

Online appendix

How citizens evaluate democracy: An assessment using the European Social Survey

A. Descriptive statistics

Table A1: Means and standard deviations of the items.

<i>Items</i>	Mean	SD
Equality before the law	5.10	3.18
Electoral punishment	5.56	3.06
Government explains	4.73	2.79
Reliable information	5.95	2.54
Referendum	4.96	3.12
Voters discuss	6.48	2.47
Free and fair elections	7.07	2.91
Party alternatives	5.57	2.55
Free opposition	7.41	2.46
Minorities rights	6.23	2.61
Responsible government	5.60	2.40
Free media	7.27	2.59
Reduction income differences	4.13	2.77
Poverty protection	4.12	2.92
<i>n</i>	39172	

Table A2: Means of the items, by country.

	AL	BE	BG	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	HU	IE
Equality before the law	3.01	5.34	2.36	7.23	5.04	4.00	6.41	8.21	5.29	3.11	7.41	4.83	6.43	4.96	6.06
Electoral punishment	3.79	6.10	5.38	7.07	4.53	3.70	6.00	7.66	4.00	5.33	7.32	6.01	6.28	5.02	6.66
Government explains	4.38	5.25	3.30	6.92	3.85	3.47	4.71	6.53	4.07	3.28	6.45	4.80	5.51	4.07	5.58
Reliable information	5.98	6.19	5.04	6.75	5.68	5.51	6.71	6.34	5.81	5.57	7.11	5.47	6.06	4.95	6.81
Referendum	4.20	4.10	3.64	7.91	5.14	4.46	3.71	6.64	4.66	3.88	6.33	4.44	5.64	5.27	7.11
Voters discuss	6.83	6.39	5.86	7.17	6.90	6.81	6.38	7.16	6.46	6.11	6.71	6.54	6.35	6.52	6.80
Free and fair elections	3.65	7.45	3.96	8.18	8.35	7.10	8.55	9.16	6.46	6.88	9.10	7.37	8.18	6.37	7.85
Party alternatives	5.46	5.91	4.50	6.61	5.01	5.64	5.72	5.66	5.42	5.17	6.51	5.15	5.95	5.83	5.98
Free opposition	7.12	7.40	6.81	7.74	8.26	7.10	8.57	8.85	6.83	7.36	8.07	7.60	7.88	6.96	7.86
Minorities rights	5.19	6.45	6.97	7.19	7.54	6.47	7.22	7.36	5.21	4.61	7.09	5.99	6.85	6.38	6.64
Responsible government	4.66	5.79	6.04	6.07	4.74	4.60	5.62	6.45	5.71	5.57	6.77	5.40	5.62	4.56	6.51
Free media	6.88	7.38	6.05	7.89	7.80	6.98	8.46	9.05	7.18	7.10	8.12	7.10	7.76	6.36	7.84
Reduction income differences	3.37	5.03	1.83	5.54	3.81	3.03	4.22	5.87	3.12	2.98	6.02	4.39	5.07	3.71	5.12
Poverty protection	2.41	5.03	1.88	6.28	3.62	2.94	4.51	6.39	2.80	3.14	5.90	4.41	5.41	3.44	5.47
	IL	IS	IT	LT	NL	NO	PL	PT	RU	SE	SI	SK	UA	XK	
Equality before the law	5.79	6.74	3.44	3.33	6.73	8.10	4.02	3.34	3.20	7.80	3.89	2.97	1.96	2.64	
Electoral punishment	4.53	5.76	3.12	4.72	6.84	7.28	5.56	4.66	3.68	7.36	5.50	5.98	3.96	2.64	
Government explains	4.82	4.59	3.23	3.54	5.84	6.53	3.70	4.03	4.00	7.08	4.35	4.29	2.82	3.08	
Reliable information	6.49	5.97	4.57	5.57	6.17	7.20	5.94	6.02	4.34	7.51	5.94	5.60	4.32	4.32	
Referendum	3.84	6.01	3.86	4.17	4.81	6.73	5.02	3.98	3.84	6.72	6.42	4.88	3.26	3.25	
Voters discuss	7.42	6.68	6.51	5.42	6.94	7.25	6.55	6.24	5.38	6.79	6.32	6.88	5.50	4.59	
Free and fair elections	7.95	7.73	5.85	4.43	8.21	8.96	7.42	7.17	4.30	9.07	7.08	7.06	3.21	3.14	
Party alternatives	5.81	5.56	3.61	4.21	6.45	6.70	6.14	5.16	4.86	6.99	4.87	5.83	3.86	4.07	
Free opposition	8.02	8.03	6.48	6.05	7.96	8.58	7.51	7.12	5.07	8.79	7.12	7.12	5.24	5.17	
Minorities rights	5.74	5.91	4.43	5.11	6.82	7.28	6.10	4.21	3.96	7.57	7.33	7.19	4.12	5.96	
Responsible government	5.11	5.10	4.72	5.37	6.30	6.24	5.24	5.37	4.94	6.27	5.30	5.99	4.74	4.57	
Free media	8.11	7.75	6.08	6.03	7.99	8.67	7.70	6.68	4.72	8.86	7.16	6.84	4.91	4.86	
Reduction income differences	3.72	4.94	2.74	2.86	5.51	6.25	3.08	3.47	3.25	6.12	3.44	3.50	2.13	2.59	
Poverty protection	3.99	4.11	2.55	2.66	5.62	6.27	3.10	2.97	2.97	6.37	3.30	3.38	2.03	2.21	

B. Measurement model with additional latent factors

The model presented in the article is the following:

$$y_{ik} \sim N(\beta_{k0} + \beta_{k1}\phi_i, \omega_k) \quad (1)$$

$$\phi_{ij} \sim N(\theta_j, \sigma_\phi) \quad (2)$$

where y_{ik} is the matrix of observed responses, β_{k0} is the intercept of the responses, β_{k1} represents the slopes, i.e. the factor loadings, ϕ_i is the latent variable, i.e. the evaluation of democracy, and ω_k is the standard deviation of the measurement error, which basically indicates the level of agreement across respondents in their evaluations of the attributes of democracy. The chosen priors are relatively uninformative and are as follows: $(\beta_{k0}, \beta_{k1})' \sim N(0, 100)$ and $\omega_k \sim \text{inverse-Gamma}(0.01, 0.01)$. The term ϕ_{ij} accounts for the country-nesting indicated by j , and follows a Normal distribution with mean θ_j , and standard deviation σ_ϕ , that is the error at the individual-level which follows a $U(0, 10)$ distribution. The prior for the country random-effect is $N(0, 100)$, with $\sigma_\phi \sim U(0, 10)$, which is the standard deviation of the country random-effect.

The model presented in (1) can be extended to include other latent factors:

$$y_{ik}^* \sim N(\beta_{k0}^* + \beta_{k1}^*\phi_{ij}^*, \omega_k^*) \quad (3)$$

$$\phi_{ij}^* \sim N(\theta_j^*, \sigma_\phi^*) \quad (4)$$

The asterisk (*) indicates that the terms regard any latent factor estimated using a subset of items. For (3) and (4) all priors are the same as for the model presented in the article. Here, we estimate three additional latent factors:

- *Vertical accountability*, using the items: a) governing parties are punished in elections when they have done a bad job; b) the government explains its decisions to voters; c) the media provide citizens with reliable information to judge the government.
- *Participation*, using the items: a) citizens have the final say on the most important political issues by voting on them directly in referendums; b) voters discuss politics with people they know before deciding how to vote.
- *Competition*, using the items: a) national elections are free and fair; b) different political parties offer clear alternatives to one another; c) opposition parties are free to criticise the government.

Therefore, in this model we estimate four latent factors: one using all 14 items and three using subsets of items. As we deal with more than one latent factor, it is important to model the correlation between them, both at the individual- and country-level. The term ϕ_{ij} indicates the individual-level latent trait using the 14 items, $\phi_{ij}^{[1]}$ indicates the “Vertical accountability”, $\phi_{ij}^{[2]}$

indicates the “Participation”, and $\phi_{ij}^{[3]}$ indicate the “Competition” individual-level latent traits. Instead, the term θ_j indicates the country-level latent trait using the 14 items, $\theta_j^{[1]}$ indicates the “Vertical accountability”, $\theta_j^{[2]}$ indicates the “Participation”, and $\theta_j^{[3]}$ indicates the “Competition” country-level latent traits. For all these latent traits we have the corresponding intercepts, slopes and error terms, and priors.

These latent factors will be correlated as, in part, are built using items underlying a broader latent factor that is the citizen-based evaluation of democracy. Therefore, we model the correlation between the four latent factors, both at the individual- and country-level, as follows:

$$\begin{bmatrix} \phi_{ij} \\ \phi_{ij}^{[1]} \\ \phi_{ij}^{[2]} \\ \phi_{ij}^{[3]} \end{bmatrix} \sim (M_\phi, \Omega_\phi) \quad (5)$$

$$\begin{bmatrix} \theta_j \\ \theta_j^{[1]} \\ \theta_j^{[2]} \\ \theta_j^{[3]} \end{bmatrix} \sim (M_\theta, \Omega_\theta) \quad (6)$$

Where M_ϕ and M_θ are vectors of length 4 including the means of the latent factors at the individual- and country-level, that are 0s; and Ω_ϕ and Ω_θ are 4×4 covariance matrices for the variation of the latent factor between respondents and countries. The matrices Ω_ϕ and Ω_θ follow an inverse-Wishart($R, 5$), where $R = I_4$. From the covariance matrices we derive the correlations between the latent factors.

In sum, this model allows estimating multiple latent factors, at the individual- and country-level, modeling the correlations between them. The results of this model are reported in Table B1. For convenience, the model was estimated using 10% of the sample. In other words, from each country we randomly drew 10% of respondents.

With the estimated latent factors we also carry out the same validation analysis as in the article. Therefore, we look for the convergence, by means of correlations, between the country-level latent factors and the three measures of democracy, i.e. the Unified Democracy Scores, the Democracy Barometer, the Democracy Ranking, and the aggregated SWD. The results are reported in Table B2. Then, we look for the convergence, by means of correlations, between the individual-level latent factors and the SWD item. The results are reported in Table B3. These results indicate that the latent factors found using fewer items, which measure sub-dimensions of democracy, have similar correlations with the measures used for validation as the the latent factor found using the 14 items. This might indicate that citizen-based measures of democracy could be built using subsets of items.

Table B1: Estimates of the parameters measuring the evaluation of democracy, posterior medians and 95% credible intervals, using multiple latent factors. Bayesian factor analysis with country random-effects.

Latent factor the ESS measure (with 14 items) [ϕ_{ij}]				
	β_0	β_1	ω	r^2
Equality before the law	5.073 [5.007; 5.144]	2.372 (0.741) [2.303; 2.441]	2.150 [2.100; 2.203]	0.549 [0.542; 0.557]
Electoral punishment	5.616 [5.549; 5.687]	2.109 (0.694) [2.040; 2.175]	2.186 [2.137; 2.241]	0.482 [0.474; 0.490]
Government explains	4.714 [4.663; 4.762]	2.358 (0.832) [2.305; 2.413]	1.571 [1.526; 1.617]	0.692 [0.681; 0.704]
Reliable information	5.938 [5.878; 5.997]	1.715 (0.673) [1.656; 1.776]	1.885 [1.841; 1.930]	0.454 [0.445; 0.462]
Referendum	4.954 [4.882; 5.024]	2.147 (0.683) [2.071; 2.220]	2.294 [2.240; 2.347]	0.467 [0.459; 0.475]
Voters discuss	6.523 [6.452; 6.590]	1.099 (0.445) [1.026; 1.172]	2.212 [2.163; 2.263]	0.198 [0.192; 0.204]
Free and fair elections	7.105 [7.042; 7.169]	1.985 (0.690) [1.916; 2.053]	2.085 [2.036; 2.135]	0.476 [0.466; 0.486]
Party alternatives	5.577 [5.517; 5.640]	1.657 (0.644) [1.593; 1.720]	1.970 [1.922; 2.017]	0.414 [0.406; 0.422]
Free opposition	7.410 [7.347; 7.473]	1.442 (0.584) [1.377; 1.511]	2.005 [1.959; 2.053]	0.342 [0.332; 0.351]
Minorities rights	6.279 [6.213; 6.345]	1.527 (0.588) [1.458; 1.591]	2.102 [2.055; 2.151]	0.345 [0.338; 0.352]
Responsible government	5.596 [5.530; 5.662]	1.109 (0.460) [1.042; 1.176]	2.142 [2.095; 2.192]	0.212 [0.206; 0.218]
Free media	7.261 [7.197; 7.324]	1.592 (0.614) [1.524; 1.658]	2.047 [2.000; 2.094]	0.377 [0.368; 0.386]
Reduction income differences	4.132 [4.075; 4.189]	2.100 (0.753) [2.040; 2.161]	1.835 [1.790; 1.881]	0.567 [0.558; 0.576]
Poverty protection	4.118 [4.062; 4.175]	2.300 (0.781) [2.239; 2.359]	1.840 [1.794; 1.887]	0.610 [0.601; 0.618]
Random-effects				
σ_ϕ	0.824 [0.805; 0.844]			
σ_θ	0.566 [0.442; 0.753]			
Latent factor for Vertical accountability [$\phi_{ij}^{[1]}$]				
	β_0	β_1	ω	r^2
Electoral punishment	5.614 [5.547; 5.684]	2.136 (0.704) [2.065; 2.206]	2.158 [2.108; 2.211]	0.495 [0.485; 0.505]
Government explains	4.714 [4.667; 4.759]	2.428 (0.856) [2.377; 2.479]	1.462 [1.409; 1.514]	0.733 [0.719; 0.748]

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Reliable information	5.937 [5.877; 5.998]	1.705 (0.669) [1.640; 1.766]	1.895 [1.849; 1.943]	0.448 [0.436; 0.459]
Random-effects				
$\sigma_{\phi^{[1]}}$	0.865 [0.844; 0.886]			
$\sigma_{\theta^{[1]}}$	0.500 [0.389; 0.389]			
Latent factor for Participation [$\phi_{ij}^{[2]}$]				
	β_0	β_1	ω	r^2
Referendum	4.953 [4.884; 5.023]	2.286 (0.727) [2.213; 2.359]	2.158 [2.098; 2.217]	0.529 [0.516; 0.546]
Voters discuss	6.523 [6.454; 6.594]	1.102 (0.446) [1.025; 1.178]	2.211 [2.160; 2.261]	0.199 [0.189; 0.210]
Random-effects				
$\sigma_{\phi^{[2]}}$	0.853 [0.829; 0.877]			
$\sigma_{\theta^{[2]}}$	0.521 [0.407; 0.699]			
Latent factor for Competition [$\phi_{ij}^{[3]}$]				
	β_0	β_1	ω	r^2
Free and fair elections	7.105 [7.052; 7.162]	2.270 (0.788) [2.206; 2.333]	1.771 [1.715; 1.829]	0.622 [0.604; 0.640]
Party alternatives	5.576 [5.516; 5.639]	1.665 (0.647) [1.598; 1.734]	1.963 [1.915; 2.016]	0.418 [0.404; 0.433]
Free opposition	7.410 [7.352; 7.469]	1.624 (0.657) [1.558; 1.686]	1.864 [1.815; 1.911]	0.432 [0.418; 0.446]
Random-effects				
$\sigma_{\phi^{[3]}}$	0.786 [0.766; 0.766]			
$\sigma_{\theta^{[3]}}$	0.640 [0.504; 0.854]			
Deviance	362288			
Correlations between individual-level latent factors				
	ϕ_{ij}	$\phi_{ij}^{[1]}$	$\phi_{ij}^{[2]}$	$\phi_{ij}^{[3]}$
ESS measure	1	0.974 [0.943; 0.988]	0.871 [0.736; 0.937]	0.921 [0.835; 0.962]
Vertical accountability		1	0.857 [0.703; 0.933]	0.843 [0.689; 0.924]
Participation			1	0.753 [0.525; 0.876]
Competition				1
Correlations between country-level latent factors				
	θ_j	$\theta_j^{[1]}$	$\theta_j^{[2]}$	$\theta_j^{[3]}$
ESS measure	1	0.984	0.987	0.898

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	[0.979; 0.989]	[0.968; 0.995]	[0.880; 0.916]
Vertical accountability	1	0.972	0.815
		[0.946; 0.988]	[0.785; 0.844]
Participation		1	0.877
			[0.835; 0.910]
Competition			1

Note: based on 5000 MCMC draws. Estimates are posterior medians. In square brackets the 95% credible intervals are reported. In round brackets the factor loadings are reported. Based on a randomly drawn subsample ($n = 3918$, 10% of respondents from each of the 29 countries).

Table B2: *Correlations between the country-level latent factors and, respectively, the Unified Democracy Scores, the Democracy Barometer, the Democracy Ranking, and the aggregated SWD.*

	ESS measure	V. Accountability	Participation	Competition
	θ_j	$\theta_j^{[1]}$	$\theta_j^{[3]}$	$\theta_j^{[3]}$
Unified Democracy Scores	0.85	0.81	0.79	0.86
Democracy Barometer	0.84	0.84	0.71	0.74
Democracy Ranking	0.85	0.80	0.69	0.87
Satisfaction with democracy	0.90	0.87	0.78	0.85

Table B3: *Correlations between the individual-level latent factors and SWD, by country.*

	ESS measure	V. Accountability	Participation	Competition
	ϕ_{ij}	$\phi_{ij}^{[1]}$	$\phi_{ij}^{[3]}$	$\phi_{ij}^{[3]}$
Albania	0.55	0.54	0.55	0.56
Belgium	0.38	0.36	0.37	0.46
Bulgaria	0.28	0.27	0.28	0.30
Cyprus	0.53	0.54	0.52	0.47
Czech Republic	0.32	0.29	0.31	0.38
Denmark	0.40	0.39	0.39	0.41
Estonia	0.53	0.51	0.53	0.58
Finland	0.41	0.39	0.40	0.43
France	0.34	0.32	0.34	0.40
Germany	0.49	0.48	0.49	0.50
Great Britain	0.29	0.26	0.28	0.38
Hungary	0.61	0.61	0.61	0.59
Iceland	0.43	0.41	0.43	0.47
Ireland	0.37	0.35	0.36	0.40
Israel	0.40	0.39	0.40	0.42
Italy	0.42	0.41	0.42	0.44
Kosovo	0.69	0.68	0.68	0.69
Lithuania	0.28	0.26	0.28	0.31
Netherlands	0.49	0.48	0.49	0.50
Norway	0.46	0.46	0.46	0.44
Poland	0.61	0.60	0.60	0.61
Portugal	0.29	0.27	0.29	0.34
Russia	0.54	0.53	0.54	0.54
Slovakia	0.40	0.40	0.40	0.40
Slovenia	0.51	0.53	0.51	0.43
Spain	0.54	0.53	0.53	0.51
Sweden	0.39	0.38	0.39	0.42
Switzerland	0.46	0.46	0.45	0.44
Ukraine	0.46	0.46	0.46	0.43
Pooled	0.57	0.54	0.52	0.57

C. Measurement model by groups of countries

We recall, again, the model used in the article as in (1) and (2). One issue with this general model is that the slopes, indicating the strength of the relationship between one item and the latent factor, are treated as fixed, i.e. equal across the countries. However, it can be easily extended to address this point.

Here, we present an extension of this model such that we are able to compare the slopes across two (or even more) groups of countries. For the matter of this illustration, we group the countries in two: post-communist and non post-communist countries. As known, democratic legacies matter for the levels of political support and satisfaction with democracy. Therefore, it is reasonable to consider the 29 countries included in the special module of sixth round of the ESS as belonging to these groups, and to explore whether the slopes are similar or different among them. In the end, this model will show whether the items used to build the latent factor capturing the citizen-based measure of democracy “work” comparably in the two groups of countries, providing a way of testing their equivalence.

To do so, we add to (1) an interaction term, as it is, in the end, a linear model for the observed items y_{ik} . Including an interaction term between the latent factor ϕ_i and the group of country where the respondent lives, that is a dummy variable $east_i$ distinguishing between the two groups ($east_i = 0$, non post-communist; $east_i = 1$, post-communist), allows finding the differences in the slopes (i.e. the associations between the items and the latent factor) for the two groups of countries. Therefore, the model is as follows:

$$y_{ik} \sim N(\beta_{k0} + \beta_{k1}\phi_i + \beta_{k2}east_i + \beta_{k3}\phi_i east_i, \omega_k) \quad (7)$$

In this model, the priors for the β s are as follows: $(\beta_{k0}, \beta_{k1}, \beta_{k2}, \beta_{k3})' \sim N(0, 100)$; while $\omega_k \sim \text{inverse-Gamma}(0.01, 0.01)$.

With this model we are therefore able to estimate the intercepts and slopes for the two groups of countries. In fact, if $east_i = 0$, equation (7) becomes:

$$y_{ik} \sim N(\beta_{k0} + \beta_{k1}\phi_i + \beta_{k2} \times 0 + \beta_{k3}\phi_i \times 0, \omega_k), \quad (8)$$

$$y_{ik} \sim N(\beta_{k0} + \beta_{k1}\phi_i, \omega_k) \quad (9)$$

Instead, if $east_i = 1$, equation (7) becomes:

$$y_{ik} \sim N(\beta_{k0} + \beta_{k1}\phi_i + \beta_{k2} \times 1 + \beta_{k3}\phi_i \times 1, \omega_k), \quad (10)$$

$$y_{ik} \sim N(\beta_{k0} + \beta_{k1}\phi_i + \beta_{k2} + \beta_{k3}\phi_i, \omega_k), \quad (11)$$

$$y_{ik} \sim N((\beta_{k0} + \beta_{k2}) + \phi_i(\beta_{k1} + \beta_{k3}), \omega_k) \quad (12)$$

Therefore, for the group of non post-communist countries, the intercepts are β_{k0} while the slopes are β_{k1} . For the group of post-communist countries the intercepts are $(\beta_{k0} + \beta_{k2})$, while the

slopes are $(\beta_{k1} + \beta_{k3})$. As this model is estimated using the Bayesian framework, we also obtain the uncertainties for the intercepts and slopes of the two groups.

Eventually, as for the model in used in the article, we include in the model the country random-effect as in equation (2), using the same priors. As for the model illustrated in the previous section, this one as well was estimated using 10% of the observations from each country. In sum, such model is a simple, yet efficient, way of exploring how items underlying a latent trait might be similar or different among groups of respondents, also incorporating information about them (e.g. country), so to provide at least a partial indication regarding the possible differences in the associations between the items and the latent trait.

The results are reported in Table C1. The results indicate that the slopes of the items for the two groups of countries are different from each other. The overall pattern is that the items for the group of post-communist countries have generally stronger associations with the latent trait measuring how democracy is evaluated by citizens. Nevertheless, the differences in the strength of the associations between items and latent trait between post-communist and western countries are small in magnitude. For four items (equality before the law; government explains; reduction of income differences; and poverty protection), the differences are not distinguishable from zero. Instead, three items (free and fair elections; free opposition; and free media) present remarkably stronger associations with the latent trait, indicating that for the respondents living in these countries the three aspects are crucial to evaluate democracy compared to the respondents living in western European countries. In the end, the analysis shows that the latent construct is similar for post-communist and non-post communist countries, with some differences for a limited number of items.

Table C1: Estimates of the parameters measuring the evaluation of democracy, posterior medians and 95% credible intervals, using two groups of countries. Bayesian factor analysis with country random-effects.

	Non post-communist			Post-communist			r^2	
	β_0	β_1	β_2	β_3	$\beta_0 + \beta_2$	$\beta_1 + \beta_3$		ω
Equality before the law	6.013 [5.668; 6.344]	2.138 [2.046; 2.234]	-2.439 [-3.250; -1.590]	-0.088 [-0.260; 0.091]	3.575 [3.080; 4.099]	2.048 [1.916; 2.189]	2.055 [2.006; 2.107]	0.450 [0.349; 0.534]
Electoral punishment	6.187 [5.908; 6.457]	1.699 [1.606; 1.801]	-1.464 [-2.227; -0.659]	0.453 [0.271; 0.641]	4.725 [4.208; 5.281]	2.153 [2.004; 2.306]	2.272 [2.218; 2.327]	0.380 [0.315; 0.424]
Government explains	5.265 [4.925; 5.577]	2.104 [2.026; 2.192]	-1.422 [-2.253; -0.516]	0.157 [-0.002; 0.310]	3.844 [3.315; 4.419]	2.259 [2.135; 2.386]	1.679 [1.636; 1.725]	0.589 [0.502; 0.642]
Reliable information	6.348 [6.129; 6.552]	1.309 [1.228; 1.396]	-1.025 [-1.705; -0.316]	0.657 [0.494; 0.820]	5.321 [4.836; 5.824]	1.965 [1.838; 2.101]	1.942 [1.896; 1.988]	0.366 [0.310; 0.401]
Referendum	5.329 [5.009; 5.636]	1.943 [1.843; 2.052]	-0.958 [-1.797; -0.088]	0.291 [0.099; 0.478]	4.372 [3.830; 4.942]	2.235 [2.084; 2.391]	2.330 [2.276; 2.386]	0.426 [0.376; 0.451]
Voters discuss	6.727 [6.575; 6.876]	0.782 [0.692; 0.872]	-0.496 [-0.979; 0.010]	0.654 [0.493; 0.820]	6.235 [5.870; 6.611]	1.435 [1.303; 1.577]	2.222 [2.171; 2.271]	0.165 [0.145; 0.179]
Free and fair elections	8.050 [7.866; 8.224]	1.044 [0.962; 1.129]	-2.377 [-3.102; -1.601]	1.365 [1.197; 1.529]	5.674 [5.104; 6.276]	2.407 [2.270; 2.555]	2.036 [1.987; 2.084]	0.286 [0.202; 0.364]
Party alternatives	5.859 [5.635; 6.071]	1.343 [1.258; 1.432]	-0.696 [-1.357; -0.000]	0.600 [0.436; 0.759]	5.160 [4.693; 5.653]	1.942 [1.811; 2.080]	2.006 [1.959; 2.055]	0.363 [0.320; 0.384]
Free opposition	7.951 [7.809; 8.091]	0.766 [0.684; 0.848]	-1.345 [-1.925; -0.726]	1.182 [1.026; 1.340]	6.608 [6.141; 7.108]	1.947 [1.820; 2.081]	1.991 [1.945; 2.038]	0.229 [0.175; 0.273]
Minorities rights	6.496 [6.253; 6.733]	1.474 [1.387; 1.565]	-0.553 [-1.199; 0.125]	0.257 [0.098; 0.425]	5.946 [5.522; 6.388]	1.733 [1.600; 1.870]	2.052 [2.007; 2.101]	0.362 [0.327; 0.379]
Account to governments	5.825 [5.650; 5.994]	0.980 [0.892; 1.068]	-0.579 [-1.046; -0.092]	0.303 [0.142; 0.461]	5.247 [4.918; 5.583]	1.282 [1.153; 1.416]	2.130 [2.081; 2.179]	0.203 [0.177; 0.219]
Free media	7.881 [7.725; 8.040]	0.894 [0.812; 0.980]	-1.545 [-2.188; -0.864]	1.237 [1.074; 1.398]	6.338 [5.831; 6.875]	2.131 [1.994; 2.273]	2.008 [1.962; 2.056]	0.263 [0.201; 0.314]
Reduction income differences	4.789 [4.469; 5.088]	1.969 [1.890; 2.054]	-1.702 [-2.468; -0.884]	0.027 [-0.127; 0.181]	3.087 [2.608; 3.594]	1.995 [1.874; 2.121]	1.753 [1.708; 1.800]	0.516 [0.424; 0.583]
Poverty protection	4.916 [4.558; 5.247]	2.178 [2.096; 2.265]	-2.075 [-2.894; -1.210]	-0.123 [-0.272; 0.035]	2.844 [2.359; 3.363]	2.054 [1.937; 2.180]	1.721 [1.674; 1.767]	0.542 [0.436; 0.622]
Random-effects								
$\sigma_\phi^{[2]}$	0.879 [0.854; 0.901]							
$\sigma_\theta^{[2]}$	0.519 [0.403; 0.704]							
Deviance	231974							

Note: based on 5000 MCMC draws. Estimates are posterior medians. In square brackets the 95% credible intervals are reported. In round brackets the factor loadings are reported. Based on a randomly drawn subsample ($n = 3918$, 10% of respondents from each of the 29 countries).

D. Models discussed in the “Correlates and consequences” section

Table D1: *Correlates of the citizen-based measure of democracy built using 14 items. Multilevel models estimates.*

	(1)	(2)	(3)
Intercept	-0.440*** (0.104)	-1.925** (0.671)	-1.306*** (0.083)
Woman	-0.049*** (0.008)	-0.051*** (0.008)	-0.049*** (0.008)
Education	-0.008*** (0.001)	-0.008*** (0.001)	-0.008*** (0.001)
Age	0.001 (0.002)	0.002 (0.002)	0.001 (0.002)
Age-sq./100	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)
In paid work	-0.058*** (0.010)	-0.052*** (0.010)	-0.058*** (0.010)
Life satisfaction	0.052*** (0.002)	0.052*** (0.002)	0.052*** (0.002)
Trust in others	0.039*** (0.002)	0.039*** (0.002)	0.039*** (0.002)
Feeling about income	0.046*** (0.006)	0.048*** (0.006)	0.046*** (0.006)
Ideology	0.030*** (0.002)	0.029*** (0.002)	0.030*** (0.002)
Political interest	-0.044*** (0.005)	-0.044*** (0.005)	-0.044*** (0.005)
Electoral loser (r.c.):			
Electoral winner	0.148*** (0.010)	0.147*** (0.010)	0.148*** (0.010)
DK	0.033** (0.010)	0.042*** (0.010)	0.033** (0.010)
Post-communist country	-0.643*** (0.146)		
Economic Performance Index		0.015 (0.008)	
Government Effectiveness Index			0.578*** (0.055)
<i>Country random-effects</i>			
Var.	0.149	0.208	0.050
BIC	77780	76097	77751
N	35157	34609	35157

Note: respondents nested in 29 countries. Sig.: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Maximum likelihood estimates, standard errors in parentheses. The model including the Economic Performance Index excludes Kosovo due to unavailability of the macro-economic indicators to build it.

Table D2: Correlates of the SWD item. Multilevel models estimates.

	(1)	(2)	(3)
Intercept	-1.065*** (0.085)	-2.509*** (0.409)	-1.588*** (0.079)
Woman	-0.032*** (0.009)	-0.033*** (0.009)	-0.032*** (0.009)
Education	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)
Age	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)
Age-sq./100	-0.000 (0.002)	-0.000 (0.002)	-0.000 (0.002)
In paid work	-0.042*** (0.011)	-0.038*** (0.011)	-0.042*** (0.011)
Life satisfaction	0.097*** (0.002)	0.098*** (0.002)	0.097*** (0.002)
Trust in others	0.064*** (0.002)	0.064*** (0.002)	0.064*** (0.002)
Feeling about income	0.036*** (0.006)	0.039*** (0.006)	0.036*** (0.006)
Ideology	0.040*** (0.002)	0.039*** (0.002)	0.040*** (0.002)
Political interest	-0.050*** (0.005)	-0.050*** (0.005)	-0.050*** (0.005)
Electoral loser (r.c.):			
Electoral winner	0.246*** (0.011)	0.244*** (0.011)	0.246*** (0.011)
DK	0.070*** (0.011)	0.075*** (0.011)	0.070*** (0.011)
Post-communist country	-0.374*** (0.107)		
Economic Performance Index		0.016** (0.005)	
Government Effectiveness Index			0.356*** (0.048)
<i>Country random-effects</i>			
Var.	0.081	0.076	0.039
BIC	83857	82217	83839
N	34991	34449	34991

Note: respondents nested in 29 countries. The SWD item is standardized to allow comparison with the ESS citizen-based measure of democracy. Sig.: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Maximum likelihood estimates, standard errors in parentheses. The model including the Economic Performance Index excludes Kosovo due to unavailability of the macro-economic indicators to build it.

Table D3: Comparison of the effects of the ESS citizen-based measure of democracy and the SWD item on turnout and participation in demonstrations. Logistic multilevel models estimates.

	Turnout	Turnout	Demonstr.	Demonstr.
Intercept	-0.427*	-0.375	-0.804**	-0.818**
	(0.195)	(0.196)	(0.267)	(0.269)
ESS measure	0.108***		-0.234***	
	(0.020)		(0.028)	
SWD		0.101***		-0.156***
		(0.018)		(0.025)
Woman	0.163***	0.163***	-0.048	-0.037
	(0.030)	(0.030)	(0.043)	(0.043)
Education	0.054***	0.053***	0.054***	0.056***
	(0.005)	(0.005)	(0.006)	(0.006)
Age	0.043***	0.042***	-0.022*	-0.021*
	(0.006)	(0.006)	(0.009)	(0.009)
Age-sq./100	-0.012	-0.012	0.006	0.005
	(0.007)	(0.007)	(0.010)	(0.010)
In paid work	0.205***	0.205***	0.156**	0.160**
	(0.036)	(0.037)	(0.052)	(0.052)
Life satisfaction	0.061***	0.055***	-0.001	0.002
	(0.007)	(0.008)	(0.011)	(0.011)
Trust in others	0.032***	0.030***	0.063***	0.064***
	(0.007)	(0.007)	(0.010)	(0.010)
Feeling about income	0.099***	0.103***	-0.048	-0.052
	(0.021)	(0.021)	(0.029)	(0.029)
Ideology	0.027***	0.025***	-0.137***	-0.138***
	(0.007)	(0.007)	(0.009)	(0.009)
Political interest	-0.601***	-0.598***	-0.555***	-0.554***
	(0.019)	(0.019)	(0.026)	(0.026)
<i>Country random-effects</i>				
Var.	0.230	0.234	0.512	0.523
BIC	28826	28674	17054	17052
N	33566	33413	35086	34920

Note: respondents nested in 29 countries. The SWD item is standardized to allow comparison with the ESS citizen-based measure of democracy. Sig.: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Maximum likelihood estimates, coefficients are log-odds, standard errors in parentheses.

E. Trace plots

Figure E1: Trace plots of the β_{k0} parameters.

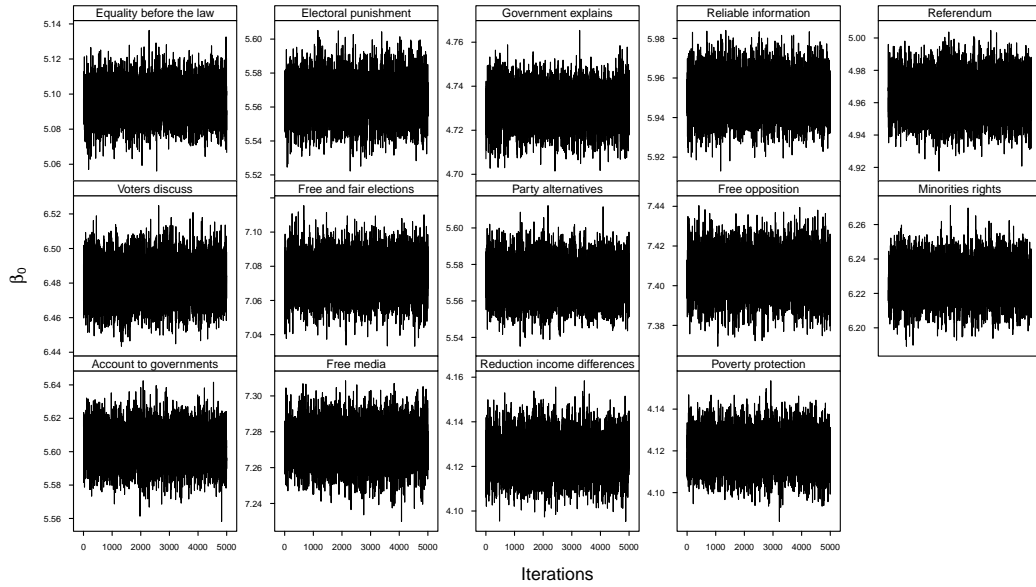


Figure E2: Trace plots of the β_{k1} parameters.

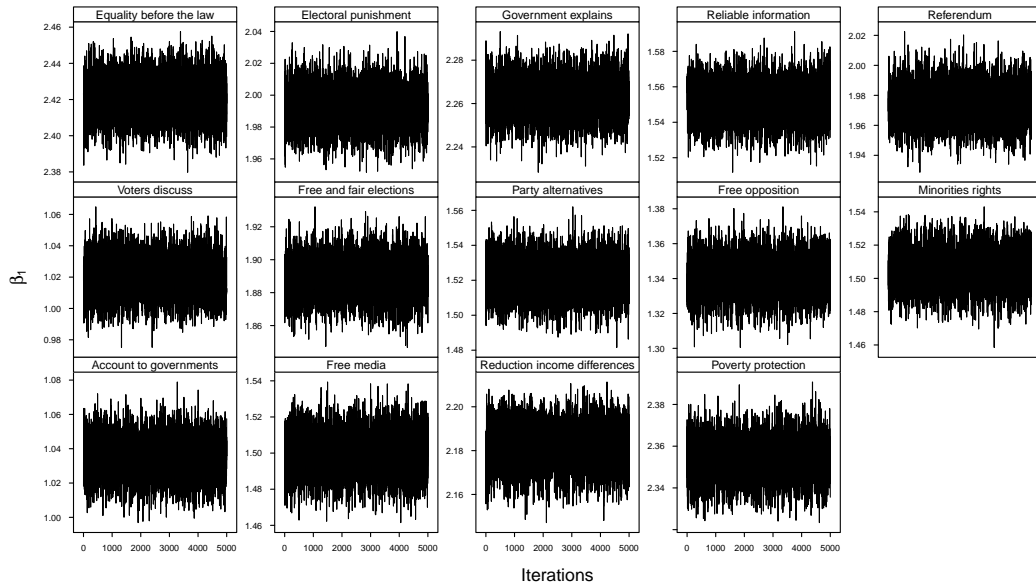


Figure E3: Trace plots of the ω_k parameters.

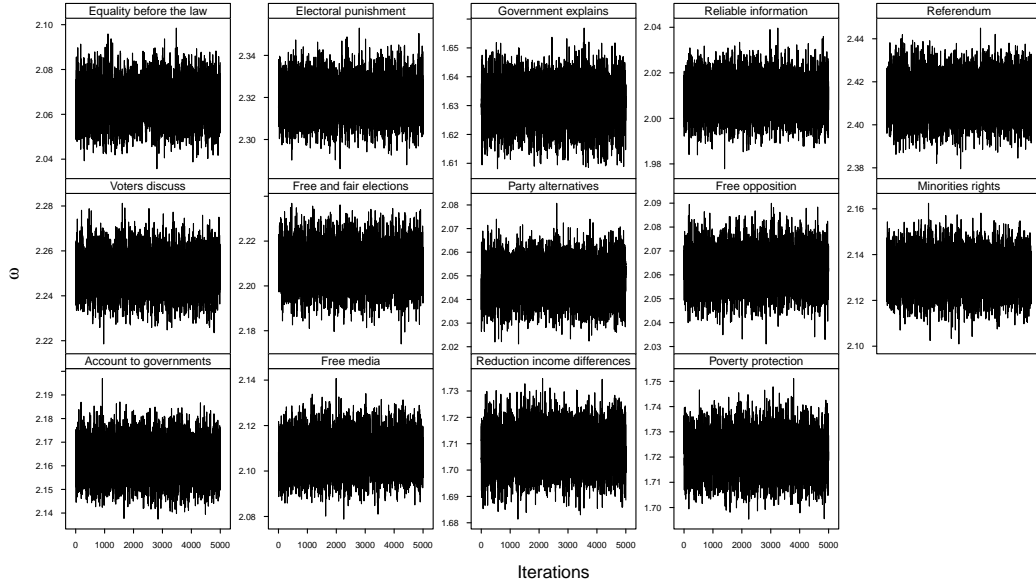


Figure E4: Trace plots of ϕ_i of the highest score, 10 random scores, and the lowest score.

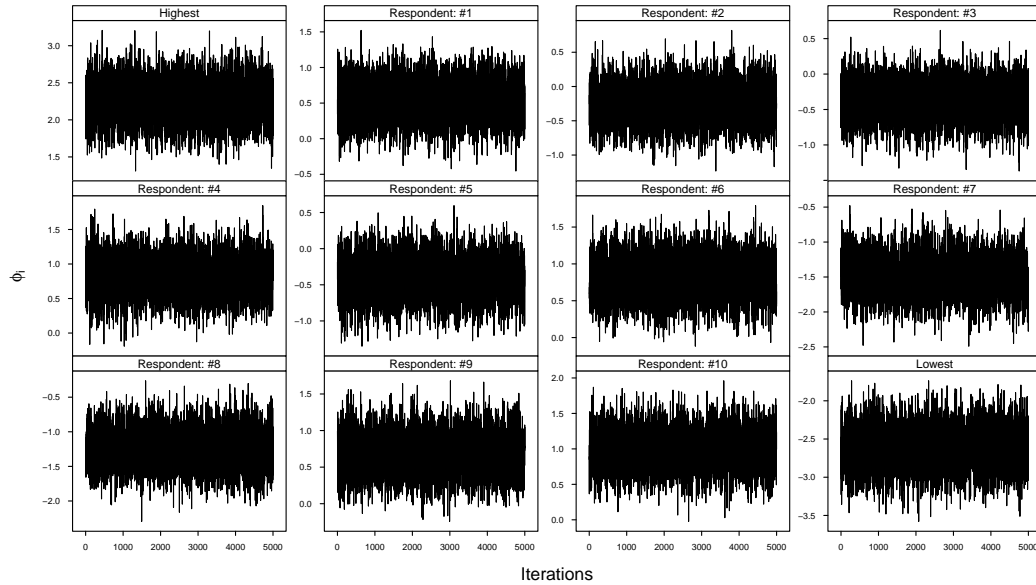


Figure E5: Trace plots of θ_k .

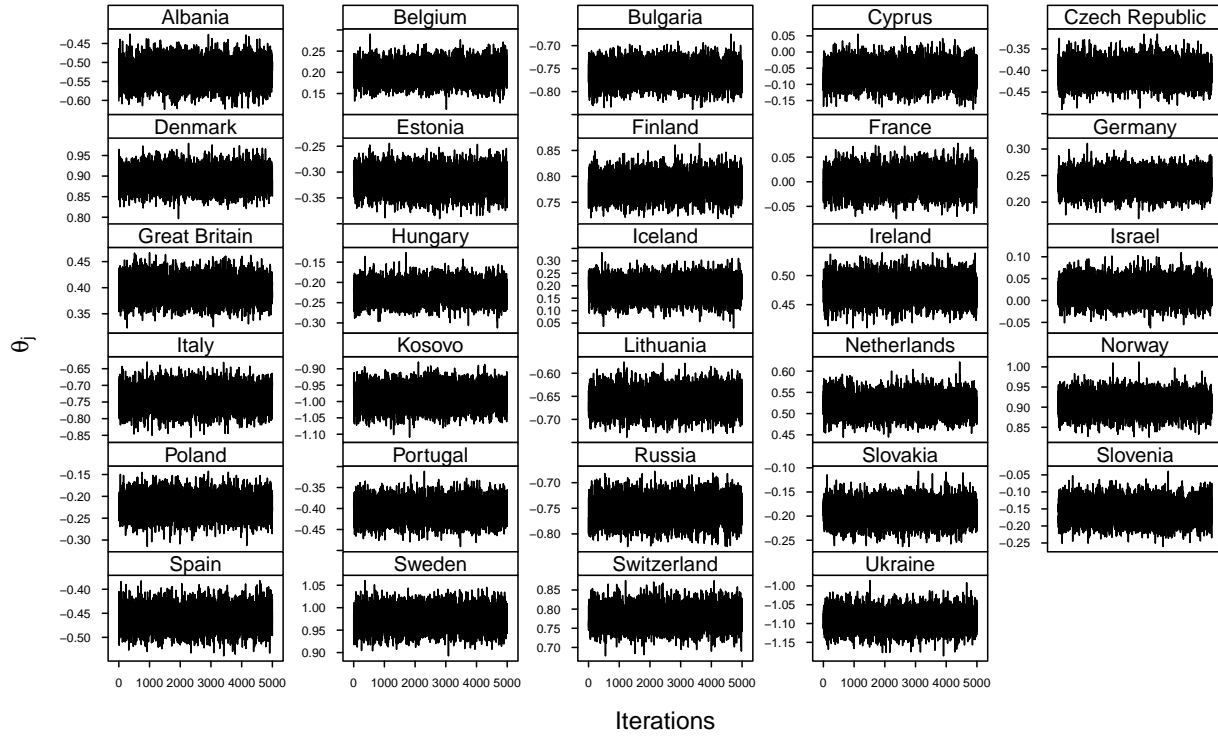


Figure E6: Trace plots of σ_ϕ and σ_θ .

