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Public Acceptance of Regional Redistribution in Germany: A Survey Experiment on the Perceived Deservingness of Regions

Jan Gniza[1] and Matthias Wrede[2]*

[1]Friedrich-Alexander University Erlangen-Nürnberg, Chair of Sociology and Empirical Research Methods, Findelgasse 7-9, 90402 Nuremberg, Germany and [2]Friedrich-Alexander University Erlangen-Nürnberg, Chair of Economics and Social Policy, Findelgasse 7-9, 90402 Nuremberg, Germany
*Corresponding author, email: matthias.wrede@fau.de

Abstract
Many policies target the economic and social consequences of regional inequality. This study experimentally investigates factors explaining the public degree of consent to financial transfers to disadvantaged regions. The main hypothesis of this study is that most people use the deservingness-heuristic not only to judge individuals but also to judge regions. We argue that people advocate interregional transfers based on perceived deservingness determined by recipient region's need, lack of responsibility for the need, likelihood of reciprocity, and by a shared identity. To support this hypothesis, we conducted a factorial survey in Germany asking respondents to rate transfers to needy regions under different hypothetical conditions. We demonstrate, as predicted by the deservingness hypothesis, that consent to transfers to other regions is positively influenced by the extent of need and, in particular, past effort of the recipient region as well as by a shared identity. The results suggest that regional policies are particularly accepted when they target needs caused by factors beyond the control of recipient regions.

Introduction

There is agreement in the literature that the perceived deservingness of benefiting individuals plays a crucial role in the formation and public acceptance of social policies (Van Oorschot et al., 2017). However, there are a considerable number of policies where regions rather than individuals are the recipients. This study experimentally examines if perceived deservingness also determines those characteristics of a recipient region that explain the acceptance in Germany of financial transfers to disadvantaged regions in Germany and Europe.

In the OECD, labor productivity in the worst-performing region within the country is on average about half that of the best-performing region within each country, and unemployment rates typically differ by a factor of three (OECD, 2019). The place of residence within a country determines inhabitants' job chances, housing options, health care, environmental conditions, crime risk, and extent of provided welfare measures (Martin, 2015; Vampa, 2017). Regional inequality affects life chances and is associated with greater interpersonal inequality (McCann, 2020).

To cope with regional inequality, the EU, UK, and other high-income countries use transfers to improve economic and living conditions in weaker regions. These place-based policies are the essentials of EU cohesion policy, territorial fiscal equalization schemes, structural funds, and business or infrastructure development funding. Furthermore, regional policies are crucial for the acceptance of climate policies by supporting transitioning regions that rely on carbon-intensive industries (Oei et al., 2020). Surveys show that most of the European population consider comparable living conditions to be desirable (Gerhards et al. 2019).

However, the regional literature shows that excessive efforts to reduce regional inequalities are often economically inefficient by not providing the desired growth-enhancing results and discouraging inhabitants from moving to regions where workers are needed (Iammarino et al., 2019; Neumark and Simpson, 2015). On the other hand, focusing solely on booming metropolitan areas can lead to a lack of housing and an overload of the infrastructure there (OECD, 2006) and political discontent expressed through votes for populist parties in disadvantaged regions (Rodríguez-Pose, 2018; Rodríguez-Pose and Dijkstra, 2021). Henkel et al. (2021) show regional transfers in Germany lead to lower national economic output; however, smaller disparities still lead to an increase in welfare as congestion in large cities is reduced. Therefore, it can also be economically reasonable to reduce migration to booming areas. These arguments for and against intervention are used in debates in different countries – for example, on the use of structural funds for former coal mining areas in Germany (Oei et al., 2020), imbalances between rural America and megacities in the US (Muro, 2021), and the future of UK cohesion policy after Brexit (Bachtler and Begg, 2017) and the resulting policy of Levelling Up (Enenkel, 2021; Martin et al., 2021).

To implement a widely accepted regional policy and to justify the considerable financial expenditure, studies demand that policy makers should also consider the public's sense of justice (Harrison et al., 2020: 132). However, so far, few studies examine population's attitudes towards the costs and benefits of reducing regional inequalities.

The available studies on attitudes and election results show that respondents' economic self-interest is a decisive determinant in explaining attitudes towards regional redistribution. Individuals in wealthier regions show less support for interregional transfers and out-group concerns influence preferences for recipient regions (Mueller et al., 2016; Balcells et al., 2015). Related to issues of interregional redistribution, Holm and Geys (2018) demonstrate that national rather than local identification affects preferences for intrapersonal redistribution in a heterogeneous federation. Gniza et al. (2022) show with a survey experiment that the German public supports regional policies that equalize living conditions and only target economic conditions if it enhances lasting growth.

Previous studies on the acceptance of regional redistribution show that self-interest and social identification are important determinants but largely ignore other motivations that are widely regarded as important foundations of individual attitudes and actions: altruism and perceived deservingness. While the importance of the recipient's perceived deservingness for the public acceptance of welfare benefits to individuals has been demonstrated in many studies (see e.g. Heuer and Zimmermann, 2020 for an overview), its role for interregional transfers has not yet been explored.

Our study contributes to the literature by examining how deservingness explains public acceptance of regional transfers. To this end, we follow the literature on deservingness of individuals (Van Oorschot, 2000) and define a region as more deserving when the extent of region's need is higher, the region has little responsibility for the needs, a greater likelihood of reciprocity, and when the population of the giving and the receiving region have a shared identity. Theoretically, we argue that people perceive a region as a homogenous group of people (as entity) and judge the region as they would judge a person. People adapt the deservingness-heuristic (see e.g. Petersen, 2012) to regions by using all available cues to assess whether regions are "reciprocators" who are willing to pass on help to others.

Conducting a survey experiment in Germany, we designed a hypothetical regional policy program and varied the characteristics of eligible recipient regions. The experimental variation in the recipient regions' characteristics enables us to analyze the relevance of different deservingness aspects for the acceptance of financial transfers to hypothetical regions. By giving respondents several decision criteria at once and considering the respondent's regional origin, we can also control whether respondents behave in purely altruistic way or purely self-interested way. Our sample encompasses two rather small groups of people for whom we cannot exclude pure self-interest or pure altruism because these respondents always reject or always advocate regional transfers regardless of the recipient's characteristics.

However, our most important finding is that the attitudes of the vast majority are consistent with the deservingness heuristic applied to regions. People are more willing to help regions in greater need, but they also appreciate the contributions to society and the efforts made in the past to avoid the need for help. For example, regions with a higher share of the elderly and regions that have used their financial expenses reasonably in the past were more likely to receive support. Furthermore, proximity and a shared identity with the recipient region increase the willingness of the donor to help. Specifically, donors prefer recipient regions from their own federal state to other German regions, and prefer these in turn to regions from other EU countries. Deservingness criteria are crucial even when the economic effectiveness of the aid is rather low. Since need and control over need are important deservingness criteria, we interpret that regional measures are particularly accepted if they target residents' needs for relevant public infrastructure and target structural changes caused by trends beyond regions' responsibility.

Perceived deservingness in modern welfare states and the importance of reciprocity

There is widespread agreement in the literature that although self-interest has a significant impact on public support for welfare benefits, the total explanatory power is

often low (Fong, 2001). Many studies emphasize the role of recipient's perceived deservingness for the public acceptance of welfare benefits (Heuer and Zimmermann, 2020). The literature established mainly five deservingness criteria to evaluate whether persons or groups deserve financial support: the level of need, the control over this neediness or responsibility for it, the level of reciprocity (especially past contributions to the welfare system), the recipient's attitude (e.g. gratefulness), and shared identity with the recipient (Van Oorschot, 2000). Depending on the research question, studies argue at least with one but mostly with several of these criteria.

Studies use deservingness criteria to explain the empirically observable higher public acceptance of supporting the elderly (Arrondel and Masson, 2006), handicapped (Jæger, 2007), and parents (Buss, 2019). The elderly and handicapped often cannot earn an income; therefore, they are needy and have no control over it. Furthermore, the elderly have a long working history and paid taxes, which increases deservingness due to the reciprocity criterium. Parents care for their children (higher need and less control over it) and get credits for fulfilling an important social task (reciprocity). On the other hand, the public perceives migrants and unemployed on average as less deserving (see e.g. Kootstra, 2016; Osipovič, 2015). Migrants contributed less in the past (less reciprocity) and are confronted with more prejudices due to greater social distance (e.g. prejudice that they show less effort). Furthermore, many people believe that the poor and unemployed are responsible for their own fate and that they do too little to improve their situation (Alesina and Angeletos, 2005; Baumberg, 2016). Kootstra (2016) and Buss (2019) show that the acceptance of unemployment benefits – also targeted at migrants – can be increased if it is clear that the recipients have worked in the past and are striving to find a new job (reciprocity).

From an evolutionary perspective, the assessment of deservingness has the function to evolve und enforce reciprocal exchange of help in social groups (Petersen, 2012: 3). For our ancestors, it was essential for survival to get help in case of illness, to hunt cooperatively, and to share food (Stiner et al., 2009). However, providing help is risky because free riders could take advantage and refuse to help others in the future. A donor is only protected in the future if recipients also make efforts to reciprocate help (Axelrod and Hamilton, 1981) either to the donor (direct reciprocity) or to others in the social group (generalized reciprocity). Generalized reciprocity (A helps B helps X) is especially important for social groups because a donor's initial help sets a whole chain of help in motion (Van Doorn and Taborsky, 2012). Person A's first aid becomes the root of aid to several people (A helps B helps C helps D . . .). This multiplication of aid maximizes group protection where everyone – including original donor A – can count on help when they need it.

To ensure such reciprocal exchanges of help, humans evolved a deservingness-heuristic to distinguish "cheaters" from "reciprocators" (Petersen, 2012). Reciprocators are those who are willing to pass on help to others except for cheaters. This heuristic is a deep-seated psychological process that operates automatically and is driven by anger towards the unmotivated and compassion towards the unfortunate (Jensen and Petersen, 2017: 71; Zak, 2007). The importance of reciprocity

norms in cooperative human behavior and allocative decisions also gets strong support from experimental research (see e.g. Fehr and Fischbacher, 2005) and studies that use reciprocity as the main theoretical explanation for the public acceptance of the welfare state measures (see e.g. Bowles and Gintis, 2000; León, 2012). These results confirm the empirical relevance of the established deservingness criteria and support the theoretical explanation that donors want to evolve long-lasting reciprocal relationships.

Theoretical framework – the deservingness of regions

The basic idea of our theoretical framework is that donors consider recipient regions' characteristics to evaluate if regions deserve financial transfers. Inspired by established deservingness criteria, we focus on four regional characteristics that we expect to influence the acceptance of financial transfers. The region's economic strength (need), the proportion of the elderly in the recipient region (need, control, and reciprocity), region's past financial expenses (control and reciprocity), and the location of the region (identity).

The only deservingness criterion that is not part of our hypotheses is "attitude". Attitude contains recipients' gestures of gratitude, which we consider difficult to transfer to the regional context. Furthermore, studies suggest that gratitude is a cue for recipient's efforts to reciprocate (Heuer and Zimmermann, 2020; Nowak and Roch, 2007), which we have already considered with region's past financial expenses.

We theoretically explain donor's judgements about regions with the evolutionary deep-seated psychological deservingness-heuristic that humans use available cues to differentiate between "cheaters" and "reciprocators" (Petersen, 2012). The heuristic occurs automatically in small-scale exchanges with personal contact as well as for the evaluation of abstract groups who could benefit from welfare state measures like "the unemployed", "the migrants", "the pensioners", or "the sick ones" (Jensen and Petersen, 2017).

We assume that donors affectively judge entire regions similar to how people make judgements about the deservingness of other abstract groups. Social psychology established the concept of group entitativity to describe that a group of individuals is perceived and judged as a homogenous entity (see e.g. Abelson et al., 1998). The similarity of group members especially leads to the perception that a group of individuals is one coordinated actor with a collective mind and intentions (Waytz and Young, 2012). People perceive homogenous groups as having the same properties as persons (Hamilton and Sherman, 1996). We assume that donors will perceive and judge regions similar to persons under two conditions. First, the information describes regions as an acting entity and not as a few individuals (from one region). Second, donors do not get ambivalent information about (groups of) individuals from one region. Under these two conditions, we assume that donors will use all available cues about a region to judge if the region is a "reciprocator" and therefore if the region deserves financial support.

Hypotheses

Need is an important deservingness criterion to assess how much potential recipients depend on external help. To capture the need of a region, we use economic strength and average income. These indicators capture the prosperity and capacities of the region and their inhabitants. The public should perceive a stronger obligation to financially support regions when these indicators are comparatively low, which leads to our first hypothesis.

H1: *There will be greater acceptance of financial support for a region that is weaker economically and has a lower income.*

We also expect that the composition of the population matters for the perceived deservingness of a region. Studies showed that the elderly score especially high according to deservingness criteria because they are needy, have no control over it, and have already worked all their lives and possibly raised children (Buss, 2019). All these criteria rather speak in favor of "reciprocators" and not "cheaters" leading to a high consensus in society that the elderly should get returns for their life achievements by being offered a decent standard of living. Needy regions with bad public infrastructure can threaten the living standard of the less mobile elderly. Therefore, financial support for regions with a high share of the elderly are more accepted versus regions with a younger population.

H2: *There is greater acceptance for financial support of regions with more elderly people.*

Donors will use available effort cues about the recipient region to assess if the region is a "reciprocator" who is willing to pass on help. For this assessment, the deservingness criteria control and reciprocity are especially important. Donors will evaluate if the needy region has senselessly risked the need or even strategically created the need to get support. This past behavior is not only an important cue for past contributions but also for region's future efforts to give something back. When a region has meaningfully invested its resources, donors should attribute less responsibility to the recipient region for the bad situation and trust the region to show efforts to reciprocate. Thus, donors will give greater support to regions that have spent more money for education and infrastructure than for recreational facilities.

H3: *Acceptance of financial support for a region increases with previous spending on education and infrastructure rather than recreational facilities.*

To address proximity and identity in the regional context, we distinguish whether recipient regions belong to the same federal state, to another state in Germany, and to another country in the European Union (EU). We assume that these three types of regions shape different perceptions of identity by providing implicit information about the common language, cultural habits, frequency of past interactions, and common institutions. Using this information, donors can group other people and identify more strongly with a group.

The German public should be most supportive of regions from the same federal state followed by other German regions; they should be less supportive of regions from other EU countries.

H4a: *If the recipient region is located in the same federal state, then the acceptance of financial support for this region is greater than if it were in another federal state.*

H4b: *If the recipient region is located in another EU Member State, then acceptance of financial support for that region will be less than if it were in Germany.*

We base our last hypothesis H5 on the donor's prevalent attitudes and not on a regional characteristic of the recipient region. We assume that the donor's sensitivity to the deservingness cue need is influenced by prevalent attitudes on aid-receiving individuals. Need is an important cue that recipients truly depend on external help; however, the literature also shows that people have different attitudes whether the mere existence of need in terms of poverty is a result of fewer efforts (see e.g. Alesina and Angeletos, 2005). Depending on their attitude, donors should associate the cue need with different abilities of a recipient to reciprocate. Potential donors should be more sensitive towards need if they assume that help-receivers are rather reciprocators who also do something for society in return. If potential donors assume that people receiving help are not giving anything back to society, then they fear fraud and should be less sensitive towards the cue need. Thus, the acceptance of transfers to needy regions will decrease if donors generally doubt that aid-receiving individuals meet their obligation to reciprocate.

H5: *Donors who agree that too many people who do nothing for society receive aid are less sensitive towards the need of a region than donors who do not agree.*

Federalism, fiscal equalization, and regional policy in Germany

Here we offer a short overview of federalism and regional policy in Germany because the political system in Germany shapes the expectations of the respondents. The legislative power in Germany is divided between 16 federal states (Länder) and the federal government. The states consist of smaller administrative and political entities with their own competences including counties and municipalities.

The German Basic Law Article 72 (Federal Ministry of Justice, 2022) defines the legal objective of equivalent living conditions. To achieve this objective, the legislature has implemented fiscal equalization schemes and regional policy instruments. Large fiscal equalization schemes redistribute funds between the federal government, the state governments (Länderfinanzausgleich), and the local governments (kommunaler Finanzausgleich). In addition, the European Union, the Federal Government, and the state governments have set up many regional policy programs to promote business development and infrastructure building in disadvantaged regions (BBSR, 2012: 185). These programs usually require a viable concept from applicants that is checked in a case-by-case assessment.

Research design and data

To test our hypotheses on the perceived deservingness of regions, we designed a hypothetical regional policy program with varying characteristics of the recipient region. We examine how the experimental variation in the recipient regions' characteristics influences the respondent's judgements and therefore the acceptance of regional transfers.

Factorial Survey Experiments

The basic idea of factorial survey experiments is that respondents successively evaluate several different hypothetical situations. These situations (called vignettes) have characteristics that vary experimentally (Wallander, 2009; for an overview, see Auspurg and Hinz, 2015). The varying characteristics of the situation (vignette dimensions) represent the independent variables of interest that we expect to influence respondents' ratings.

We see two advantages of using the method of factorial survey for our research. First, the experimental variation of the dimensions enables a causal interpretation of several simultaneously occurring single determinants on respondents' judgements. Second, versus conventional survey questions, the presence of multiple treatments reduces the risk of social desirability (Wallander, 2009). The evaluation of a bundle of characteristics makes it difficult for respondents to identify socially desirable responses. We conclude that only a factorial survey can test whether respondents simultaneously perceive several characteristics as relevant for the regions' deservingness.

A vignette study on attitude to regional policy

The setting of our factorial survey is a 10-billion euro project for disadvantaged regions in the European Union. We informed the respondents that the hypothetical program considers a total of 96 regions with a size of 1 to 3 million inhabitants. In Germany, regions of this size are either large cities, government regions, or smaller federal states with distinctive but different competences. We gave respondents information that the question of how many and which of the eligible regions will be funded and to what extent is still open. The purpose of the survey is to determine which regions should be considered for the hypothetical program.

Each respondent evaluated six different randomly selected regions (vignettes) composed of different regional characteristics and was asked to indicate the level of support for transfers to the respective region on a scale of 1 (I totally disagree) to 11 (I fully agree) (see Figure 3 in the online Appendix for a vignette example). Recipient regions vary in six vignette dimensions (see Table 1). To simplify the evaluation for the respondents, we always presented the vignette dimensions in the same order (Table 1) and underlined the varying factors. We conducted a full fractional factorial design with the whole universe of 96 vignettes (3x2x2x2x2x2), which implies a balanced and orthogonal sample. Due to random selection, respondents cannot rate a vignette multiple times, and each of the 96 possible vignettes is displayed equally often.

Table 1. Construction of the vignettes-characteristics of the recipient region

Dimension	Vignette text and varying levels (Dimensions in the order they were shown to the respondents)	Hypotheses
Location (jurisdiction)	The recipient region is located in (1) the federal state in which you live. (2) Germany. (3) a member state of the European Union.	H4: Federal state > Germany > EU (identity)
Economic relations	(1) Few business relationships exist (2) Many business relationships exist between the firms in the recipient region and the region where you live.	Vignette control variable
Economic strength (need)	Economic strength and income are about (1) 10% lower than the average in Germany. (2) 30% lower than the average in Germany.	H1: 30% > 10% (Need) H5: 30% * high reciprocal expectations > 30% * low reciprocal expectations (reciprocity)
Proportion of the elderly	The proportion of elderly people in the recipient region is (1) lower than the average in Germany. (2) higher than the average in Germany.	H2: higher > lower (need, control, reciprocity)
Past financial expenses	In the past, the recipient region has invested (1) less in schools and roads than in recreational facilities. (2) more in schools and roads than in recreational facilities.	H3: more > less (control, reciprocity)
Effectiveness	Through the creation of new jobs (1) few residents of the recipient region will be discouraged from leaving their home region and searching for jobs throughout Germany. (2) many residents of the recipient region will be discouraged from leaving their home region and searching for jobs throughout Germany.	Vignette control variable

After the experimental vignette design, the survey continues with questions on socio-demographics, regional mobility, living conditions of the respondent's hometown, attitudes towards regional disparities, and regional redistribution and knowledge about regional policy measures. We also asked for fairness-related principles inspired by Rasinski (1987) while capturing the respondent's beliefs about distributive fairness in society. Furthermore, we asked for the respondent's home district and merged the information with official regional data[1].

To test our five hypotheses, we used the vignette dimensions economic strength for H1 (need), proportion of the elderly to test H2 (need, control, reciprocity), past financial expenses for H3 (control, reciprocity), and location for H4 (identity). Hypothesis H5 also uses the dimension of economic strength (need) and analyzes whether the respondent's expectations that help-receiving individuals are rather reciprocators explain stronger responses to this need dimension (reciprocity).

We use two further control dimensions to test whether the presumed influences on the perceived deservingness also occur under control of two – more selfish – decision criteria: economic relations and the effectiveness of the financial transfer. We operationalize close economic relations through many business relationships between the regions, through which the donor's home region benefits directly from growth in the recipient region. Our measure of effectiveness is whether the financial transfer will discourage few or many residents from moving by creating new jobs in the recipient region. To control for economic effectiveness, which relates output (jobs created) to inputs (financial transfer), helps to isolate perceptions of deservingness. Donors should always prioritize greater needs over lesser needs and reward the efforts of the recipient region regardless of whether few or many jobs are created.
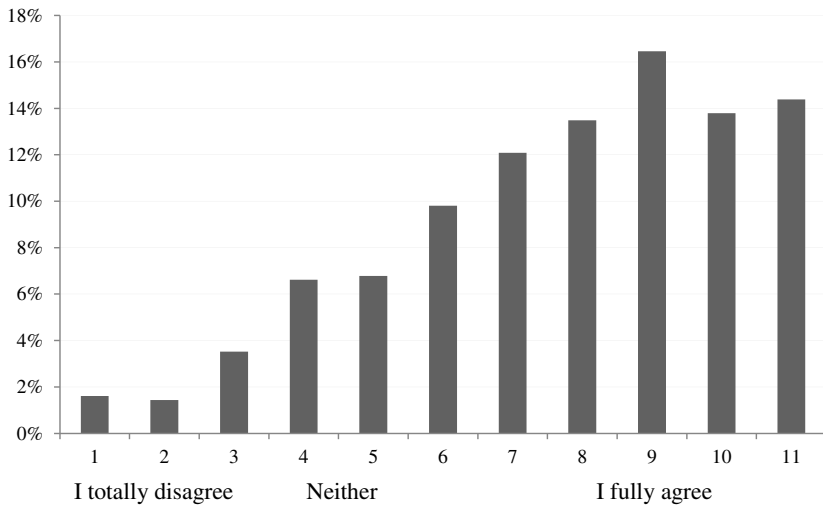
Data Collection

We conducted our online survey in August 2018 with a sample of 1055 respondents in cooperation with the Norstat convenience panel where panelists get bonus points (convertible into cash) for completing surveys. To ensure the involvement of the incentivized participants, we implemented a quality check like Stumpf et al. (2020) and excluded participants rushing through the questionnaire already during the sampling process[2].

We selected our final sample with quotas on age, sex, East and West Germany, federal states, and four different region types classified by population density (sample description see Table 3 in the online appendix). Respondents ranged in age from 16 to 86 with a median age of 50. The sex ratio is nearly even, and the distribution of age groups and four types of regions reflects the population density and roughly corresponds to the distribution of the entire German population. Respondents with a secondary school exam are overrepresented in our survey with a share of 51.18% in comparison to a share of 31.89% in the German population. Respondents from East Germany and with a lower net household income are also slightly overrepresented in the survey. We control for individual characteristics in our statistical models and consider these overrepresentations in the interpretation of our results.

We conclude that our sample is well-suited for our research purpose. Considering the regional background of respondents allows us to examine the influence of the regional origin on attitudes to regional redistribution.

Estimation Method

To model respondents' preferences on regional redistribution, we regress the acceptance ratings on the vignette factors. Since every respondent evaluates six vignettes, we consider the nested structure of the data. We ran fixed-effect models, pooled linear regressions, as well as random intercept and random slope models. We also considered our dependent variable to be ordinal by estimating ordered probit and ordered logit models. These statistical approaches do not yield major different results, which indicates robust results and a functioning randomization of the vignettes to respondents. As a preferred model, we choose a multilevel linear mixed effects (random intercept) model because it allows for intra-individual as well as inter-personnel variance of vignette ratings (Snijders and Bosker, 2012).

Mean = 7.71; Median = 8; SD =2.51; n vignettes = 6330; n respondents = 1055

Figure 1. Distribution of acceptance ratings.

When we model cross-level interactions, we also specify random slopes for the lower-level variables. In the case of vignette experiments, the vignette dimensions are the lower-level variables (level-1) and the respondent's characteristics are the upper-level variables (level-2). This hierarchy arises because each respondent evaluates several vignettes; therefore, one respondent and several ratings are dependent. Heisig and Schaeffer (2019) showed that omitted specified slopes lead to unmodelled cluster correlated errors with higher t-ratios and recommend to specify a random slope term for modeling cross-level interactions.

Results

We present the distribution of the dependent variable (acceptance of the transfer) in Figure 1. Respondents used the total range of the scale from 1 *I totally disagree* to 11 *I fully agree*; 1.61% of the vignettes are rated as *I totally disagree* whereas 14.39% as *I fully agree*. The mean evaluation over all vignettes and respondents is 7.71, and the median value is 8. Hence, ratings follow a left skewed distribution. The characteristics of the recipient region (vignette levels) seemed to work as stimuli by creating sufficiently large variance.

Acceptance of transfers to needy regions

We present our main results in Table 2, which contains three multilevel linear mixed effects models. Model 1 (random intercept) includes the vignette dimensions and the control variables of sex, age, education, net household income, East/West Germany, and the population density of the respondent's home region (control variables are shown in Model 1 from Table 4 in the online appendix). Models 2 and 3

Table 2. Acceptance of regional transfers (mixed-effects multilevel regression)

	Variable	Level	Model 1 b/SE	Model 2 b/SE	Model 3 b/SE
		Dependent variable: Acceptance of the regional transfer from 1 disagree to 11 fully agree.			
Vignette dimen-sions	**Location (jurisdiction) (H4)** (Ref. Germany)	Federal state in which you live	0.146* (0.065)	0.136* (0.065)	0.155* (0.065)
		A member state of the EU	-0.378*** (0.065)	-0.384*** (0.065)	-0.379*** (0.065)
	Economic relations (Ref. Few relationships)	Many business relationships with the region where you live	0.055 (0.053)	0.056 (0.053)	0.059 (0.053)
	Economic strength (need) (H1) (Ref. 10% lower than average)	Economic strength 30% lower than average in GER	0.430*** (0.053)	0.279*** (0.074)	0.439*** (0.053)
	Proportion of the elderly (H2) (Ref. Lower than aver-age)	Proportion of elderly people is higher than GER average	0.321*** (0.053)	0.314*** (0.053)	0.180* (0.081)
	Past financial expenses (H3) (Ref. Less in schools and . . .)	More in schools and roads than in recrea-tional facilities	0.266*** (0.053)	0.270*** (0.053)	0.258*** (0.053)
	Effectiveness (Ref. Few residents)	Many residents will be discouraged from leaving the region	0.858*** (0.053)	0.868*** (0.053)	0.855*** (0.053)
Interactions	**Reciprocal expectations** (Ref. Agreement 4-5)	No agreement (1-3) to "too many getting help even though they do nothing for society"		-0.083 (0.121)	
	Economic strength (need) # reciprocal expecta-tions (H5)	Economic strength 30% lower than average # No agreement to "too many getting help even though they do nothing for society"		0.381** (0.118)	

(*Continued*)

Table 2. (*Continued*)

Variable	Level	Model 1 b/SE	Model 2 b/SE	Model 3 b/SE
	Dependent variable: Acceptance of the regional transfer from 1 disagree to 11 fully agree.			
Respondent's age (Ref. under 51 years old)	Age above median (51+)			0.262* (0.122)
Proportion of the elderly # respondent's age	Proportion of elderly people is higher than GER average# respondent above median age			0.291* (0.122)
Control variables Age, sex, education, net household income, West/East Germany, type of region	See online appendix table 4 for control variables model 1	**Included**	**Included**	**Included**
Constant		6.740*** (0.265)	6.685*** (0.278)	6.892*** (0.220)
Random Effects Parameters	Var (cons)	1.919 (0.113)	2.991 (0.459)	3.436 (0.474)
	Var (Residual)	3.929 (0.077)	3.771 (0.081)	3.761 (0.081)
	Var (vignette dimension of the cross-level interaction)		0.588 (0.161)	0.652 (0.163)
	Cov (vignette dimension of the cross-level interaction, _cons)		-0.797 (0.256)	-0.984 (0.263)
n vignettes		6330	6330	6330
n Respondents		1055	1055	1055
AIC		28129.54	28107.32	28114.83
BIC		28332.13	28336.92	28310.66

Model 1 with random intercept; Model 2 and Model 3 with random-intercept and specified random slopes.

+p<0.1; * p<.05; ** p<.01; *** p<.001

include vignette dimensions, control variables, and one additional interaction term each (random intercept models with specified random slopes).

Hypotheses

Consistent with H1, the results show that an economically weaker recipient region with lower income implies greater acceptance of financial support for that region. If a recipient region's economic power and residents' income are 30% below the German average, then the respondents are significantly more likely to agree with financial support for the region (0.430 at p<0.001; reference 10% below average). A higher share of old people in the recipient region leads to significantly stronger acceptance compared to a proportion lower than the German average (0.321 at p<0.001); thus, the results are consistent with H2. A model where the age of the respondent is simply a dummy variable (median split) and an interaction term is included (Model 3) shows that the positive effect of the dimension composition of the population still exists for respondents under 51 years (0.180 at p<0.05) and gets significantly larger for respondents over 50 (0.291 at p<0.05). A possible explanation for this positive interaction term could be the greater ability of older respondents to put themselves in the social situation of the elderly.

The vignette dimension past financial expenses has significant effects. On average, donors have significantly higher acceptance rates (0.266 at p<0.001) if the recipient region has invested more in schools and roads than in recreational facilities. Thus, the results are consistent with H3: positive cues about the recipient's efforts increase the acceptance of financial support.

The results show that the location (identity) of the recipient region significantly influences the acceptance of financial support. Versus regions in Germany, fiscal transfers are significantly less accepted if the recipient region is located in another member state of the European Union as H4a conjectures (-0.378 at p<0.001). Our results are further consistent with H4b: financial transfers are significantly more accepted if the recipient region is located in the same federal state and not elsewhere in Germany (0.146 at p<0.05).

The results are further consistent with H5: donors who share the belief that there are too many people getting help without doing something for society are less sensitive to needy regions. The vignette dimension need captures whether economic strength and income of the recipient region are 30% below average and not 10% below average. Model 2 also includes the interaction effect of the vignette dimension economic strength (need) and the reciprocity statement *there are too many people getting help even though they do nothing for society*; 39 percent of respondents disagree (values 1 to 3) and 61% of respondents agree (values 4 or 5). The main effect of the vignette dimension economic strength (need) in Model 2 indicates that donors who agree to the reciprocity statement also give statistically significant higher ratings for regions in greater need than less needy regions (0.279 at p<0.001).

The interaction term of Model 2 reveals that the effect size of the vignette dimension need gets significantly larger if donors do not agree to the reciprocity statement, i.e. if they assume the help-receivers are reciprocators (0.381 at p<0.01). Figure 2 illustrates this interaction and shows that all types of donors perceive greater need as
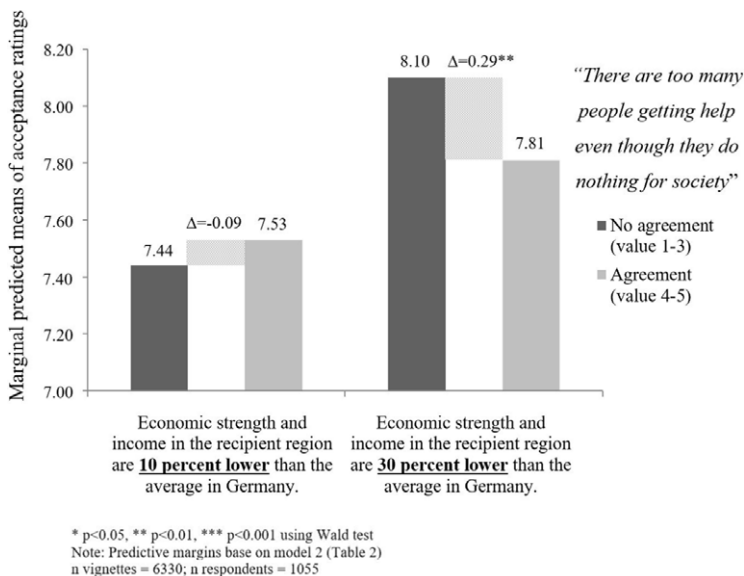
Figure 2. Need sensitivity depending on reciprocal expectations.

more deserving, but the sensitivity to the cue need decreases when donors share the belief that too many aid-receiving individuals give nothing back to society.

Beyond our hypotheses, we also tested if the sensitivity to need is stronger in combination with the other deservingness cues like closer location or useful past expenses. However, interactions between need with each of the other vignette dimensions show non-significant results (not shown). We interpret that deservingness cues matter constantly in different constellations and have fairly independent influences on perceptions.

Additional vignette control variables

The effect of the control dimension "economic relations" is not significant. Therefore, it does not lead to a significantly higher acceptance if many rather than few business relationships exist between a donor's home region and the recipient region (0.057 at $p > 0.1$). This non-significant coefficient supports the theoretical explanation that donors expect returns for society rather than direct returns for themselves.

Significant coefficients of the control dimension effectiveness show that regional financial transfers are significantly more accepted if the transfer will discourage many instead of just a few residents from moving by creating new jobs (0.858 at $p < 0.001$). These results do not contradict our theoretical deservingness explanations. On the contrary, donors could also interpret created jobs as a cue for the recipient's efforts and capabilities to reciprocate in the future. However, donors could also see relief opportunities for themselves and value that fewer people move

to booming regions. Most importantly, this result reveals that respondents still use our hypothesized cues to judge recipients' deservingness even if effectiveness is a crucial decision criterion.

Strict preferences

We also find evidence of sheer self-interest and pure altruism in the response behavior of 4% of respondents. These respondents always gave the same rating for each of the six assessed possible recipient regions with about 1% consistently rejecting financial aid and 3% always advocating strong help. Rejecting speaks for the self-interest to avoid any costs whereas advocating speaks for pure altruism, which declares unconditional help in a strict interpretation. However, the 4% share shows that only a small minority of respondents have such strict preferences and that most consider the regional characteristics to judge deservingness.

Respondents' characteristics and regional origin

This section shows how socio-demographics and the respondent's regional origin explain the average acceptance across all possible recipient regions; therefore, we explain the variance in the average acceptance of the entire hypothetical policy program.

There are no significant results for the respondent's sex, household income, degree of rurality in the respondent's home region, and education (Model 1, Table 4, online Appendix). The only socio-demographic variable with statistically significant effects is the respondent's age. Respondents aged 55-64 years and above 65 years give significantly higher ratings than younger respondents. One explanation for the generally stronger support could be that older people assume that they are most affected by the economic decline of a region due to their lack of mobility. Furthermore, the dummy variable East Germany (reference West Germany) has positive effects on overall ratings at the 10% level. We attribute this effect to the generally poorer economic conditions in East Germany (e.g. GDP per capita and unemployment rate) and the socialist past that could have shaped attitudes. Model 4 (Table 4, online Appendix) shows that district's median income and respondent's general welfare state attitudes also have explanatory power. Respondents living in the regions with a comparatively lower median income (first quintile) and respondents who agree with the statement "*If the government must go deeper in debt to help people, then it should do so*" are generally more in favor of fiscal transfers.

Despite these influences of respondents' characteristics, the effects of the vignette dimensions always remain stable even if we add interaction terms of relevant control variables and vignette dimensions. Therefore, the distinction between the hypothetical regions in our survey experiment is not due to particular characteristics of the respondent but rather general.

Conclusion

In Germany, the EU, and many modern societies, the goal of equivalent living conditions in all regions is an important political objective (Article 72, Basic Law,

Germany; Article 174, Treaty on the Functioning of the European Union; Section 36; Canada Act 1982). While many studies have analyzed the economic implications of the associated redistributive policy, few studies have focused on the public perception of these measures and, to the best of our knowledge, none of these studies have shown that established deservingness criteria shape public expectations of regional redistribution. Understanding and fulfilling these expectations is crucial to the legitimacy of the regional redistribution policy.

Our study closes the gap and analyzes the circumstances under which the German public is more likely to accept financial support for regions in need. Our most important finding is that donors use the deservingness-heuristic to identify "reciprocators" not only to judge individuals but also to judge whether entire regions deserve financial support. We show that the acceptance of transfers increases with the needs of the recipient region, a higher proportion of older people, future-oriented financial expenditures in the past, and a shared identity. These results also hold when we control for the effectiveness of the transfers (created jobs), economic relations with the recipient region, and respondent's characteristics and regional origin. Furthermore, we showed that donors' attitudes whether aid-receiving individuals also do something for society moderates the effect of recipient region's need on the acceptance of the transfer. Therefore, respondents' prevalent attitudes whether needy individuals are in general rather "reciprocators" affect the judgements of needy regions. Our results are also in line with Hansen (2019) who showed that prevalent beliefs influence the sensitivity towards deservingness cues about individuals, which we interpret as further support for the explanation that donors use the same deservingness-heuristic for individuals and regions.

Despite the importance of reciprocity, our results do not imply that self-interest and altruistic attitudes play no role at all. In accordance with the literature (see e.g. Balcells et al., 2015), we have shown that respondents on average agree more with transfers if they live in regions with very low median income, are older, or generally demand that the government spends more on helping needy people. We are convinced that respondents' selfish and altruistic attitudes nicely explain the average acceptance (and rejection) of the whole redistributive policy program; however, the deservingness-heuristic to identify "reciprocators" explains best how most respondents differentiate between eligible recipient regions.

Our study is the first to examine deservingness in the context of redistributive regional measures and one of a few to analyze public perceptions in the regional context at all. However, it does have some limitations. The way we described the region may have contributed to respondents' perception that a region is a judgable entity similar to individuals. However, we are convinced that the description of a region as an acting entity is a popular stylistic device in media and therefore the kind of framing the public often gets. Nevertheless, it would be interesting for future research, to analyze how respondents deal with contradictory information about regions, e.g. when administration and inhabitants behave differently.

In addition to our theoretical and empirical contribution, we also derive policy implications. We propose to link rights and obligations with regional redistribution. We recommend that regional measures clearly define the needs criteria and clarify the obligations of the recipient in dealing with the aid received. Guidelines should be established in a transparent, scientifically monitored process with objective

indicators, so that deservingness would be more precise in public debates and less prone to strategic narratives that distort actual conditions. The case of West and East Germany after reunification shows that reducing massive regional inequalities needs long-term commitment and funding across parties and legislatures (Enenkel, 2021). A clarification process supports long-term commitment with reciprocity norms and ensures that all regions can rely on assistance if they meet the identified needs criteria and show the expected efforts. However, reciprocity norms also include that potential donors have the obligation to create fair conditions where efforts are rewarded. By providing public infrastructure and mitigating asymmetric shocks, regional measures can tackle unequal opportunities in society and thus one root of populism and political instability (Protzer and Summerville, 2021; Rodríguez-Pose and Dijkstra, 2021). We point out that measures are not only accepted but also demanded if they address the needs of residents for relevant public infrastructure such as schools, roads, incentives for doctors and broadband availability in lagging regions. We interpret our results in such a way that they indicate a particularly high acceptance when regional policies support adaptation to structural change caused by trends beyond regions' responsibility, e.g. when the local industry struggles due to globalization, technological change, or transformation to a more environmentally friendly industry.

Since also social identity matters, it may be useful for wide acceptance to support also net-payer regions to a small extent, as is already possible with EU funding for German regions, for example. In this way, policies can address social identity without violating other deservingness criteria like need and expected efforts. Politicians should be aware that by considering only social identity, they might neglect other criteria important to the public. When policies include financial incentives in the private sector, the public should be more concerned about how the funds are used and expect job creation efforts that foster sustainable growth. The recipient's use of financial resources is important for the acceptance of regional redistribution, and our analysis suggests partially replacing general purpose grants with earmarked grants that limit the recipient's room for manoeuvre, which, from a public choice perspective, also may have some additional advantages in the governance of local authorities (see e.g. Smart and Bird, 2010).

While this survey was conducted in Germany, we are convinced that our findings and conclusions are valid for many modern societies. We showed that the German public does not only use the deservingness-heuristic to judge individuals but also to judge entire regions. The proven deservingness-heuristic is used across countries and cultures (Van Oorschot, 2006; Jensen and Petersen, 2017), and we expect that the heuristic is also used across countries to judge whether regions deserve financial transfers. However, studies also suggest cultural differences in how the public interprets needs, effort and mobility (e.g. Alesina and Angeletos, 2005). Further research could analyze the extent to which such country-based differences affect perceptions of regional policy programs.

Notes

1 We use data from the Federal Institute for Research on Building, Urban Affairs, and Spatial Development (BBSR).
2 Approximately 25% of the respondents did not pass this check and are therefore not part of the sample. Such rates are quite usual when using incentivized participants and sophisticated quality tests in experimental vignette designs. Abraham et al. (2021:279) were able to compare the characteristics of such dropouts with the final sample and could not find indications of systematic distortions due to the respondents who did not pass the quality check.

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