# Supplemental material A: Descriptive statistics and study design.

Table A.1. Descriptive statistics using raking weights.

| **Variable** | **N** | **Mean** | **Std. dev.** | **Min** | **Max** |
|---|---|---|---|---|---|
| ETS acceptability | 1,462 | 4.942 | 3.237 | 0 | 10 |
| Political trust (3-item sum variable) | 1,473 | 4.787 | 2.209 | 0 | 10 |
| Trust in parliament | 1,473 | 5.662 | 2.415 | 0 | 10 |
| Trust in politicians | 1,473 | 4.313 | 2.361 | 0 | 10 |
| Trust in political parties | 1,473 | 4.388 | 2.375 | 0 | 10 |
| Political orientation (left-right) | 1,422 | 5.285 | 2.788 | 0 | 10 |
| Age | 1,483 | 51.89 | 18.33 | 19 | 93 |
| **Variable** | **N** | **%** | **Weighted %** | | |
| **Treatment group** | | | | | |
| Control | 367 | 24.97 | 23.65 | | |
| Economy | 364 | 24.76 | 25.75 | | |
| Independence | 377 | 25.65 | 26.96 | | |
| Emissions | 362 | 24.63 | 23.64 | | |
| **Party preference** | | | | | |
| Left Alliance (VAS) | 201 | 13.62 | 13.09 | | |
| Social Democratic Party (SDP) | 284 | 19.24 | 20.64 | | |
| The Greens (VIHR) | 180 | 12.20 | 9.35 | | |
| Centre Party (KESK) | 86 | 5.83 | 6.37 | | |
| National Coalition Party (KOK) | 233 | 15.79 | 14.04 | | |
| The Finns Party (PS) | 204 | 13.82 | 15.09 | | |
| Other | 152 | 10.30 | 11.37 | | |
| Don’t know | 136 | 9.21 | 10.04 | | |
| **Gender** | | | | | |
| Male | 769 | 52.71 | 50.19 | | |
| Female | 690 | 47.29 | 49.81 | | |
| **Age** | | | | | |
| 18–34 | 248 | 16.72 | 22.07 | | |
| 35–49 | 327 | 22.05 | 23.14 | | |
| 50–64 | 391 | 26.37 | 25.10 | | |
| 65+ | 517 | 34.86 | 29.69 | | |
| **Highest education** | | | | | |
| Basic level | 88 | 5.96 | 20.22 | | |
| Secondary level | 625 | 42.34 | 56.17 | | |
| Tertiary level | 763 | 51.69 | 23.61 | | |
| **Subjective income** | | | | | |
| Quite bad or worse | 190 | 12.86 | 19.14 | | |
| Moderate | 517 | 34.98 | 36.61 | | |
| Quite good or better | 771 | 52.17 | 44.25 | | |

## Demographic characteristics

The data utilized in the study is collected using the panel 'Kansalaismielipide' (Citizens' Opinion). Åbo Akademi University is responsible for the national public opinion research infrastructure, which is funded by the Research Council of Finland. 'Kansalaismielipide' is part of this research infrastructure and is an opinion poll of ordinary Finns. The panel consists of volunteers and there is no payment involved. Recruitment of panel respondents began in 2019 and currently the panel has thousands of participants. In each study, participants are recruited through random sampling, where the probability of different groups joining the study is considered.

Table A.2 reports the baseline demographic characteristics of the 1,476 respondents. Prior to weighting, younger respondents and those aged over 80 were underrepresented, and the sample was disproportionately composed of highly educated individuals. Applying survey weights corrects these imbalances, yielding a distribution that more closely approximates the Finnish population and enhancing the population relevance of the results.

Table A.2. Respondent demographics.

| | **Respondents** | **Respondents (weighted)** | **Finland 2023[1]** |
|---|---|---|---|
| Age group (%) | | | |
| 18-24 | 4.5 | 7.5 | 6.6 |
| 25-29 | 5.6 | 6.9 | 6.1 |
| 30-34 | 6.8 | 7.7 | 6.8 |
| 35-39 | 7.3 | 7.7 | 6.6 |
| 40-44 | 6.7 | 7.8 | 6.5 |
| 45-49 | 8.0 | 7.5 | 6.2 |
| 50-54 | 7.4 | 8.0 | 5.6 |
| 55-59 | 9.1 | 8.7 | 6.4 |
| 60-64 | 10.0 | 8.6 | 6.4 |
| 65-69 | 11.1 | 8.3 | 6.2 |
| 70-74 | 11.7 | 8.8 | 6.0 |
| 75-79 | 9.5 | 5.5 | 5.2 |
| 80- | 2.6 | 7.0 | 5.9 |
| Education (%) | | | |
| Basic | 6.0 | 20.4 | 21.2 |
| Secondary | 42.2 | 56.1 | 35.1 |
| Tertiary | 51.8 | 23.6 | 43.7 |
| Gender (%) | | | |
| Male | 52.8 | 50.4 | 49.5 |
| Female | 47.2 | 49.7 | 50.5 |

[1]Statistics Finland. (2024). Population Structure. https://stat.fi/en/statistics/vaerak

## Use of weights

Under- and over-representation can bias estimated treatment effects when key sociodemographic variables, such as age, gender, and education, are correlated with climate policy support. Using survey weights based on variables that are strongly related to the outcome is therefore a cautious and robust strategy. Post-stratification can improve precision in a randomized experiment by reducing unexplained variation and is unlikely to worsen inference, making the use of weights methodologically conservative and statistically justified (see Miratrix et al., 2018).

## Randomization control

Table A.3 shows the unweighted sociodemographic balance across treatment groups. The $\chi^2$ tests indicate a statistically significant association between age group and treatment assignment ($\chi^2(9) = 18.97$, $p = 0.025$), whereas no significant associations are observed for the other sociodemographic variables. This suggests that the age distribution differs modestly across treatment groups, implying some imbalance despite random assignment. However, inspection of the cell frequencies shows that these differences are relatively small in magnitude and not heavily concentrated in any single treatment group.

Table A.3. Sociodemographic balance across treatment groups.

| **Age group** | **Control** | **Economy** | **Independence** | **Emissions** |
|---|---|---|---|---|
| 18–34 | 66 | 55 | 80 | 45 |
| 35–49 | 68 | 83 | 86 | 84 |
| 50–64 | 103 | 103 | 96 | 87 |
| 65+ | 130 | 123 | 114 | 145 |
| $\chi^2(9) = 18.97$, $p = 0.025$ | | | | |
| **Gender** | | | | |
| Male | 186 | 197 | 186 | 196 |
| Female | 175 | 160 | 183 | 161 |
| $\chi^2(3) = 2.51$, $p = 0.473$ | | | | |
| **Education level** | | | | |
| Basic | 15 | 25 | 27 | 21 |
| Secondary | 163 | 157 | 152 | 145 |
| Tertiary | 189 | 181 | 194 | 193 |
| $\chi^2(6) = 5.19$, $p = 0.519$ | | | | |

We further examined the age distribution across treatment groups. Figure A.1 shows that older age cohorts (approximately ages 55–79) are clearly overrepresented in all treatment groups relative to the Finnish population, although somewhat less so in the emissions condition. Figure A.2 demonstrates that this bias becomes less systematic once post-stratification weights are applied. Without accounting for this imbalance, justifications that resonate more strongly with older respondents could display inflated treatment and interaction effects, since age is associated not only with climate policy acceptability but also with political trust and party preference.

Figure A.1. Age distribution within treatment groups and the Finnish population (unweighted percentages).

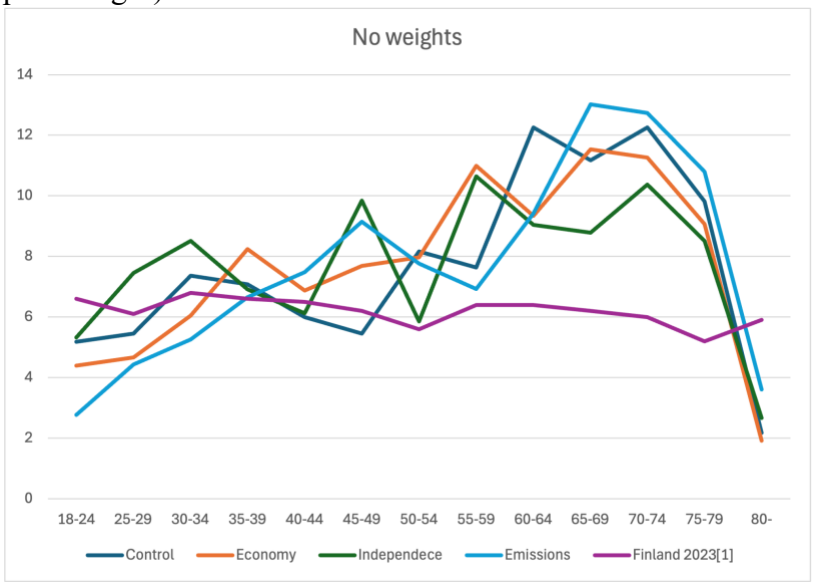
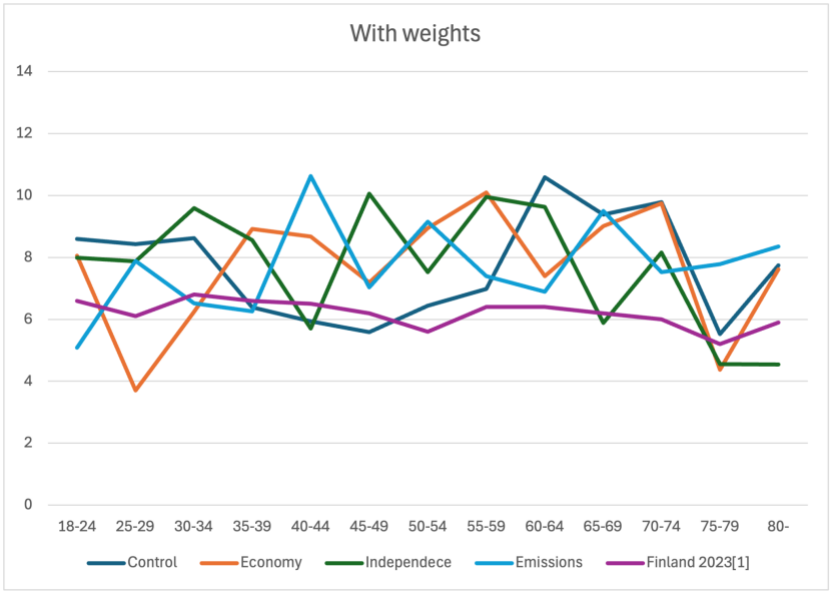



Figure A.2. Age distribution within treatment groups and the Finnish population (weighted percentages).




**Balance of key predictors across treatment groups**

Figure A.3 shows the weighted distribution of political trust across treatment groups. The distributions largely overlap, indicating good balance in political trust across experimental conditions. A Pearson chi-square test shows that political trust does not differ systematically across treatment conditions ($\chi^2(15) = 18.14$, $p = 0.255$). Most observations are concentrated around the mean and one standard deviation (±1SD) above it, while the tails of the distribution are relatively sparse. As a result, treatment effects conditional on very low or very high levels [±2SD] of political trust are estimated with limited precision, which likely contributes to the absence of statistically significant effects at the extremes.

Figure A.3. The distribution of political trust across treatment groups

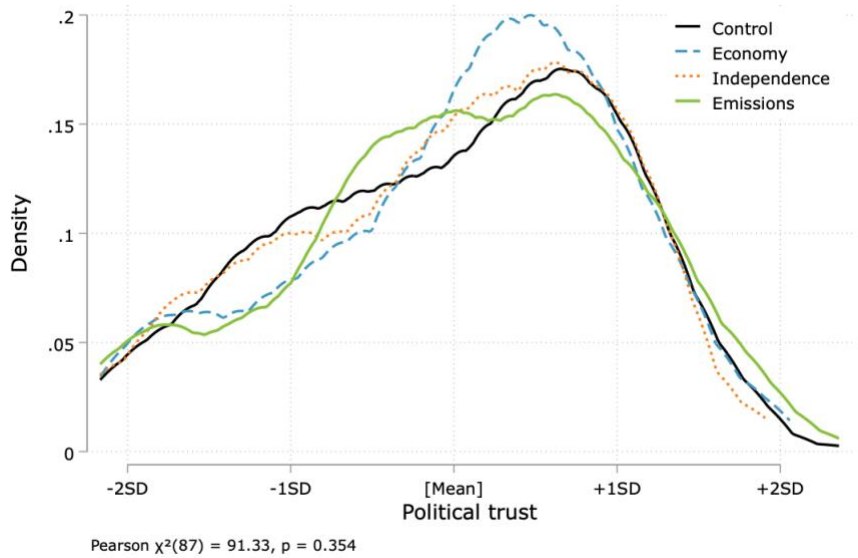
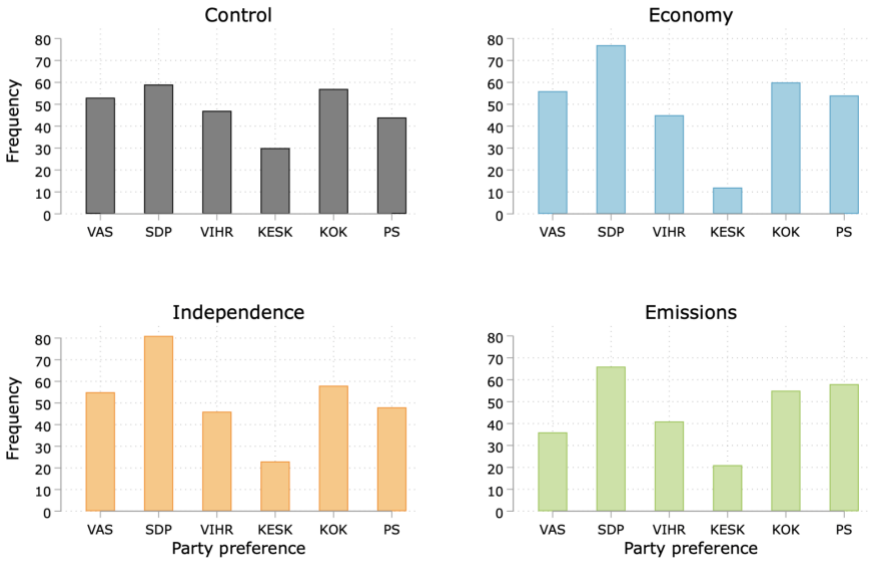



Figure A.4 presents the weighted distribution of party preference across treatment groups. A Pearson chi-square test indicates no statistically significant association between party preference and treatment assignment ($\chi^2(15) = 18.14$, $p = 0.255$). The distributions are broadly similar, indicating that party preference is well balanced across experimental conditions. While minor differences are visible, for example, a somewhat higher share of SDP supporters in the economy and independence treatments and a slightly higher share of PS supporters in the emissions treatment, these deviations are modest and unsystematic. Overall, the figure indicates that treatment assignment is not confounded by party composition, although small subgroup sizes limit statistical power for party-specific effects, particularly for the Greens (VIHR) and the Centre Party (KESK). This means that the absence of statistically significant differences in several cases is likely driven by limited statistical power rather than the absence of substantive treatment effects, and inference must be cautious.

Figure A.4. The distribution of party preference across treatment groups

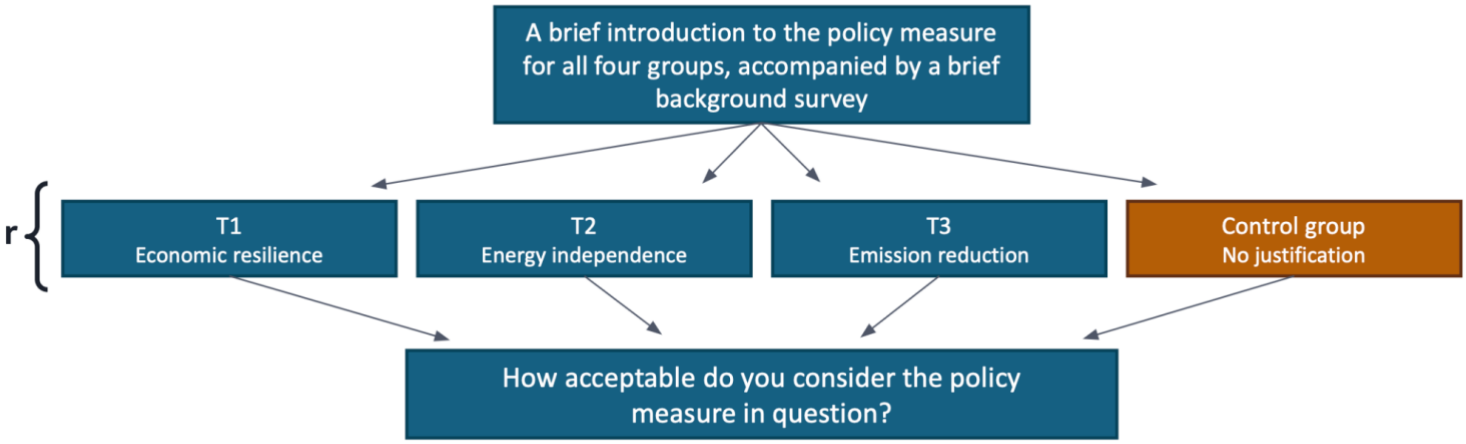



## Rererence

Miratrix, L. W., Sekhon, J. S., Theodoridis, A. G., & Campos, L. F. (2018). Worth weighting? How to think about and use weights in survey experiments. Political Analysis, 26(3), 275-291.

# Supplemental material B: Study design

Figure B.1. Experiment structure.



# Supplemental material C: Regression tables

Table C.1 presents the main effect model of the justification treatment as well as the results from the political trust interaction model. Model 1 indicates that compared to the control group, treatments have no statistically sifnidicant effects. Model 2 shows that political trust is linked to higher ETS acceptability. Model 3 shows that the only statistically significant interaction between political trust and the treatment justifications is observed for the emissions justification (Emissions × political trust). This indicates that the effect of emphasizing emissions reduction on ETS acceptability becomes increasingly positive as political trust rises. Among respondents with low political trust, the emissions justification reduces policy acceptability, a pattern that is also illustrated in Figure 3.

The main-effects model yields an adjusted $R^2$ of 0.008, indicating that policy justifications alone explain virtually none of the variation in ETS acceptability. In contrast, adding political trust and its interactions substantially increases the adjusted $R^2$ to 0.155, suggesting that this model explains a markedly larger share of the variance. This indicates that political trust is a key structuring factor in how policy justifications influence acceptability.

Table C.1. Regression results for total treatment effects and interactions with political trust.

| | M1: Treatment | | M2: Political trust | | M3: Interaction model | |
|---|---|---|---|---|---|---|
| | Effect | Robust SE | Effect | Robust SE | Effect | Robust SE |
| **Main effects** | | | | | | |
| Treatment (ref. Control) | | | | | | |
| Economy | -0.530 | (0.320) | | | -1.099 | (0.651) |
| Independence | 0.148 | (0.291) | | | 0.082 | (0.642) |
| Emissions | -0.572 | (0.315) | | | -1.696** | (0.638) |
| Political trust | | | 0.520*** | (0.038) | 0.469*** | (0.087) |
| **Interactions** | | | | | | |
| Control × Political trust | | | | | 0.000 | (0.000) |
| Economy × Political trust | | | | | 0.108 | (0.117) |
| Independence × Political trust | | | | | 0.025 | (0.116) |
| Emissions × Political trust | | | | | 0.230* | (0.116) |
| Constant | 5.175*** | (0.216) | 2.738*** | (0.204) | 2.926*** | (0.493) |
| Observations | 1,462 | | 1,462 | | 1,462 | |
| Adj. $R^2$ | .008 | | .116 | | .155 | |

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Table C.2 presents the average marginal effects (AME) of justifications treatment on ETS acceptability by party. The only statistically significant effect in is observed among supporters of the populist radical right party, the Finns Party (PS). Framing the policy in terms of energy independence increases their ETS acceptability by approximately 2 points on an 11-point scale (AME = 2.08, p = 0.001), representing a substantively large effect. Based on the adjusted $R^2$ (.262), also party preference explains a substantially larger share of variation in ETS acceptability than treatment justifications alone.

Table C.2. Average marginal effects of justifications treatment on ETS acceptability by party preference. Models are estimated using raking weights.

| Treatment (ref. Control) | AME | Robust SE | p | L 95% CI | H 95% CI |
|---|---|---|---|---|---|
| Economy | | | | | |
| VAS | 0.472 | 0.779 | 0.545 | -1.056 | 2.000 |
| SDP | -1.029 | 0.553 | 0.063 | -2.115 | 0.057 |
| VIHR | -0.822 | 0.591 | 0.164 | -1.981 | 0.337 |
| KESK | -0.410 | 1.021 | 0.688 | -2.413 | 1.593 |
| KOK | 0.791 | 0.686 | 0.250 | -0.556 | 2.137 |
| PS | -0.270 | 0.569 | 0.635 | -1.388 | 0.847 |
| Independence | | | | | |
| VAS | 0.218 | 0.807 | 0.787 | -1.366 | 1.802 |
| SDP | -0.754 | 0.558 | 0.177 | -1.850 | 0.341 |
| VIHR | 0.045 | 0.604 | 0.941 | -1.141 | 1.231 |
| KESK | 0.484 | 0.802 | 0.546 | -1.089 | 2.057 |
| KOK | 0.915 | 0.606 | 0.131 | -0.273 | 2.103 |
| PS | 2.084 | 0.653 | 0.001*** | 0.802 | 3.366 |
| Emissions | | | | | |
| VAS | -0.000 | 0.973 | 1.000 | -1.910 | 1.909 |
| SDP | 0.030 | 0.602 | 0.961 | -1.151 | 1.210 |
| VIHR | -0.500 | 0.581 | 0.389 | -1.640 | 0.639 |
| KESK | -0.518 | 0.858 | 0.546 | -2.201 | 1.166 |
| KOK | -0.238 | 0.857 | 0.782 | -1.920 | 1.445 |
| PS | 0.451 | 0.648 | 0.487 | -0.820 | 1.722 |

Adj. R2 = 0.262

# Supplemental material D: Robustness of the results.

Figure D.1. Marginal effects of justifications on policy acceptability by political party preference after controlling for political trust. 95% CIs.

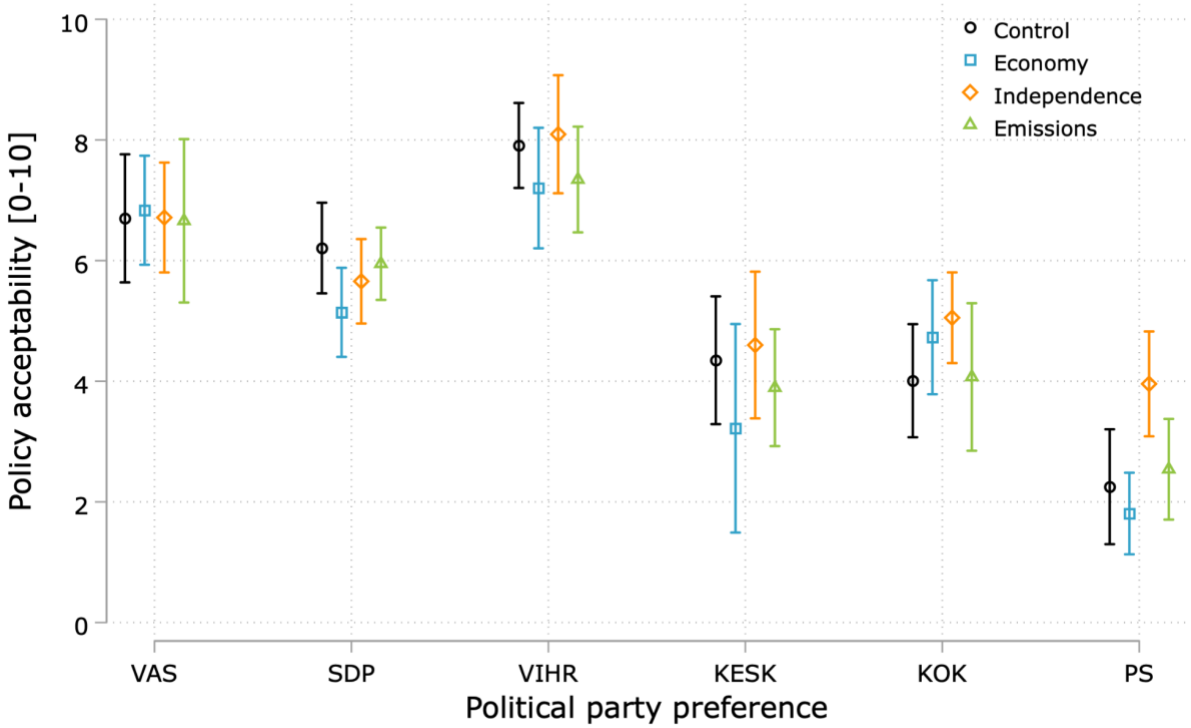


Figure D.2. Marginal effects of justifications on policy acceptability by political trust after controlling for political party preference. 95% CIs.

