# Supplementary Information 

## (Inequality in) Interest Group Involvement and the Legitimacy of Policy-Making

Anne Rasmussen ${ }^{1}$ \& Stefanie Reher ${ }^{2}$

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ideology
[^0]
## 1. Experimental vignettes

When legislators debate new policies they can consult different stakeholders, for instance business groups, NGOs, trade unions, firms, academics and citizens. One way to consult such stakeholders is through inviting them to testify at a hearing in Congress [US]/provide oral evidence to Parliament [UK]/provide a statement at a public hearing in the Bundestag [Germany].

Below, we will present you with a description of a situation where legislators in Congress [US]/Parliament [UK]/the Bundestag [Germany] decided on a policy issue. It includes information about whether legislators invited interest groups that are key stakeholders in the policy area to testify at a congressional hearing [US]/give oral evidence [UK]/provide a statement [Germany]. You will also find out whether the legislators' decision reflected public opinion and the positions of the interest groups.

Please read the scenario carefully before answering a few questions on your perceptions about the decision. To make sure that you have enough time to think about the scenario, you will see this page for 90 seconds before you see the arrow letting you move to the next page. However, please take as much time as you need to think about your answers.

Figure S1. Introductory text

## Decision on tax cuts for hybrid cars

Parliament recently debated whether to give tax cuts to companies that produce hybrid cars, which have both a petrol engine and an electric motor. On issues related to the greenhouse gas emissions of vehicles, the key stakeholders are typically environmental groups and business associations.

Parliament <invited neither environmental groups nor business associations to give oral evidence / invited equal numbers of environmental groups and business associations to give oral evidence / invited more environmental groups than business associations to give oral evidence/ invited more business associations than environmental groups to give oral evidence>.

In the end, the legislators decided <in favour of / against> giving tax cuts to companies that produce hybrid cars. This decision is <
in line with the position of both environmental groups and business associations /
against the position of both environmental groups and business associations /
in line with the position of environmental groups but against the position of business associations /
in line with the position of business associations but against the position of environmental groups>.

The decision is <in line with / against > the position of <a large / the> majority of the public: according to an opinion poll, <70/55>\% of the public <agree / disagree> with the decision.

## Example vignette:

Decision on tax cuts for hybrid cars

Parliament recently debated whether to give tax cuts to companies that produce hybrid cars, which have both a petrol engine and an electric motor. On issues related to the greenhouse gas emissions of vehicles, the key stakeholders are typically environmental groups and business associations.

Parliament invited equal numbers of environmental groups and business associations to give oral evidence.

In the end, the legislators decided in favour of giving tax cuts to companies that produce hybrid cars. This decision is in line with the position of environmental groups but against the position of business associations.

The decision is against the position of the majority of the public: according to an opinion poll, $\mathbf{5 5 \%}$ of the public disagree with the decision.

Figure S2. Vignette on tax cuts for hybrid car producers (UK version)

## Decision on regulating sugar content of beverages

Parliament recently debated whether to restrict the sugar content of beverages. On issues related to nutrition such as this one, the key stakeholders are typically consumer organisations and business associations.

Parliament <invited neither consumer organisations nor business associations to give oral evidence /
invited equal numbers of consumer organisations and business associations to give oral evidence /
invited more consumer organisations than business associations to give oral evidence / invited more business associations than consumer organisations to give oral evidence>.

In the end, the legislators decided <in favour of / against> restricting the sugar content of beverages. This decision is <
in line with the position of both consumer organisations and business associations / against the position of both consumer organisations and business associations / in line with the position of consumer organisations but against the position of business associations /
in line with the position of business associations but against the position of consumer organisations $>$.

The decision is <in line with / against > the position of <a large / the> majority of the public: according to an opinion poll, <70/55>\% of the public <agree / disagree> with the decision.

## Example vignette:

Decision on regulating sugar content of beverages
Parliament recently debated whether to restrict the sugar content of beverages. On issues related to nutrition such as this one, the key stakeholders are typically consumer organisations and business associations.

Parliament invited more consumer organisations than business associations to give oral evidence.

In the end, the legislators decided against restricting the sugar content of beverages. This decision was in line with the position of business associations but not consumer organisations.

The decision was against the position of a large majority of the public: according to an opinion poll, $\mathbf{7 0 \%}$ of the public disagree with the decision.

Figure S3. Vignette on restrictions on sugar content of beverages (UK version)

Table S1. Attributes and values in vignettes

| Attributes | Values general | Values in Experiment 1 (tax cut for hybrid car producers) | Values in Experiment 2 (restricting sugar content of beverages) |
| :---: | :---: | :---: | :---: |
| Inclusion of interest groups in consultation | None / more business than cause interests / more cause than business interests / equal numbers of business and cause interests | None / more business associations than environmental groups / more environmental groups than business associations / equal numbers of business associations and environmental groups | None / more business associations than consumer organizations / more consumer organizations than business associations / equal numbers of business associations and consumer organizations |
| Policy outcome | Policy adopted / rejected | Tax cuts adopted / rejected | Restriction on sugar content adopted / rejected |
| Policy attainment | Business and cause interests attain preferred policy / only business interests attain preferred policy / only cause interests attain preferred policy / neither business nor cause interests attain preferred policy | Business associations and environmental groups attain preferred policy / only business associations attain preferred policy / only environmental groups attain preferred policy / neither business associations nor environmental groups attain preferred policy | Business associations and consumer organizations attain preferred policy / only business associations attain preferred policy / only consumer organizations attain preferred policy / neither business associations nor consumer organizations attain preferred policy |
| Public support for policy | Public majority agrees with policy outcome / public majority disagrees with policy outcome | Public majority agrees with policy outcome / public majority disagrees with policy outcome | Public majority agrees with policy outcome / public majority disagrees with policy outcome |
| Size of public majority | 55\% / 70\% | 55\% / 70\% | 55\% / 70\% |

## 2. Verifying the legitimacy scales

In order to examine whether the survey items used to construct the two additive scales measuring procedural and substantive legitimacy do indeed constitute two distinct but internally consistent scales, we conduct an exploratory factor analysis. We thereby explore whether the six items load onto two distinct factors in a way that corresponds to our scales. We conduct a factor analysis with an oblique oblimin rotation, as we expect the two factors to be correlated. The result confirms that the items clearly load on two factors consistent with procedural and substantive legitimacy. Table S 2 shows the factor loadings of each item on the two factors. As mentioned in the main text, the internal consistency of the scales is also high with Cronbach's alpha $=0.85$ for procedural legitimacy and 0.90 for substantive legitimacy.

Table S2. Factor loadings of legitimacy questions (UK wording) from factor analysis with oblique oblimin rotation

| Variable | Factor 1 [substantive <br> legitimacy] | Factor 2 [procedural <br> legitimacy] |
| :--- | :--- | :--- |
| The process that led to the policy decision was fair. | 0.0038 | $\mathbf{0 . 7 9 5 5}$ |
| Legislators made the right decision. $\mathbf{0 . 8 5 7 6}$ | -0.0019 |  |
| When making the decision, legislators took the views of all <br> relevant actors into account. | 0.0248 | $\mathbf{0 . 7 6 0 9}$ |
| Legislators made the decision that is best for the citizens of <br> the UK. | $\mathbf{0 . 9 0 5 0}$ | -0.0449 |
| The process that led to the decision was democratic. | -0.0147 | $\mathbf{0 . 7 9 2 3}$ |
| Legislators made the best decision for those who are <br> affected by the policy. | $\mathbf{0 . 7 1 7 4}$ | 0.1108 |

## 3. Diagnostics

We conducted a set of diagnostic checks, partly based on the recommendations in Hainmueller, Hopkins and Yamamoto (2014).

### 3.1. Issue order

We start by testing whether the AMCE estimates are the same regardless of whether respondents saw the hybrid cars issue (group 1) or the sugar content issue (group 2) first (recall that the order of appearance of the vignettes with the two issues was randomized and the models in Table 1 include a group dummy). Table S 3 shows for Model 1, Table 1 that the effects are largely the same across the two groups, only some small differences exist. Group 1 has a slightly more negative evaluation of the presence of more cause than business groups vs. equal representation than Group 2, but the effects are statistically significant in both groups.

Table S3. Effects of interest group representation by issue order

|  | Group 1 <br> (hybrid, sugar) | Group 2 (sugar, hybrid) |
| :---: | :---: | :---: |
| Numerical repres. of groups (reference=equal) |  |  |
| None | $-0.958^{* * *}$ | $-0.937^{* * *}$ |
|  | (0.030) | (0.029) |
| More cause | -0.379*** | -0.272*** |
|  | (0.028) | (0.029) |
| More business | -0.499*** | -0.489*** |
|  | (0.029) | (0.029) |
| Policy attainment (ref=in line with both) |  |  |
| Against both | -0.356*** | $-0.329^{* * *}$ |
|  | (0.028) | (0.029) |
| In line with business | -0.277*** | -0.237*** |
|  | (0.028) | (0.029) |
| In line with cause | -0.127*** | -0.074** |
|  | (0.028) | (0.028) |
| Public opinion (ref=70\% against) |  |  |
| 55\% against | $0.088^{* *}$ | $0.081 * *$ |
|  | (0.029) | (0.029) |
| 55\% support | $0.407 * * *$ | 0.451 *** |
|  | (0.030) | (0.029) |
| 70\% support | $0.410^{* * *}$ | $0.454^{* * *}$ |
|  | (0.029) | (0.029) |
| Outcome favorability | $0.139^{* * *}$ | $0.185^{* * *}$ |
|  | (0.009) | (0.009) |
| Policy issue | 0.006 | -0.002 |
|  | (0.016) | (0.016) |
| US (ref=UK) | -0.026 | -0.025 |
|  | (0.029) | (0.029) |
| DE (ref=UK) | -0.050 | 0.031 |
|  | (0.028) | (0.028) |


| Constant | $2.201^{* * *}$ | $1.989^{* * *}$ |
| :--- | :---: | :---: |
|  | $(0.047)$ | $(0.046)$ |
| BIC | 24601 | 25388 |
| Observations | 8,973 | 9,166 |

Notes: Standard errors are clustered by respondent. ${ }^{*} \mathrm{p}<0.05 ;{ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$

### 3.2. Randomization

To check whether the random assignment of attribute values produced balanced groups, we regress key respondent characteristics on the attributes. Table S 4 shows that there are no relationships between age and gender, respectively, and the probability of being assigned particular attribute values.

Table S4. Linear regression of age and gender on randomized attributes

|  | Age | Female |
| :--- | :---: | :---: |
| Numerical repres. of groups (reference=none) |  |  |
| Equal | 0.027 | 0.007 |
|  | $(0.341)$ | $(0.010)$ |
| More cause | -0.294 | 0.011 |
|  | $(0.346)$ | $(0.010)$ |
| More business | -0.083 | 0.006 |
|  | $(0.345)$ | $(0.010)$ |
| Policy attainment (ref=in line with neither) |  |  |
| In line with both | 0.468 | -0.013 |
| In line with business | $(0.343)$ | $(0.010)$ |
|  | -0.012 | -0.001 |
| In line with cause | $(0.352)$ | $(0.010)$ |
|  | 0.243 | 0.003 |
| Public opinion (ref=70\% against) | $(0.350)$ | $(0.010)$ |
| 55\% against |  |  |
|  | 0.042 | -0.007 |
| 55\% support | $(0.344)$ | $(0.010)$ |
|  | -0.303 | 0.001 |
| 70\% support | $(0.345)$ | $(0.010)$ |
|  | 0.008 | 0.001 |
| US (ref=UK) | $(0.346)$ | $(0.010)$ |
| DE (ref=UK) | $1.437^{* * *}$ | $0.174^{* * *}$ |
|  | $(0.422)$ | $(0.012)$ |
| Constant | $3.876^{* * *}$ | 0.003 |
|  | $(0.416)$ | $(0.013)$ |
| BIC | $45.133^{* * *}$ | $0.508^{* * *}$ |
| Observations | $(0.471)$ | $(0.014)$ |
| Notes Stan | 158506 | 26388 |
|  | 18714 | 18714 |

Notes: Standard errors are clustered by respondent. ${ }^{*} \mathrm{p}<0.05 ;{ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$

## 4. Analyses on sample including respondents who failed attention and manipulation checks

During the data collection we replaced respondents who failed either one of two attention checks or more than half of the manipulation checks (there were 4 checks per policy-making scenario). All of the checks were simple questions about the text describing the decisionmasking scenario, which respondents see simultaneously on the same page and can check if unsure. This means that the sample used in the analyses, which excludes the replaced respondents, is representative of the three countries' populations in terms of age, gender, and region. Nevertheless, we also estimate the models on the sample that includes respondents who either failed one of the two attention checks or more than half of the manipulation checks. Note that respondents who failed the attention check in the first experiment were not shown the second experiment. Thus, this larger sample includes 11,247 respondents who participated in both experiments ( 1,832 of whom failed one of the attention checks and 58 of whom passed the attention check but failed more than half of the manipulation checks and are, thus, excluded from the final sample); 4,759 respondents who only participated in the sugar restrictions experiment (because they failed the attention check or terminated the study for other reasons); and 6,033 respondents who only participated in the hybrid cars experiment. Note that this larger sample is not representative of the populations, as particular sub-groups may have had a higher probability of being excluded. The excluded respondents were replaced based on the gender, age, and region quotas so that the final sample is representative of the populations along these variables.

Table S 5 shows the estimate of Models 1-4 among this larger sample. Overall, the coefficients are very similar to those for the reduced sample. Many of them are smaller in magnitude on the larger sample, which is not surprising given that some of the respondents were excluded because they did not pay attention to the scenarios described in the vignette. Their responses are thus less likely to be affected by the treatments.

Table S5. Robustness checks using sample that includes respondents excluded for failing attention or majority of manipulation checks



Notes: Models include fixed effects for experimental group (1: hybrid cars, beverages; 2: beverages, hybrid cars). Standard errors are clustered by respondent. ${ }^{*} \mathrm{p}<0.05 ;{ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$

## 5. Analyses split by country

Table S6. OLS regressions of legitimacy on representation, UK



Notes: Models include fixed effects for experimental group (1: hybrid cars, beverages; 2: beverages, hybrid cars). Standard errors are clustered by respondent. ${ }^{*} \mathrm{p}<0.05 ;{ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$

Table S7. OLS regressions of legitimacy on representation, US



Notes: Models include fixed effects for experimental group (1: hybrid cars, beverages; 2: beverages, hybrid cars). Standard errors are clustered by respondent. ${ }^{*} \mathrm{p}<0.05 ;{ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$

Table S8. OLS regressions of legitimacy on representation, Germany

|  | (1) | (4) |
| :---: | :---: | :---: |
| Numerical repres. of groups (reference=equal) |  |  |
| None | $-0.770^{* * *}$ | -0.861*** |
|  | (0.035) | (0.069) |
| More cause | -0.191*** | -0.281*** |
|  | (0.034) | (0.069) |
| More business | -0.369*** | -0.407*** |
|  | (0.034) | (0.065) |
| Policy attainment (ref=in line with both) |  |  |
| Against both | $-0.407^{* * *}$ | -0.466*** |
|  | (0.035) | (0.065) |
| In line with business | -0.305*** | -0.303*** |
|  | (0.034) | (0.064) |
| In line with cause | -0.126*** | -0.285*** |
|  | (0.033) | (0.066) |
| Numerical repres. (ref=equal) * policy attainment (ref=in line with both) |  |  |
| None * against both |  | 0.166 |
|  |  | (0.097) |
| None * in line with |  | -0.026 |
| business |  | (0.097) |
| None * in line with |  | 0.215* |
| cause |  | (0.097) |
| More cause * |  | 0.123 |
| against both |  | (0.094) |
| More cause * in |  | 0.075 |
| line with business |  | (0.094) |
| More cause * in |  | 0.161 |
| line with cause |  | (0.096) |
| More business * |  | -0.063 |
| against both |  | (0.092) |
| More business * in |  | -0.064 |
| line with business |  | (0.094) |
| More business * in |  | 0.264** |
| line with cause |  | (0.091) |
| Public opinion (ref=70\% against) |  |  |
| $55 \%$ against | 0.090** | $0.087^{*}$ |
|  | (0.034) | (0.034) |
| 55\% support | $0.356^{* *}$ | $0.355^{* * *}$ |
|  | (0.035) | (0.035) |
| 70\% support | $0.357^{* * *}$ | $0.355^{* * *}$ |
|  | (0.035) | (0.035) |
| Outcome favorability | $0.160 * * *$ | $0.160 * * *$ |
|  | (0.010) | (0.010) |
| Policy issue | 0.001 | 0.000 |
|  | (0.019) | (0.019) |
| Constant | $2.007^{* * *}$ | $2.063^{* * *}$ |
|  | (0.067) | (0.075) |
| BIC | 16556 | 16608 |
| Observations | 6,087 | 6,087 |

Notes: Models include fixed effects for experimental group (1: hybrid cars, beverages; 2: beverages, hybrid cars). Standard errors are clustered by respondent. "p<0.05; ${ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$

## 6. Analysis for each component of legitimacy scale

Table S9. Model 1 (Table 1) with each component of procedural legitimacy scale as dependent variable

|  | Process was fair | Views of all relevant actors taken into account | Process was democratic |
| :---: | :---: | :---: | :---: |
| Numerical repres. of groups (reference=equal) |  |  |  |
| None | -0.964*** | -1.097*** | $-0.806^{* * *}$ |
|  | (0.023) | (0.025) | (0.025) |
| More cause | -0.422*** | -0.302*** | -0.266*** |
|  | (0.023) | (0.024) | (0.024) |
| More business | -0.640*** | -0.454*** | $-0.390^{* * *}$ |
|  | (0.023) | (0.024) | (0.025) |
| Policy attainment (ref=in line with both) |  |  |  |
| Against both | $-0.306^{* * *}$ | $-0.434^{* * *}$ | -0.290*** |
|  | (0.023) | (0.024) | (0.025) |
| In line with business | -0.261*** | -0.311*** | -0.209*** |
|  | (0.023) | (0.024) | (0.024) |
| In line with cause | -0.096*** | $-0.130^{* * *}$ | -0.071** |
|  | (0.023) | (0.024) | (0.024) |
| Public opinion (ref=70\% against) |  |  |  |
| 55\% against | 0.100*** | 0.079*** | 0.086*** |
|  | (0.024) | (0.024) | (0.025) |
| 55\% support | $0.443^{* * *}$ | $0.416^{* * *}$ | 0.430 *** |
|  | (0.023) | (0.025) | (0.025) |
| 70\% support | $0.447^{* * *}$ | $0.397 * * *$ | $0.452^{* * *}$ |
|  | (0.023) | (0.024) | (0.025) |
| Outcome favorability | $0.164^{* * *}$ | $0.167^{* * *}$ | $0.154^{* * *}$ |
|  | (0.007) | (0.007) | (0.007) |
| Policy issue | 0.016 | -0.012 | 0.005 |
|  | (0.014) | (0.015) | (0.013) |
| US (ref=UK) | -0.023 | -0.080*** | 0.029 |
|  | (0.023) | (0.024) | (0.024) |
| DE (ref=UK) | -0.020 | -0.135*** | $0.130^{* * *}$ |
|  | (0.022) | (0.023) | (0.025) |
| Constant | 2.186*** | $2.132^{* * *}$ | 2.071*** |
|  | (0.046) | (0.049) | (0.050) |
| BIC | 53481 | 54648 | 54236 |
| Observations | 17,863 | 17,687 | 17,498 |

Notes: Models include fixed effects for experimental group (1: hybrid cars, beverages; 2: beverages, hybrid cars). Standard errors are clustered by respondent. "p<0.05; ${ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$

## 7. Analysis of economic resource and representativeness effects, controlling for ideology

Table S10. OLS regressions of legitimacy on representation and moderating variables, controlling for ideology


| More cause * | 0.004 | 0.006 |
| :--- | :---: | :---: |
| ideology | $(0.012)$ | $(0.012)$ |
| More business * | $0.046^{* * *}$ | $0.045^{* * *}$ |
| ideology | $(0.012)$ | $(0.012)$ |
| Policy attainment (ref=in line with both)* citizen ideology |  |  |
| Against both * ideology | $0.024^{*}$ | $0.026^{*}$ |
|  | $(0.012)$ | $(0.012)$ |
| In line with business * | $0.030^{*}$ | 0.022 |
| ideology | $(0.012)$ | $(0.012)$ |
| In line with cause * | -0.001 | 0.000 |
| ideology | $(0.012)$ | $(0.012)$ |
| Public opinion (ref=70\% against) |  |  |
| 55\% against | $0.099^{* * *}$ | $0.095^{* * *}$ |
|  | $(0.028)$ | $(0.027)$ |
| 55\% support | $0.473^{* * *}$ | $0.464^{* * *}$ |
|  | $(0.028)$ | $(0.028)$ |
| 70\% support | $0.480^{* * *}$ | $0.469^{* * *}$ |
|  | $(0.028)$ | $(0.027)$ |
| Outcome favorability | $0.168^{* * *}$ | $0.165^{* * *}$ |
|  | $(0.008)$ | $(0.008)$ |
| Policy issue | -0.005 | 0.012 |
| US (ref=UK) | $(0.016)$ | $(0.016)$ |
|  | $-0.047^{*}$ | -0.036 |
| Constant | $(0.022)$ | $(0.022)$ |
|  | $2.187^{* * *}$ | $2.193^{* * *}$ |
| BIC | $(0.081)$ | $(0.079)$ |
| Observations | 28207 | 29288 |
| Noter | 10,136 | 10,525 |

Notes: Citizen ideology is a 11-point scale, with $0=$ left and $10=$ right. Models include fixed effects for experimental group (1: hybrid cars, beverages; 2: beverages, hybrid cars). Standard errors are clustered by respondent. ${ }^{*} \mathrm{p}<0.05 ;{ }^{* *} \mathrm{p}<0.01 ;{ }^{* * *} \mathrm{p}<0.001$


[^0]:    ${ }^{1}$ University of Copenhagen \& University of Bergen, ar@ifs.ku.dk
    ${ }^{2}$ University of Strathclyde, stefanie.reher@strath.ac.uk

