Supplemental Information

Equality, Reciprocity, or Need? Bolstering Welfare Policy Support for Marginalized Groups with Distributive Fairness

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Supplemental Information

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Ethical practices concerning human participants

In Studies 1 and 3, participants were recruited through an online research panel built and managed by 2muse survey company (Bratislava, Slovakia). All participants signed a consent form that explains how their data will be used including their anonymity and confidentiality, GDPR regulations, and their rights when opting into 2muse's online panel. The surveys in Studies 1 and 3 were made available to 2muse panel participants, who chose to opt into these surveys. All participants in both studies understood they were taking part in a research study. Participants were compensated for their participation in Studies 1 and 3. If participants successfully completed the survey, they received "points" that they could then exchange for material rewards in the 2muse webstore. As a member of ESOMAR, 2muse complies with its professional code and guidelines, including the equal and fair remuneration to all participants according to the Slovak and international standards.

In Study 2, individuals directly engaged by the research process also included the municipality's mayor. The mayor collaborated on the development of the survey questionnaire and gave his approval for the final version. We also discussed with the mayor the potential impact of the study on the political process in the municipality as well as potential harm to all human participants directly engaged in the research process, including himself. Based on this reflection, we were very careful to respect participants' autonomy, especially of the vulnerable members of the marginalized Roma community. We sought the informed and voluntary consent of each participant. Participants were invited to take part in a survey, conducted by the researchers from Comenius University, assessing public opinion about development projects in the municipality. They received assurances about the survey's anonymity and that the anonymized results could be available for other researchers as well as for the inhabitants of the municipality. Participants' consent (or lack thereof) were documented in the Qualtrics offline app. All participants understood they were taking part in a research study. Participants did not receive any compensation for taking part in the study.

In line with APSA's *Principles and Guidance for Human Subjects Research*, we sought to avoid physical, psychological, social, and economic harm to human participants directly engaged in the research process. Studies 1, 2, and 3 did not involve deception. To the best of our knowledge and reflection, all studies posed minimal risk of harm to human participants directly engaged in the research process. We are not aware of any foreseeable intended or unintended adverse impact on participants in these studies, especially on members of the vulnerable Roma population. Hence, we did not seek Institutional Review approval since, at the time, it was not required in the Slovak Republic and at Comenius University in Bratislava, when studies pose minimal risk of harm to participants and do not involve deception.

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Statement of Ethical Approval Exemption

I, the undersigned, as a statutory representative of the Faculty of Social and Economic Sciences of Comenius University in Bratislava, issue this confirmation of exemption from the requirement to assess the ethicality of the research in connection with the research and data collection, which are the basis of the article: "Equality, Reciprocity, or Need? Bolstering Welfare Policy Support for Marginalized Groups with Distributive Fairness" by authors: Andrej Findor, Matej Hruška, Roman Hlatky, Tomáš Hrustič, Zuzana Bošeľová.

At the time of data collection, i.e. in 2019, the requirement of research assessment by the Ethics Committee was not applied in the conditions of the Slovak Republic. The requirement for the creation of ethics' standards of scientific research were formulated in connection with the requirement of Act No. 269/2018 of 11 September 2018 on Quality Assurance of Higher Education, on the basis of which the the internal regulation of Comenius University in Bratislava No. 23/2021 Internal Quality Assurance System of Higher Education of the University of Bratislava (https://uniba.sk/fileadmin/ruk/legislativa/2021/Vp_2021_23.pdf) was adopted. The eighth part of this regulation regulates the standards and the process of granting approval for research according to these standards. The regulation came into force on 8.11.2021.

All previous research has required researchers to secure informed consent from research participants. Therefor all participants signed a consent form that explains how their data will be used including their anonymity and confidentiality, requested by GDPR regulation. Compliance with the obligation to ensure informed consent from research participants was acknowledged by the authors in a declaration at the end of the articles. We are not aware of any foreseeable intended or unintended adverse impact on participants in these studies, especially on members of the vulnerable Roma population.

Bratislava, 27.5.2022

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Study 1

Table A1. *Sample characteristic and representativeness*

Variable	Survey	Census
Male	0.48	0.49
Female	0.52	0.51
Age: 18-24	0.13	0.13
Age: 25-34	0.21	0.21
Age: 35-44	0.19	0.18
Age: 45-54	0.18	0.17
Age: 55-64	0.16	0.16
Age: 65+	0.13	0.16
Education: Primary	0.10	0.17
Education: Secondary (no diploma)	0.35	0.31
Education: Secondary (complete)	0.38	0.30
Education: University	0.18	0.18
Region: Bratislavsky	0.12	0.13
Region: Trnavsky	0.12	0.10
Region: Trenciansky	0.11	0.11
Region: Nitriansky	0.13	0.12
Region: Zilinsky	0.12	0.13
Region: Banskobystricky	0.11	0.11
Region: Presovsky	0.14	0.15
Region: Kosicky	0.15	0.14
Municipality: less than 1k	0.13	0.15
Municipality: 1k-4 999	0.29	0.29
Municipality: 5k-19 999	0.16	0.16
Municipality: 20k - 99 999	0.28	0.27
Municipality: 100k+	0.14	0.13

Note: All census data taken directly from 2021 Slovak Census; available at the following link: https://www.scitanie.sk/en/population/basic-results/number-of-population/SR/SK0/SR. Data taken directly from tables available on the website.

Table A2. *Randomization check ANOVA*

	Observations	Groups	df between	df within	statistic	*p*
Gender	1002	4	3	554	0.261	.854
Age	1002	4	3	554	0.948	.417
Ethnicity	1002	4	3	547	1.524	.207
Education	1002	4	3	554	2.066	.104
Region	1002	4	3	554	0.928	.427
Municipality size	1002	4	3	554	0.875	.454

Table A3. *Descriptive statistics for Study 1a (municipal water well)*

Group	N	Min	Q1	Median	Q3	Max	Mean	SD	Skew	Kurtosis
Roma settlement	251	1	2	6	8	11	5.68	3.51	0.18	-1.25
Non-Roma settlement	252	1	6	9	11	11	8.38	2.81	-0.83	-0.28

Table A4. *Descriptive statistics for Study 1b (funding for less developed regions)*

Group	N	Min	Q1	Median	Q3	Max	Mean	SD	Skew	Kurtosis
Including Roma	253	1	2	6	9	11	5.72	3.76	0.19	-1.43
Not including Roma	246	1	7	9	11	11	8.75	2.52	-0.97	0.2

Table A5. *ANCOVA analysis - opinions about building the well*

Dependent Variable: How much money should go to building the well? (1-11)

	Sum Sq	df	F value	*p*	partial eta^2	CI	CI 95% low	CI 95% high
Intercept	457.39	1	45.58	< .001				
Group	823.56	1	82.08	< .001	0.15	0.9	0.102	0.20
Gender	0.27	1	0.03	.871	0.00	0.9	0	0.00
Age category	58.15	5	1.16	.328	0.01	0.9	0	0.02
Education	50.97	3	1.69	.168	0.01	0.9	0	0.03
Municipality size	16.20	4	0.40	.806	0.00	0.9	0	0.01
Region	96.93	7	1.38	.212	0.02	0.9	0	0.03
Income	80.60	8	1.00	.432	0.02	0.9	0	0.02
Residuals	4746.18	473	2					

N= 503

Table A6. *ANCOVA analysis - opinions about policies*

Dependent Variable: How much money should go to regional development policies? (1-11)

	Sum Sq	df	F value	*p*	partial eta^2	CI	CI 95% low	CI 95% high
Intercept	316	1	32.65	< .001				
Group	1152	1	119.16	< .001	0.20	0.9	0.15	0.26
Gender	81	1	8.39	.004	0.02	0.9	0.00	0.04
Age category	113	5	2.34	.041	0.02	0.9	0.00	0.04
Education	93	3	3.22	.023	0.02	0.9	0.00	0.04
Municipality size	45	4	1.16	.329	0.01	0.9	0.00	0.02
Region	109	7	1.61	.131	0.02	0.9	0.00	0.04
Income	60	8	0.77	.627	0.01	0.9	0.00	0.02
Residuals	4535	469						

N= 499

Table A7. *S1a OLS – opinions about building a well*

Dependent Variable: How much money should go to building the well? (1-11)

	Estimate	Std. Error	Lower 95% CI	Upper 95% CI	*p*-value
Intercept	5.67	0.2	5.28	6.07	<.001
group: Non-Roma settlement	2.71	0.28	2.15	3.26	<.001
R squared	0.15				
Adjusted R squared	0.15				

N=503, df = 501

Table A8. *S1a OLS – opinions about building a well including covariates*

Dependent Variable: How much money should go to building the well? (1-11)

	Estimate	Std. Error	Lower 95% CI	Upper 95% CI	*p*-value
(Intercept)	6.3	0.93	4.47	8.13	<.001
groupNon-Roma settlement	2.63	0.29	2.06	3.20	<.001
GENDERFemale	-0.05	0.31	-0.66	0.56	.871
AGECAT25-34	0.25	0.57	-0.87	1.37	.663
AGECAT35-44	0.91	0.58	-0.24	2.06	.12
AGECAT45-54	0.66	0.59	-0.50	1.82	.263
AGECAT55-64	1.10	0.59	-0.06	2.27	.064
AGECAT65+	0.93	0.65	-0.36	2.21	.157
EDUSecondary (no diploma)	-0.86	0.56	-1.95	0.24	.125
EDUSecondary (complete)	-0.22	0.56	-1.31	0.87	.694
EDUUniversity	-0.08	0.67	-1.40	1.24	.908
SIZE1k-4 999	0.43	0.49	-0.53	1.37	.378
SIZE5k-19 999	0.33	0.57	-0.78	1.45	.558
SIZE20k - 99 999	0.52	0.49	-0.44	1.48	.284
SIZE100k+	0.01	0.70	-1.37	1.4	.984
REGTrnavsky	-1.5	0.72	-2.90	-0.09	.037
REGTrenciansky	-0.34	0.72	-1.76	1.08	.635
REGNitriansky	-1.24	0.71	-2.64	0.16	.083
REGZilinsky	-0.44	0.70	-1.82	0.95	.534
REGBanskobystricky	-1.23	0.72	-2.64	0.18	.087
REGPresovsky	-1.13	0.71	-2.52	0.27	.114
REGKosicky	-1.03	0.60	-2.21	0.15	.087
PINCOME2	-0.58	0.42	-1.40	0.25	.173
PINCOME3	-0.47	0.45	-1.35	0.40	.289
PINCOME4	-0.30	0.57	-1.42	0.81	.592
PINCOME5	0.74	0.75	-0.73	2.21	.324
PINCOME6	-0.18	1.01	-2.16	1.81	.857
PINCOME7	0.81	0.97	-1.1	2.73	.404
PINCOME8	0.25	0.83	-1.39	1.88	.769
PINCOME9	-1.06	0.76	-2.55	0.42	.16
R Squared	0.21				

Adj.R Squared	0.16

N = 503, df = 473

Table A9. *S1b OLS – opinions about policies*

Dependent Variable: How much money should go to regional development policies? (1-11)

	Estimate	Std. Error	Lower 95% CI	Upper 95% CI	*p*-value
Intercept	5.72	0.2	5.33	6.12	<.001
group: not including Roma	3.03	0.29	2.46	3.6	<.001
R squared	0.18				
Adjusted R squared	0.18				

N=499, df = 497

Table A10. *S1b OLS – opinions about policies including covariates*

Dependent Variable: How much money should go to regional development policies? (1-11)

	Estimate	Std. Error	Lower 95% CI	Upper 95% CI	*p*-value
(Intercept)	5.31	0.93	3.48	7.13	<.001
groupnot including Roma	3.11	0.29	2.55	3.68	<.001
SEXFemale	-0.91	0.31	-1.53	-0.29	.004
AGECAT25-34	0.89	0.54	-0.16	1.95	.097
AGECAT35-44	1.07	0.57	-0.06	2.19	.063
AGECAT45-54	1.38	0.57	0.26	2.50	.016
AGECAT55-64	1.91	0.59	0.75	3.06	.001
AGECAT65+	1.38	0.63	0.14	2.61	.029
EDUSecondary (no diploma)	-0.87	0.57	-1.99	0.26	.131
EDUSecondary (complete)	-0.73	0.56	-1.82	0.36	.189
EDUUniversity	0.30	0.62	-0.93	1.52	.633
SIZE1k-4 999	-0.25	0.48	-1.19	0.69	.599
SIZE5k-19 999	-0.50	0.53	-1.54	0.54	.348
SIZE20k - 99 999	-0.48	0.49	-1.45	0.48	.326
SIZE100k+	0.74	0.67	-0.57	2.04	.27
REGTrnavsky	0.62	0.70	-0.75	1.99	.373
REGTrenciansky	0.47	0.71	-0.93	1.86	.51
REGNitriansky	-0.14	0.69	-1.50	1.23	.846
REGZilinsky	0.67	0.71	-0.73	2.07	.348
REGBanskobystricky	1.45	0.73	0.02	2.88	.046
REGPresovsky	1.24	0.68	-0.1	2.57	.07
REGKosicky	0.75	0.57	-0.38	1.87	.192
PINCOME2	-0.48	0.43	-1.31	0.36	.259
PINCOME3	0.13	0.47	-0.79	1.05	.781
PINCOME4	-0.65	0.57	-1.77	0.47	.254
PINCOME5	-0.74	0.78	-2.27	0.78	.338

PINCOME6	-0.92	1.10	-3.08	1.25	.405
PINCOME7	1.07	1.15	-1.18	3.32	.349
PINCOME8	-0.07	0.69	-1.42	1.28	.917
PINCOME9	-0.36	0.71	-1.76	1.04	.609
R Squared	0.28				
Adj.R Squared	0.23				

N = 499, df = 469

Table A11. *S1a - opinions about building a well , income interaction*

Dependent Variable: How much money should go to building the well? (1-11)

	Estimate	Std. Error	Lower 95% CI	Upper 95% CI	*p*-value
Intercept	5.88	0.32	5.26	6.52	<.001
group: Non-Roma settlement	2.66	0.44	1.80	3.52	<.001
income: below median	-0.32	0.42	-1.16	0.51	.446
group x income	0.10	0.60	-1.07	1.27	.866
R squared	0.16				
Adjusted R squared	0.15				

N = 462, df = 458

Table A12. *S1a - opinions about policies, income interaction*

Dependent Variable: How much money should go to building the well? (1-11)

	Estimate	Std. Error	Lower 95% CI	Upper 95% CI	*p*-value
Intercept	6.12	0.32	5.49	6.74	<.001
group: not including Roma	3.06	0.46	2.15	3.96	<.001
income: below median	-0.65	0.43	-1.50	0.19	.13
group x income	-0.03	0.62	-1.25	1.18	.958
R squared	0.19				
Adjusted R squared	0.18				

N = 443, df = 439

Study 2

Table A13. *Sample gender composition*

	n	freq
Male	43	0.38
Female	70	0.6š

Table A14. *Sample age characteristics*

min	Q1	median	Q3	max	mean	SD	n	missing
23	35	47	63	85	49.3	16.1	113	0

Table A15. *Ascribed Ethnicity*

	n	freq
Slovak	52	0.46
Roma	61	0.54

Table A16. *Self-Identified Ethnicity*

	n	freq
Slovak	92	0.81
Roma	18	0.16
other	3	0.03

Table A17. *Predicted average agreement across ethnicity and experimental condition*

Dependent Variable: Support for building the social housing project (1-4)

Condition	Ascribed ethnicity	Predicted average	SE	LCL	UCL
Control	Slovak	2.2	0.181	1.85	2.56
Equality	Slovak	2.96	0.175	2.62	3.31
Proportionality	Slovak	3.1	0.167	2.78	3.43
Need	Slovak	2.39	0.181	2.04	2.75
Control	Roma	3.79	0.072	3.65	3.94
Equality	Roma	3.29	0.14	3.01	3.56
Proportionality	Roma	2.94	0.165	2.62	3.27
Need	Roma	3.75	0.08	3.59	3.91

N=113

Study 3

Table A18. *Sample characteristic and representativeness*

Variable	Survey	Census
Male	0.48	0.49
Female	0.52	0.51
Age: 18-24	0.13	0.13
Age: 25-34	0.20	0.21
Age: 35-44	0.18	0.18
Age: 45-54	0.18	0.17
Age: 55-64	0.16	0.16
Age: 65+	0.16	0.16
Education: Primary	0.09	0.17
Education: Secondary (no diploma)	0.35	0.31
Education: Secondary (complete)	0.38	0.30
Education: University	0.19	0.18
Region: Bratislavsky	0.11	0.13
Region: Trnavsky	0.11	0.10
Region: Trenciansky	0.11	0.11
Region: Nitriansky	0.13	0.12
Region: Zilinsky	0.13	0.13
Region: Banskobystricky	0.11	0.11
Region: Presovsky	0.15	0.15
Region: Kosicky	0.15	0.14
Municipality: less than 1k	0.15	0.15
Municipality: 1k-4 999	0.29	0.29
Municipality: 5k-19 999	0.17	0.16
Municipality: 20k - 99 999	0.27	0.27
Municipality: 100k+	0.13	0.13

Note: All census data taken directly from 2021 Slovak Census; available at the following link: https://www.scitanie.sk/en/population/basic-results/number-of-population/SR/SK0/SR. Data taken directly from tables available on the website.

Table A19. *Randomization check ANOVA*

	Observations	Groups	df between	df within	statistic	*p*
Gender	1009	4	3	558	4.725	.003
Education	1009	4	3	558	0.064	.979
Region	1009	4	3	558	0.341	.796
Municipality size	1009	4	3	558	1.524	.207

Table A20. *Descriptive statistics - Personal agreement*

group	N	Min	Q1	Median	Q3	Max	Mean	SD	Skew	Kurtosis
Control	252	1	1	3	3	4	2.5	1.08	-0.121	-1.277
Equality	249	1	2	3	3	4	2.63	1.04	-0.328	-1.067
Proportionality	254	1	2	3	4	4	2.83	1.06	-0.561	-0.896
Need	254	1	1	3	3	4	2.4	1.07	-0.054	-1.29

Table A21. *Descriptive statistics - Agreement of majority*

group	N	Min	Q1	Median	Q3	Max	Mean	SD	Skew	Kurtosis
Control	252	1	1	2	3	4	1.82	0.875	0.524	-1.051
Equality	249	1	1	2	3	4	2.01	0.946	0.413	-0.983
Proportionality	254	1	1	2	3	4	2.21	0.967	0.143	-1.095
Need	254	1	1	2	2	4	1.81	0.816	0.482	-0.964

Table A22. *Support for building social housing, interaction with income*

Dependent Variable: (1) Individual agreement and (2) perceptions of societal agreement with building the social housing (both 1-4)

		Estimate	Std. Error	*p*	OR [95% CI]
Personal agreement	Reciprocity	0.44	0.25	.072	1.55 [0.96, 2.52]
	Equality	0.34	0.24	.149	1.41 [0.89, 2.23]
	Need	-0.09	0.24	.716	0.92 [0.57, 1.46]
	Income below median	-0.1	0.24	.679	0.91 [0.57, 1.45]
	Reciprocity x income	0.27	0.34	.420	1.32 [0.68, 2.57]
	Equality x income	-0.37	0.34	.276	0.70 [0.36, 1.34]
	Need x income	-0.08	0.34	.822	0.93 [0.48, 1.80]
Majority agreement	Reciprocity	0.87	0.25	<.001	2.39 [1.47, 3.91]
	Equality	0.62	0.24	.010	1.86 [1.16, 3.00]
	Need	0.22	0.24	.355	1.25 [0.78, 1.99]
	Income below median	0.22	0.25	.369	1.25 [0.77, 2.03]
	Reciprocity x income	-0.26	0.35	.453	0.77 [0.39, 1.52]
	Equality x income	-0.67	0.35	.056	0.51 [0.26, 1.02]
	Need x income	-0.45	0.34	.191	0.64 [0.33, 1.25]

N= 916, df = 906

Note: Ordered logit regression; OR=Odds Ratio; CI=95% Confidence Interval. Baseline = control condition.

Interaction effects with EU funds and perceived competitiveness

General opposition to EU funding can moderate support for transfers, as can sentiments about competition between majority Slovaks and minority Roma. To probe for potential interaction effects, we assessed participants' attitudes towards European Union funding ("The use of EU funds is advantageous for the inhabitants of Slovakia"); and their perceived competitiveness of Roma ("If the Roma get special breaks (i.e., in housing, welfare benefits) this is likely to make things more difficult for other people") (adapted from Fiske et al. 2002). For both questions, participants responded on a 1 ("completely disagree") to 4 ("completely agree") scale.

Due to a low number of respondents choosing option "1", which led to empty cells and prevented the model from running successfully, the two variables (EU funding attitudes, perceived Roma competitiveness) were recoded for this analysis such that options "1" and "2" were collapsed together, creating three levels. This should be more preferable to dichotomizing variables (see e.g., MacCallum et al. 2002). In the analysis, all variables were defined as ordered factors.

To estimate the overall effects of experimental conditions and interactions for both of the outcome variables at the same, we used multivariate analysis of variance. Specifically, we used the *MANOVA.wide* function from the MANOVA.RM package (Friedrich, Konietschke, and Pauly 2019) to calculate the Wald-type statistic (WTS) and the modified ANOVA-type statistic (MATS), with 1000 iterations for resampling. An analysis with experimental conditions in interaction with the attitudes towards the EU funding and perceived competitiveness of Roma showed a significant effect of experimental conditions (WTS(6) = 28.32, resampled $p < .001$), attitudes towards the EU funding (WTS(4) = 51.92, resampled $p < .001$), perceived competitiveness of Roma (WTS(4) = 144.65, resampled $p < .001$). There was a non-significant interaction between the experimental conditions and attitudes towards the EU funding (WTS(12) = 8.04, resampled $p = .819$), and a significant interaction with perceived Roma competitiveness (WTS(12) = 25.50, resampled $p = .024$).

Results indicate that the effect of the experimental manipulation on opinions about social housing policies was not strongly dependent on attitudes towards the EU funding and perceived competitiveness of Roma.

References

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