comparing groups in which subjects were or were not aware that the small group consisted of their local neighbors, we find that both groups increased their contributions to the regional PG as the MPCR of the regional PG increased. Importantly, this increase is not statistically smaller in the group where neighborhood attachment was made public. In other words, a higher efficiency of the regional PG was associated with a leveling up of contributions by subjects, and the leveling up was the same across groups, irrespective of whether subjects knew that the small group consisted of their neighbors. This finding is robust. It holds on average, but also for subjects with above-median neighborhood attachment and for subjects that have been procedurally primed on their neighborhood attachment, even though both types of subjects exhibit clearly more parochialism in their contributions to the smaller group PG than the rest of the population. In our artefactual field experiment, therefore, efficiency can be said to survive parochial bias.

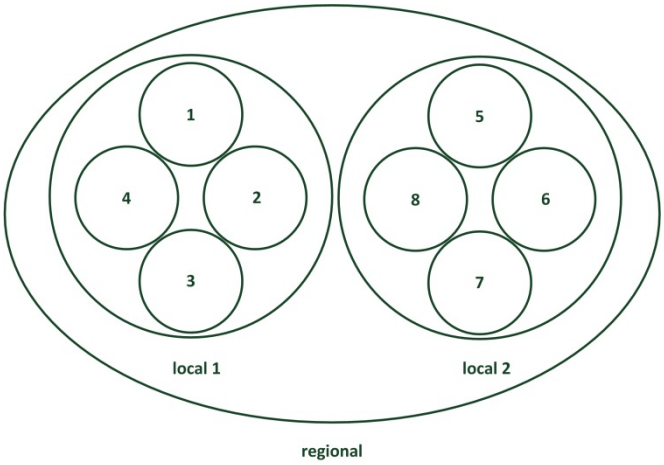
The remainder of the paper is organized as follows. Section 2 describes the experimental design and derives our theoretical predictions. Section 3 contains a detailed description of the experimental protocol. We present the experimental results and robustness checks in Section 4. The last section provides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

2. Experimental Design & Theoretical Predictions

2.1. Experimental Design

Our experimental design implements a multi-level public goods game in which each subject is a member both of a small group consisting of four members and of a larger group of eight members. The larger group is composed of the small group of four plus an additional four members, who are all members of the same other small group. In the parlance of ML-PGG, the smaller groups are therefore 'nested' (e.g. Güth and Sääksvuori 2012) in the larger group, with two small groups of four making up one large group of eight. In keeping with that literature, we will repeatedly refer in the paper (but not the instructions) to the small group and its PG as *local* and contrast that with the larger group and its PG being termed *regional*. Figure 1 illustrates the group composition.

Figure 1: Group composition



The decision task for subjects is to allocate an initial endowment across three different accounts: a private account that subjects retain for themselves, a PG that generates benefits to the member's local group only, and a PG that provides benefits to the entire regional group. Formally, subject *i*'s payoff, π_i, given the contribution decisions of all remaining seven subjects, of which three are in subject *i*'s local group L_i and four in the other local group L_{-i} of which *i* is not a member, can be expressed as

$$\pi_i = e - q_i^l - q_i^r + \alpha^l \sum_{j \in L_i} q_j^l + \alpha^r \sum_{j \in L_i \cup L_{-i}} q_j^r$$

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. α^l is the MPCR from the local public good and α^r denotes the MPCR from the regional public good. The respective MPCRs fulfill the standard requirements for a social dilemma, with $\alpha^l < 1$ and $4\alpha^l > 1$ for the local as well as $\alpha^r < 1$ and $8\alpha^r > 1$ for the regional group.

The treatment conditions and parametric implementation of the design are summarized in Table 1 for stage 1 of the experiment and Figure A1 in the appendix provides a schematic diagram of the two-stage procedural implementation plus the number of subjects in each treatment. Table 1 shows that the experimental treatments vary along two dimensions, MPCR and social identity. We start with the two MPCR conditions that vary the productivity of the regional PG. Subjects are randomly assigned to one of these conditions at the outset of the experiment and remain in the same MPCR condition until the end. As in Blackwell and McKee (2003), there are two MPCRs for the regional good while the MPCR for the local PG is always set at $\alpha^l = 0.5$. The total benefits (TB) of a one unit contribution to the local PG

across the entire regional society of eight are therefore held constant at 2 units.[5] Condition LOW features a regional MPCR of $\alpha^r = 0.25$ and corresponding TB of 2. In condition LOW, therefore, the TB of the local and the regional PG are the same while the price of contributing is lower in the local PG.[6] Condition HIGH features an MPCR of $\alpha^r = 0.5$, a corresponding TB of 4,which is larger than the TB of the local good, but the same price of contributing.[7]

The second treatment dimension, social identity, is implemented in two stages, corresponding to two consecutive decision tasks for each subject. In both stages, the treatment consists of whether subjects receive information that they share a group attachment with the members of the smaller and the larger group. The group attachment for the smaller group is residence in the same neighborhood, for the larger it is residence in the same region. The *neighborhoods* in the experiment are municipal districts, i.e. political entities with a typical population of several thousand inhabitants and an area of around five square kilometers that elect their own representatives to the city council. The *region* in the experiment is a metropolitan area straddling several states with a population of over two million and in which the neighborhoods are located. The region does not function as a political entity. In the condition *LABEL*, subjects learn that the small group contains three other individuals that reside in the subject's own neighborhood and that the large group contains those three plus four individuals that reside in the same region as the subject. Subjects assigned to the treatment condition NOLABEL, on the other hand, are not informed that the three other members of the smaller group share a common neighborhood with the subject. Jointly, the two treatment dimensions of MPCR and social identity allow us to identify how contributions in a ML-PGG respond to naturally occurring forms of social identity.

Table 1: Experimental Design, Stage 1 – Summary

Treatment	**Local Public Good (LPG)**			**Regional Public Good (RPG)**		
	#	α^l	TB^l	#	α^r	TB^r
LOW – NOLABEL	4	0.5	2	8	0.25	2
LOW – LABEL	4	0.5	2	8	0.25	2
HIGH – NOLABEL	4	0.5	2	8	0.5	4
HIGH – LABEL	4	0.5	2	8	0.5	4

[5] With $\alpha^l = 0.5$, a contribution to the local PG of €1 by one subject generates €0.5 for four subjects in the local group only and therefore a total benefit of €2 for the entire group of eight.

[6] The price of giving for the individual contributor is the opportunity cost of contributing to the PG. At an MPCR of 0.5, the contributor receives €0.5 in PG for every €1, corresponding to a price of €0.5. At an MPCR of 0.25, the contributor only receives €0.25 and the price is €0.75.

[7] At $\alpha^r = 0.25$ ($\alpha^r = 0.5$), a contribution to the regional PG of €1 by one subject generates €0.25 (€0.5) for eight subjects in the regional group and therefore a total benefit of €2 (€4) for the entire group of eight.

Subjects take one allocation decision in stage 1 of the experimental session. There is no feedback after stage 1. The session then continues with stage 2, which is essentially a repeat of stage 1, but preceded by a priming task that follows the natural identity stimulation approach by Li et al. (2014) and Chen et al. (2014). There, subjects first complete a questionnaire that contains a set of seven questions about their neighborhood and their involvement in neighborhood activities and, second, a short writing task in response to an open-ended question. There are two versions of the open-ended question. Given our interest in parochial preferences, the analysis of stage 2 decisions uses observations from the majority of subjects (74 percent) assigned to the *local prime* version in which subjects list positive aspects of living in their specific neighborhood.[8] After completing the writing task, subjects take their stage 2 allocation decision. To determine final payoffs to subjects, the group decision of one regional group in one of the two stages was randomly selected and the corresponding pay-offs computed at the end of the experiment.[9]

2.2 Hypotheses

In a sequence of two one-shot ML-PGG, purely selfish individuals are predicted to allocate their entire endowment to their private account in both decisions. Given the parameter choices of the design, this prediction holds for all four treatment conditions, irrespective of the level of the MPCR (LOW or HIGH) and of the social identity information (LABEL or NOLABEL). The behavior of the average subject in PGG experiments, however, is not consistent with the assumption of purely selfish preferences (Ledyard 1995, Zelmer 2003, Chaudhuri 2011). This also holds for behavior in the ML-PGG for which previous experiments have found that individuals exploit the free-riding opportunities present in the ML-PGG to a significantly lower degree than predicted in the standard Nash equilibrium of purely selfish players (Blackwell and McKee 2003, Güth and Sääksvuori 2012, Fellner and Lünser 2014).

The levels of cooperation observed in the ML-PGG can be traced back to well understood structural factors that explain cooperation in the linear PGG such as the MPCR. The conclusive evidence from the standard PGG that higher MPCRs induce higher contributions (Isaac et al. 1984, Zelmer 2003, Chaudhuri 2011) carries over to ML-PGG. Like in the standard PGG, a higher MPCR increases efficiency through a higher productivity and, at the same time, a lower price of giving (Andreoni and Miller 2002). Group size, another structural

[8] The remaining 26 percent of subjects were assigned to the *regional prime* version in which they listed positive aspects of living in the region.
[9] To prevent spillover or licensing effects, subjects are informed at the beginning of the experiment about these procedures.

factor, has been shown to have either no or at best a slightly positive effect on contributions in experiments involving the standard PGG (Isaac et al. 1994, Nosenzo et al. 2015, Diederich et al. 2016). In light of these results, previous findings from the ML-PGG that the small group receives higher contributions on average when its TB are the same as those of the larger group (Blackwell and McKee 2003, Fellner and Lünser 2014, Chakravarty and Fonseca 2016) are not in themselves evidence of a local bias, but may simply affirm that contributions in the PGG respond to the MPCR, but are largely irresponsive to group size. The finding that increasing the MPCRs for contributions to the larger-group PG leads to higher contributions (Blackwell and McKee 2003, Fellner and Lünser 2014) is also in line with these previous findings. Group size invariance can similarly explain the result that even at identical MPCRs for the smaller and larger group, contributions to the smaller group do not fall to zero (Blackwell and McKee 2003, Chakravarty and Fonseca 2016).

Given the broad empirical support for a significant and positive MPCR effect, our first hypothesis is that an artefactual field experiment will validate the core findings of previous ML-PGG lab experiments. Comparing stage 1 contributions of subjects that face a lower MPCR for the regional PG (0.25) than for the local PG (0.5) with stage 1 contributions of subjects that face equal MPCRs in both PGs, we predict a higher average share of endowments going to the regional PG when MPCRs are the same (and TB are higher). This would be in line with the results by Blackwell and McKee (2003) in a design with 'minimal groups' and by Fellner and Lünser (2014) in a design without group identity and would reaffirm the dominance of the MPCR effect: The productivity of contribution to the regional public good is higher for the higher MPCR while the price of contribution is lower. Both mechanisms render contributing to the regional PG more attractive for subjects with social preferences, whether aware or unaware of a shared common identity. Applied to the design of the present experiment, this validation test leads to the following formulation.

> ***Hypothesis 1 (positive MPCR effect)****: Average contributions to the regional public good will be higher in the HIGH MPCR treatment compared to the LOW MPCR treatment.*

In other words, contributions are predicted to respond positively to increases in the MPCR for a PG benefiting the larger group, and the positive MPCR effect is expected to be present both in settings in which subjects are aware of a shared neighborhood affiliation and in which they are not. The comparison of contributions that form the core test of hypothesis 1 therefore

delivers a validation check on previous findings in the ML-PGG paradigm that have varied the MPCR of the regional PG both under anonymity and using minimal groups.

Following the validation exercise implicit in testing hypothesis 1, hypothesis 2 homes in on the core issue of this paper: Does a shared social identity in a subgroup of subjects engaged in a ML-PG provision problem lead to changes in contribution behavior that can unambiguously be judged to interfere with efficiency? In other words, does a parochial bias lead to efficiency losses in the level problem and if so, how big are these losses? Our strategy for establishing the presence and size of a parochial bias in the present ML-PGG is to examine the interaction effect between the shift in the MPCR in the regional good and the disclosure of a shared social identity in the local group. This strategy presents a clean test for the question how ML-PG provision is affected by a potential parochial bias on account of activated social identity and is a key step towards the question of efficiency.[10] Parochial altruism predicts that, relative to subjects in an anonymous setting, subjects aware of a shared local neighborhood affiliation attach greater weight to local outcomes (Bernhard et al. 2006) and will therefore have less of an inclination to level up in response to a higher MPCR for the regional PG. A shared social identity, in other words, prevents subjects' from leveraging a higher MPCR into a higher provision of PGs to the same extent as when identity is not revealed. Applied to the present experimental design, this tests formulates as

> **Hypothesis 2 ('leveling up'):** *The interaction effect between the MPCR treatment and the LABEL treatment is predicted to be negative: Relative to subjects without knowledge of their group composition, subjects aware that the local public good benefits exclusively their neighbors increase the contributions to the higher level by less when the MPCR of the regional public good increases.*

The test of hypothesis 2 establishes the core result of our experiment. The remaining three hypotheses add robustness. Hypotheses 3 and 4 focus not on the presence of the interaction effect, but its strength. We expect to find heterogeneity across subjects in how they respond to the disclosure of a common local affiliation among members of the small group. Subjects will

[10] An alternative approach could be based on a simple comparison of contribution levels to the local and regional PG across social identity treatments at constant MPCR for the regional PG. A strategy based on comparing levels across the LABEL/NOLABEL treatment is not sufficient, however. The LOW MPCR treatment is a poor setting for a comparison because the TBs of the local and the regional account are identical such that any combination of contributions to the local and regional PG that leaves their sum broadly unchanged has the same impact on total provision. Comparing levels in the HIGH MPCR treatment, on the other hand, is complicated by evidence from previous experiments that even in anonymous group settings, the local PG attract significant contributions despite its lower TBs. This sets a high baseline for an additional parochial bias to assert itself. Comparing total benefits across MPCRs is also problematic since productivity is exogenously higher in the HIGH MPCR condition.

be heterogeneous along a multitude of dimensions. The dimension of interest in the present design is a predisposition towards parochialism, and we explore two sources of predisposition. One predisposition is home-grown: We predict that among subjects who articulate a strong attachment to their own neighborhood in the post-questionnaire (henceforth 'local patriots'), the change in contributions to the regional PG caused by an increased MPCR for the regional good is less than the change among the other subjects when they are in the LABEL treatment. No such effect should be present in the NOLABEL treatment. The reasoning is the same as that underlying hypothesis 2, with the only difference that subjects predisposed to parochialism are expected to exhibit a stronger form of the interaction effect. This conjecture is captured in the following hypothesis.

> **Hypothesis 3 (local patriots):** *The negative interaction effect between the MPCR treatment and the LABEL treatment is predicted to be greater in absolute terms for subjects who articulate high concern for members of their neighborhood compared to those who articulate low concern: 'Local patriots' that are aware that their contributions to the local group benefit their 'neighbors' are less inclined than others to 'level up' when the MPCR of the regional public good increases.*

The second source of predisposition toward parochial choices, namely through priming, provides the content of our fourth hypothesis. The priming procedure that subjects take prior to their stage 2 decision follows Li et al. (2014) and Chen et al. (2014) and is designed to activate an existing place attachment in subjects' mind. Subjects that have undergone the *local prime* version of the procedure and are then assigned to the LABEL condition in the social identity treatment are therefore expected to exhibit a stronger concern for how their allocation decisions in stage 2 impact on members of the small group. The predictions for locally primed subjects are then essentially the same as in the case for a home-grown predisposition for parochialism: On average, subjects in the LABEL condition will increase their contributions towards the regional PG less as its MPCR doubles than subjects in the NOLABEL condition, who are unaware that the small group contains their 'neighbors'.

> **Hypothesis 4 (priming effect):** *The negative interaction effect between the MPCR treatment and the LABEL treatment is predicted to be greater in absolute terms for subjects who have undergone the local priming procedure. After local priming, subjects that are aware that their contributions to the local group benefit their 'neighbors' are less inclined than others to 'level up' when the MPCR of the regional public good increases.*

3. Experimental Setting and Procedure

The inter-neighborhood intra-region experiment recruited participants from a total of four municipal districts, two each from two cities in Germany, Heidelberg and Mannheim, that are located within 25 km of each other in the same region, the Rhine-Neckar metropolitan region. Heidelberg, with a population 150,000, consists of 15 municipal districts; Mannheim, with a population of 330,000, consists of 17 districts.

The recruitment procedure involved the distribution of around 12,000 invitation letters via mail to up to 3,000 randomly selected households in each of the four districts.[11] The letter invited the receiving household to have one member of voting age take part in a scientific study on decision making, conducted by the University of Heidelberg and the Centre for European Economic Research (ZEW) in Mannheim. The announced participation reward was set at €5. Subjects were informed that they could earn additional individual payments in the course of a 15-minute study. No other information on the context of the study was given in this initial invitation letter.

A total of 616 individuals from Heidelberg (323) and Mannheim (293) took part in the online experiment. They did so by following a link in the invitation letter with their personal electronic device.[12] To log in and start the experiment, participants entered an individual access code provided in the invitation letter. The access code prevented participants from taking part in the study more than once. After going through a series of detailed instructions on the procedures, the decision task, and a set of numerical examples, participants made their decisions.[13] The average participant completed the experiment in approximately 15 minutes. We used an ex-post matching protocol to calculate final payoffs.

The participation payment was set at €5. The initial endowment was set at €8. Participants earned an average of €18.38, which at 15 minutes average completion time compares favorably with the equivalent average hourly wage. Individual payments were implemented by sending households a payment card which is good for cash in many large retail chains, petrol stations, and online shops.[14] Payment cards were charged with the individualized payments and sent out by mail four weeks after the conclusion of the experiment. All

[11] Since one district (Bahnstadt) 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.

[12] 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.

[13] We provide a diagram of the experimental procedures, the invitation letter and a translated version of the instructions in the supplementary material.

[14] 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.

specifics regarding the payment procedure were disclosed to subjects prior to their first decision.

As part of the experimental procedure, subjects completed a post-questionnaire after the first decision task. The questionnaire collected information on characteristics of place attachment. We combine five measures commonly used in the place attachment literature into a score of participants' local identity (*local identity index*). These metrics are (1) whether participants deliberately decided to live in their neighborhood; whether they feel (2) happy, (3) proud, and (4) comfortable to be living in their neighborhood; and (5) how well they feel they identify with their neighborhood. Responses to each item were made on a five-point Likert scale from 1 (*not at all*) to 5 (*extremely*). The local identification score was calculated by standardizing responses to all five items and summing.[15] At the end of the experiment subjects completed another questionnaire collection information on core demographics (age, sex, income, education, religiousness), duration of residence in the region (*years region*) and the municipal district (*years neighborhood*).

4. Experimental Results

4.1. Full sample

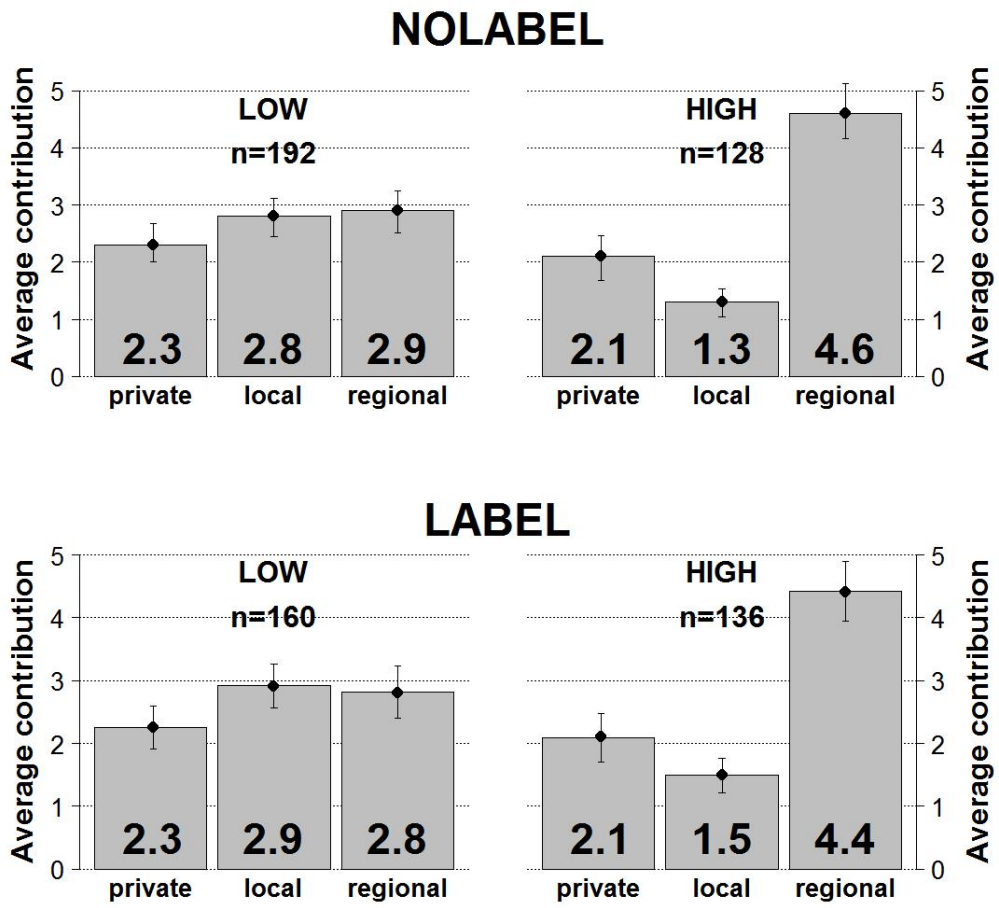
We begin our analysis by describing the pooled data from the stage 1 decision across all treatments and participants. There, 32.8% of the sample contribute their full endowment either to the local (LPG) or the regional public good (RPG) and leave nothing in their private account. 6.1% of participants allocate their entire endowment to their private account. In line with the overwhelming evidence in PGG experiments, it is modal behavior to contribute some, but not all of the endowment to PGs. This can also be seen in Figure 3, which plots participants' average contribution decisions to their private account and the LPG and RPG across all four treatment conditions.

Before reporting on the first hypothesis test, we provide a first comparison between the behavior observed in our artefactual field experiment and that in previous laboratory studies. This comparison is based on the neutral treatment condition NOLABEL, which provides the closest parallel. The choice of parameters in the LOW MPCR treatment mirrors the baseline conditions in Blackwell and McKee (2003) and Fellner and Lünser (2014) in that contributions to the LPG and the RPG produce the same TB. Both lab studies find significantly higher contributions to the LPG than to the RPG. By contrast, we observe nearly

[15] Table A1 in the supplementary material reports the descriptive statistics of the post-questionnaire broken down by municipal district.

equal average contributions to the LPG and the RPG (2.8 vs. 2.9). This could be due to differences between field and laboratory as well as other design differences such as group size (Blackwell and McKee 2003), and the level at which the MPCR is set (Blackwell and McKee 2003, Fellner and Lünser 2014).

Figure 3: Average contributions in the four treatment conditions, full sample



Note: Average contributions to private, local and regional account in the NOLABEL (upper half) and LABEL (lower half) of LOW (left) and HIGH (right) for the whole sample. Confidence intervals at the 95%-level.

Hypothesis 1 conjectures that the artefactual field experiment will replicate a core finding of previous laboratory experiments, namely that a higher MPCR for the regional good causes significantly higher contributions by subjects. We test hypothesis 1 by comparing contributions to the RPG at different MPCRs in both the NOLABEL and the LABEL conditions. In the NOLABEL treatment, contributions to the RPG are significantly higher from an MPCR of 0.5 compared to an MPCR of 0.25 (2.9 vs. 4.6, $p = 0.000$, MW-U test). The

same is true in the LABEL treatment (2.8 vs. 4.4, p = 0.000, MW-U test).[16] These tests are summarized in

Result 1 (positive average MPCR effect)*:* *Average contributions to the regional public good are significantly higher in the HIGH MPCR treatment compared to the LOW MPCR treatment.*

We note in passing that the positive MPCR effect observed in this experiment is a substitution effect between the two PGs. The average share of endowment allocated to the private account does not change significantly across the MPCR conditions (NOLABEL: 2.3 vs. 2.1, p = 0.309; LABEL: 2.3 vs. 2.1, p = 0.343, MW-U test). Average contributions to the LPG are significantly lower, however (NOLABEL: 2.8 vs. 1.3, p = 0.000; LABEL: 2.9 vs. 1.5, p = 0.000, MW-U test). This observed substitution from the LPG to the RPG 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.[17]

Having validated one of key findings from lab-based ML-PGG experiments in an artefactual field setting in result 1, we now turn to testing hypothesis 2, which forms the core of the paper. We expect that the strength of the MPCR effect will be significantly smaller in the LABEL condition, which invokes naturally occuring social identity, compared to the NOLABEL condition, which does not even invoke minimal group identity. The test of hypothesis 2 is essentially a difference-in-difference test in which we compare whether the MPCR effect (the difference between LOW and HIGH MPCR) differs between the NOLABEL and LABEL condition. In the NOLABEL condition, the MPCR effect gives rise to an increase of €1.8 in contributions to the RPG, in the LABEL condition to an increase of €1.6, which is smaller. The difference between the MPCR effects is not statistically significant, however (p = 0.766, F-test). Invoking social identity had therefore no significant effect on the average subject's responsiveness to an increase in the MPCR of the RPG. This is summarized in

Result 2 ('leveling up'): *There is no statistical difference in the strengths of the MPCR effect in the social identity treatment conditions: The effect of revealing a shared social identity does not significantly change the increase in the contributions to the regional public good when its MPCR increases.*

[16] All statistically significant results reported are robust to corrections for multiple hypothesis testing proposed by List et al. (2016).

[17] 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.

The non-parametric test of hypothesis 2 is supported by regression analysis. Table 2 reports the results of a simple OLS model of participants' contributions to either the private, local or regional account. The baseline are the contributions of subjects assigned to a treatment without social identity invoked (NOLABEL) and at an MPCR of 0.25 for the RPG (LOW). The dummy variable (*LABEL*) indicates assignment to treatment condition LABEL and the dummy variable HIGH assignment to a treatment with an MPCR of 0.5 for the RPG. The variable of interest is the interaction term of the two dummies (*HIGH x LABEL*), which captures whether contributions respond differently to a change in the MPCR when participants share a common local affiliation. We estimate both a simple model (first three columns of coefficients) as well as a richer model with further controls (second three columns). The controls comprise individual characteristics collected in the post-questionnaire: *age*, gender (*female*), *income*, years of *education*, the degree of *religious* affiliation (based on a five-point Likert scale from 1 'not at all' to 5 'extremely'), the time of living in the respective neighborhood (n*eighborhood*) and in the metropolitan region (*region*).

Table 2: Individual contributions, full sample

	q^p	q^l	q^r	q^p	q^l	q^r
	Private	Local	Regional	Private	Local	Regional
HIGH	-0.27	-1.49***	1.76***	0.26	-1.61***	1.87***
	(0.260)	(0.212)	(0.309)	(0.263)	(0.215)	(0.311)
LABEL	-0.08	0.14	-0.07	-0.04	0.07	-0.03
	(0.241)	(0.064)	(0.282)	(0.249)	(0.252)	(0.296)
HIGH x LABEL	0.09	0.06	-0.16	0.08	0.22	-0.23
	(0.367)	(0.309)	(0.444)	(0.377)	(0.317)	(0.456)
Constant	2.33***	2.78***	2.88***	3.09***	2.59***	2.33***
	(0.169)	(0.169)	(0.188)	(0.606)	(0.547)	(0.736)
Controls	no	no	no	yes	yes	yes
Neighborhood FE	no	no	no	yes	yes	yes
# of observations	616	616	616	602	602	602

Notes: OLS regressions, $q^p, q^l, q^r \epsilon [0,8]$. Robust standard errors in parentheses; $*p < 0.1$, $**p < 0.05$ and $***p < 0.01$.
Controls: age, female, income, education, religious, years of residency in the neighborhood, years of residency in the metropolitan region.

The regression results reaffirm results 1 and 2: The coefficients associated with the dummy variable HIGH show that at a higher MPCR, average contributions to the RPG are higher and contributions to the LPG lower, supporting result 1. Also note that the coefficients estimated for LABEL have the predicted sign (positive for the LPG, negative for the RPG), but are small and statistically insignificant for all three accounts. The dummy capturing the interaction effect is also insignificant throughout, supporting result 2 that there is no interaction effect. In the following, we challenge our findings by a series of robustness check

4.2. Robustness Check I: Pre-existing heterogeneity in place attachment

The experimental procedures introduce two sources of heterogeneity in predisposition towards a local bias. One of the sources are pre-existing differences in place attachment: Some citizens identify much more with their own neighborhood than others. For subjects for whom place attachment is relatively unimportant for their social identity, revealing a shared local affiliation may not be sufficient to induce a change in contribution behavior. Subjects with strong place attachment, on the other hand, may respond more strongly than the average person to such information. This is important for two reasons: One is that there are spatial contexts in which neighborhood attachment is very prominent (such as sectarian cities with minimal intra-neighborhood mobility; see e.g. Meier et al. 2016). It is therefore useful to understand whether those for whom place attachment is an important component of social identity differ in their propensity to level up from the rest of the population. The other is that in real world settings in which contribution decisions to PG often have a sequential dimension, heterogeneity in the interaction effect could incite subjects with strong neighborhood attachment to be the first to contribute to the local PG, thus conceivably setting in motion a path towards parochialism that other participants subsequently follow (Vesterlund 2003, Andreoni and Petrie 2004).

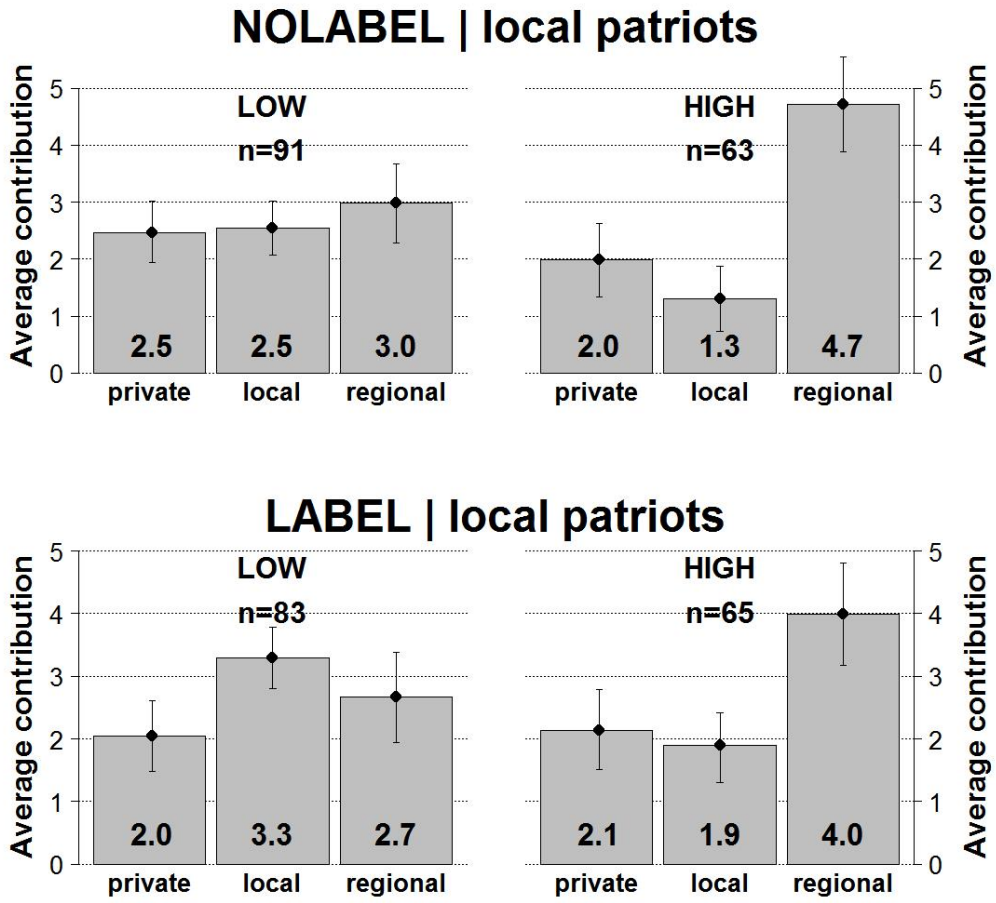
To test for the possibility of a heterogeneous interaction effect, we first identify the subsample of subjects for whom place attachment is likely to matter most. This identification relies on a composite index that measures the degree of group identity based on five questions concerning participants' affiliation with the neighborhood. Those above the median index value exhibit above-median place attachment.[18] As a shorthand, we refer to this group as *local patriots*. Figure 4 plots the contribution behavior of local patriots in all four treatments.

As a first construct validity test, we find that local patriots, i.e. those that express above-median place attachment, exhibit a distinct contribution behavior. For example, local patriots contribute significantly more to the LPG than subjects with a below median place attachment, but only when a shared neighborhood affiliation in the small group is revealed (LABEL), irrespective of the MPCR condition (LOW: 3.3 vs. 2.5, $p = 0.013$; HIGH: 1.9 vs. 1.3, $p = 0.003$, MW-U test). Unaware of the shared neighborhood in the small group (NOLABEL), their contribution behavior is indistinguishable from the rest of the sample (LOW: 2.5 vs. 3.0,

[18] Place attachment is measured as the degree to which individuals agreed on a five-point likert scale from 1 'not at all' to 5 'extremely' to the following five items: 'deliberately decided to live in their neighborhood', 'happy to live in their neighborhood', 'proud to live in their neighborhood', 'feel comfortable to live in their neighborhood', and 'perceive identification' with their neighborhood each measured on a five-point likert scale from 1 'not at all' to 5 'extremely'.

p = 0.176; HIGH: 1.3 vs. 1.3, p = 0.933; MW-U test).[19] Local patriots therefore not only express above-median place attachment, they also contribute significantly more to the LPG than other subjects if and only if they know that the local group consists of neighbors.

Figure 4: Average contributions in the four treatment conditions, subsample of subjects with above-median place attachment



Note: Average contributions to private, local and regional account in the NOLABEL (upper half) and LABEL (lower half) of LOW (left) and HIGH (right) for the sample restricted to *local patriots*. Confidence intervals at the 95%-level.

In light of how local patriots' contribution behavior differs from that of other subjects, the presence and nature of the MPCR effect and the presence of an interaction effect between MPCR and social identity information are obvious next questions. Hypothesis 3 predicts that this interaction effect will be present and, in light of result 2, significantly negative. To answer these questions, we first test for the MPCR effect by comparing in both social identity conditions the change in contributions to the RPG as the MPCR of the RPG doubles. Doubling the MPCR raises contributions to the RPG among local patriots by €1.7 (p = 0.000;

[19] This is consistent with the observation that local patriots also respond more strongly and statistically significantly to the social identity treatment than others. Knowledge about a shared neighborhood in the small group makes local patriots increase their contributions to the LPG by 1.2 (LOW MPCR, $p < 0.05$) and by 0.6 (HIGH MPCR, $p < 0.10$) relative to those without strong neighborhood attachment.

MW-U test) without knowledge of shared neighborhood (NOLABEL) and by €1.3 (p = 0.000; MW-U test) with knowledge of shared neighborhood (LABEL). This finding reaffirms result 1: Local patriots also exhibit the positive MPCR effect. Testing hypothesis 3 requires a comparison of the MPCR effects across social identity treatment. Table 3 reports the coefficients of the regression analysis conducted for the reduced sample. The results reaffirm the MPCR effect (dummy *HIGH*) as well as the positive impact of revealed shared neighborhood on contributions to the LPG. The interaction effect, however, does not deliver statistically significant results, leading us to reject hypothesis 3.

Table 3: Individual contributions, local patriots

	q^p	q^l	q^r	q^p	q^l	q^r
	Private	Local	Regional	Private	Local	Regional
HIGH	-0.49	-1.25***	1.74***	-0.43	-1.33***	1.76***
	(0.398)	(0.307)	(0.472)	(0. 399)	(0. 318)	(0.482)
LABEL	-0.42	0.75**	-0.32	-0.45	0.77**	-0.32
	(0.341)	(0.355)	(0.416)	(0.350)	(0.377)	(0.450)
HIGH x LABEL	0.59	-0.19	-0.40	0.51	-0.14	-0.37
	(0.530)	(0.448)	(0.646)	(0.532)	(0.474)	(0.671)
Constant	2.47***	2.55***	2.99***	4.17***	1.93***	1.90***
	(0.261)	(0.248)	(0.299)	(0.889)	(0.779)	(1.11)
Controls	no	no	no	yes	yes	Yes
Neighborhood FE	no	no	no	yes	yes	Yes
# of observations	302	302	302	294	294	294

Notes: OLS regressions, $q^p, q^l, q^r \epsilon [0,8]$. Robust standard errors in parentheses; $*p < 0.1$, $**p < 0.05$ and $***p < 0.01$.
Controls: age, female, income, education, religious, years of residency in the neighborhood, years of residency in the metropolitan region.

Result 3 (leveling up by local patriots): *For subjects with above-median place attachment, revelation of neighborhood ties does not result in less leveling up: There is no statistical difference in the strengths of the MPCR effect exhibited by subjects with strong place attachment across the social identity treatment conditions.*

Taken together, these findings have a number of implications. One is that the MPCR effect and the parochial bias affect contributions independently. 'Local patriots' behave more cooperatively towards others when they are aware that others are also locals and they respond to changes in the MPCR of a PG in the predicted way. However, their response to a change in the MPCR is not modulated by parochialism. Put differently, the parochialism observed in 'local patriots', as evidenced in higher contributions to the LPG, is independent of how productive it is to provide the PG at a higher level. This independence, in turn, adds robustness to the sample average that is reported in result 2: Since the parochial bias of 'local patriots' does not interact with the MPCR effect, it is clear that result 2, the zero effect on

average, is not the outcome of countervailing effects among those with strong and those with weak place attachment.

4.3. Robustness Check II: Priming for place attachment

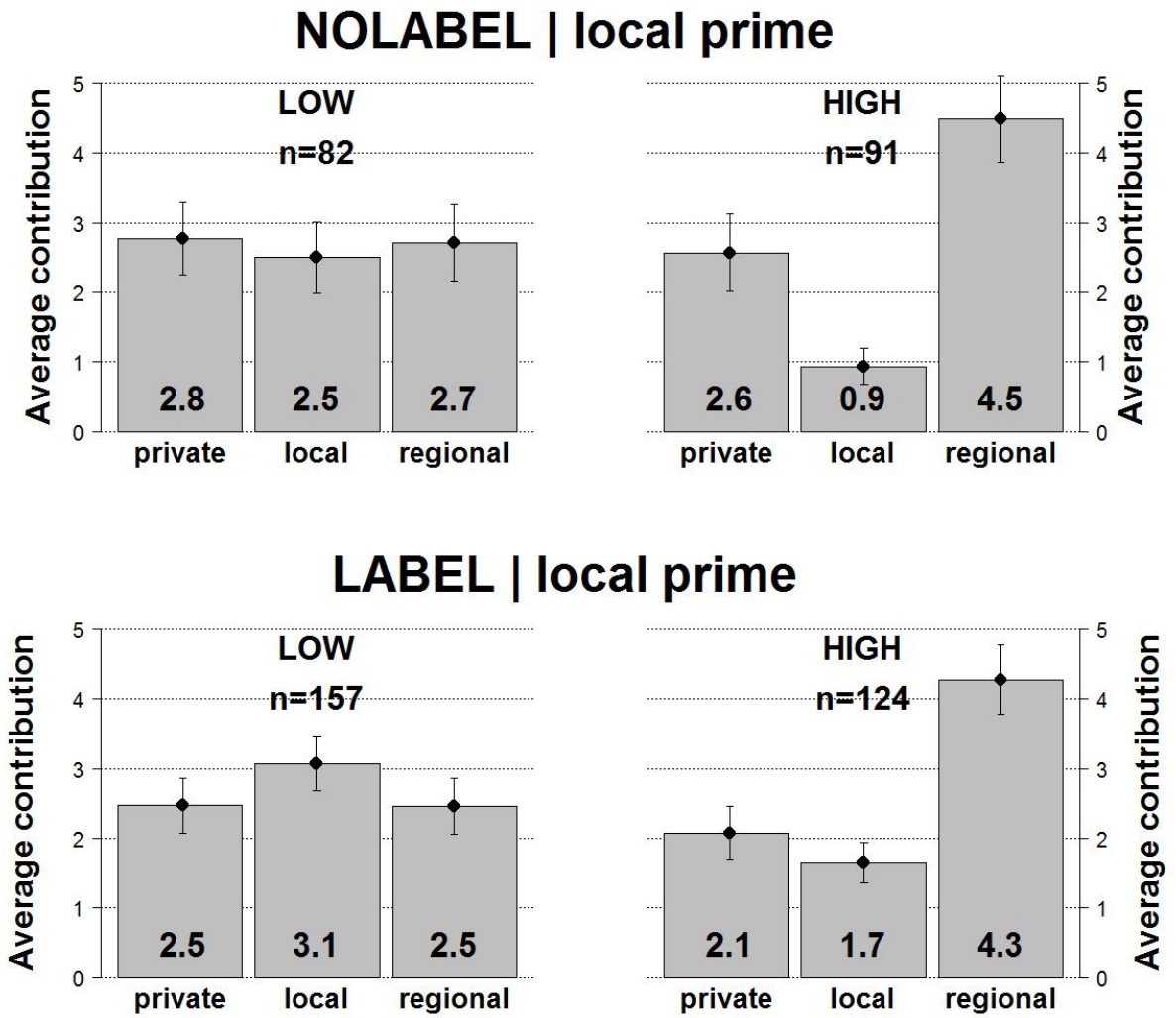
Despite relying on naturally occurring forms of social identity that are expected to affect behavior more substantially than minimal group identity, a conceivable objection to our experimental design could be a concern that it insufficiently stimulates an existing predisposition towards behaving parochially. If true, the results based on observed behavior in the social identity treatments LABEL/NOLABEL would underestimate the true effect of social identity. A robustness check based on pre-existing heterogeneity in place attachment, as that conducted in the previous subsection, would not provide a remedy if a social identity stimulus was indeed insufficient because the local patriots subsample is defined relative to the sample median rather than to an absolute benchmark.

To examine whether result 2 is robust against the possibility of an insufficient experimental stimulus, we use observations from stage 2 of the experiment, i.e. after the priming task. A total of 454 subjects underwent the local priming version that is of interest here. As a first test, we compare the behavior between the LABEL and the NOLABEL treatment in stage 2 across the MPCR conditions. Figure 5 plots the stage 2 contribution decisions across treatments for all locally primed subjects. As in the previous tests, there is a strong MPCR effect on contributions to the RPG in the control group under the NOLABEL condition. Both size and significance of the effects are comparable to the previous results, reaffirming result 1.[20] Also, priming has the expected effect on contribution behavior, providing a manipulation check on the priming procedure: Locally primed subjects in the LABEL treatment have significantly higher average contributions to the LPG than the control group both at a LOW MPCR (3.1 vs. 2.5, $p = 0.054$, MWU test) and a HIGH MPCR (1.7 vs. 0.9, $p = 0.001$, MWU test).[21]

[20] Contributions to the RPG increase significantly (2.7 vs. 4.5, $p = 0.000$) for a doubling of the MPCR while contributions to the LPG decrease significantly. (2.5 vs. 0.9, $p = 0.000$).

[21] While in LOW 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 HIGH we find additional contributions to the LPG primarily driven by lower contributions to the private account (-0.5) and a moderate decrease in RPG contributions (-0.2).

Figure 5: Average contributions across treatment conditions, stage 2, locally primed subjects



Note: Average contributions to private, local and regional account in the NOLABEL | local prime (upper half) and LABEL | local prime (lower half) of LOW (left) and HIGH (right) for the sample restricted to *locally primed subjects.* Confidence intervals at the 95%-level.

Despite these effects, the interaction effect between an increase in the MPCR and invoking social identity is again insignificant. Table 4 reports the results of the regression analysis of the contributions decisions using the same estimation strategy as for tables 2 and 3. The results are similar to those for the restricted sample of stage 1 contributions by subjects with above-median place attachment presented in table 3. The coefficient estimates in table 4 reaffirm a positive MPCR effect (dummy *HIGH*) that leads to a substitution away from LPG to RPG. The results in table 4 also confirm the presence of a pro-local bias induced by the revelation of shared neighborhood affiliation (dummy *LABEL*): Contributions to the LPG are higher. At the same time, table 4 also reaffirms the lack of an interaction effect: The change in contributions caused by a doubling of the MPCR in the RPG is statistically indistinguishable

between subjects primed for neighborhood attachment to whom a shared neighborhood affiliation in the local group is disclosed and primed subjects to whom it is not disclosed.

Table 4: Individual contributions, full sample, after local prime

	q^p	q^l	q^r	q^p	q^l	q^r
	Private	Local	Regional	Private	Local	Regional
HIGH	-0.21	-1.56***	1.77***	-0.28	-1.50***	1.78***
	(0.383)	(0.287)	(0.416)	(0.402)	(0.303)	(0.435)
LABEL	-0.31	0.57*	-0.26	-0.34	0.59*	-0.26
	(0.328)	(0.323)	(0.343)	(0.345)	(0.342)	(0.368)
HIGH x LABEL	-0.18	0.14	0.05	-0.08	-0.07	0.15
	(0.472)	(0.378)	(0.528)	(0.495)	(0.396)	(0.554)
Constant	2.78***	2.50***	2.72***	3.15***	1.93***	2.92***
	(0.261)	(0.255)	(0.277)	(0.756)	(0.646)	(0.911)
Controls	no	no	no	yes	yes	yes
Neighborhood FE	no	no	no	yes	yes	yes
# of observations	454	454	454	443	443	443

Notes: OLS regressions, $q^p, q^l, q^r \epsilon [0,8]$. Robust standard errors in parentheses; $*p < 0.1$, $**p < 0.05$ and $***p < 0.01$.
Controls: age, female, income, education, religious, years of residency in the neighborhood, years of residency in the metropolitan region.

As a second test, we rerun the regression on a restricted sample of 238 subjects that were allocated to the same social identity condition in both stages. This eliminates a potential attenuation of the treatment effects in the NOLABEL treatment in stage 2 by subjects who were assigned to the LABEL treatment in stage 1 and were therefore aware of the composition of the small group.

Table 5: Individual contributions, restricted sample, after local prime

	q^p	q^l	q^r	q^p	q^l	q^r
	Private	Local	Regional	Private	Local	Regional
HIGH	-0.02	-1.99***	2.00***	-0.00	-2.06***	2.06***
	(0.524)	(0.441)	(0.558)	(0.565)	(0.485)	(0.589)
LABEL	-0.04	0.33	-0.28	0.04	0.27	-0.32
	(0.465)	(0.490)	(0.471)	(0.510)	(0.530)	(0.512)
HIGH x LABEL	-0.44	0.31	0.13	-0.52	0.30	0.23
	(0.663)	(0.561)	(0.724)	(0.727)	(0.617)	(0.790)
Constant	2.58***	2.98***	2.44***	3.51***	2.41***	2.08*
	(0.359)	(0.399)	(0.380)	(1.09)	(0.930)	(1.22)
Controls	no	no	no	yes	yes	yes
Neighborhood FE	no	no	no	yes	yes	yes
# of observations	229	229	229	225	225	225

Notes: OLS regressions, $q^p, q^l, q^r \epsilon [0,8]$. Robust standard errors in parentheses; $*p < 0.1$, $**p < 0.05$ and $***p < 0.01$.
Controls: age, female, income, education, religious, years of residency in the neighborhood, years of residency in the metropolitan region.

Table 5 reports the results of this exercise, which are in line with the evidence from the full sample.[22] Jointly, these tests of the effect of the local priming procedure on contributions leads to our final result.

Result 4 (no interaction effect through priming): *There is no statistical difference in the strengths of the MPCR effect exhibited by subjects primed for place attachment across the social identity treatment conditions.*

This result also supports the previous finding that the MPCR and the social identity effects are unrelated, even when the propensity for place attachment is procedurally activated through a priming task.

5. Conclusion

The starting point of this paper was the question whether naturally grown social identity, a well established source of biases in other-regarding behavior, also negatively affects the efficiency of multi-level public goods provision due to parochial concerns. Building on the experimental paradigm of the multi-level public goods game and the well-established concept of neighborhood attachment, it tests whether subjects who know that their contributions to the lower level public good specifically benefit their neighbors respond less to a higher MPCR in the higher level public good than subjects who are unaware of the shared neighborhood attachment.

Our evidence from an artefactual field experiment design brings three novel elements to bear on the question. One element is the field context that favors naturally grown social identity as a behavioral driver of parochial concerns. The second element is the particular neighborhood-within-a-region setting that allows parochialism to naturally assert itself at the local level. The third is a two-by-two design that both varies the public good's productivity across levels and the salience of social identity. This two-by-two design makes disentangling both dimensions in a formal test possible. Jointly, these elements confirm previous evidence that there is a positive MPCR effect in multi-level public goods, but also that level-wise allocations of public goods contributions do not efficiently respond to relative total productivities. Our results also show, however, that inefficiencies of level-wise allocations need not reflect parochialism. Most importantly, they challenge the hypothesis that a shared social identity in the smaller group makes the average subject less responsive to a higher efficiency of contributing to the larger group. Parochialism, in other words, does not stand in the way of

[22] Additional tests on other subsamples in which the first stage treatment assignment are taken into account in various ways were also conducted. These tests reaffirm the results reported in the main text.

efficiency. This result is robust towards individual heterogeneity in social identity as it holds for subjects with above-median neighborhood attachment and subjects primed towards such attachment, even though both groups exhibit clear evidence of parochialism.

In sum, therefore, we find that even naturally grown types of social identity do not necessarily imply a parochialism penalty on efficiency in a situation in which public goods can be provided at more than one spatial level.[23]

[23] Note that we are not claiming that the private provision of public goods will be efficient, which would run counter to an overwhelming body of empirical and experimental evidence. We are only claiming that social identity will not increase the inefficiencies inherent in the social dilemma of PG provision.

Literature

Akerlof G, Kranton R (2000), Economics and Identity, *The Quarterly Journal of Economics*, 115, 715–753.

Andreoni J, Miller J (2002), Giving according to GARP: An experimental test of the consistency of preferences for altruism, *Econometrica*, 70(2), 737-753.

Andreoni J, Petrie R (2004), Public goods experiments without confidentiality: a glimpse into fund-raising, *Journal of Public Economics*, 88(7), 1605-1623.

Bernhard H, Fischbacher U, Fehr E (2006), Parochial altruism in humans, *Nature*, 442 (7105), 912-915.

Blackwell C, McKee M (2003), Only for my own neighborhood? Preferences and voluntary provision of local and global public goods, *Journal of Economic Behavior and Organization*, 52, 115–131.

Bonaiuto M, Fornara F, Bonnes M (2003), Indexes of perceived residential environment quality and neighbourhood attachment in urban environments: a confirmation study on the city of Rome, *Landscape and urban planning*, 65(1), 41-52.

Brasington, D. M. (2003). Snobbery, racism, or mutual distaste: what promotes and hinders cooperation in local public-good provision?. *Review of Economics and Statistics*, *85*(4), 874-883.

Brown B, Perkins DD, Brown G (2003), Place attachment in a revitalizing neighborhood: Individual and block levels of analysis, *Journal of environmental psychology*, 23(3), 259-271.

Buchan N, Grimalda G, Wilson R, Brewer M, Fatás E, Foddy M (2009), Globalization and human cooperation, *Proceedings of the National Academy of Sciences of the United States of America*, 106, 4138–4142.

Chakravarty S, Fonseca M (2016), Discrimination via exclusion: An experiment on group identity and club goods, *Journal of Public Economic Theory*, forthcoming.

Charness G, Rigotti L, Rustichini A (2007), Individual behavior and group membership, *The American Economic Review*, 97(4), 1340-1352.

Chaudhuri A (2011), Sustaining cooperation in laboratory public goods experiments: a selective survey of the literature, *Experimental Economics*, 14, 47–83.

Chen Y, Li S (2009), Group Identity and Social Preferences, *American Economic Review*, 99, 431–457.

Chen Y, Li S, Liu T, Shih M (2014), Which hat to wear? Impact of natural identities on coordination and cooperation, *Games and Economic Behavior*, 84, 58–86.

Cherry T, Dickinson L (2008), Voluntary contributions with multiple public goods, *Environmental Economics*, *Experimental Methods*: Routledge, 184-193.

Diederich J, Goeschl T, Waichman I (2016), Group size and the (in) efficiency of pure public good provision, *European Economic Review*, 85, 272-287.

Duncombe W, Yinger J (1993), An analysis of returns to scale in public production, with an application to fire protection, *Journal of Public Economics*, 52(1), 49-72.

Engel C, Rockenbach B (2009), We Are Not Alone: The Impact of Externalities on Public Good Provision, *Working Paper Series of the Max Planck Institute for Research on Collective Goods*, 2009_29.

Falk A, Zehnder C (2013), A city-wide experiment on trust discrimination, *Journal of Public Economics*, 100, 15-27.

Falk A, Fischbacher U, Gächter S (2013), Living in two neighborhoods—social interaction effects in the laboratory, *Economic Inquiry*, 51(1), 563-578.

Fellner G, Lünser G (2014), Cooperation in local and global groups, *Journal of Economic Behavior & Organization*, 108, 364–373.

Finney, M. (1997). Scale economies and police department consolidation: Evidence from Los Angeles. *Contemporary Economic Policy*, *15*(1), 121-127.

Goette L, Huffman D, Meier S (2006), The impact of group membership on cooperation and norm enforcement, *American Economic Review*, 96, 212–216.

Guala F, Mittone L, Ploner M (2013), Group membership, team preferences, and expectations, *Journal of Economic Behavior & Organization*, 86, 183-190.

Güth W, Sääksvuori L (2012), Provision of Multilevel Public Goods by Positive Externalities: Experimental Evidence, **The BE Journal of Economic Analysis & Policy**, 12(1), 1935-1982.

Isaac RM, Walker J, Thomas S (1984), Divergent evidence on free riding: an experimental examination of possible explanations, *Public Choice*, 43, 113–149.

Isaac RM, Walker JM, Williams AW (1994), Group size and the voluntary provision of public goods - Experimental evidence utilizing large groups, *Journal of Public Economics*, 54, 1-36.

Laczko LS (2005), National and Local Attachments in a Changing World System: Evidence from an International Survey, *International Review of Sociology—Revue Internationale de Sociologie*, 15(3), 517-528.

Ledyard J (1995), Public Goods: A survey of experimental research, in: Kagel JH, Roth AE (Eds.), *Handbook of Experimental Economics*, Princeton University Press, New Jersey, USA.

Lewicka M (2005), Ways to make people active: The role of place attachment, cultural capital, and neighborhood ties, *Journal of Environmental Psychology*, 25(4), 381-395.

Lewicka M (2011), Place attachment: How far have we come in the last 40 years?, *Journal of Environmental Psychology*, 31(3), 207-230.

Li S, De Oliveira A, Eckel C (2014), Common Identity and the Voluntary Provision of Public Goods: An Experimental Investigation, Mimeo.

List JA, Azeem MS, Xu Y (2016), Multiple hypothesis testing in experimental economics, *National Bureau of Economic Research*, Working Paper 21875.

Marschall MJ (2004), Citizen participation and the neighborhood context: A new look at the coproduction of local public goods, *Political Research Quarterly*, 57(2), 231-244.

McCarter MW, Samek A, Sheremeta RM (2014), Divided loyalists or conditional cooperators? Creating consensus about cooperation in multiple simultaneous social dilemmas, *Group & Organization Management*, 39(6), 744-771.

Meier, S., Pierce, L., Vaccaro, A., & La Cara, B. (2016). Trust and in-group favoritism in a culture of crime. *Journal of Economic Behavior & Organization*, 132, 78-92.

Moser G, Ratiu E, Fleury-Bahi G (2002), Appropriation and interpersonal relationships from dwelling to city through the neighbourhood, *Environment and behavior*, 34(1), 122-136.

Nosenzo D, Quercia S, Sefton M (2015), Cooperation in small groups: the effect of group size, *Experimental Economics*, 18(1), 4-14.

Paasi A (2003), Region and place: regional identity in question, *Progress in human geography*, 27(4), 475-485.

Reingewertz Y (2012), Do municipal amalgamations work? Evidence from municipalities in Israel, *Journal of Urban Economics*, 72(2), 240-251.

Ringel NB, Finkelstein JC (1991), Differentiating neighborhood satisfaction and neighborhood attachment among urban residents, *Basic and applied social psychology*, 12(2), 177-193.

Ruffle BJ, Sosis R (2006), Cooperation and the in-group-out-group bias: A field test on Israeli kibbutz members and city residents, *Journal of Economic Behavior & Organization*, 60(2), 147-163.

Tajfel H, Turner J (1979), An Integrative Theory of Intergroup Conflict, in: Austin W, Worchel S (Eds.), *The Psychology of Intergroup Relations*. Monteray: Brooks/Cole Publishing Co., pp. 33–47.

Tuan YF (1975), Place: An Experiential Perspective, *Geographical Review*, 65 (2), 151-165.

Turner JC, Brown RJ, Tajfel H (1979), Social comparison and group interest in ingroup favouritism, *European journal of social psychology*, 9(2), 187-204.

Vesterlund L (2003), The informational value of sequential fundraising, *Journal of Public Economics*, 87(3), 627-657.

Wachsman Y (2002), The effects of group interaction in a public goods experiment with two exchanges, Department of Economics, University of Hawaii at Manoa, Working Paper, 02-5.

Wang, J, Wu B, Ho, DWC, Wang, L, Evolution of cooperation in multilevel public goods games with community structures, *Europhysics Letters*, 93(5).

Wit AP, **Kerr NL** (2002), "Me versus just us versus us all" categorization and cooperation in nested social dilemmas, *Journal of personality and social psychology*, 83(3), 616.

Zelmer J (2003), Linear Public Goods Experiments: A Meta-Analysis, *Experimental Economics*, 6, 299–310.

Supplementary Material

Figure A1: Schematic diagram experimental procedures

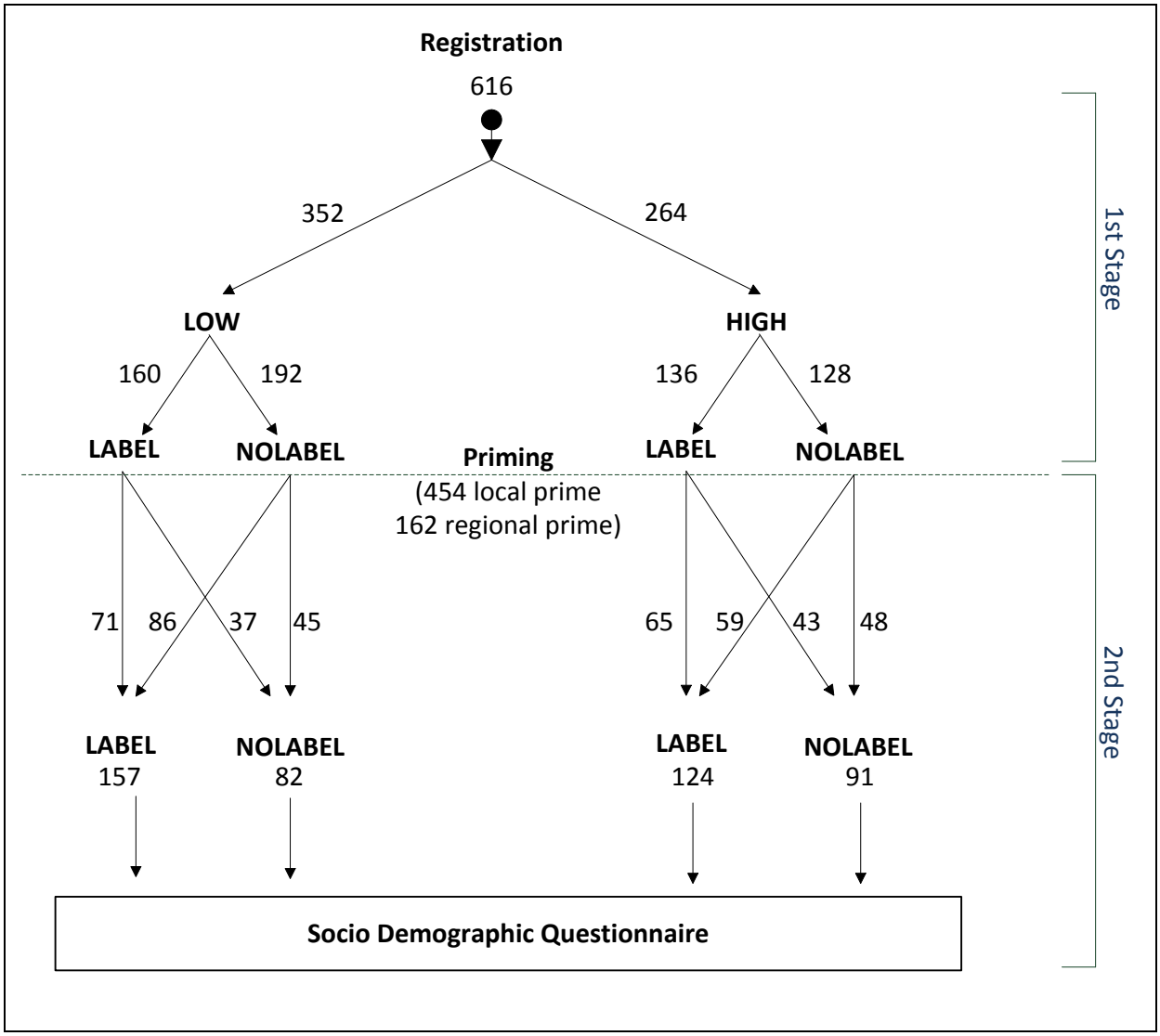


Table A1: Sample characteristics

	Total	Heidelberg		Mannheim	
		Bahnstadt	Neuenheim	Feudenheim	Schwetzingerstadt / Oststadt
Subjects (in #)	616	146	177	109	184
Age (in years)	35.6	29.0	38.1	47.2	31.5
Female (in %)	45.7	47.9	48.9	42.6	42.6
Income (in EUR)	2,087	2,027	2,117	2,550	1,832
Education (in years)	14.8	14.4	15.4	14.3	15.0
Religion	2.33	2.33	2.31	2.43	2.30
Region (in years)	17.5	7.4	19.5	35.2	13.2
Neighborhood (in years)	8.9	1.6	10.8	20.6	5.9
Local Identity Index	-0.04	-0.12	-0.05	0.29	-0.16
Local Patriots (in %)	49	45	47	65	44

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

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. 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** 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** 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 municipal districts Bahnstadt, Feudenheim, Neuenheim, and Schwetzingerstadt/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.
- A random procedure (comparable with a coin flip) at the end of the study will determine whether you 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 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 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 this 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 this 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 proceeding with 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* [of the region] 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 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 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 this 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 this 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 <u>for yourself</u>?

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 <u>for all 8 participants in the decision task</u>?

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 not reliable anymore.
Please choose one of the following answers:

□ Strongly Disagree □ Disagree □ Agree □ Strongly Agree □ No statement

---

c) In dealing with strangers, it is better to be cautious before trusting 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 its 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 there were parliamentary elections to be held next Sunday?
Please choose one of the following answers:

□ CDU/CSU
□ SPD
□ Bündnis 90/Die Grünen
□ FDP
□ Die Linke
□ AfD
□ I do not vote
□ No statement
□ 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 procedure (comparable with a coin flip) which randomly selects whether you will receive the additional payment either from task 1 or task 2. Both outcomes 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 your earned compensation without having to provide 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).

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.