Social-Psychological Context Moderates Incentives to Co-produce: Evidence from a Large-Scale Survey Experiment on Park Upkeep in an Urban Setting

Abstract: This paper presents evidence that the relevance of incentives to co-produce depends on the social-psychological context in which actors operate. We propose that context (including community attachment, trust in local authorities, ethnic diversity, unemployment level, and population density) moderates the effect of incentives (utility of the co-produced service, monetary and reputational rewards, and social norms). Through a survey experiment carried out in 593 urban locations across 13 countries, we show that willingness to co-produce increases with community attachment and decreases with ethnic diversity of the local area. The relevance of utility and social norms as determinants of willingness to co-produce depends on the social-psychological context. Reputational and monetary rewards have limited effect, and their relation to the context is less clear. All incentives are largely irrelevant when actors operate in cooperation-conducive circumstances, where co-production is a value in itself. However, their importance as “tools” to encourage co-production arises under challenging contexts.

Evidence for Practice

• Social-psychological context matters: willingness to co-produce increases with community attachment and decreases with ethnic diversity of the local area.
• When the social-psychological context is conducive for co-production, actors do not need to be incentivized since they see co-production as a value in itself.
• Policy efforts should focus on contexts that are unfavorable for co-production. In such circumstances, utility and social norms can be used to encourage participation. Policy makers can, for example, demonstrate the utility of the service/good or facilitate actors’ communication about their involvement to friends, relatives, and neighbors.
• In contrast, providing reputational or monetary rewards will do little to increase engagement in co-production.

Ordinary people are increasingly appreciated as valuable contributors to public service delivery. This is reflected in the growing body of research on the determinants and consequences of co-production, i.e. public services being delivered by public agencies in cooperation with residents (Brandsen and Honingh 2015). Co-production is “an umbrella concept that captures a wide variety of activities” that involve lay actors, next to state actors, aimed at improved service delivery (Nabatchi et al. 2017, 769). Its collective utility is particularly high where public agencies’ efforts are insufficient. It also allows resources saved due to people’s input to be redirected to other goals. However, some circumstances make mobilization of ordinary people particularly difficult. Diversity, poverty, and urbanization have long been recognized as factors that hamper public goods production, including co-production (Twigger-Ross et al. 2003; Vigdor 2004). Similarly, lack of affiliation with the local community and distrust toward local authorities make participation in co-production unlikely (Thijssen and Van Dooren 2016; van Eijk and Steen 2014).

Substantive part of research on co-production has focused on mechanisms that can be applied to stimulate people joining in the provision of public services. For some of them, co-production is valuable in itself and they engage in it independent of any individual benefits (Sharp 1978). Others respond positively to utility derived from the services produced, material or immaterial rewards, or the benefit of “fitting in” the social context (Alford 2002; Pestoff 2012). In this article, we propose that social-psychological context is crucial for ordinary people seeing co-production as a value in itself, as well as for their interpretation of the available incentives to co-produce. Our proposition builds directly on the literature emphasizing the...
importance of psychological (attitudes, beliefs) and sociological (social structure’s effect on actors’ position and interactions) factors for how incentives operate in the collective action context (Dietz et al. 1998; Klandermans 1984). When psychological and social context is favorable for person’s engagement, individual incentives are largely redundant, while under challenging conditions they can be successfully applied to encourage participation. We use data from a survey experiment conducted in 593 urban locations across 13 East-Central European countries to show that not only does social-psychological context affects willingness to co-produce, but also it conditions the relevance of incentives.

We begin with defining co-production and discussing how incentives are expected to encourage it. Next, we review the literature to explain types of social-psychological context as determinants of willingness to co-produce, and discuss how the effect of individual-level incentives differs depending on these contexts. We then present our data and research design, and the analysis. In the final sections, we discuss the results and their implications.

Theoretical Framework
Co-production
Defining co-production as the collaboration between public sector professionals and service consumers in the production of public services (Brandsen and Honingh 2015) leaves it open if this collaboration is done individually or collectively (Brudney and England 1983). As co-production refers to alternative service delivery, wherein people at least in part produce their own services, and the state involvement is direct or indirect, e.g. through financing or regulation (Pestoff 2012). Collaboration may be initiated top-down by the government, or may be a bottom-up initiative. Examples of co-production may thus include a local government responsible for the upkeep of a public park inviting local residents to give a hand, as well as (a group of) residents taking the initiative to clean up a public park.1 People may supplement or substitute professional service providers: they may contribute to the core production process of a public service (e.g. parents acting as “reading mom or dad” as a direct contribution to teaching) or may be involved in a complementary service (e.g., parents helping in the school’s kitchen) (Brandsen and Honingh 2015; Pestoff 2012). Examples of co-production can be found in diverse policy fields, such as health care, social services, education, urban renewal, community building, or safety. It is a challenging phenomenon to study, since co-production in different fields “comes with specific challenges, opportunities and practices” (Brandsen et al. 2018, 7).

People’s Engagement in Co-production
The most relevant question in co-production literature relates to identifying the factors that make people engage in it. Here, we make a novel contribution by systematically showing that different social-psychological context characteristics determine willingness to co-produce, and that under conditions that are unfavorable for co-production, individual-level incentives are more influential.

Pestoff (2012, 1110) explicitly links individuals’ motivation to co-produce social services with the private value they receive as service users. This motivation depends then on the extent to which the service affects a person herself, her family, or loved-ones. The perceived individual utility of a service thus pushes her to co-produce. Alford and Yates (2015) show that in three policy areas—public safety, the environment, and health—co-production activities with high levels of personal benefits are performed more often than activities producing largely public value. “Self-interest is not paramount (…) but it does appear to be a factor in why citizens co-produce” (p. 171).

Literature is sceptical about the impact of financial incentives on co-production. Based on four case studies, Alford (2002, 44) argues that willingness to co-produce “is difficult to foster through an economic exchange.” Vanleene et al.’s (2017) study of participation in a community development project finds monetary rewards to be of little influence. In an experiment seeking to establish if financial rewards stimulate co-production of services for refugees, Voorberg et al. (2018) find that only substantial financial incentives have an effect, and that this effect is very small, thus financial incentives do not provide a cost-efficient instrument to stimulate co-production. Research into the effect of interventions on pro-social behavior in the context of public goods has demonstrated that monetary rewards have at best a modest effect on participation (Kraft-Todd et al. 2015), or even crowd-out pro-social behavior (Gneezy and Rustichini 2000).

In contrast, reputational rewards have been shown to effectively encourage participatory behavior, as “actors behave pro-socially in order to develop an altruistic reputation” (Simpson and Willer 2008, 37). Reputation is so important that it makes people act strategically to earn it, thus, it is one of the most powerful mechanisms stimulating cooperation in the context of public goods production (Fehr and Fischbacher 2003). The power of reputational reward has been demonstrated on the example of charity offers (Bereczki et al. 2007; Milinski et al. 2002), more broadly defined charitable behavior (for a review, see Bekkers and Wiepking 2011), and environmentally friendly behavior (Griskevicius et al. 2010).

“Normative” social influence takes place when people want to comply with the group’s expectations (Deutsch and Gerard 1955). When the group cannot be used as a point of reference, for example, because of its low cohesiveness, behavior of others has an informational influence (Deutsch and Gerard 1955). Presence of strong norms implies conformity that is central to normative influence, while fuzziness of the context implies an informational effect, yet the outcome is the same: an actor follows the behavior of others. Observability of behavior in line with descriptive norms has been shown to be highly efficient for eliciting public goods contributions (Kraft-Todd et al. 2015; Krupka and Weber 2009). Similarly, studying resident’s reporting behavior, Clark and Brudney’s (n.d.) detect a “diffusion effect”: living near highly active co-producers increases one’s own likelihood to co-produce. Thijsen and Van Dooren’s (2016) study of residents’ reporting behavior finds that in neighborhoods with a higher number of neighborhood initiatives more people take part in co-production. Co-production is thus “contagious”, as people follow the example of others.

Putting Willingness to Co-produce in Context
Decisions about any social action, including co-production, are always made in context (Matsuba et al. 2007). How utility, rewards, and norms are “weighted” depends on the social-psychological
context, that is attitudes and beliefs about co-production partners and structural features that determine social interactions (Dietz et al. 1998; Klandermans 1984). In other words, incentives’ importance and effectiveness are moderated by actors’ everyday social-psychological reality. Some social and psychological factors have been identified as particularly relevant for collective action. Trust in cooperation partners and the sense of affinity with the local community encourage cooperative activities, while their lack makes alternative mechanisms, such as individual-level incentives, highly relevant (Twigger-Ross et al. 2003; van Eijk and Steen 2014, 2016). Diversity and low socio-economic status of a locality are expected to have an adverse effect on people’s willingness to act collectively, because of communication problems, conflicting values, and limited resources (Gilster 2014; Letki 2008; Viggdr 2004). Similarly, urban context has been shown to have a generally negative effect on the density of non-kin social networks and social interactions, despite close geographical proximity of inhabitants, thus making sustained collective action a challenging task (Smith 1994). These psychological (trust and reciprocity) and social (features of social structure that determine values, attitudes and interaction patterns) factors form context that, apart from the hypothesized direct effect on willingness to co-produce, is likely to have an indirect effect, as it determines the relevance of individual-level incentives.

**Horizontal Ties: Community Attachment.** Community attachment is often defined in reference to the bond between an individual and her environment, similar to the social-psychological concept of identity, i.e. one’s personal location within social life (Rollero and De Piccoli 2010). As such, community attachment affects values, interests, and resultant behavior. The sense of inter-connectedness, shared goals, and values contribute to the individual well-being and social ties that facilitate cooperation and make it important and worthwhile (Manzo and Perkins 2006; Talò et al. 2014; Voorberg et al. 2015). Community attachment is one of the key concepts applied to explain local engagement (Nowell and Boyd 2010, 2014; Talò et al. 2014). Given that the goods produced are non-excludable, residents identifying strongly with the community are more likely to contribute out of the concern and consideration for other community members than those with weak sense of community attachment (Rydin and Pennington 2000).

The very circumstances that make community attachment a crucial determining factor of cooperation, including co-production, make us expect it to impact the relevance of individual-level incentives. We expect that individuals who feel attached to their local community will be less strongly driven by individual benefit-maximizing concerns such as utility or financial rewards. Accordingly, such instrumental rewards should be highly relevant when community affiliation is weak. In contrast, reputational rewards are most important if earned in a social context that is highly significant for an actor. Reputation building is one of the basic signaling mechanisms applied in social interactions, but it is only useful if applied in the context of repeated, meaningful interactions (Raub and Wessel 1990). So, its effect for people with low levels of community attachment should be weak or non-existent. Given the normative and informational effect of others’ behavior (Deutsch and Gerard 1955; Krupka and Weber 2009), we expect the impact of social norms to be activated when community attachment is high. People with strong attachment to their community should be driven by a desire “to fit in” and to be accepted by the group, but this effect will be absent when community attachment is weak. The above takes us to the following hypotheses:

**H1a:** Community attachment increases willingness to co-produce.

**H1b:** Community attachment has a negative moderating effect on the impact of utility and monetary rewards on willingness to co-produce, and a positive moderating effect on the impact of social norms and reputational rewards.

**Vertical Ties: Trust in Local Authorities.** The very definition of co-production refers to the involvement of both ordinary people and public sector professionals. How people evaluate local government’s trustworthiness is crucial for their willingness to co-produce local public goods, even if the co-production initiative is a bottom-up one. According to van Eijk and Steen (2014, 2016) the extent to which people trust that government is willing to provide room for interaction, impacts their readiness to co-produce. Likewise, Fledderus and Honingh (2016) and Fledderus et al. (2015) point at the importance of a trustful relationship between residents and public organizations in co-producing services. Given that the services co-produced are in the domain of the authorities’ responsibility, the deficiency that needs to be addressed through co-production indicates local authorities’ limited efficiency and thus may have a discouraging effect. When local authorities are considered trustworthy such a negative implication should be overcome, which is evidenced by research on procedural justice showing that confidence in an institution indicates its legitimacy and resultant ability to elicit people’s cooperation and compliance (Grimes 2006; Tyler and Jackson 2014).

The effect of incentives on willingness to co-produce is conditioned by trust toward local authorities. Being the key predictor of compliant and cooperative behavior, trust does not require supplementing with incentives. In contrast, when the attitude toward local authorities is negative, individual utility and financial rewards are highly important, while reputational rewards are redundant (Fledderus et al. 2014). After all, people are not interested in the reputation of co-operation with disliked and distrusted authorities. When it comes to social norms, we expect that their informational impact will increase under low levels of trust. Authorities’ low reputation can trigger mixed responses from other local residents, and it is precisely under such ambivalent settings that the behavior of others’ has the strongest heuristic value (Deutsch and Gerard 1955; Krupka and Weber 2009). Moreover, where formal institutions are weak, the need for informal ones increases. Such an “endogenous substitutive relationship” has been particularly studied in the post-Communist context (Efendic et al. 2011; Letki and Evans 2005). This leads us to the following hypotheses:

**H2a:** Trust in local authorities increases willingness to co-produce.

**H2b:** Trust in local authorities has a negative moderating effect on the impact of utility and monetary and reputational rewards.
Local Socio-economic Context. Both the social and economic dimension of the immediate spatial context have proven relevant for predicting voluntary contributions toward public goods, including co-production (Gilster 2014; Sharkey and Faber 2014). Affluent and homogenous communities provide conditions for cooperation that is based on shared norms and goals. This has been confirmed empirically, among others, on the examples of non-profit volunteering and donations (Gilster 2014; Graddy and Wang 2009), and programs for local residents to report problems in the public domain (Thijssen and Van Dooren 2016). Social disorganization theory (Sampson and Groves 1989; Sampson and Raudenbush 1999) links community's ability to produce public goods to the density of local non-kin networks, where diversity and poverty are challenging for producing goods that are non-rivalrous and non-excludable. Diversity has been identified as particularly challenging for the maintenance of local ties because of the different structure of norms, values, and interests of particular ethnic groups, but also because of communication barriers and conflicting expectations toward the authorities concerning public goods provision, and these goods' non-excludability. Ethnic diversity has been found to have a negative effect on individual decisions aimed at localized public benefits at the expense of private costs (Beard et al. 2016; Vigdor 2004).

Numerous studies link economic deprivation to low civic engagement and participatory activity. For example, poverty and low levels of homeownership have been found to have a negative impact on donations (Graddy and Wang 2009), neighborhood deprivation lowers participation in local initiatives and voluntary associations (Gilster 2014; Letki 2008), and living in areas of concentrated poverty has a generally negative effect on residents' psychological well-being and sense of inclusion (Atkinson and Kintrea 2001), while unemployment—individual and local—has a similar effect on the sense of political efficacy and competence (Marx and Nguyen 2016). All these arguments make us presume that living in an economically deprived locality, for example, a locality with high level of unemployment, lowers the probability of engaging in co-production activities.

Spatial organization is yet another relevant correlate of co-production decisions. Since we control for some of the main influence channels associated with the level of urbanization (i.e. community attachment and diversity), the proposed impact of the population density on willingness to co-produce focuses on the very effect of spatial organization on patterns of interaction. Research predominantly shows either a negative or no effect of various measures of the level of urbanization on volunteering. For example, a study of Japanese municipalities and prefectures shows that population density has a negative effect on some forms of volunteering and no effects on others (Haddad 2004). Similar results are presented by an investigation of the contextual effect of population density on associational membership (Hooghe and Boterman 2012; see also Svendsen and Svendsen 2016). Both a study of elderly city dwellers and a study based on phone billing data point to a negative effect of urban context on the size of networks (Wang et al. 2018; York Cornwall and Behler 2015).

These findings are linked to the high mobility and associated sense of anonymity in urban areas, which in turn is likely to encourage free-riding and diffusion of responsibility. Overall, these studies provide evidence that despite an increased spatial proximity of inhabitants in high-population density areas, the effect of the level of urbanization on civic volunteering is predominantly negative. The above-discussed mechanisms and supporting evidence allow us to propose the following hypotheses:

H3a: Ethnic diversity has a negative effect on the probability of willingness to co-produce.

H3b: Unemployment has a negative effect on the probability of willingness to co-produce.

H3c: Population density has a negative effect on the probability of willingness to co-produce.

Building on the literature reviewed above, we expect that local context conditions the effect of incentives. In particular, under cooperation-conducive conditions (homogeneity of values and interests, economic security, and low anonymity), co-production is seen as a “value in itself”. In contrast, where the structural conditions are challenging for cooperative attitudes and behavior (ethnic diversity, high unemployment, mobility, and associated anonymity), people need to be incentivized. In other words, we propose that the relevance of instrumental incentives, such as utility and monetary rewards, increases when social context is challenging. Similarly, in the context of mixed information about the appropriate behavior the informative significance of others’ behavior increases (Deutsch and Gerard 1955; Krupka and Weber 2009), thus we expect the effect of social norms on co-production to strengthen under social contexts that are challenging for cooperation. Finally, given that the value attributed to reputational incentives is higher in homogenous and tight-knit context, we expect that when ethnic diversity and population density increase, reputational rewards become less relevant, because the same features that make cooperation difficult, limit the signaling power of reputation. We have no expectation regarding the moderating effect of unemployment rate on reputational rewards. The above takes us to our final set of hypotheses:

H4a: Ethnic diversity has a positive moderating effect on the impact of utility, social norms, and monetary rewards, but a negative moderating effect on the impact of reputational rewards on willingness to co-produce.

H4b: Unemployment rate has a positive moderating effect on the impact of utility, social norms, and monetary rewards on willingness to co-produce.

H4c: Population density has a positive moderating effect on the impact of utility, social norms, and monetary rewards, but a negative moderating effect on the impact of reputational rewards on willingness to co-produce.

Research Design

To test the hypotheses outlined above, we use data from a representative-samples face-to-face public opinion survey administered
in 2014 in Central-Eastern Europe as part of an ERC StG Project 240830 “Public Goods through Private Eyes: Exploring Citizens’ Attitudes towards Public Goods and the State in Central-Eastern Europe” (Letki 2015). The survey was carried out in 14 post-communist countries with an average sample size of 1,500 respondents in each country. Because one of the key independent variables, ethnic fractionalization, is unavailable for Poland, the models include only 13 countries. The sample was clustered at the lowest administrative level: village, small town, city, or in the case of large cities, a city district. However, given that the relevance of the topic of our experiment (local park upkeep) is limited to urban context, we follow previous research on the topic and include urban areas only (Kabisch and Haase 2013; Leslie et al. 2010). Individual-level survey data were supplemented with Census information (for the details of the data, sampling and fieldwork see Table A1 and accompanying text in the Appendix). The resultant dataset includes jointly 10,871 respondents nested in 593 urban localities across 13 countries in Central and Eastern Europe: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Romania, Serbia, Slovakia, Slovenia and Ukraine.

The Vignette
To study willingness to get involved in co-production, the survey applied a so-called factorial design, which combines the advantages of a randomized experiment with a survey on a representative sample (Mutz 2011). All respondents were presented with a short scenario, with three variable factors. They were asked to imagine the following situation: “You live next to a nice but littered park. You learn that a group of people living in your neighbourhood are organising an initiative to clean up this park one afternoon next week.” This was followed by three factors with different values that were randomly assigned to respondents. First factor was intended to capture utility derived from the park by the respondent and her family, second factor captured different level of social norms pertaining to involvement in co-production among the respondent’s reference group in the locality, and final factor presented the options of rewards (for the exact wording, see Table A2). Then they were asked how likely it is that they would join this initiative. The responses were recorded on a 4-point Likert-type scale from “Very likely” to “Not likely at all.” For the purpose of the analysis, the scale was recoded so that willingness to participate is higher when the value of the scale is higher. Each respondent was asked the question only once, yet different scenarios were thus presented to different respondents. The respondents’ indicated willingness to engage in co-production under different combinations of factors is our dependent variable.

Independent Variables
Incentives to Co-produce

Based on the vignette factors introduced above, we operationalize the incentives to co-produce as UTILITY: whether the respondent and her family use the park often/sometimes or never, SOCIAL NORMS: whether a lot/some of people the respondent knows or no one she knows will join in the initiative, and REWARDS: REPUTATIONAL (being mentioned in the local newspaper) and MONETARY (receiving a token fee) (for the construction of the variables, see Table A3 in the Appendix).

Community Attachment. Community attachment is composed of five items capturing attitudes toward local community (see Table A4). The six items subjected to factor analysis formed one dimension with a high Alpha of 0.830, so they have been combined to form an additive index ranging from 0 (no attachment) to 4 (very strong attachment), with a mean of 2.769 (SD = 0.741).

Trust in Local Government. Respondents were asked to indicate their level of confidence in a number of institutions: “Now I am going to read a list of different authorities and institutions. Please tell me how much trust you have in each of them? Please, use a scale from 0 to 10, where 0 means “No trust at all” and 10 means “A great deal of trust.” We have used one item—“local government”—with a mean of 4.385 (SD = 2.717), to capture trust in local authorities.

Local Context: Ethnic Diversity, Unemployment, and Locality Size. Data from the public opinion survey used for our analysis were clustered at the local level—town, city, or a city district. We retrieved census information about the ethnic composition, level of unemployment, and the population density for the corresponding administrative units and merged it with the main dataset. Ethnic DIVERSITY index was calculated as a Herfindahl-Hirschman index, i.e. the sum of squares of shares of particular ethnic groups in the local community, subtracted from 1. It captures the probability that two randomly drawn people within a given spatial unit will represent different ethnic groups. It ranges from 0 (perfect homogeneity) to 1 (each person in the locality represents a different ethnic group). In our data the maximum value is 0.698, while the mean is 0.151 (SD = 0.171). UNEMPLOYMENT level varies from 0 percent to as high as 48.64 percent, with the locality-level mean of 12.71 percent (SD = 8.647). Finally, we use one of the measures of the level of urbanization commonly applied in the literature, namely, population DENSITY. In our sample, population varies from 14.5 people per km$^2$ to 7,918 people per km$^2$, with the mean of 1,287.89 people (SD = 1,300.21) (for the details of distribution of independent variables, see Table A5 in Appendix).

Control Variables: Socio-economic Characteristics. Although our design is based on an experiment and thus the scenarios were randomly assigned to respondents, we nevertheless control for the respondents’ standard socio-economic characteristics, such as gender, age, whether the respondent has a degree, and the length of living in a given locality (in years). We do so in case data missingness was non-random and could affect our results, and since prior literature points at the importance of controlling for socio-demographic characteristics (Alford and Yates 2015; Parrado et al. 2013).

The Model
As our dependent variable, the willingness to contribute to the upkeep of the local park, is measured on an ordinal scale, we model it using ordinal logistic regression. Given the multi-level structure of our data, we use an ordered logit hierarchical regression, where respondents are nested within lowest administrative units (towns/city districts), and country fixed effects are accounted for. Social-psychological variables moderate the effect of vignette factors on willingness to co-produce, with the specification presented in Table A6 in the appendix on the example of community attachment; we apply the same formulation to each moderator (trust in local authorities, locality’s ethnic diversity, unemployment level, and population size).
Results
The central argument of our paper is that the effect of incentives is moderated by psychological and social factors. However, before we investigate the proposed moderating effect, we first test hypotheses 1a, 2a, and 3a–3c, about the negative effect of the lack of community attachment, lack of trust in local authorities, ethnic diversity, unemployment level, and population density. The effects from an ordinal logistic regression model are interpreted as changes in probabilities. In this particular case, these are probabilities of willingness to co-produce reaching a certain value on the 1–4 scale. In the discussion to follow, we always refer to the change in the probability of the willingness to co-produce reaching the lowest level (i.e. 1—“Not likely at all”) or the highest one (i.e. 4 “Very likely”). All probabilities have been estimated with the use of SPost13 package for STATA (Long and Freese 2014).

Contextual Determinants of Willingness to Co-produce
Models 1–5 in Table 1 include the experimental factors (incentives: utility, social norms, no reward, and reputational reward) and their interactions with a given social-psychological variable, while controlling for the remaining four. To assess the hypothesized effect of context on willingness to co-produce, we refer to the change in predicted probabilities when the independent variable changes by 1 SD and all incentives (vignette factors) equal zero. Figure 1 below presents the effects.

| Variables | Community Attachment | Trust in Local Government | Ethnic Diversity | Unemployment Rate | Population Density |
|-----------|----------------------|---------------------------|------------------|-------------------|-------------------|
| Utility   | 1.341***              | 0.644***                  | 0.007            | –0.120            | 0.256**           |
| (0.336)   | (0.164)              | (0.116)                   | (0.155)          | (0.112)           |
| Social norms | 0.172                | 0.449**                   | 0.002            | –0.011            | 0.125             |
| (0.373)   | (0.189)              | (0.110)                   | (0.119)          | (0.105)           |
| Ref cat.: Monetary reward | –0.226              | –0.028                    | 0.109            | 0.275*            | –0.156            |
| (0.354)   | (0.195)              | (0.121)                   | (0.148)          | (0.111)           |
| Reputational reward | –0.467              | –0.013                    | 0.121            | 0.257*            | 0.132             |
| (0.311)   | (0.189)              | (0.127)                   | (0.147)          | (0.117)           |
| Attitudes | Community attachment | 0.723***                  | 0.578***         | 0.566***          | 0.576***          |
| (0.146)   | (0.071)              | (0.070)                   | (0.07)           | (0.072)           |
| Trust in local government | 0.017                | 0.088                     | 0.018            | 0.018             | 0.018             |
| (0.020)   | (0.057)              | (0.021)                   | (0.020)          | (0.020)           |
| Context   | Ethnic fractionalization | –1.108***              | –1.088***       | –2.437***         | –1.076***         |
| (0.335)   | (0.335)              | (0.573)                   | (0.334)          | (0.337)           |
| Unemployment rate | 0.011                | 0.011                     | 0.012            | –0.015            | 0.010             |
| (0.011)   | (0.011)              | (0.011)                   | (0.016)          | (0.011)           |
| Population density (in 1,000) | –0.040             | –0.040                    | –0.043           | –0.042            | –0.169**          |
| (0.032)   | (0.032)              | (0.033)                   | (0.033)          | (0.066)           |
| Interaction terms | X utility              | –0.317***                | 1.913***        | 0.046***          | 0.159***          |
| (0.118)   | (0.033)              | (0.444)                   | (0.012)          | (0.065)           |
| X social norms | –0.007               | –0.067*                   | 0.612*           | 0.013             | 0.030             |
| (0.127)   | (0.040)              | (0.340)                   | (0.008)          | (0.051)           |
| X no reward | 0.066                | –0.008                    | –0.582           | –0.023**          | 0.059             |
| (0.127)   | (0.041)              | (0.371)                   | (0.010)          | (0.044)           |
| X reputational reward | 0.163               | –0.004                    | –0.497           | –0.019*           | –0.098            |
| (0.113)   | (0.038)              | (0.493)                   | (0.011)          | (0.063)           |
| Thresholds | /cut1                 | –1.761                    | –1.826           | –2.466            | –2.511            |
| (0.482)   | (0.399)              | (0.339)                   | (0.335)          | (0.327)           |
| /cut2     | –0.152               | –0.220                    | –0.845           | –0.889            | –0.725            |
| (0.478)   | (0.402)              | (0.338)                   | (0.338)          | (0.332)           |
| /cut3     | 1.970                | 1.900                     | 1.283            | 1.243             | 1.405             |
| (0.485)   | (0.398)              | (0.328)                   | (0.328)          | (0.325)           |
| Random effects | Locality             | 0.633                     | 0.637            | 0.642             | 0.648             |
| (0.078)   | (0.079)              | (0.079)                   | (0.080)          | (0.080)           |
| Observations | 10,871               | 10,871                    | 10,871           | 10,871            | 10,871            |
| Number of groups | 593                 | 593                       | 593              | 593               | 593               |
| Log pseudolikelihood | −6.676.89          | –6.682.38                  | –6.662.18        | –6.659.01         | –6.666.53         |
| Variance reduction | 41.4 percent        | 41.1 percent               | 40.7 percent     | 40.1 percent      | 41.0 percent      |
| McFadden R² | 0.052                | 0.051                     | 0.054            | 0.055             | 0.053             |

Notes: Multilevel ordered logit, robust standard errors in parentheses. Models controlled for sex, age, education, length of living in the locality, country fixed effects.
N1 = 10,871, N2 = 593, N3 = 13.
*p < .1; **p < .05; ***p < .01.

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Panels A and C show that low community attachment and high ethnic diversity crowd out willingness to coproduce. The 1 SD decrease community attachment decreases the probability of the highest category (“Very likely”) by about 8.8 percent and increases the probability of the lowest category (“Not likely at all”) by around 5.4 percent. An even stronger effect is present for ethnic diversity, where a 1 SD increase in diversity results in a 7.9 percent increase of “Not likely at all” category and 8.3 percent decrease of “Very likely” category. For the remaining variables the same pattern is visible, i.e. low trust in local authorities and high unemployment and population density are associated with lower willingness to coproduce. However, these effects are not statistically significant. This means that hypothesis 1a and hypothesis 3a have been confirmed, while hypothesis 2a and 3b and 3c have not, as even though the remaining effects are in the expected direction, they miss conventional significance levels.

**Putting Incentives in Context**

Finally, we test the hypotheses about the moderating effect of social-psychological context (H1b, 2b, 4a–4c). Given that interaction effects are difficult to interpret solely based on the table coefficients, we present them as change in probability (in percent) for each incentive (UTILITY, SOCIAL NORMS, MONETARY, and REPUTATIONAL reward) for the lowest (“Not likely at all”) and highest (“Very likely”) categories of the dependent variable at the minimum, median, and maximum level of the moderating variables (ATTACHMENT, TRUST, DIVERSITY, UNEMPLOYMENT, and DENSITY).

**Social-Psychological Context**

In Hypotheses H1b and H2b, we proposed that strong community attachment and trust in local authorities weaken the effect of instrumental incentives on willingness to co-produce. In both cases, we should see the effect of utility and monetary rewards under low, but not high values of the moderating variables. Panels A and C in Figures 2 and 3 present the results. In the case of UTILITY, our proposition is confirmed, as under minimum and median level of community attachment UTILITY significantly increases the probability of the respondent declaring that she would very likely participate by 9.8 and 7.5 percent, respectively, and lowers the probability of the “Not likely at all” category by 23.4 and 3.5 percent, respectively. Also trust in local authorities has a significant effect, as under minimum and median level of trust UTILITY significantly increases the probability of the respondent...
declaring that she would very likely participate by 10 and 7.8 percent, respectively, and lowers the probability of the “Not likely at all” category by 5.9 and 4.1 percent, respectively. In the case of MONETARY rewards, there is no statistically significant effect on willingness to co-produce under any level of the two psychological variables (community attachment and trust in local authorities).

In H1b, we proposed that under strong community attachment both SOCIAL NORMS and REPUTATIONAL rewards will increase probability of co-production, while under low levels of attachment there will be no similar effect. Panels B and D in Figure 2 show the results. Contrary to our expectation about community embeddedness providing norms and reputation with relevance, REPUTATIONAL reward has no significant effect under any level of the moderating variable. SOCIAL NORMS, in contrast, have a positive effect only under the median level of attachment, as they increase the probability of the highest category by 2.62 percent and decrease the probability of the lowest category by 1.16 percent. For trust in local authorities (H2b), we proposed a different moderating mechanism, whereby high levels of trust will strengthen the effect of REPUTATIONAL rewards and SOCIAL NORMS will be more relevant a predictor under low levels of trust. Panels B and D in Figure 3 show that while NORMS indeed have an effect under minimum value of trust (increasing the highest category probability by 7.1 percent and decreasing the probability of the lowest category by 4 percent), there is no statistically significant effect of REPUTATIONAL rewards as any level of trust in local authorities. Overall, psychological context moderates the effect of UTILITY and, to certain extent, SOCIAL NORMS on willingness to co-produce, but—contrary to our propositions—there is no effect in the case of either type of rewards.

Social Context
In hypotheses H4a–H4c, we proposed that the features of social-structural context, such as level of ethnic diversity, unemployment, and population density will moderate the effect of both instrumental and reputational incentives. Specifically, we proposed that under high diversity, unemployment, and population density UTILITY, SOCIAL NORMS, and MONETARY reward will encourage willingness to co-produce, and will have no such effect under low levels of these variables. Panels A, B, and C of Figures 4–6 display the results. They show that UTILITY has an expected effect, that is statistically significant, under median and maximum levels of all three contextual variables. It increases the probability of the highest category (“Very likely”) by 5.2 and 17.8 percent at the median and maximum level of diversity, by 4.8 and 27.6 percent at the median and maximum level of unemployment, and by 6.6 and 20.4 percent at the median and maximum level of population density. Accordingly, it lowers the probability of the lowest category (“Not likely at all”) by 2.4 and 17.1 percent at the median and maximum level of diversity, by 2.6 and 14.7 percent at the median and maximum level of unemployment, and by 3.3 and 17.2 percent at the median and maximum level of population density. In the case of population density, UTILITY also encourages co-production at the minimum level, but this effect is fairly small and in line with the moderating effect proposed (2 percent at $p < .05$).
The conditionality of SOCIAL NORMS on social-structural factors is less pronounced than in the case of UTILITY. The statistically significant effect is present only at the maximum level of ethnic diversity and unemployment, where SOCIAL NORMS increase the probability of the “Very likely” category by 6.2 and 8.4 percent, respectively, and lower the probability of the “Not likely at all” category by 4.9 and 3.8 percent, respectively. No statistically significant moderating effect of population density on the effect of SOCIAL NORMS is present. Finally, the effect of MONETARY reward on willingness to co-produce is moderated by unemployment level only, where under the maximum level of unemployment it increases the probability of the “Very likely” category by 11.5 percent and lowers the probability of the “Not likely at all” by 4.5 percent, while under median level of unemployment the effect of MONETARY reward is statistically insignificant.

In H4a and H4c, we proposed that under high levels of ethnic diversity and population density the effect of REPUTATIONAL reward will tend toward 0, while it will be positive and significant at low levels of the moderating variables. Panels D in Figures 4 and 6 show the results. It is clear that ethnic diversity has no moderating effect on REPUTATIONAL rewards, but a clear and statistically significant effect is visible in the case of population density. And so, at the minimum level of population density REPUTATIONAL rewards increase the probability of the “Very likely” category by 4.9 percent and decreases the probability of the “Not likely at all” by 2.1 percent. A similar, yet weaker effect, that misses the statistical significance threshold, is observable at median level of population density, while the opposite —crowding out willingness to co-produce— effect is present at the maximum level of density, where REPUTATIONAL reward decreases probability of the “Very likely” category by 13.4 percent and increases the probability of “Not likely at all” by 10.2 percent. Clearly, in densely populated urban settings people consider being known for their contribution to the local public goods as defaming.

**Discussion and Conclusion**

With governments increasingly relying on ordinary people’s co-production in the provision of public services, the question arises under what conditions people can be mobilized. The contribution of this article is manifold. First, following up on previous work that emphasized that successful policy needs to be contextualized (Bryson et al. 2013; Fledderus et al. 2014), we have supplemented the incentive-based approach to co-production with a broad range of mechanisms related to social-psychological factors to propose that some contexts are more challenging for co-production than others, and that under challenging contexts some individual incentives can be applied to encourage participation. At the same time, under circumstances favorable for co-production we proposed that no incentives are needed, as co-production is seen as a value in itself.

Second, we tested our hypotheses through a unique design—a survey experiment applied to representative samples of 13 East-Central European countries, using a vignette study set in a specific field of service delivery: local park upkeep. This offers a vast methodological
improvement over previous studies, as it allows to overcome the limitations of research based on correlational data and/or case studies. The experiment allows to deal with the problem of causality between reported behavior and individual attitudes. Moreover, the structure of the data allows to nest respondents in their local areas, and not only to analyze the effect of social-psychological context on respondents’ willingness to co-produce, but also to examine the interaction between incentives to co-produce and this context.

Third, the results of our analyses confirmed most, but not all our hypotheses. We demonstrated that willingness to co-produce increases with community attachment and decreases with ethnic diversity of the local area, while the effect of trust in local authorities, unemployment, and population density is statistically insignificant. However, all these contextual factors are relevant moderators of the effect of utility derived from the good co-produced on willingness to co-produce, as under contexts that are less cooperation conducive, utility has a strong effect, while under contexts favorable for cooperation it has no statistically significant effect. A similar pattern, albeit with weaker effects (and sometimes missing the conventional significance levels) is present in the case of social norms, which serve largely as an informational factor (under low trust in authorities, high diversity, and unemployment), but also as a normative one (under median-level of community attachment). We have also shown a very limited relevance of rewards for willingness to co-produce. We have identified an effect of monetary rewards only under low and high levels of unemployment, and reputational—under low and high population density. Interestingly, offering a reputational reward in a densely populated area crowds out co-production instead of encouraging it. These findings contribute to our understanding why the previous evidence regarding rewards is mixed: they are relevant under some specific contexts.

Finally, our results not only provide new insights for literature, but can also serve as input for government to design policies directed at motivating local actors to co-produce. Most specifically, we find suggestive evidence that social-psychological context must be taken into account for an effective policy design (Bryson et al. 2013). As such, our findings are relevant especially in guiding policy makers when and where to take action. Building a context more favorable for co-production, for example, by stimulating community attachment, is a long-term and difficult endeavor. Moreover, that willingness to co-produce decreases with increasing ethnic diversity of the local area does not provide moral grounds to decrease ethnic diversity of neighborhoods as segregation holds other negative effects, including concentrating poverty and distress (Austin Turner and Rawlings 2009). Our finding, however, that individual-level incentives can be used to mitigate obstacles to co-production arising from social-psychological context provides information where policy makers can act upon. When the context is unfavorable for co-production, policy makers can focus on demonstrating the utility of the service concerned for local residents and helping co-producing actors to communicate their involvement to friends, relatives, and neighbors. In contrast, our findings suggest that providing reputational or monetary rewards would do little to increase engagement in co-production. Moreover, our findings suggest that when the socio-psychological context is conductive for

Figure 4  The Effect of Incentives on Willingness to Co-produce at the Minimum, Median, and Maximum Level of Ethnic Diversity
Figure 5  The Effect of Incentives on Willingness to Co-produce at the Minimum, Median, and Maximum Level of Unemployment

Figure 6  The Effect of Incentives on Willingness to Co-produce at the Minimum, Median, and Maximum Level of Population Density
co-production, policy makers do not need to incentivize people since the latter see co-production as a value in itself.

While informative, the above findings are subject to a number of limitations. First, recent studies acknowledge that the practice of co-production might differ between different types of services, such as co-producing safety, health, education, communities, etc. (Brandsen et al. 2018). Our vignette is set in a specific field of service delivery -local park upkeep- and studies a bottom-up initiated co-production initiative wherein inhabitants take the initiative to contribute to a core process of public services. While it provides an important example of local co-production, we should be careful, however, in generalizing our findings to other types of co-production. We studied an initiative wherein people co-produce private value for themselves as well as value for the local community as a whole. Studying a case where free riding can occur might impact on our findings concerning the role of specific incentives and the context wherein co-production takes place. Community attachment, for example, might be expected to have a different effect when studying a co-production activity which provides private value mainly. It would be interesting for future research to replicate our multi-dimensional and multilevel investigation to different examples of government-people collaboration.

Second, our analysis is based on a large-scale cross-national survey experiment with data gathered in 13 Central-Eastern European states. While it is an advantage that we study co-production in the context that has been largely under-researched so far, which also has potentially a greater variance in terms of some key predictors, we should be careful in generalizing our findings to other political, economic, and cultural regions. A key feature which may help explain adherence to co-production is whether a country is characterized by a tradition of collaboration and consultation between government, civil society, and private actors or rather by a “authoritative” government that seeks “to develop policy in an exclusive manner and retain as much control as possible” (Voorberg et al. 2017, 366). Governance traditions in Central-Eastern European countries set the state as the central actor responsible for public service delivery, with people having little influence on the final policy and its outcome. Despite efforts aimed at building bottom-up civic activism, levels of civic participation are still significantly lower than in mature democracies (Pop-Eleches and Tucker 2013) and trust toward state agents is continuously low (Letki 2018). At the same time, unemployment levels are extraordinarily high in some parts of Eastern Europe, and ethnic diversity is not immigration-related, which is potentially important for understanding the relevance of these factors.

Finally, while the experimental setup presents a significant methodological improvement over correlational studies, the vignette study measured self-reported likelihood to co-produce rather than actual behavior. Thus, we do not know the exact strength of particular effects under real-life conditions. Our study offers a number of novel theoretical propositions and their rigorous empirical tests, but equally importantly it opens new, exciting avenues for research on co-production.

Acknowledgments

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Imagine you live next to a nice but littered park. You learn that a group of people living in your neighborhood are organizing an initiative to clean up this park one afternoon next week.

| Park Upkeep Vignette: Distribution of Factors and Responses, N = 11,086 |
|---------------------------------------------------------------|
| a) You and your family often go to this park                | 33.6 |
| You and your family sometimes go to this park              | 34.0 |
| You and your family never go to this park                 | 32.3 |
| b) No one you know is planning to join this initiative     | 33.5 |
| Some people you know are planning to join this initiative  | 33.8 |
| A lot of people you know are planning to join this initiative | 32.7 |
| (no mention)                                              | 33.4 |
| People who join in will receive a token fee for their help.| 33.6 |
| People who will join in will be acknowledged in the local newspaper | 33.0 |
| How likely is it that YOU will join this initiative to clean up a local park? | 33.0 |
| Not likely at all                                         | 10.1 |
| Not very likely                                          | 16.2 |
| Fairly likely                                            | 35.7 |
| Very likely                                              | 38.1 |

Table A2

APPENDIX

Survey sample, sampling, and fieldwork information for the survey run as part of an ERC StG Project 240830 “Public Goods through Private Eyes: Exploring Citizens’ Attitudes towards Public Goods and the State in Central-Eastern Europe”, PI: Natalia Letki, University of Warsaw. Face-to-face representative national samples, clustered at the level of Primary Sampling Units (Local Administrative Units or equivalent; in large cities—city district), N1 (individuals) = 20,028; N2 (PSUs) = 973; N3 (countries) = 13.

Sampling of PSUs. Sample selection process was standardized across all countries covered by the study. Stratified clustered random sample was selected in every participating country. Primary Sampling Units (PSUs) were selected randomly in such a way as to ensure that they meet constraints with respect to regions and population size of the locality. For most of the PSUs, the PSU and the SP are identical. However, for large cities a PSU might have comprised a few SPs. At the same time, the overall number of SPs in every country is fixed and equal to 75. It was assumed that the number of 20 interviews in every SP would be achieved. Within every SP, households (Secondary Sampling Units) were first selected using a random route algorithm and taking into account the response rate declared by the company conducting fieldwork. Then, one respondent was selected in any of those households from among all the persons aged 15+ (18+ in Romania) using either Kish grid or the next (last) birthday principle. Sampling frames were prepared by the [identifying reference] research team based on the most recent Census available for each country. They were compiled at the level of LAU2 (Local Administrative Units) or equivalent units (most often municipalities).

Principles of Prelisting. The following principles were used to carry out prelisting of addresses:

- To minimize the homogeneity due to geographic proximity effects, each SP was to be divided into interviewer quadrants (I/Qs), e.g. according to East-West and North-South axes, and the number of addresses to be prelisted was distributed equally among the quadrants.
Table A3 Explaining Willingness to Co-produce: Utility, Rewards, and Social norms

| Model 1. | Model 2. | Model 3. |
|-----------------|-----------------|-----------------|
| Utility (ref. cat.: Ofen) | Utility (ref. cat.: Never) | 0.496*** (0.0974) |
| Sometimes | 0.0161 | (0.107) |
| Never | −0.487*** (0.110) |
| Social norms (ref. cat.: A lot of people) | Social norms (ref. cat.: No one) | 0.160* (0.0906) |
| Some people you know | −0.232*** (0.0886) |
| No one you know (No social norms) | −0.141* (0.0865) |
| Rewards (ref. cat. Monetary) | | |
| No reward mentioned | −0.0754 | (0.0829) |
| Reputational | −0.0453 | (0.0932) |
| Thresholds | | |
| /cut1 | −2.728 (0.110) |
| /cut2 | −1.222 (0.069) |
| /cut3 | 0.761 (0.069) |
| Random effect | | |
| Neighborhood | 1.082 (0.111) |
| Number of groups | 593 |
| Observations | 10,871 |
| Variance reduction | 35.0 percent |
| Number of groups | 593 |
| Observations | 10,871 |
| McdFadden R² | 3.45 |
| 3.40 |

Notes: Unstandardized coefficients with SE in parentheses. Multilevel ordered logit, robust standard errors in parentheses, Models 2 and 3 controlled for sex, age, education, employment, length of living in the locality, country fixed effects.

*p < .1; ***p < .01.

Table A4 Community Attachment Indicators: Principal Component Analysis, N = 11,664

| Factor Loading |
|----------------|
| a) I like living in this neighborhood. | 0.671 |
| b) People in this neighborhood can be trusted. | 0.702 |
| c) People around here are willing to help each other. | 0.681 |
| d) People who live in this area form a real community. | 0.662 |
| e) I feel a sense of belonging to a local community. | 0.617 |
| f) This is a great neighborhood to live in. | 0.704 |
| Cronbach Alpha | 0.830 |

Notes: The respondents were asked to indicate to what extent they agree or disagree with the statements presented, using a Likert scale from 1 (strongly agree) through 2 (rather agree), 3 (neither agree nor disagree), 4 (rather disagree) to 5 (strongly disagree) (with a possibility of “don’t know” and “refusal” options). The items have been recoded so that higher value indicates a higher level of agreement with a statement; “don’t know” has been recoded into the middle of the scale.

- Prelisting could not be conducted by the person making a contact attempt (interviewer).
- A 7-step algorithm was used to prelist, where the lister selected every 3rd dwelling he/she passed, and in case of buildings with multiple staircases every staircase was treated as a separate building.

Pre-listed addresses were provided to the [identifying reference] research team in the .csv format. The [identifying reference] team randomly drew 50 percent of households from those preselected in every SP. In households with more than one inhabitant, the interviewer randomly drew a person to give an interview (using next- or last-birthday method or Kish grid, constant for entire country).

Additional Addresses. Whenever fieldwork companies encountered problems with reaching declared response rates (as happened in Hungary, where RRs were overestimated by the fieldwork companies), additional addresses were released. They were drawn randomly from the remaining 50 percent of the pre-listed addresses. They were released proportionally in each SP (i.e. if additional three addresses were required in one SP, three addresses were added to every SP in the sample), resulting in the increase of the sample size.

Contact and Interviewing. The contact with the household drawn was made in person; the minimum number of contacts required before the address was considered inaccessible was 4. Informed consent was acquired in cases. All interviews were carried out as CAPI. Some companies used additional mechanisms such as a phone call or a letter to make an initial, pre-interview contact, and incentivized respondents (small gifts, game of chance).

Table A3 displays the estimates of the effect of incentives (vignette factors) as they were originally specified in the experiment (Model 2). UTILITY is defined as the frequency of using the park in question by the respondent and her family; estimates show that those under the “never use the park” condition are significantly less willing to join in the initiative than those who use it “often”
Moreover, the conditions “sometimes” and “often” are not statistically significantly different, thus we can conclude that using the park “sometimes” constitutes a sufficient level of utility for the respondents to join in the cleaning initiative. For the sake of parsimony, we therefore dichotomize this factor into “no utility” (never) and “utility” (sometimes/often). When it comes to REWARDS we choose the MONETARY reward as a reference category. This allows us to see whether its effect is statistically significantly different from that of the REPUTATIONAL reward, as well as a placebo condition (no reward mentioned). No type of reward has a statistically significant effect on willingness to co-produce. When it comes to the effect of SOCIAL NORMS, as in the case of UTILITY, we have three levels of other people’s involvement in the local initiative graded based on the respondent’s familiarity with them: a lot of people respondent knows, some people she knows and no one she knows. However, there is no statistically significant difference between the effect of the respondent knowing a lot of people and her knowing some people.

Table A5 Individual and Contextual Predictors and Control Variables: Descriptives

|                          | N    | Mean | SD  | Min | Max |
|--------------------------|------|------|-----|-----|-----|
| Individual level predictors |      |      |     |     |     |
| Community attachment     | 11,365 | 2.77 | .74 | 0   | 4   |
| Confidence in local authorities | 11,138 | 4.39 | 2.72 | 0   | 10  |
| Neighborhood level predictors |    |      |     |     |     |
| Population density (in 1,000) | 595 | 1.26 | 1.32 | 0.02 | 7.92 |
| Ethnic fractionalization | 594 | 0.24 | 0.21 | 0.00 | 0.73 |
| Unemployment level       | 595 | 11.03 | 6.44 | 1.4  | 40.87 |
| Control variables        |      |      |     |     |     |
| Gender                   | 10,734 | 1.18 | 0.98 | 0   | 1   |
| Age                      |      |      |     |     |     |
| Up to 25 years old       | 10,730 | 0.09 | 0.28 | 0   | 1   |
| 25 up to 40 years old    | 10,730 | 0.19 | 0.39 | 0   | 1   |
| 40 up to 55 years old    | 10,730 | 0.26 | 0.44 | 0   | 1   |
| 55 up to 65 years old    | 10,730 | 0.20 | 0.40 | 0   | 1   |
| 65+                      | 10,730 | 0.27 | 0.44 | 0   | 1   |
| Degree                   | 10,734 | 0.21 | 0.41 | 0   | 1   |
| Length of living in the neighborhood | 10,540 | 29.48 | 19.43 | 0   | 89.69 |

Table A6 Specification of the Hierarchical Ordered Logit Model Explaining Willingness to Co-produce for the $i$th Respondent in the $j$th Locality of the $k$th Country on the Example Community Attachment

$$\Pr(\text{CO-PRODUCTION}_{ijk} = p) = \beta_0 + \beta_1 \text{UTILITY}_{ijk} + \beta_2 \text{SOCIAL NORMS}_{ijk} + \beta_3 \text{NO REWARD}_{ijk} + \beta_4 \text{REPUTATIONAL REWARD}_{ijk} + \beta_5 \text{AGE}_{ijk} + \beta_6 \text{FEMALE}_{ijk} + \beta_7 \text{DEGREE}_{ijk} + \beta_8 \text{LENGTH}_{ijk} + \beta_9 \text{ATTACHMENT}_{ijk} + \beta_{10} (\text{ATTACHMENT}_{ijk} \times \text{UTILITY}_{ijk}) + \beta_{11} (\text{ATTACHMENT}_{ijk} \times \text{SOCIAL NORMS}_{ijk}) + \beta_{12} (\text{ATTACHMENT}_{ijk} \times \text{NO REWARD}_{ijk}) + \beta_{13} (\text{ATTACHMENT}_{ijk} \times \text{REPUTATIONAL REWARD}_{ijk}) + \beta_{14} \text{TRUST}_{ijk} + \beta_{15} \text{DIVERSITY}_{ijk} + \beta_{16} \text{UNEMPLOYMENT}_{ijk} + \beta_{17} \text{DENSITY}_{ijk} + \epsilon_{1ijk} + \epsilon_{2jk} + \psi_k$$

Notes: $p$—a point on a scale of willingness to co-produce (1–4). $\epsilon_{1ijk}$—respondent-level residual term. $\epsilon_{2jk}$—locality-level residual term. $\psi_k$—country fixed-effect.

In contrast, the condition under which no one she knows will participate makes the respondent statistically significantly less willing to join in, even though the effect is fairly weak (about 1.95 percent). Again, for the sake of parsimony, we pool together conditions to form “no norms” (no one) and “social norms” (some/a lot) (Model 3).