

Technical Report: Trust Scales and Hierarchies: A Rasch Analysis of Commonly Used Political Trust Survey Measures.

Final Report for Rasch Paper Analysis - MIRT and eRm Results

Item Response Theory and the Benefits of the Rasch Scale

Item Response Theory (IRT) models are determined in light of item difficulty parameters that measure how hard or easy a specific item is to endorse. In our case, how hard or easy an institution is to trust (its perceived trustworthiness). They also model item discrimination/differentiation, that is, how much a particular item (institution) is related to the latent scale; in other words, how heavy a role it plays in determining positioning of individuals on the latent scale. Overall, item response theory models assess the likelihood of particular response as a function of a person's positioning on the latent scale and the survey question/item's positioning on that same latent scale (van der Linden, 2017. Various constraints such as equal discrimination and particular response patterns can also be specified depending on the model (Reise, 2014).

Our analysis builds on the works of Z&N 2017 to assess whether commonly used political trust items also meet the stricter demands of the Rasch model. The Rasch model differs from Mokken scale analysis in that it specifies a number of a-priori criteria which scale items and response patterns must adhere to, in order to meet the demands of specific objectivity. The latter assumption implies that the rank of item difficulty,¹ should be the same for respondents regardless of their ability on the latent construct. Likewise, the rank of a person's ability on the latent construct should be the same regardless of the item difficulty/location (Andrich, 1988, p. 43).

In the context of the measurement of political trust, specific objectivity implies that the relative rank of the trustworthiness of an institution (item location) should be independent of the respondents and the respondents' placement on the political trust scale.² Reversely, an individuals' position along the latent political trust scale should be the same regardless of the trustworthiness ranking of a set of institutions. A political trust scale which does not have the same relative ranking of the trustworthiness of the institutions used to create the scale across score groups/ the ability continuum cannot be interpreted in a consistent manner. It loses any substantive meaning it might have along different points on our scale.

Moreover, the Rasch model, differs from the Mokken Monotone Homogeneity Model (aka the 2PL model in the IRT literature) in that it constrains all items used on a scale to differentiate equally well between response probabilities. This is different from the concept of item location/difficulty. All IRT models including the Mokken and Rasch account for diverging item location along a latent continuum. In so doing, they model the difficulty that a particular question/item may pose to the respondent. The discrimination, hereafter differentiation parameter, on the other hand, is the slope of a response curve for a particular item at its steepest point. It tells us how quickly the response probability on a given item changes as the latent political trust score changes. (Reise, 2014, p. 2) It provides information about the proximity between a given item and the underlying latent scale. In the case of the measurement of political trust, indicates the extent to which a particular institution enables us to differentiate between individuals with high levels of trust and

¹In the context of social sciences and surveys on political trust in different institutions, the concept of item difficulty essentially highlights the fact that institutions inspire a different level of trustworthiness in respondents. Some types of institutions are easier to trust than others.

²That is, regardless of their latent levels of political trust, respondents probed about trust in various institutions should rank the trustworthiness of those institutions in a similar way.

those with low levels of political trust. By constraining all discrimination parameters to equal 1, the Rasch model, specifies a-priori the sufficiency of the sum-score for item and person location on the latent-scale. One does not need to account for an unequal weight of a particular item on the latent scale when using a score of responses for measurement purposes (see (Muraki, 1990, p. 67) for more on the impact of unequal discrimination).

Methods

As a starting-point for our analyses, we first assess whether trust in the institutions inquired about constitute a scale. Using non-parametric Mokken scaling we provide the overall scalability coefficients (H-score) of the institutions in each country. The coefficients and their corresponding Z-test enable us to determine if the institutions in our scale “constitute a homogeneous set of indicators of the same latent trait”, in this case, political trust (van Schuur, 2003, p. 149).

To assess whether commonly used political trust measures meet the demands of the Rasch model, we examine the global fit of the data to various polytomous extensions of this model. In particular we assess the fit of the data to the constraints of the Rating Scale Model (RSM) and the Partial Credit Model (PCM). Both models are extensions of the Rasch model for polytomous data. (Andrich, 2016; Masters, 2016) The RSM assumes a predetermined response structure (i.e. Likert Scales common in attitudinal surveys) and imposes equal category threshold parameters across all items. The PCM, on the other hand, remains agnostic about the number of categories per item and provides individual threshold estimates for each item/question (Masters, 2016). For our purposes the RSM model is most appropriate, however, when response categories are sparse or irregular, the PCM can also be used to relax the constraint of equal item threshold parameters.

We rely on two procedures to investigate the fit of the data to the a-priori specification of the Rasch model. Given the large sample of countries we first assess the disparity between the model and the data using goodness of fit indices; an approach which stems primarily from the IRT literature. We use this approach as a filter to further investigate countries in which the demands of the Rasch model are likely to be met. In line with the recommendations of Maydeu-Olivares & Joe, we rely on the M2-statistic, the M2 based RMSEA, the TLI and the CFI to assess approximate fit of the models (2014). Taken together, these values indicate whether a Rasch or Rasch-like model is likely to have generated the responses in the surveys used throughout this analysis. We calculate these fit indices using the mirt package which fits both unidimensional and multidimensional IRT models using maximum likelihood (ML). (P. Chalmers et al., 2015) All analyses used the RSM unidimensional model.

While model checking under the IRT framework primarily assesses whether the model fits the data, it does not provide evidence that the a-priori demands of the Rasch model have been met. Investigation of fit under the Rasch framework is primarily focused on evaluating if the a-priori demands of the Rasch-model are met. The data and response patterns must fit the model in order to meet the demands of specific objectivity. To test these assumptions we rely on the Andersen Likelihood Ratio test as implemented in the R package eRm which employs conditional maximum likelihood (CML) to estimate model parameters.³ (Patrick Mair, Hatzinger, Maier, Rusch, & Mair, 2018) The Andersen LR test is commonly used in Rasch Analysis as it is sensitive to violations of double monotonicity (parallel item response functions) that may be due to unequal discrimination parameters. It is also useful in testing violations of the sufficiency of sum-score assumption (Meijer, Sijtsma, & Smid, 1990). The test builds on the demands of sub-scale homogeneity and assesses the equality of item location parameters across sub-samples (P. Mair, 2018). To do so, the median or mean of the raw scores on all survey items was used as a cut-off criteria, dividing the respective samples in groups of high trusters and low-trusters. The item location parameters in both sub-samples were then compared to check for important deviations. With the exception of the WVS sample used in the original article, we present results of the Andersen LR test in instances in which global fit indices suggest a close or adequate fit between the data and the model. In the case of the WVS, results from the Andersen test are provided for all countries analyzed.

³The CML estimates and Andersen LR test most closely align with the measurement philosophy of the Rasch model (see Von Davier, 2016 in Win der Linden and Mair and Hatzinger, 2007).

Data and Sample Cuts

We analyze commonly used political trust survey items in 7 cross-national surveys, 161 country-surveys, and 119 unique countries (see appendix Table 25 for a full list). The first analysis focuses on replicating the results of Z&N 2017 from the 6th round of the World Values Survey using the RSM and the PCM. In so doing, we apply the same sample cuts for consistency. The final sample provides an overview of trust across 23 advanced democracies around the globe. As an extension of this analysis, we investigate the fit of respondents' trust in various institutions from seven other cross-national surveys, namely Round 6 of the Afro barometer survey, Rounds 4 of the Arab Barometer survey, the Latino-Barometer collected between 2016 and 2017, the 8th Round of the European Social Survey, Rounds 3 and 4 of the Asian Barometer survey, the 2nd round of the South Asian Barometer, and the Eurobarometer 87.3 collected in 2017. Together these surveys provide a thorough picture of political trust across South and Central America, Africa, Europe, Asia, and 7 countries of the MENA region over the years 2010 to 2017.

Our selection of institutions to include on our political trust scales mirrors current approaches used in studies employing survey analysis in the political science literature. Tables 1,5,7,9,11, 13-15, and 19 provide a list of survey items, namely the set of institutions in which respondents expressed trust for each of the datasets included in our model. They also provide the mean values per items across all countries in the specified dataset along with the number of respondents included for each analysis. The items trust in the justice system and in the police were asked in all 161 surveys. Trust in the parliament and political parties were asked in all but 2 and 3 countries respectively. 100 surveys also investigated trust in the national government and in 87 of the 161 surveys trust in the local government was inquired. Trust in the civil service was probed in 77 surveys. The electoral system featured in 65 surveys, and in 56 out of 161 surveys trust in the executive branch (president or prime minister) was probed. Additional institutions investigated the tax system (36 surveys).⁴ The appendix (Table 25) provides a full list of the institutions in each of the 161 surveys kept for this analysis.

For our analysis, all answer patterns were recoded to ensure that the lowest value is equal to 0 and that lower values represent lower levels of political trust. Apart from the ESS which employed 11 response categories from 0 to 10 and the dichotomous responses of the Eurobarometer, all surveys employed a 4-point Likert structure (here recoded such that values range from 0 to 3). We employed list-wide deletion to remove respondents who failed to provide one or more responses (see appendix (Table 25) for the percentage of individuals dropped from each survey and a discussion of missing data in our analysis.)

Results

World Values Survey Round 6: Year (2010 to 2014)

We first present results from our extended replication of Z&N's analysis which employed the fourth round of the World Values Survey in 23 advanced democracies. Table 1 below provides a summary of the sample used for this analysis.

⁴We did not include the item trust in the army/armed forces in any of our scales. Probing for trust in the army could be associated with concepts broader than political trust such as nationalism and patriotism in most instances. This is in line with scaling in many political science studies which rarely use the army item.

Table 1: WVS (2010-2014) Table of Descriptives based on Zmerli and Newton,2017 sample cuts

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
CONF_CIVSERV	0	32125	1.319	0.837	0.005	0	3	3	1	1	0.031	2.331
CONF_COURTS	0	32125	1.516	0.891	0.005	0	3	3	2	2	-0.130	2.264
CONF_GOV	0	32125	1.263	0.871	0.005	0	3	3	1	1	0.167	2.294
CONF_PARL	0	32125	1.151	0.849	0.005	0	3	3	1	1	0.273	2.380
CONF_PARTIES	0	32125	0.983	0.796	0.004	0	3	3	1	1	0.469	2.717
CONF_POLICE	0	32125	1.591	0.881	0.005	0	3	3	2	2	-0.258	2.365

Note:

Item Description of Full Sample used for extended replication of Zmerli & Newton's 2017 WVS (2010-2014) Analysis.

We first present the global fit indices common in the IRT literature. The M2 statistics, RMSEA, TLI and CFI for the unidimensional RSM model are provided in Table 2. It is worth noting that the TLI and CFI values are not always reliable when tables of full-response patterns are sparse. Our findings, are informed by all indices and do not weigh heavily the TLI and CFI values.

Table 2: WVS (2010-2014) Rating Scale Model Global Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
India	196.465	12	0	0.099	0.087	0.111	-0.776	0.000	0.205	0.012
Peru	199.920	12	0	0.116	0.102	0.131	0.873	0.492	0.590	0.018
Mexico	331.858	12	0	0.117	0.106	0.128	0.834	0.337	0.546	0.013
Brazil	299.846	12	0	0.130	0.117	0.142	0.671	0.000	0.498	0.014
Taiwan, Republic of China	244.621	12	0	0.133	0.119	0.148	0.643	0.000	0.597	0.017
Chile	219.670	12	0	0.136	0.120	0.152	0.621	0.000	0.549	0.017
South Africa	804.245	12	0	0.143	0.135	0.151	0.715	0.000	0.611	0.009
Philippines	318.961	12	0	0.146	0.133	0.160	0.422	0.000	0.516	0.018
Spain	300.971	12	0	0.149	0.135	0.164	0.560	0.000	0.477	0.018
Cyprus	312.282	12	0	0.162	0.146	0.177	0.281	0.000	0.568	0.018
Poland	302.199	12	0	0.174	0.157	0.191	0.485	0.000	0.605	0.021
Argentina	358.214	12	0	0.174	0.159	0.190	0.458	0.000	0.512	0.019
Slovenia	392.313	12	0	0.179	0.164	0.194	0.590	0.000	0.615	0.020
Australia	553.898	12	0	0.179	0.167	0.192	0.296	0.000	0.485	0.017
Sweden	381.103	12	0	0.179	0.164	0.195	-0.081	0.000	0.580	0.020
Uruguay	336.469	12	0	0.181	0.164	0.198	0.270	0.000	0.497	0.020
Germany	839.380	12	0	0.191	0.181	0.203	-0.024	0.000	0.547	0.014
Romania	741.546	12	0	0.212	0.199	0.225	0.437	0.000	0.594	0.017
Korea (South)	666.249	12	0	0.214	0.200	0.228	0.236	0.000	0.649	0.016
Estonia	812.649	12	0	0.218	0.205	0.230	-0.183	0.000	0.584	0.015
Netherlands	1012.109	12	0	0.221	0.210	0.233	0.242	0.000	0.645	0.013
United States of America	1360.736	12	0	0.230	0.220	0.240	-0.136	0.000	0.577	0.014
Japan	1666.991	12	0	0.268	0.257	0.279	-0.357	0.000	0.648	0.013

Note:

Fit Indicators of the Rating Scale Model sorted by the M2-based RMSEA

As shown in Table 2, with the exception of India, the institutional trust items do constitute medium to strong Mokken scales across all countries. This replicates the results of Zmerli and Newton (2017). However, the global indicators assessing the closeness of fit between the Rasch RSM and the data strongly suggest that these scales do not fit the Rasch model. The non-significant M2-based p-values in Table 2 indicate a poor fit. Likewise, the RMSEA and their confidence intervals which are all above the widely accepted cut-off of .05 for close fit and .08 for adequate fit also indicate poor fit. The TLI and CFI values which are well below commonly accepted cut-offs of 0.95 to 0.90 depict the same picture. The Rasch Rating Scale Model is unlikely to have generated the observed data. As previously noted these indicators only provide an estimate

of closeness of fit to the data. To test whether the demands of the Rasch model are met we use the Andersen LR Test which assesses sub-scale invariance/homogeneity.

Table 3 below provides the results of the Andersen LR Test conducted in 18 of the 23 countries for which the RSM could be fit. It is worth noting that in South Africa, Uruguay, India, Mexico, and Brazil the RSM model could not be estimated as the minimization algorithm did not converge on a solution.⁵ A condition for this test is that the response pattern for each item meet a number of criteria. Among them is the condition that each item have an equal number of response categories and that variation exists in the response pattern for each sub-sample. For example, in the event that everyone in the low-trusting group answers 0 to the item trust in parliament, that item cannot be used for the Andersen LR test. We also list the items that met these pre-conditions and were kept for the Andersen LR test in table 3.

Table 3: WVS (2010-2014) Andersen Likelihood Ratio Test for Rating Scale Model (RSM)

country	LR	Chi2.df	p.value	Items.kept
Slovenia	3.796	3	0.284	police, courts
Korea (South)	5.988	3	0.112	police, civserv
Poland	6.123	3	0.106	police, courts
Japan	11.543	3	0.009	police, parties
Netherlands	15.746	3	0.001	police, civserv
Sweden	25.546	3	0.000	civserv, courts
Spain	41.980	6	0.000	police, parl, civserv, parties, courts
Argentina	59.883	6	0.000	police, civserv, gov, parties, courts
Chile	54.379	3	0.000	police, parties
Estonia	66.030	4	0.000	police, gov, courts
Australia	127.345	5	0.000	police, parl, civserv, courts
Cyprus	118.860	7	0.000	police, parl, civserv, gov, parties, courts
Germany	187.965	7	0.000	police, parl, civserv, gov, parties, courts
Peru	119.425	5	0.000	police, civserv, gov, courts
Philippines	13783097.215	7	0.000	police, parl, civserv, gov, parties, courts
Romania	133.021	7	0.000	police, parl, civserv, gov, parties, courts
Taiwan, Republic of China	18511187.548	6	0.000	police, civserv, gov, parties, courts
United States of America	123.877	5	0.000	police, civserv, gov, courts

Note:

Andersen Likelihood Ratio Test with Median Split: Location Parameters estimated with CML in eRm package.

These results indicate a common story line. In no country within this sample does the data meet the demands of the Rasch model. Looking at the Andersen LR Test results for the RSM, trust in the police, in parliament, the civil service, the national government, political parties, and in the justice system do not form a scale which meets the demands of the Rasch model. The significant p-values in Table 3 indicate an important difference between item location parameters (the trustworthiness of these institutions) within sub-samples of highly-trusting individuals and others with low-political trust. The non-significant p-values in Slovenia, South Korea, and Poland which seem to indicate a fit of the Rasch model are evaluated only with two-item scales consisting of confidence in the police and the courts in Slovenia and Poland and confidence in the police and the civil service in South Korea. In those countries, these item pairs meet the demands of the Rasch model. However, the automatic removal of four other institutions on our scale due to inappropriate response patterns is strong evidence that a political trust scale which includes both implementing institutions such as the police, the courts and the civil service and representative institutions such as the national parliament, government, and political parties does not meet the demands of the Rasch model.⁶ It is worth noting that

⁵A closer analysis of the item trace lines suggests that in these countries response patterns conditioned on the latent score on certain items were very closely related, making it difficult for the algorithm to converge on a solution of the location parameters.

⁶Failure to estimate the item location parameters in the RSM when response patterns are inappropriate and the removal of certain items from the LR tests makes systematic analysis across countries in our sample more difficult. To be clear, these

in the case of the Philippines and Taiwan, no likelihood value converged.

In Table 4, we relax the constraint of a pre-defined response structure by using the PCM in which item category/threshold parameters are estimated individually. We note that this is not in line with the data collection process which did employ a common response structure as respondents were provided with a choice of 4 responses. However, it is likely that empirically this common structure may not emerge from the data if respondents in a given country never select a particular response category. The PCM enables us to relax the assumption of a common response structure and test the assumptions of a Rasch-type model in all 23 countries.

Table 4: WVS (2010-2014) Andersen Likelihood Ratio Test for Partial Credit Model (PCM)

country	LR	Chi2.df	p.value	Items.kept
Sweden	4.568	5	0.471	civserv, courts
Slovenia	4.589	5	0.468	police, courts
Poland	6.932	5	0.226	police, courts
Korea (South)	9.326	5	0.097	police, civserv
Netherlands	24.013	5	0.000	police, civserv
Japan	40.782	5	0.000	police, parties
Argentina	64.700	14	0.000	police, civserv, gov, parties, courts
Spain	73.684	14	0.000	police, parl, civserv, parties, courts
Chile	58.759	5	0.000	police, parties
Taiwan, Republic of China	81.838	14	0.000	police, civserv, gov, parties, courts
Brazil	79.079	11	0.000	police, civserv, gov, courts
Australia	121.958	11	0.000	police, parl, civserv, courts
Cyprus	119.304	17	0.000	police, parl, civserv, gov, parties, courts
Germany	277.264	17	0.000	police, parl, civserv, gov, parties, courts
Estonia	102.668	8	0.000	police, gov, courts
India	124.487	17	0.000	police, parl, civserv, gov, parties, courts
Mexico	178.168	17	0.000	police, parl, civserv, gov, parties, courts
Peru	139.368	11	0.000	police, civserv, gov, courts
Philippines	226.004	17	0.000	police, parl, civserv, gov, parties, courts
Romania	155.176	17	0.000	police, parl, civserv, gov, parties, courts
United States of America	134.728	11	0.000	police, civserv, gov, courts
Uruguay	160.788	14	0.000	police, parl, civserv, gov, courts
South Africa	234.029	17	0.000	police, parl, civserv, gov, parties, courts

Note:

Andersen Likelihood Ratio Test for PCM with Median Split: Location Parameters estimated with CML in eRm package.

Our findings shown in Table 3 are unchanged. In no country does trust in these 6 institutions generate a scale which meets the demands of the Rasch model. Where we do find non-significant p-values indicating sub-scale invariance of the item parameters across high and low trusters, the scale has been reduced to two-items due to inappropriate response patterns on the other 4 items. In Sweden, confidence in the civil service and the courts meet the demands of the Rasch model. In Slovenia and Poland it is confidence in the police and the courts which does so. And in South Korea confidence in the Police and the Civil Service constitute scales which meet the Rasch demands of specific objectivity. In all these cases, the two-items scale reflect trust in implementing institutions, a divide often seen in the literature. However, commonly used items combining both representative and implementing institutions fail to meet the demands of the Rasch model. Taken together these findings strongly suggest that a 6 item scale does not meet the demands of a unidimensional Rasch model as implemented by the RSM or the PCM.⁷

are not downfalls of this approach, on the contrary we believe they are strengths. In instances when item location parameters cannot be estimated or when the Andersen LR test removes a set of items we can conclude that the scales do not meet the demands of the Rasch model. For these reasons, we do employ CML and the Andersen LR test and present these results in our appendix. This allows us to double-check findings from the ML estimation procedure and their equivalent fit statistics which we present here for the sake of portraying a systematic overview.

⁷In addition we performed a number of robustness checks to assess whether our findings were sensitive to the number of

Extensions

We extend our analysis by using a number of the Barometer Surveys and the European Social Survey. For these extensions we present results from the mirt package which uses ML estimation. We rely on global fit indicators assessing fit between the data and the model to test the assumptions of the Rasch model in country-surveys that closely or adequately fit the Rasch model.

Afrobarometer Survey Round 6: Year (2014 to 2015)

The 6th round of the Afrobarometer was conducted in 36 African countries. In 32 of them respondents were probed for their levels of trust in various state institutions. Here we select 8 of these institutions, namely the presidency, the national parliament, the national electoral commission, the tax office, local governments, the police, the justice system, and the ruling party. Omitted items included trust in the army and in opposition parties. In the case of the former, trust in the army is often associated with nationalism. While it is plausible that in some countries with a history of civil unrest and mutinies individuals may be more skeptical about the army and as a result not attribute blind support to this institution, we kept in line with the common practice of excluding the army from our political trust scale. We removed trust in the opposition party to avoid creating an overly polarized scale which would include both trust in the ruling party and in the opposition party. We believe that a single party item provides enough information about political trust in political parties. Unfortunately no item probed respondents for their trust in the party system. Consequently, we relied on trust in the ruling party as a proxy for respondents confidence in the political parties. Table 5 below provides descriptive statistics of the items which we include on the scale along with the overall list-wide deleted sample size.

Table 5: Afrobarometer (2014-2015) Table of Descriptives for 8 trust items in list-wide deleted sample of 32 countries.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
TRST_COURTS	0	42201	1.611	1.075	0.005	0	3	3	2	2	-0.125	1.753
TRST_LOCGOV	0	42201	1.462	1.071	0.005	0	3	3	1	1	0.048	1.755
TRST_NEC	0	42201	1.535	1.115	0.005	0	3	3	2	2	-0.049	1.649
TRST_PARL	0	42201	1.501	1.088	0.005	0	3	3	1	1	0.002	1.712
TRST_POLICE	0	42201	1.482	1.116	0.005	0	3	3	1	1	0.029	1.644
TRST_PRESIDENT	0	42201	1.681	1.162	0.006	0	3	3	2	3	-0.207	1.572
TRST_RULPART	0	42201	1.446	1.137	0.006	0	3	3	1	0	0.072	1.602
TRST_TAX	0	42201	1.452	1.073	0.005	0	3	3	1	1	0.057	1.750

Note:

Item Description of Afrobarometer Survey Analytical Sample - Pooled sample of 32 countries.

Table 6 provides an overview of the global fit results for the unidimensional Rating Scale Model. These results largely confirm that the data do not adequately fit the Rasch model. The p-value associated with the M2 is lower than .0001 in all cases which indicates a significant difference between the model and the data, the RMSEAs and their confidence intervals fail to reach a value lower than .05 in all countries. Only Togo's RMSEA and its lower 5% confidence interval are close to the adequate-fit cut-off of .08 suggested by (Browne and Cudeck,1993). Nevertheless, even in that case the CFI and TLI values remain low with TLI = .927 and CFI =.848; both values below the commonly accepted cut-off of .95. This strongly indicates that the Rasch model is not a fitting model for this data and consequently its benefits and measurement properties are also not valid for commonly used political trust scales.

categories used and the items included. Dichotomizing the data such that categories 0 and 1 = 0 and 2 and 3 = 1 did not alter our findings. Moreover, eliminating trust in the police, which tended to be the worst fitting item in most countries in the WVS data did not change our findings. The eRm package and Andersen LR test were used to investigate the assumptions of the Rasch model for these robustness checks.

Table 6: Afrobarometer Round 6 (2014-2015) Rating Scale Model Global Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
Togo	200.260	25	0	0.083	0.073	0.094	0.927	0.848	0.673	0.013
Burundi	247.349	25	0	0.093	0.082	0.103	0.810	0.604	0.582	0.015
Gabon	308.043	25	0	0.099	0.089	0.109	0.870	0.730	0.531	0.015
Nigeria	574.243	25	0	0.100	0.093	0.107	0.874	0.737	0.485	0.010
Liberia	346.440	25	0	0.106	0.096	0.116	0.857	0.703	0.539	0.016
Cameroon	324.762	25	0	0.107	0.097	0.118	0.759	0.497	0.512	0.015
Tanzania	773.946	25	0	0.118	0.111	0.125	0.712	0.401	0.572	0.012
Zambia	408.480	25	0	0.123	0.112	0.133	0.754	0.488	0.559	0.015
Namibia	449.385	25	0	0.125	0.115	0.135	0.655	0.281	0.614	0.016
Mozambique	768.755	25	0	0.127	0.119	0.135	0.790	0.562	0.669	0.010
Mali	522.124	25	0	0.130	0.121	0.140	0.670	0.312	0.528	0.015
Madagascar	525.544	25	0	0.131	0.121	0.141	0.660	0.291	0.531	0.015
Tunisia	448.177	25	0	0.133	0.123	0.144	0.592	0.150	0.405	0.016
Niger	511.461	25	0	0.134	0.124	0.144	0.667	0.306	0.626	0.016
Guinea	510.905	25	0	0.134	0.124	0.144	0.762	0.505	0.644	0.013
SÃ£o TomÃ© and PrÃncipe	465.521	25	0	0.136	0.125	0.147	0.684	0.341	0.443	0.018
Cape Verde	489.724	25	0	0.137	0.126	0.147	0.679	0.331	0.538	0.016
Botswana	508.952	25	0	0.137	0.127	0.148	0.521	0.003	0.489	0.016
South Africa	1024.732	25	0	0.139	0.131	0.146	0.660	0.292	0.488	0.011
Lesotho	421.098	25	0	0.140	0.128	0.152	0.430	0.000	0.403	0.016
Senegal	463.889	25	0	0.141	0.130	0.153	0.614	0.196	0.508	0.017
Sudan	575.548	25	0	0.146	0.136	0.156	0.673	0.319	0.561	0.015
Ghana	1192.821	25	0	0.147	0.140	0.154	0.799	0.582	0.634	0.010
Uganda	1110.621	25	0	0.150	0.142	0.157	0.149	0.000	0.434	0.012
Malawi	1252.630	25	0	0.156	0.149	0.164	0.574	0.112	0.453	0.011
Sierra Leone	614.563	25	0	0.157	0.146	0.168	0.541	0.043	0.490	0.017
Zimbabwe	1326.205	25	0	0.162	0.154	0.169	0.676	0.325	0.710	0.009
Algeria	654.146	25	0	0.162	0.152	0.173	0.769	0.518	0.696	0.013
Benin	792.608	25	0	0.167	0.157	0.177	0.629	0.227	0.594	0.014
Kenya	1451.020	25	0	0.171	0.164	0.179	0.175	0.000	0.488	0.012
Mauritius	973.332	25	0	0.187	0.177	0.197	0.543	0.048	0.643	0.016
Cote d'Ivoire	1171.053	25	0	0.207	0.197	0.217	0.365	0.000	0.593	0.015

Note:

Fit Indicators of the Rating Scale Model sorted by the M2-based RMSEA

Latino Barometer Survey: Year (2017)

The Latino Barometer survey 2017 was conducted in 18 South and Central American Countries. For this analysis we assess whether six polytomous items, namely, confidence in the electoral system, the government, the justice system, parliament, political parties, and in the police meet the demands of the Rasch model. Table 7 below provides an overview of descriptive statistics for each of these items in the overall sample.

Table 7: Latino Barometer (2017) Table of Descriptives for 6 trust items in list-wide deleted sample of 18 countries.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
CONF_ELECSYS	0	18675	1.026	0.955	0.007	0	3	3	1	0	0.517	2.228
CONF_GOV	0	18675	0.897	0.921	0.007	0	3	3	1	0	0.703	2.512
CONF_JUSTICE	0	18675	0.934	0.896	0.007	0	3	3	1	0	0.594	2.432
CONF_PARL	0	18675	0.864	0.876	0.006	0	3	3	1	0	0.711	2.645
CONF_PARTIES	0	18675	0.626	0.806	0.006	0	3	3	0	0	1.097	3.363
CONF_POLICE	0	18675	1.142	0.946	0.007	0	3	3	1	1	0.355	2.148

Note:

Item Description of Latino Barometer Survey Analytical Sample - Pooled sample of 18 countries.

As shown in Table 8 below, in no country does the Rasch model closely fit the political trust scale. Looking at the M2 based p-values all of them are significant beyond a cut-off of .0001 indicating a difference between the model and the data. Interestingly, the RMSEA for Colombia, Peru and Chile are well below the cut-off of .05, nevertheless their upper confidence interval at the 95% level is well above .05. Based on a less restrictive cut-off of 0.08 for the RMSEA value, this may indicate adequate fit. However, the CFI values remain below the commonly accepted cut-off of .95 while the TLI values are slightly above it. Overall, this suggests that the Rasch model may fit in these 3 countries and a significant misfit of the Rasch model in the remaining countries. Further analysis of global fit using the Andersen LR test for both the RSM and PCM on this dataset suggested that in no country were the scale sub-sample invariant across high and low trusters. This indicates that the properties of the Rasch model and its benefits cannot be conferred upon political trust scales in South and Central America.

Table 8: Latino Barometer (2017) Rating Scale Model Global Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
Colombia	44.273	12	0	0.048	0.034	0.064	0.978	0.910	0.499	0.018
Peru	45.913	12	0	0.050	0.035	0.066	0.954	0.817	0.447	0.018
Chile	50.099	12	0	0.053	0.038	0.069	0.968	0.872	0.556	0.016
Mexico	67.910	12	0	0.065	0.050	0.081	0.944	0.776	0.491	0.017
Panama	59.794	12	0	0.068	0.051	0.085	0.946	0.784	0.491	0.019
Paraguay	76.387	12	0	0.070	0.055	0.085	0.977	0.908	0.714	0.015
Bolivia	92.310	12	0	0.078	0.064	0.094	0.884	0.537	0.485	0.017
Dominican Rep.	83.269	12	0	0.079	0.064	0.096	0.934	0.737	0.519	0.020
Ecuador	102.189	12	0	0.080	0.066	0.095	0.942	0.769	0.629	0.015
Guatemala	82.941	12	0	0.081	0.065	0.098	0.908	0.633	0.509	0.020
El Salvador	93.290	12	0	0.086	0.070	0.102	0.938	0.752	0.583	0.020
Honduras	121.512	12	0	0.100	0.084	0.116	0.814	0.256	0.360	0.017
Nicaragua	123.008	12	0	0.102	0.086	0.119	0.895	0.579	0.598	0.017
Costa Rica	137.103	12	0	0.106	0.090	0.122	0.719	0.000	0.455	0.018
Brazil	168.998	12	0	0.109	0.094	0.123	0.877	0.507	0.467	0.016
Argentina	196.950	12	0	0.119	0.105	0.134	0.818	0.273	0.412	0.018
Uruguay	291.640	12	0	0.147	0.132	0.161	0.615	0.000	0.502	0.016
Venezuela	808.489	12	0	0.240	0.226	0.254	0.321	0.000	0.514	0.015

Note:

Fit Indicators of the Rating Scale Model sorted by the M2-based RMSEA

Arab Barometer Round 4: Year (2016 to 2017)

We evaluated a political trust scale in seven countries in the MENA region to see if they formed a Rasch-

like scale. The institutions included on the scale included the national government, the justice system, parliament, political parties, and the police. Table 9 below provides an overview of descriptive statistics for each of these items.

Table 9: Arab Barometer (2017) Table of Descriptives for 5 trust items in list-wide deleted sample of 7 countries.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
CONF_GOV	0	7378	1.119	1.049	0.012	0	3	3	1	0	0.391	1.867
CONF_JUSTICE	0	7378	1.316	1.058	0.012	0	3	3	1	0	0.163	1.783
CONF_PARL	0	7378	0.843	0.963	0.011	0	3	3	1	0	0.809	2.494
CONF_PARTIES	0	7378	0.580	0.803	0.009	0	3	3	0	0	1.241	3.706
CONF_POLICE	0	7378	1.837	1.065	0.012	0	3	3	2	3	-0.441	1.936

Note:

Item Description of Arab Barometer Survey Analytical Sample - Pooled sample of 7 countries.

Table 10 provides an overview of global fit statistics for the RSM in the model. Surprisingly in Tunisia and Palestine, the Rasch model seems to adequately fit the data. Although the C2 based p-values remain below the .0001 level suggesting poor fit, the RMSEA, its confidence intervals and the TLI and CFI indicate adequate fit when using a relaxed cut-off of ≤ 0.08 for the RMSEA. Taken together this suggests a reasonable fit in Tunisia and perhaps in Palestine as its upper bound confidence interval of the RMSEA (95%) are higher than 0.08. However, to ensure that the demands of the Rasch model are met, it is not enough that the data resemble the predicted values of the Rasch model. Analysis of fit of the data to the demands of the Rasch model (RSM) according to the Andersen LR Test suggests that with the exception of Tunisia, in no other country/territory surveyed in the Arab Barometer do the political trust scales exhibit sub-scale invariance across respondents with high trust and those with low levels of political trust. Moreover, in Palestine the government item is removed from the scale due to inappropriate response patterns. However, the political trust scale in Tunisia consisting of confidence in political parties, in government, in the justice system, and in the police does exhibit sub-scale invariance between respondents with low political trust and those with high political trust. Results from the Andersen LR test of the RSM model yield a non-significant p-value of 0.14. This is further depicted in Figure 1 below as most of the location parameters fall within the confidence intervals along the diagonal line comparing location parameters among a sample above and below median levels of political trust.

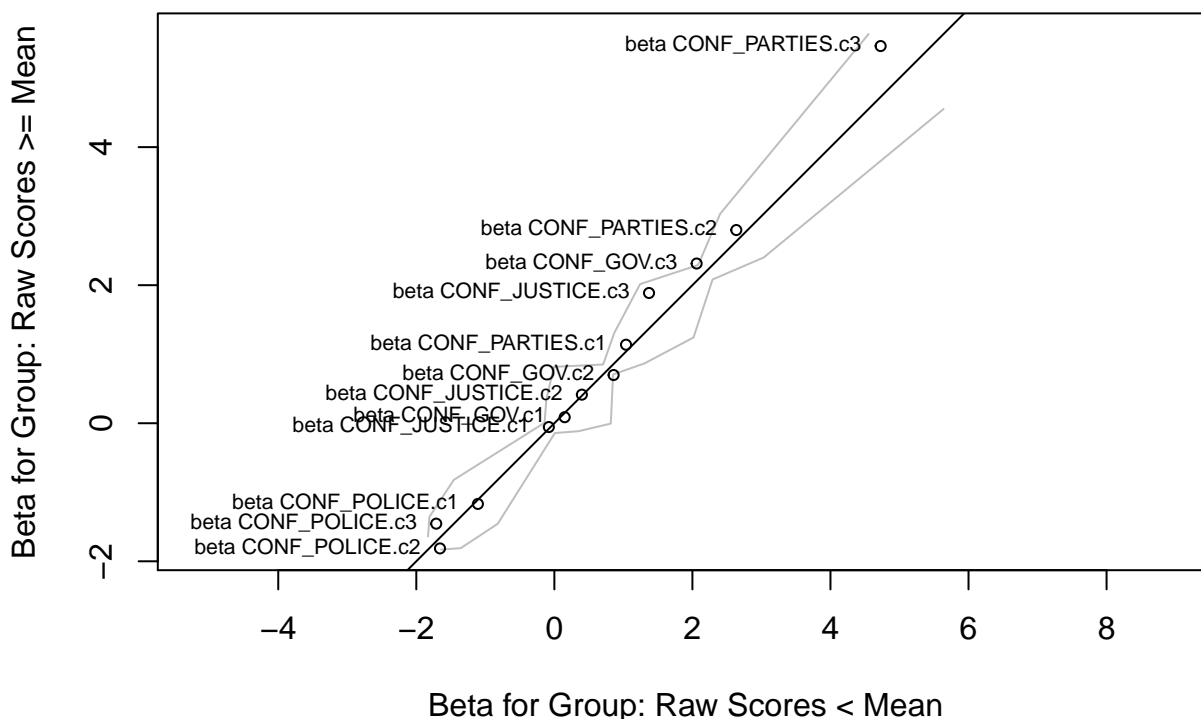
Table 10: Arab Barometer (2016-2017) Rating Scale Model Global Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
Tunisia	86.789	17	0	0.065	0.052	0.079	0.973	0.954	0.456	0.020
Palestine	116.847	17	0	0.076	0.063	0.089	0.982	0.969	0.620	0.015
Morocco	180.120	17	0	0.095	0.083	0.108	0.965	0.941	0.597	0.017
Egypt	266.237	17	0	0.123	0.110	0.137	0.915	0.856	0.465	0.019
Jordan	308.699	17	0	0.126	0.114	0.138	0.833	0.716	0.497	0.020
Algeria	360.807	17	0	0.135	0.123	0.148	0.930	0.882	0.573	0.018
Lebanon	386.650	17	0	0.136	0.124	0.148	0.911	0.848	0.493	0.021

Note:

Fit Indicators of the Rating Scale Model sorted by the C2-based RMSEA

Figure 1: Tunisia Graphical Model Check



NULL

European Social Survey Round 8: Year (2016 to 2017)

The 8th round of the European Social Survey provides responses to trust in 4 political institutions across twenty-three European countries. These institutions are the police, the justice system, the national parliament and political parties. As the ESS provides respondents with 11 response categories (0 to 10), it is particularly difficult to assess response patterns in this survey. Table 11 below provides the number of respondents in the final list-wide deleted sample along with descriptive statistics for each of the 4 items and Table 12 reports the global fit indicators of the Rasch Model (RSM).

Table 11: European Social Survey (ESS 2017) Table of Descriptives for 4 trust items in list-wide deleted sample of 23 countries.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
CONF_JUSTICE	0	42574	5.417	2.606	0.013	0	10	10	6	5	-0.409	2.405
CONF_PARL	0	42574	4.587	2.549	0.012	0	10	10	5	5	-0.164	2.291
CONF_PARTIES	0	42574	3.644	2.380	0.012	0	10	10	4	5	0.084	2.201
CONF_POLICE	0	42574	6.392	2.414	0.012	0	10	10	7	8	-0.762	3.150

Note:

Item Description of ESS Analytical Sample - Pooled sample of 23 countries. Each item has 11 categories

Table 12: European Social Survey 8 (2016-2017) Rating Scale Model Global Fit Indicators and Mokken H-values (recoded)

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
Slovenia	210.188	32	0	0.067	0.058	0.075	0.986	0.924	0.585	0.015
Portugal	211.001	32	0	0.068	0.059	0.077	0.976	0.870	0.460	0.018
Hungary	296.339	32	0	0.073	0.066	0.081	0.987	0.930	0.653	0.012
Spain	361.584	32	0	0.075	0.068	0.082	0.980	0.894	0.571	0.013
France	435.940	32	0	0.079	0.072	0.086	0.972	0.852	0.495	0.013
Israel	515.407	32	0	0.079	0.073	0.085	0.973	0.857	0.501	0.012
Ireland	589.563	32	0	0.082	0.076	0.088	0.972	0.850	0.498	0.012
Belgium	411.665	32	0	0.083	0.076	0.090	0.979	0.886	0.584	0.014
Russian Federation	552.964	32	0	0.086	0.080	0.092	0.983	0.911	0.668	0.011
Estonia	564.174	32	0	0.093	0.086	0.099	0.972	0.853	0.579	0.013
Czechia	672.523	32	0	0.095	0.089	0.101	0.979	0.889	0.674	0.011
Poland	504.473	32	0	0.097	0.090	0.104	0.963	0.803	0.519	0.015
Switzerland	461.965	32	0	0.097	0.089	0.105	0.967	0.823	0.546	0.017
Germany	936.207	32	0	0.101	0.095	0.106	0.964	0.808	0.547	0.011
United Kingdom	674.652	32	0	0.103	0.096	0.110	0.963	0.804	0.552	0.014
Italy	946.817	32	0	0.107	0.101	0.112	0.962	0.797	0.578	0.011
Netherlands	642.320	32	0	0.108	0.101	0.116	0.965	0.816	0.597	0.014
Norway	661.095	32	0	0.114	0.106	0.121	0.956	0.766	0.557	0.017
Sweden	655.347	32	0	0.115	0.107	0.122	0.960	0.786	0.578	0.015
Austria	869.732	32	0	0.115	0.109	0.122	0.957	0.773	0.575	0.014
Iceland	434.602	32	0	0.121	0.111	0.131	0.949	0.727	0.567	0.020
Finland	956.160	32	0	0.123	0.116	0.130	0.951	0.739	0.593	0.014
Lithuania	1088.013	32	0	0.128	0.121	0.134	0.953	0.747	0.595	0.012

Note:

Fit Indicators of the RSM sorted by C2-based RMSEA. Mokken Scale Values (Category 10 collapsed to 9 for Mokken Analysis)

The results shown in table 12 above indicate that trust in the justice system, the national parliament, the police and political parties generate strong Mokken scales. However, the Rasch model does not closely fit the data generating process. In no country is the C2-based p-value significant. This indicates a divergence between the data and the Rating Scale Model. Nevertheless, the values of the RMSEA, the TLI and the CFI suggest that in 6 countries the data may adequately fit the Rasch model. In Slovenia, Portugal, Hungary, Spain, France and Israel the RMSEA values are less than .08 with values lower than .08 indicating adequate fit. However, if we were to base our selection criteria on the upper confidence interval at 95%, only Slovenia and Portugal would exhibit adequate fit to the Rasch model. Nevertheless, in these six countries, the TLIs are all above .97 and the CFI values range from .85 to .93 suggesting an acceptable fit. However, a stricter and more commonly accepted TLI and CFI cut-off of values $> .90$ would indicate that only responses in Slovenia and Hungary exhibit adequate fit to the model. Overall, these various fit indices suggest that in most cases it is unlikely that the data generating process resembles the Rasch model. Only in a handful of countries do we find an adequate fit between the data and the model. Yet, as previously stated, we find it important to note that fit indicators do not provide much information about whether the apriori assumptions of the Rasch model are met. Results from the Andersen test, as implemented in eRm revealed that in all but six countries all four items on the scale had inaccurate response patterns, leaving no items for analysis. Of the six countries left, none were close to an acceptable p-value for the Andersen LR test. This puts into question the validity of using items with longer response categories to capture variation across respondents. Analyzing the data against the demands of the Rasch model suggests that combining political trust items with more response category does not necessarily yield better measurement. Rather, it may lead to more violations of the sufficiency of the sum-score for person placement on the latent scale.

Asian Barometer Round 4, Round 3, and South Asian Barometer Round 2

To assess an institutional trust scale in Asia and South Asia, we rely on the third and fourth round of the Asian barometer as well as data from the second round of the South Asian Barometer. We first analyze

responses from the fourth round of the Asian barometer collected between 2014 and 2016 to ensure consistency in the timing of data collection across our analysis. At the time of analysis, data from the 4th round of the Asian Barometer was available for 9 countries: Cambodia, Malaysia, Mongolia, Myanmar, the Philippines, Singapore, South Korea, Taiwan, and Thailand. To allow for a larger coverage of countries we use data from 5 countries in the 3rd round of the Asian barometer conducted between 2010 and 2012. As of writing, five countries were not included in the 4th round of the Asian Barometer survey, namely: Japan, Hong Kong, Mainland China, India and Vietnam. Lastly, we also include data gathered in 2013 across five countries in South Asia for the second round of the South Asian Barometer. These five countries are India, Pakistan, Bangladesh, Sri Lanka and Nepal. With a few exceptions, we assessed the scale properties of a similar range of institutions across these 19 countries. Across countries featured in the 3rd and 4th round of the Asian Barometer, our scales consisted of trust in 9 institutions. They are: the civil service, the courts, local governments, the national government, the national electoral commission, parliament, political parties, the police, and the presidency. Exceptions include Singapore (Round 4) where respondents were not asked about their trust in the local government or in the national electoral commission.⁸ In the 3rd round, respondents in Mainland China were not asked about the National Electoral Commission or the Presidency. In Vietnam (Round 3) trust in the presidency was not included in the questionnaire. In the remaining 5 countries featured in the second round of the South Asian Barometer Trust in the National Electoral Commission was not featured in any of the questionnaires. Where applicable respondents' trust in the Prime Minister was asked instead of Trust in the President. In Pakistan and Nepal, questionnaires did not include trust in local governments. Trust in the National Government was not included in Bangladesh or Nepal. Lastly, the survey in Nepal did not include trust in the Parliament.⁹ Tables 13 to 15 below provide an overview of key descriptive statistics for the list-wide deleted data for the 4th and 3rd rounds of the Asian Barometer as well as for the 2nd round of the South Asian Barometer. As noted, in a few countries the number of survey items does differ. A full breakdown of the number of missing items is provided for each country in the appendix. Furthermore while we provide results from the list-wide deleted sample, the proportion of respondents with missing responses on at least 1 item across these 8 items is substantial, ranging from 4.8% in South Korea to 42.5% in Myanmar.¹⁰

⁸This is due to the fact that Singapore has no elected local governments. There is however, a local administration. Moreover, the elections department is not structured in a way that is independent of the current ruling government.

⁹Respondents were not asked about trust in key institutions such as local government, the national government, and the parliament in Nepal. This is warranted given that national level elections only took place in 2013 and until 2006 Nepal was a de facto Monarchy.

¹⁰Using list-wide deletion poses an important challenge for our analysis. In 84 out of 161 country-surveys more than 10% (between 10% and 49.8%) of respondents are removed from the analytical sample as a result of the procedure. This may lead to an overemphasis of the difference in the quality of the surveys. It also implies that the scales we analyze throughout this paper primarily reflect the properties of institutional trust among those who are willing to respond to these survey questions and/or who know how much trust they have in these institutions. Probing why individuals do not respond or do not know about trust in various institutions is beyond the scope of this paper. Previous research on the topic already indicates that the nature of political trust is not the same in democracies vs. authoritarian regimes. Moreover in certain settings respondents may have good reasons not to respond to survey items which may be sensitive or may put them at risk. While we do not fully investigate these points, we replicate our analysis (with the exception of the Eurobarometer) with 10 datasets in which missing responses have been imputed. The results presented here remain unchanged. We provide the full results in the supplementary materials. The imputation approach we employed makes use of some of the available responses in each country-sample and yields drastically different sample sizes in these countries. However, it does not change the findings presented throughout this paper. Regarding sample size, with the exception of country-surveys in Jordan and Lebanon in the Arab Barometer, only 1 country, Nepal, had upwards of 10% of respondents who did not provide any responses to questions about trust in the institutions we use for these scales. In Jordan and Lebanon, the surveys consisted of 300 Refugees for whom the surveys did not inquire about institutional trust. The highest percentages of completely missing responses were in Nepal (10.1%), Myanmar (6.54%), India (5.33%), and Mozambique (4.46%). Table 1 in the supplementary materials provides an overview of country-surveys in which more than 1% of the sample did not provide any response to the institutional trust items inquired about.

Table 13: Asian Barometer Round 4 (2014 - 2016) Table of Descriptives for 9 trust items in list-wide deleted sample of 9 countries.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
TRST_CIVSERV	0	9475	1.643	0.792	0.008	0	3	3	2	2	-0.173	2.613
TRST_COURTS	0	9475	1.499	0.854	0.009	0	3	3	2	2	-0.035	2.369
TRST_LOCGOV	945	8530	1.607	0.810	0.009	0	3	3	2	2	-0.155	2.548
TRST_NATGOV	0	9475	1.511	0.823	0.008	0	3	3	2	2	-0.041	2.466
TRST_NEC	945	8530	1.575	0.816	0.009	0	3	3	2	2	-0.154	2.525
TRST_PARL	0	9475	1.394	0.857	0.009	0	3	3	1	1	0.017	2.329
TRST_PARTIES	0	9475	1.275	0.828	0.009	0	3	3	1	1	0.172	2.457
TRST_POLICE	0	9475	1.639	0.855	0.009	0	3	3	2	2	-0.214	2.438
TRST_PRES	0	9475	1.648	0.862	0.009	0	3	3	2	2	-0.156	2.374

Note:

Item Description of ASB Round 4 Analytical Sample - Pooled sample of 9 countries. Each item has 4 categories

Table 14: Asian Barometer Round 3 (2010 - 2012) Table of Descriptives for 9 trust items in list-wide deleted sample of 5 countries.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
TRST_CIVSERV	0	7461	1.743	0.736	0.009	0	3	3	2	2	-0.190	2.787
TRST_COURTS	0	7461	1.904	0.749	0.009	0	3	3	2	2	-0.410	3.022
TRST_LOCGOV	0	7461	1.890	0.726	0.008	0	3	3	2	2	-0.308	2.934
TRST_NATGOV	0	7461	1.927	0.923	0.011	0	3	3	2	2	-0.439	2.270
TRST_NEC	2898	4563	1.860	0.720	0.011	0	3	3	2	NA	-0.353	3.080
TRST_PARL	0	7461	1.874	0.932	0.011	0	3	3	2	2	-0.374	2.206
TRST_PARTIES	0	7461	1.803	0.969	0.011	0	3	3	2	2	-0.308	2.075
TRST_POLICE	0	7461	2.005	0.750	0.009	0	3	3	2	2	-0.456	2.983
TRST_PRES	3796	3665	1.475	0.767	0.013	0	3	3	1	NA	0.020	2.625

Note:

Item Description of ASB Round 3 Analytical Sample - Pooled sample of 5 countries. Each item has 4 categories. note that the number of items differs per country with only 7 items in Mainland China and 9 items in Hong Kong, Indonesia and Japan

Table 15: South Asian Barometer Round 2 (2013) Table of Descriptives for 9 trust items in list-wide deleted sample of 5 countries.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
TRST_CIVSERV	0	7520	1.681	0.921	0.011	0	3	3	2	2	-0.285	2.271
TRST_COURTS	0	7520	1.984	0.928	0.011	0	3	3	2	2	-0.625	2.533
TRST_LOCGOV	3315	4205	1.750	0.938	0.014	0	3	3	2	NA	-0.388	2.298
TRST_NATGOV	2259	5261	1.731	0.927	0.013	0	3	3	2	NA	-0.304	2.254
TRST_PARL	1238	6282	1.716	0.937	0.012	0	3	3	2	2	-0.273	2.199
TRST_PARTIES	0	7520	1.316	0.966	0.011	0	3	3	1	2	0.105	1.992
TRST_PM	1238	6282	1.887	0.953	0.012	0	3	3	2	2	-0.532	2.372
TRST_POLICE	0	7520	1.443	1.003	0.012	0	3	3	2	2	-0.058	1.904
TRST_PRES	1021	6499	1.979	0.935	0.012	0	3	3	2	2	-0.625	2.515

Note:

Item Description of South ASB Round 2 Analytical Sample - Pooled sample of 5 countries. Each item has 4 categories. note that the number of items differs per country with only 5 items in Nepal and 9 items in India and Sri Lanka

In tables 16 to 18 below we list the global fit indicators detailing the proximity of fit between the Rating scale model and our data. As in our previous analyses, we note that these measures can only give us an approximation of the closeness of fit between the data and the Rasch RSM, orienting us towards countries in which the apriori assumptions of Rasch measurement can be further assessed. We rely on the M2/C2-based p-value, the RMSEA and its 90% confidence bands, the TLI and the CFI to assess closeness of fit between the data and the model. The results listed in tables 16 to 18 below indicate a poor fit between the data and the Rasch RSM.

Table 16: Asian Barometer Round 4 (2014-2016) Rating Scale Model Global Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
Philippines	200.128	33	0	0.068	0.059	0.077	0.913	0.841	0.419	0.015
Mongolia	202.640	33	0	0.068	0.059	0.077	0.836	0.699	0.331	0.015
Cambodia	209.032	33	0	0.078	0.068	0.089	0.871	0.763	0.507	0.017
Myanmar	324.831	33	0	0.098	0.088	0.107	0.924	0.860	0.741	0.014
Malaysia	398.497	33	0	0.103	0.094	0.113	0.724	0.494	0.516	0.016
Taiwan	724.927	33	0	0.124	0.116	0.132	0.799	0.631	0.480	0.015
Singapore	288.240	18	0	0.126	0.113	0.139	0.729	0.302	0.638	0.018
Korea	816.544	33	0	0.144	0.136	0.153	0.691	0.434	0.459	0.016
Thailand	718.611	33	0	0.147	0.137	0.156	0.674	0.401	0.547	0.016

Note:

Fit Indicators of the Rating Scale Model sorted by the M2-based RMSEA

Table 17: Asian Barometer Round 3 (2010-2012) Rating Scale Model Global Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
Indonesia	204.675	33	0	0.065	0.056	0.073	0.923	0.859	0.528	0.016
Vietnam	220.117	25	0	0.093	0.082	0.105	0.698	0.371	0.587	0.018
Japan	1472.344	33	0	0.163	0.156	0.170	0.486	0.058	0.462	0.015
Hong Kong	1162.373	33	0	0.211	0.200	0.221	-0.131	0.000	0.555	0.020
Mainland China	2783.855	18	0	0.230	0.223	0.238	-0.072	0.000	0.637	0.012

Note:

Fit Indicators of the Rating Scale Model sorted by the M2-based RMSEA

Table 18: South Asian Barometer (2013) Rating Scale Model Global Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	TLI	CFI	scale_H	se
Nepal	149.491	17	0	0.079	0.068	0.091	0.940	0.898	0.372	0.018
Pakistan	941.606	41	0	0.103	0.097	0.109	0.925	0.890	0.393	0.011
Bangladesh	586.914	32	0	0.130	0.121	0.140	0.958	0.936	0.701	0.014
India	2025.006	51	0	0.137	0.132	0.142	0.889	0.842	0.436	0.012
Sri Lanka	1220.934	51	0	0.143	0.136	0.150	0.899	0.857	0.496	0.015

Note:

Fit Indicators of the Rating Scale Model sorted by the M2-based RMSEA

In no country do we find a non-significant difference between the data and the model based on the M2/C2 statistics. Relying on the RMSEA, the TLI and the CFI, the results appear to be more nuanced, but yield

the same conclusions. In the fourth round survey, only the Philippines (RMSEA=.068 [.059 - .077]; TLI = .91; CFI = .84) come close to the established cut-off for adequate fit. However, the CFI value < .90 casts some doubt on this. Analysis fo the 3rd round reveals a similar pattern. In no country does the M2/C2 based p-value indicate a close fit between the data and the model. Only in Indonesia do the values of the RMSEA (.065 [.056 - .073]), TLI (.92) and CFI (.86) come close to the accepted cut-off suggesting adequate fit in these countries. Lastly, analysis of the South Asian Barometer also indicate a similar pattern. Only in Nepal does the institutional trust scale, consisting of trust in the president, the courts, political parties, the civil service and the police, approach values of adequate or reasonable fit based o the RMSEA, TLI and CFI values. However, in Nepal the Andersen LR test assessing the apriori specifications of the Rasch model led to a rejection of the null hypothesis indicating that the data met the demands of sub-scale invariance. In the Philippines and Indonesia, the procedure failed to converge on a solution for the item location estimates among the high trusting sample. This also indicates a misfit between the data and the model.

Eurobarometer 87.3 (2017)

The Eurobarometer 87.3 provides 35 nationally representative surveys with batteries of trust items measured dichotomously. We focus on 7 national institutions: the courts, the police, the national parliament, political parties, the national government, local government and the public administration. Answers were recoded to values 0 and 1 and ranged from 0 (tend not to trust) to 1(tend to trust).Table 19 below provides the number of respondents in the final list-wide deleted sample along with descriptive statistics for each of the 7 items and Table 20 reports the global fit indicators of the Rasch Model (RSM).

Table 19: Eurobarometer 87.3 (2017) Table of Descriptives for 7 trust items in list-wide deleted sample of 35 countries/territories.

var	missing	n	M	SD	SE	min	max	range	median	mode	skew	kurtosis
TRST_COURTS	0	26547	0.530	0.499	0.003	0	1	1	1	1	-0.122	1.015
TRST_LOCGOV	0	26547	0.510	0.500	0.003	0	1	1	1	1	-0.039	1.002
TRST_NATGOV	0	26547	0.404	0.491	0.003	0	1	1	0	0	0.390	1.152
TRST_PARL	0	26547	0.390	0.488	0.003	0	1	1	0	0	0.449	1.202
TRST_POLICE	0	26547	0.694	0.461	0.003	0	1	1	1	1	-0.840	1.706
TRST_POLPART	0	26547	0.230	0.421	0.003	0	1	1	0	0	1.284	2.650
TRST_PUBADMIN	0	26547	0.509	0.500	0.003	0	1	1	1	1	-0.035	1.001

Note:

Item Description of EUB Analytical Sample - Pooled sample of 35 countries. Items are dichotomous

Table 20: Eurobarometer 87.3 (2017) Rasch Model (for dichotomous data) Fit Indicators and Mokken H-values

country	M2	df	p	RMSEA	RMSEA_5	RMSEA_95	SRMSR	TLI	CFI
Albania	136.718	20	0	0.081	0.068	0.094	0.103	0.979	0.980
Spain	135.841	20	0	0.081	0.068	0.094	0.099	0.952	0.954
Croatia	154.034	20	0	0.084	0.072	0.096	0.075	0.952	0.954
Greece	160.400	20	0	0.085	0.073	0.098	0.081	0.903	0.908
Serbia	131.374	20	0	0.086	0.072	0.100	0.073	0.957	0.959
France	136.482	20	0	0.087	0.073	0.101	0.080	0.926	0.930
Hungary	168.934	20	0	0.089	0.076	0.101	0.099	0.971	0.972
Cyprus (Republic)	83.197	20	0	0.090	0.070	0.110	0.084	0.946	0.948
Estonia	133.001	20	0	0.095	0.080	0.110	0.076	0.934	0.937
Lithuania	159.607	20	0	0.095	0.082	0.109	0.093	0.894	0.899
Portugal	196.050	20	0	0.096	0.084	0.108	0.077	0.959	0.961
Montenegro	107.971	20	0	0.100	0.082	0.118	0.163	0.976	0.977
Slovenia	198.112	20	0	0.100	0.088	0.113	0.109	0.926	0.929
Turkey	216.040	20	0	0.104	0.091	0.116	0.102	0.960	0.962
Finland	213.191	20	0	0.105	0.092	0.118	0.091	0.919	0.922
Latvia	186.616	20	0	0.107	0.093	0.122	0.112	0.892	0.897
Poland	215.642	20	0	0.111	0.097	0.124	0.096	0.911	0.915
Luxembourg	101.681	20	0	0.111	0.090	0.132	0.113	0.924	0.928
Sweden	231.951	20	0	0.111	0.098	0.124	0.090	0.904	0.909
Malta	83.046	20	0	0.112	0.088	0.138	0.129	0.961	0.963
Great Britain	179.449	20	0	0.112	0.098	0.128	0.089	0.911	0.916
Makedonia/FYROM	222.725	20	0	0.113	0.100	0.127	0.116	0.947	0.949
Germany West	260.100	20	0	0.116	0.104	0.129	0.095	0.925	0.929
Bulgaria	238.280	20	0	0.117	0.104	0.131	0.122	0.950	0.952
The Netherlands	254.451	20	0	0.118	0.105	0.131	0.108	0.925	0.929
Romania	264.537	20	0	0.119	0.106	0.132	0.094	0.874	0.880
Denmark	256.837	20	0	0.120	0.107	0.133	0.099	0.860	0.866
Italy	265.400	20	0	0.120	0.108	0.133	0.128	0.930	0.933
Northern Ireland	87.571	20	0	0.121	0.096	0.148	0.119	0.943	0.945
Czech Republic	282.561	20	0	0.123	0.110	0.135	0.119	0.833	0.841
Slovakia	288.305	20	0	0.126	0.114	0.139	0.133	0.947	0.949
Austria	307.111	20	0	0.130	0.117	0.143	0.109	0.820	0.829
Belgium	352.474	20	0	0.133	0.121	0.145	0.119	0.871	0.877
Germany East	202.779	20	0	0.137	0.120	0.155	0.107	0.892	0.897
Ireland	347.521	20	0	0.143	0.130	0.156	0.123	0.912	0.916

Note:

Fit Indicators of the Rasch Model sorted by the M2-based RMSEA

As observed in Table 20, the 7-item scale does not indicate a close fit between the observed data and the Rasch model. Using a loose cut-off of ≤ 0.08 for the RMSEA values, no country clearly exhibits close fit. While, in approximately 10 countries the lower-bound confidence interval of the RMSEA fall between 0.07 and 0.08, all upper confidence bands at 95% threshold are well beyond the 0.09. The SRMSR values also suggest misfit between the data and the Rasch model as no country-indicator falls below the commonly accepted value of 0.05 or if we applied the loose RMSEA cut-off of 0.08 for that matter. The M2-based p-value also suggest misfit. Nevertheless, most of the TLI and CFI values, for the most part, suggest acceptable fit between the Rasch model and the observed data with TLI and CFI consistently estimated above 0.90. In fact in 9 countries, TLI and CFI values are above the stricter cut-off of 0.95. While this provides a somewhat

blurry picture, we consider that the observed data are unlikely to have been generated by a Rasch-like process as the indicators do not all point in the same direction.

Table 21: Eurobarometer 87.3 (2017) Rasch Model (for dichotomous data) Andersen Likelihood Ratio Test

country	LR	Chi2.df	p.value	Items.kept
Great Britain	4.483	6	0.612	courts, police, pubadmin, polpart, locgov, natgov, parl
Slovakia	6.554	6	0.364	courts, police, pubadmin, polpart, locgov, natgov, parl
Romania	6.942	6	0.326	courts, police, pubadmin, polpart, locgov, natgov, parl
Lithuania	7.901	6	0.245	courts, police, pubadmin, polpart, locgov, natgov, parl
Northern Ireland	9.514	6	0.147	courts, police, pubadmin, polpart, locgov, natgov, parl
Portugal	12.593	6	0.050	courts, police, pubadmin, polpart, locgov, natgov, parl
Spain	11.719	5	0.039	courts, police, pubadmin, locgov, natgov, parl
Germany East	16.530	6	0.011	courts, police, pubadmin, polpart, locgov, natgov, parl
France	17.917	6	0.006	courts, police, pubadmin, polpart, locgov, natgov, parl
Estonia	20.023	6	0.003	courts, police, pubadmin, polpart, locgov, natgov, parl
Finland	16.819	4	0.002	courts, pubadmin, polpart, natgov, parl
Latvia	20.733	6	0.002	courts, police, pubadmin, polpart, locgov, natgov, parl
Hungary	21.763	6	0.001	courts, police, pubadmin, polpart, locgov, natgov, parl
Malta	22.932	6	0.001	courts, police, pubadmin, polpart, locgov, natgov, parl
Germany West	25.480	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Cyprus (Republic)	26.566	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Greece	23.271	4	0.000	courts, police, pubadmin, locgov, parl
Croatia	28.508	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Sweden	29.229	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Serbia	30.696	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Czech Republic	31.614	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Bulgaria	32.619	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Slovenia	34.320	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Luxembourg	34.852	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Montenegro	36.585	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Poland	42.510	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Turkey	43.768	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Makedonia/FYROM	44.905	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Ireland	50.541	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Albania	50.706	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Denmark	52.399	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
The Netherlands	72.294	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Austria	84.543	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Italy	84.292	5	0.000	courts, police, pubadmin, locgov, natgov, parl
Belgium	113.973	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl

Note:

Andersen Likelihood Ratio Test with Mean Split: Location Parameters estimated with CML in eRm package.

Interestingly enough, in 6 out of 35 countries, the scales indicate sub-sample homogeneity between low and high trusters. In Great Britain, Slovakia, Romania, Lithuania, Northern Ireland and Portugal results from the Andersen LR test are non-significant, well-above the cut-off of 0.05 (see Table 21). In those six countries/territories, the endorsibility (item location/beta coef) of each of the 7 institutions analyzed is the same for groups below the mean level of trust and individuals above that mean. However, the mirt-indicators indicate poor fit of the Rasch model in these same countries. While this suggests a mismatch between the results of the global fit indices and a test of the assumptions of the Rasch-model, it is not necessarily the case. The Rasch model requires the assumption of local independence to be met. While

the Andersen-test is sensitive to violations of double-monotonicity, sufficiency of sum-scores, and in part unidimensionality (depending on the operationalization of the test), it does not necessarily indicate whether the items meet the demands of local stochastic independence. Hence, it is plausible that a scale meet the criteria of the Andersen-LR test and violate the assumption of local independence. In this instance, this seems to be the case. While the Eurobarometer trust scale analyzed suggests sub-sample homogeneity across 6 countries, a non-parametric test of the assumption of local independence (Ponocny, 2011) available for dichotomous data in eRm reveals clear correlations among items. That is, beyond respondents' trust abilities and the item positions of each institution on the scale, certain items probing for trust in different institutions are still related. This implies that in certain cases indicating trust in one institution is indicative of indicating trust in another in ways that are not captured by the estimated Rasch trust scales. In most cases local dependencies emerge between courts and the police, courts and the public administration, public administration and local government, parties and parliament, and national government and parliament. If anything, these dependencies suggest that trust in these set of institutions may be more distinct than the estimated political trust scale. Overall, these findings help explain the mismatch between the mirt-based results and the Andersen LR test and support our conclusions that the data are unlikely to have been generated by a Rasch-like process.

Discussion:

The results presented here provide a clear picture. Commonly used political trust scales do not meet the demands of the Rasch model. With the exception of Tunisia where a scale consisting of trust in political parties, the government, the justice system and the police, no other political trust scale in the countries analyzed throughout this paper met the demands of the Rasch model. When we relax the commonly accepted cut-offs for the fit-indices such that $RMSEA \leq 0.08$, our selection is limited to 21 countries. If we consider the TLI and CFI values with a cut-off of ≥ 0.90 , only 6 of those 21 countries indicate a plausible fit of the Rasch model. They are Colombia and Paraguay (Latino Barometer), Tunisia and Palestine (Arab Barometer), and Slovenia and Hungary from the ESS. Moreover, only in Colombia, Tunisia and Slovenia are the upper 95% confidence bounds of the RMSEA higher than the relaxed cut-off of 0.08. Overall, the Rasch/Rating Scale Model does not seem to fit the data well. Moreover, Graphical model checks, suggests that in the country-surveys in which the RSM or PCM model converged and the mirt-based fit indices suggested adequate fit of the Rasch model, the assumption of sub-scale homogeneity did not hold across groups above and below the median sum score on the scale. In other words, the latent positioning of the trustworthiness of an institution on our scale differed in these different samples. In Colombia, for example, the threshold of "always trusting" the Police, was not comparable for individuals below the median sum score of political trust and those above it. The category essentially loses meaning in a comparative sense.

Results from the Andersen Likelihood Ratio Test based on the Rasch, Rating Scale and Partial Credit Model, suggest that in 6 countries (Slovakia, Romania, Northern Ireland, Turkey, the Czech Republic and Greece) dichotomous scales from the Eurobarometer survey including 7 items are sub-scale homogenous beyond a 0.01 cut-off. Of the polytomous items, only Tunisia surveyed in the Arab Barometer met the demands of the Rasch model as evaluated by the Andersen LR test (double-monotonicity, sufficiency of sum-score). It is worth noting that in an additional 6 countries, some sub-sample homogeneous scales emerge after removal of inappropriate items and also meet this cut-off. However, the removal of these items already challenge the notion that a common set of items can meet the demands of the Rasch model across these countries or surveys.

Lastly, it is particularly telling that of the national political trust scales that either exhibited adequate fit to the Rasch model or met the demands of the Andersen LR test, important local dependencies emerged between the items, violating the assumption of local independence by which responses to a trust survey item should be independent from responses on another item apart from the underlying political trust trait being measured. In Tunisia, for example, important dependencies emerged between confidence in the Parliament and Confidence in Government, the Parliament and the Justice System, as well as between Political Parties and Parliament.

Taken together, our findings provide strong evidence that often used political trust scales consisting of trust in primarily implementing and primarily representative institutions do not meet the measurement assumptions

of the Rasch model. Perhaps, this does not come as a surprise. The Rasch Model imposes strict a-priori conditions which a scale must meet in order to be considered specifically objective. Among them are the assumptions that item ordering remains consistent at different parts of a unidimensional scale and that all differentiation parameters remain equal. For a political trust scale these assumptions mean that the relative ranking of the trustworthiness of institutions within a country must be consistent regardless of one's latent political trust or another trait along which the population can be divided. Perhaps, this is too strict of a constraint.

Moreover, the assumption within Rasch Analysis by which discrimination/differentiation parameters are constrained to be the same (equal to 1) insinuates that every institution used in the creation of the scale should have the same impact on the overall scale. It assumes that institutions such as the police and political parties weigh equally in respondents' attitudes of political trust. This is unlikely to be the case and our results presented here suggest that in most countries, with the exception of Tunisia, this demand is not met.

In most countries, individuals with high levels of trust and those with lower levels of trust do not rank the trustworthiness of political institutions in their country in the same way. This implies that commonly used political trust scales do not have the same institutional hierarchy within countries. They are devoid of interpretation. While we know which institutions make up the scale, a person's placement on that political trust scale does not provide any information as to the institutions she/he is more or less likely to place their trust in.

However, while our analysis shows that in most cases institutional political trust scales do not meet the demands of the Rasch model, our results do indicate some exceptions worth investigating further. First, in a few cases a combination of questions about trust in state institutions can exhibit Rasch-like properties. In the WVS survey, scales constructed based on a subset of items such as trust in the police, trust in the courts, and the civil service did exhibit sub-scale homogeneity in Slovenia, Korea and Poland (see Table 3 above and supplementary materials for a graphical plot). In all three cases, these institutions are what may be considered implementing institutions. Thus, while our analysis suggests that a scale consisting of trust in both implementing and representative institutions does not meet the demands of the Rasch model, it is worth investigating whether a scale consisting of trust in institutions primarily associated with implementation of policies adheres to the demands of the Rasch model. A second point, also based on our analysis of the WVS data, is that in most countries in the survey, the first threshold indicating moving from no trust at all to having a little trust in state institutions also exhibits sub-scale homogeneity. This may indicate that measures of distrust in state institutions may provide better comparative quality within countries. However, these questions will need to be investigated in future research on these topics. What do these findings mean for the measurement of political trust? Political trust scales including trust in implementing and representative institutions do not form Rasch scales, however, they do form medium and strong Mokken scales (Monotone Homogeneity Models). The fact that they do has important implications for measurement. The Mokken Monotone Homogeneity Model is a nonparametric measurement model which, under certain conditions, allows stochastic ordering of groups based on sum-scores. Adherence to the MHM Mokken scale suggests that in most countries a combination of institutional trust items can be used to form a scale with weak stochastic ordering. Along such a scale "a subgroup with total scores in excess of a cut score x_c has a higher mean value of theta than any subgroup scoring below the cut score" (Sijtsma & Molenaar, 2016, p.307).

The combination of these findings provide some clarity about the nature of political trust scales across the globe. Unidimensional political trust scales exhibit partial ordinality and in most cases, their sum scores will provide insights about groups' levels of trust. However, these scales cannot be interpreted substantively across countries or within countries. Individual scores on these scales do not provide any insight as to which institutions may have been endorsed or not. Lastly, our analysis shows that these scales cannot be used with great precision, for example to differentiate individuals with the same sum-scores. Researchers interested in constructing fine-tuned political trust scales with greater measurement precision should instead apply item response theory models with discrimination parameters such as the 2PL model for dichotomous data and the general rating scale model and graded response models for polytomous data. These parametric models are specific cases of the broader nonparametric Mokken scale of MHM and provide item parameters and discrimination parameters. While the use of these models does not apply IIO by which a scale can also

have substantive interpretation, they may be used to account for the variation in differentiation of items on the scale. This in turn allows greater measurement precision in calculating person scores on the latent dimension than sum-scores. In the words of Muraki “when the discriminations of items vary to a great extent, collapsing the category points of a Likert scale without considering their differential effect on the items is not generally recommended” (1990, p. 67). When institutions have a differentiated impact on a political trust scale, accurate measurement of individuals’ trust requires accounting for this differentiation.

Appendix - Supplementary materials

Missing Responses

The Rasch Measurement model and its polytomous extensions such as the Rating Scale Model and Partial Credit Model assume that responses to questions about political trust are a logistic function of a person’s latent levels of trust (θ /ability) and the trustworthiness of an institution (α /location parameter). Our primary goal in this paper is to assess whether this assumption provides an accurate measurement model of political/institutional trust across and within countries. Using list-wide deleted data we show that this is not the case. However, the use of list-wide deletion for this analysis resulted in 54 out of 126 country-samples in which 10% to 42% of respondents were removed. List-wide deletion essentially leads to an analysis of the scalability of institutional trust using samples of individuals who responded to all survey questions and who knew how much trust they placed in political institutions. It is thus, unclear what the scale properties of political trust are in the overall survey sample and in particular among those who did not provide responses to every survey question or who simply did not know how much trust they had.

To our knowledge, imputation methods used to deal with missing responses have advantages and disadvantages for our analysis. While imputing missing responses would enable us to assess the properties of a political trust scale for a fuller sample, it is unclear whether such methods would violate the assumptions at the heart of the Rasch scaling procedure. Imputing responses requires an expectation of the population of individuals who are not likely to respond to a survey question or who do not know how much trust they should place in the institutions inquired about. In our case, we do not believe that this expectation results from a completely random process (Missing Completely at Random) (King, Honaker, Joseph, & Scheve, 2001). Instead, given the wide range of countries analyzed, we suspect that a number of factors, apart from trust itself, are likely to influence the missingness process. First, refusal to respond to an inquiry about trust in an institution is likely to be influenced by: 1. Whether the context in which the survey was undertaken is one in which dissenting opinions can be expressed. + 1a. This may include the national security context, + 1b. or a person’s social context and the individuals around at the time the survey was conducted. Furthermore, individuals who indicate not knowing how much trust they have in a set of institutions could be influenced by the factors above as well as their level of education. 2. Don’t know responses could vary along education levels if education enables individuals to better gauge the trustworthiness of an institution. Or if higher/lower educated individuals are less likely to respond to survey questions for other reasons. Lastly the pattern of missingness could be non-ignorable if individuals who are distrustful of the institutions inquired about are simply less likely to respond to survey questions or more likely to use the category don’t know.

If the process underlying the missingness is external to trust itself, as in points 1 and 2 above, then imputation methods could be used and we can assume that the data is missing almost at random. Remedying the situation would entail imputing missing responses based on the factors we believe are at the heart of the missingness process. However, while employing such a technique would provide more accurate responses, it would also entail a clear violation of the Rasch measurement model by which the only factors that ought to influence individuals’ response patterns is their latent levels of trust and the trustworthiness of the institutions inquired about.

Another approach would be to impute missing responses by conditioning on an estimate of a person’s latent score and the item difficulty parameters. The estimate of the latent score can be calculated for all individuals who provide at least one response by utilizing all available information and response patterns in the dataset, including response patterns with some missing responses. Yet, even this approach would entail the assumption that the data is missing almost at random. It is unclear whether that assumption can be

Table 22: Mean and SD of Global Fit Indices Across Imputed Country-Surveys with Plausible Fit of the Rasch Model

country	survey_wave	M2	M2_SD	df	p	p_SD	RMSEA	RMSEA_SD	RMSEA_5	RMSEA_5SD	RMSEA_95	RMSEA_95SD	TLI	TLI_SD	CFI	CFI_SD	calcul	comp_miss
Colombia	LB_2017	43.783	2.236	12	0	0	0.047	0.002	0.032	0.002	0.062	0.002	0.978	0.001	0.914	0.006	M2	0.000
Chile	LB_2017	50.236	1.591	12	0	0	0.052	0.001	0.037	0.001	0.067	0.001	0.970	0.001	0.879	0.005	M2	1.167
Indonesia	ASB_3	196.210	5.676	33	0	0	0.057	0.001	0.049	0.001	0.065	0.001	0.937	0.002	0.885	0.004	M2	1.677
Tunisia	ARB_4	96.691	8.741	17	0	0	0.063	0.003	0.051	0.003	0.075	0.003	0.975	0.003	0.958	0.005	C2	NA
Nepal	SASB_2	137.756	12.044	17	0	0	0.064	0.003	0.054	0.003	0.074	0.003	0.963	0.004	0.937	0.006	C2	NA
Portugal	ESS_8	203.762	4.050	32	0	0	0.065	0.001	0.057	0.001	0.074	0.001	0.977	0.001	0.879	0.003	C2	NA
Slovenia	ESS_8	217.581	5.737	32	0	0	0.067	0.001	0.058	0.001	0.075	0.001	0.986	0.000	0.924	0.002	C2	NA
Paraguay	LB_2017	78.789	3.608	12	0	0	0.068	0.002	0.054	0.002	0.083	0.002	0.977	0.001	0.909	0.005	M2	0.500
Palestine	ARB_4	116.083	4.558	17	0	0	0.070	0.002	0.058	0.002	0.082	0.002	0.984	0.001	0.972	0.001	C2	NA
Hungary	ESS_8	299.502	6.129	32	0	0	0.072	0.001	0.065	0.001	0.080	0.001	0.987	0.000	0.931	0.002	C2	NA
Spain	ESS_8	373.913	9.617	32	0	0	0.074	0.001	0.067	0.001	0.081	0.001	0.980	0.001	0.894	0.003	C2	NA
Israel	ESS_8	510.728	7.931	32	0	0	0.077	0.001	0.071	0.001	0.083	0.001	0.975	0.000	0.867	0.002	C2	NA
Togo	AB_6	200.785	7.410	25	0	0	0.077	0.002	0.067	0.002	0.087	0.002	0.933	0.003	0.860	0.006	M2	1.333
France	ESS_8	432.969	4.113	32	0	0	0.078	0.000	0.071	0.000	0.084	0.000	0.972	0.000	0.853	0.001	C2	NA
Ireland	ESS_8	597.354	10.621	32	0	0	0.080	0.001	0.075	0.001	0.086	0.001	0.973	0.001	0.856	0.003	C2	NA
Belgium	ESS_8	413.434	3.352	32	0	0	0.082	0.000	0.075	0.000	0.089	0.000	0.979	0.000	0.887	0.001	C2	NA
Russian Federation	ESS_8	551.694	4.745	32	0	0	0.082	0.000	0.076	0.000	0.088	0.000	0.984	0.000	0.917	0.001	C2	NA

Note:
Table Sorted by RMSEA and descending CFI values. Fit Indices are based on Mean of 10 datasets with imputed missing responses. Respondents who did not provide any responses were removed from the analysis.

held if respondents who are less trusting are also less likely to respond to survey questions on political trust. Nevertheless, if we assume that the data is missing almost at random, the latter approach would enable us to estimate missing responses without a clear violation of the very assumptions we wish to test. Hence, this imputing approach provides an advantage in enabling us to estimate missing responses. However, we do so reluctantly noting that such imputation may not be valid if the missingness process is non-ignorable such that missingness is determined by trust levels themselves.

Overall, our findings using list-wide deletion suggest that in nearly all country-surveys the Rasch model does not accurately reflect the data generating process and its assumptions are unmet. We are concerned with missingness, only in the event, that the response patterns of respondents removed due to list-wide deletion do actually meet the Rasch model and changes our overall findings. One way to test this counterfactual is to assume a most likely case in which all missing responses were imputed from a Rasch-like process. That is, we impute missing responses conditionally on a person’s latent political trust (θ) and item difficulty parameters (β) as estimated by the Rating Scale Model. This is a most-likely case in which all missing responses are imputed based on a process which in part reflects the Rasch model itself. We then, assess whether the Rasch model fits these imputed datasets containing original survey responses and imputed missing responses. The analysis was conducted using the R package *mirt*. Ability estimates (θ) were assumed to be normally distributed and we used plausible value imputation to generate 10 different datasets based on a sample in which respondents gave at least 1 answer to the trust items. (R. P. Chalmers & Ng, 2017) Table 19 below provides an overview of country-surveys in which the Rasch model plausibly fit the imputed datasets. We show countries in which the fit indices were beyond the following cut-off, indicating plausible fit of the model to the data: An upper confidence bound of the RMSEA (95%) < 0.09, and TLI and CFI values > 0.85. We note that the CFI and TLI values are well below the often-used cut-off of 0.90. Across 10, imputed datasets we show the mean global fit indicators as well as their standard deviations.

Of the 126 country-surveys analyzed (105 countries)[does not include Eurobarometer], a plausible fit was only found in 17 country-surveys when we used the relaxed TLI, CFI, and upper-bound of the RMSEA listed above. As shown in Table 19, the fit indices did not vary greatly across each of the 10 datasets with imputed values replacing missing responses. More importantly, we note that these fit values do not differ much from those found in the original analysis using list-wide deletion. We take this as an indication that our results are not influenced by the pattern of missingness observed across these datasets. Even when we assume a counterfactual in which missing responses are imputed based on a Rasch-like process, the overall fit indices barely change. In the event that missing data may have made a difference, we would expect significantly better fit. However, this is not the case. The results presented throughout this analysis do not depend on the pattern of missingness.

MIRT Goodness of Fit Results for List-Wide Deleted Data in all 161 country surveys

Table 23: Global Fit Indices of List-Wide Deleted Data in all Country Surveys

country	survey_wa	perc_miss	M2	df	p	RMSEA	RMSEA_5	RMSEA_9	SRMSR	TLI	CFI
Colombia	LB_2017	4.083	44.273	12	0	0.048	0.034	0.064	NA	0.978	0.910
Peru	LB_2017	6.083	45.913	12	0	0.050	0.035	0.066	NA	0.954	0.817
Chile	LB_2017	6.083	50.099	12	0	0.053	0.038	0.069	NA	0.968	0.872
Indonesia	ASB_3	19.484	204.675	33	0	0.065	0.056	0.073	NA	0.923	0.859
Mexico	LB_2017	8.250	67.910	12	0	0.065	0.050	0.081	NA	0.944	0.776
Tunisia	ARB_4	19.917	86.790	17	0	0.065	0.052	0.079	NA	0.973	0.954
Slovenia	ESS_8	4.208	210.193	32	0	0.067	0.058	0.075	NA	0.986	0.924
Philippines	ASB_4	7.583	200.128	33	0	0.068	0.059	0.077	NA	0.913	0.841
Portugal	ESS_8	4.016	211.004	32	0	0.068	0.059	0.077	NA	0.976	0.870
Panama	LB_2017	13.400	59.794	12	0	0.068	0.051	0.085	NA	0.946	0.784
Mongolia	ASB_4	10.016	202.640	33	0	0.068	0.059	0.077	NA	0.836	0.699
Paraguay	LB_2017	8.417	76.387	12	0	0.070	0.055	0.085	NA	0.977	0.908
Hungary	ESS_8	4.213	296.349	32	0	0.073	0.066	0.081	NA	0.987	0.930
Spain	ESS_8	6.895	361.579	32	0	0.075	0.068	0.082	NA	0.980	0.894
Palestine	ARB_4	14.250	116.853	17	0	0.076	0.063	0.089	NA	0.982	0.969
Cambodia	ASB_4	27.583	209.032	33	0	0.078	0.068	0.089	NA	0.871	0.763
Bolivia	LB_2017	9.167	92.310	12	0	0.078	0.064	0.094	NA	0.884	0.537
France	ESS_8	1.932	435.955	32	0	0.079	0.072	0.086	NA	0.972	0.852
Nepal	SASB_2	36.350	149.491	17	0	0.079	0.068	0.091	NA	0.940	0.898
Dominican Rep.	LB_2017	5.700	83.269	12	0	0.079	0.064	0.096	NA	0.934	0.737
Israel	ESS_8	6.257	515.407	32	0	0.079	0.073	0.085	NA	0.973	0.857
Ecuador	LB_2017	3.083	102.189	12	0	0.080	0.066	0.095	NA	0.942	0.769
Albania	EUB_87.	17.636	136.718	20	0	0.081	0.068	0.094	0.103	0.979	0.980
Spain	EUB_87.	13.911	135.841	20	0	0.081	0.068	0.094	0.099	0.952	0.954
Guatemala	LB_2017	9.900	82.941	12	0	0.081	0.065	0.098	NA	0.908	0.633
Ireland	ESS_8	5.296	589.465	32	0	0.082	0.076	0.088	NA	0.972	0.850
Belgium	ESS_8	1.529	411.675	32	0	0.083	0.076	0.090	NA	0.979	0.886
Togo	AB_6	15.917	200.260	25	0	0.083	0.073	0.094	NA	0.927	0.848
Croatia	EUB_87.	6.445	154.034	20	0	0.084	0.072	0.096	0.075	0.952	0.954
Greece	EUB_87.	4.257	160.400	20	0	0.085	0.073	0.098	0.081	0.903	0.908
El Salvador	LB_2017	7.300	93.290	12	0	0.086	0.070	0.102	NA	0.938	0.752

Table 23: Global Fit Indices of List-Wide Deleted Data in all Country Surveys (*continued*)

country	survey_wa	perc_miss	M2	df	p	RMSEA	RMSEA_5	RMSEA_9	SRMSR	TLI	CFI
Serbia	EUB_87.	24.826	131.374	20	0	0.086	0.072	0.100	0.073	0.957	0.959
Russian Federation	ESS_8	9.053	552.963	32	0	0.086	0.080	0.092	NA	0.983	0.911
France	EUB_87.	25.460	136.482	20	0	0.087	0.073	0.101	0.080	0.926	0.930
Hungary	EUB_87.	12.026	168.934	20	0	0.089	0.076	0.101	0.099	0.971	0.972
Cyprus (Republic)	EUB_87.	21.200	83.197	20	0	0.090	0.070	0.110	0.084	0.946	0.948
Pakistan	SASB_2	16.486	443.092	25	0	0.090	0.083	0.097	NA	0.737	0.453
Burundi	AB_6	13.583	247.349	25	0	0.093	0.082	0.103	NA	0.810	0.604
Estonia	ESS_8	4.012	564.200	32	0	0.093	0.086	0.099	NA	0.972	0.853
Vietnam	ASB_3	24.601	220.117	25	0	0.093	0.082	0.105	NA	0.698	0.371
Estonia	EUB_87.	37.624	133.001	20	0	0.095	0.080	0.110	0.076	0.934	0.937
Czechia	ESS_8	2.027	672.520	32	0	0.095	0.089	0.101	NA	0.979	0.889
Morocco	ARB_4	11.917	180.119	17	0	0.095	0.083	0.108	NA	0.965	0.941
Lithuania	EUB_87.	23.909	159.607	20	0	0.095	0.082	0.109	0.093	0.894	0.899
Portugal	EUB_87.	12.213	196.050	20	0	0.096	0.084	0.108	0.077	0.959	0.961
Poland	ESS_8	7.202	504.489	32	0	0.097	0.090	0.104	NA	0.963	0.803
Switzerland	ESS_8	6.689	461.958	32	0	0.097	0.089	0.105	NA	0.967	0.823
Myanmar	ASB_4	42.531	324.831	33	0	0.098	0.088	0.107	NA	0.924	0.860
Gabon	AB_6	3.005	308.043	25	0	0.099	0.089	0.109	NA	0.870	0.730
India	WVS_6	0.443	196.465	12	0	0.099	0.087	0.111	NA	-0.776	0.000
Honduras	LB_2017	7.800	121.512	12	0	0.100	0.084	0.116	NA	0.814	0.256
Nigeria	AB_6	7.667	574.243	25	0	0.100	0.093	0.107	NA	0.874	0.737
Montenegro	EUB_87.	14.451	107.971	20	0	0.100	0.082	0.118	0.163	0.976	0.977
Swaziland	AB_6	25.833	177.139	18	0	0.100	0.087	0.113	NA	0.803	0.494
Slovenia	EUB_87.	12.648	198.112	20	0	0.100	0.088	0.113	0.109	0.926	0.929
Germany	ESS_8	2.630	936.229	32	0	0.101	0.095	0.106	NA	0.964	0.808
Nicaragua	LB_2017	11.200	123.008	12	0	0.102	0.086	0.119	NA	0.895	0.579
United Kingdom	ESS_8	2.808	674.702	32	0	0.103	0.096	0.110	NA	0.963	0.804
Malaysia	ASB_4	14.167	398.497	33	0	0.103	0.094	0.113	NA	0.724	0.494
Turkey	EUB_87.	8.774	216.040	20	0	0.104	0.091	0.116	0.102	0.960	0.962
Finland	EUB_87.	13.142	213.191	20	0	0.105	0.092	0.118	0.091	0.919	0.922
Costa Rica	LB_2017	6.300	137.103	12	0	0.106	0.090	0.122	NA	0.719	0.000

Table 23: Global Fit Indices of List-Wide Deleted Data in all Country Surveys (*continued*)

country	survey_wa	perc_miss	M2	df	p	RMSEA	RMSEA_5	RMSEA_9	SRMSR	TLI	CFI
Liberia	AB_6	4.587	346.440	25	0	0.106	0.096	0.116	NA	0.857	0.703
Italy	ESS_8	4.189	946.869	32	0	0.107	0.101	0.113	NA	0.962	0.797
Cameroon	AB_6	11.506	324.762	25	0	0.107	0.097	0.118	NA	0.759	0.497
Latvia	EUB_87.	27.572	186.616	20	0	0.107	0.093	0.122	0.112	0.892	0.897
Netherlands	ESS_8	3.212	642.315	32	0	0.108	0.101	0.116	NA	0.965	0.816
Brazil	LB_2017	7.417	168.998	12	0	0.109	0.094	0.123	NA	0.877	0.507
Poland	EUB_87.	23.033	215.642	20	0	0.111	0.097	0.124	0.096	0.911	0.915
Luxembourg	EUB_87.	34.766	101.681	20	0	0.111	0.090	0.132	0.113	0.924	0.928
Sweden	EUB_87.	15.286	231.951	20	0	0.111	0.098	0.124	0.090	0.904	0.909
Malta	EUB_87.	49.800	83.046	20	0	0.112	0.088	0.138	0.129	0.961	0.963
Great Britain	EUB_87.	39.347	179.449	20	0	0.112	0.098	0.128	0.089	0.911	0.916
Makedonia/FYROM	EUB_87.	25.636	222.725	20	0	0.113	0.100	0.127	0.116	0.947	0.949
Norway	ESS_8	1.359	661.098	32	0	0.114	0.106	0.121	NA	0.956	0.766
Sweden	ESS_8	4.191	655.351	32	0	0.115	0.107	0.122	NA	0.960	0.786
Austria	ESS_8	2.239	869.735	32	0	0.115	0.109	0.122	NA	0.957	0.773
Germany West	EUB_87.	14.765	260.100	20	0	0.116	0.104	0.129	0.095	0.925	0.929
Peru	WVS_6	4.380	199.920	12	0	0.116	0.102	0.131	NA	0.873	0.492
Mexico	WVS_6	2.650	331.858	12	0	0.117	0.106	0.128	NA	0.834	0.337
Bulgaria	EUB_87.	22.868	238.280	20	0	0.117	0.104	0.131	0.122	0.950	0.952
Tanzania	AB_6	9.765	773.946	25	0	0.118	0.111	0.125	NA	0.712	0.401
The Netherlands	EUB_87.	16.667	254.451	20	0	0.118	0.105	0.131	0.108	0.925	0.929
Romania	EUB_87.	14.144	264.537	20	0	0.119	0.106	0.132	0.094	0.874	0.880
Argentina	LB_2017	9.583	196.950	12	0	0.119	0.105	0.134	NA	0.818	0.273
Denmark	EUB_87.	18.307	256.837	20	0	0.120	0.107	0.133	0.099	0.860	0.866
Italy	EUB_87.	17.366	265.400	20	0	0.120	0.108	0.133	0.128	0.930	0.933
Iceland	ESS_8	2.273	434.609	32	0	0.121	0.111	0.131	NA	0.949	0.727
Northern Ireland	EUB_87.	28.793	87.571	20	0	0.121	0.096	0.148	0.119	0.943	0.945
Czech Republic	EUB_87.	13.538	282.561	20	0	0.123	0.110	0.135	0.119	0.833	0.841
Zambia	AB_6	14.846	408.480	25	0	0.123	0.112	0.133	NA	0.754	0.488
Finland	ESS_8	0.883	956.220	32	0	0.123	0.116	0.130	NA	0.951	0.739
Egypt	ARB_4	19.667	266.237	17	0	0.123	0.110	0.137	NA	0.915	0.856

Table 23: Global Fit Indices of List-Wide Deleted Data in all Country Surveys (*continued*)

country	survey_wa	perc_miss	M2	df	p	RMSEA	RMSEA_5	RMSEA_9	SRMSR	TLI	CFI
Taiwan	ASB_4	17.381	724.927	33	0	0.124	0.116	0.132	NA	0.799	0.631
Namibia	AB_6	9.417	449.385	25	0	0.125	0.115	0.135	NA	0.655	0.281
Jordan	ARB_4	27.800	308.704	17	0	0.126	0.114	0.138	NA	0.833	0.716
Singapore	ASB_4	9.047	288.240	18	0	0.126	0.113	0.139	NA	0.729	0.302
Slovakia	EUB_87.	17.791	288.305	20	0	0.126	0.114	0.139	0.133	0.947	0.949
Mozambique	AB_6	22.958	768.755	25	0	0.127	0.119	0.135	NA	0.790	0.562
Lithuania	ESS_8	4.618	1088.100	32	0	0.128	0.121	0.134	NA	0.953	0.747
Brazil	WVS_6	3.836	299.846	12	0	0.130	0.117	0.142	NA	0.671	0.000
Austria	EUB_87.	15.000	307.111	20	0	0.130	0.117	0.143	0.109	0.820	0.829
Mali	AB_6	2.167	522.124	25	0	0.130	0.121	0.140	NA	0.670	0.312
Madagascar	AB_6	2.333	525.544	25	0	0.131	0.121	0.141	NA	0.660	0.291
Belgium	EUB_87.	7.610	352.474	20	0	0.133	0.121	0.145	0.119	0.871	0.877
Taiwan, Republic of China	WVS_6	11.551	244.621	12	0	0.133	0.119	0.148	NA	0.643	0.000
Tunisia	AB_6	20.583	448.177	25	0	0.133	0.123	0.144	NA	0.592	0.150
Niger	AB_6	9.167	511.461	25	0	0.134	0.124	0.144	NA	0.667	0.306
Guinea	AB_6	9.583	510.905	25	0	0.134	0.124	0.144	NA	0.762	0.505
Algeria	ARB_4	8.000	360.818	17	0	0.135	0.123	0.148	NA	0.930	0.882
Lebanon	ARB_4	21.333	386.646	17	0	0.136	0.124	0.148	NA	0.911	0.848
Chile	WVS_6	6.200	219.670	12	0	0.136	0.120	0.152	NA	0.621	0.000
SÃ£o TomÃ© and PrÃncipe	AB_6	20.234	465.521	25	0	0.136	0.125	0.147	NA	0.684	0.341
Cape Verde	AB_6	17.167	489.724	25	0	0.137	0.126	0.147	NA	0.679	0.331
Germany East	EUB_87.	13.523	202.779	20	0	0.137	0.120	0.155	0.107	0.892	0.897
Botswana	AB_6	14.500	508.952	25	0	0.137	0.127	0.148	NA	0.521	0.003
South Africa	AB_6	12.762	1024.732	25	0	0.139	0.131	0.146	NA	0.660	0.292
Lesotho	AB_6	32.417	421.098	25	0	0.140	0.128	0.152	NA	0.430	0.000
Senegal	AB_6	26.833	463.889	25	0	0.141	0.130	0.153	NA	0.614	0.196
Ireland	EUB_87.	20.020	347.521	20	0	0.143	0.130	0.156	0.123	0.912	0.916
South Africa	WVS_6	8.383	804.245	12	0	0.143	0.135	0.151	NA	0.715	0.000
Korea	ASB_4	4.833	816.544	33	0	0.144	0.136	0.153	NA	0.691	0.434
Burkina Faso	AB_6	9.917	429.895	18	0	0.146	0.134	0.158	NA	0.623	0.030
Egypt	AB_6	27.546	233.749	12	0	0.146	0.130	0.163	NA	0.033	0.000

Table 23: Global Fit Indices of List-Wide Deleted Data in all Country Surveys (*continued*)

country	survey_wa	perc_miss	M2	df	p	RMSEA	RMSEA_5	RMSEA_9	SRMSR	TLI	CFI
Sudan	AB_6	13.833	575.548	25	0	0.146	0.136	0.156	NA	0.673	0.319
Philippines	WVS_6	0.500	318.961	12	0	0.146	0.133	0.160	NA	0.422	0.000
Thailand	ASB_4	19.250	718.611	33	0	0.147	0.137	0.156	NA	0.674	0.401
Uruguay	LB_2017	9.500	291.640	12	0	0.147	0.132	0.161	NA	0.615	0.000
Ghana	AB_6	9.708	1192.821	25	0	0.147	0.140	0.154	NA	0.799	0.582
Spain	WVS_6	8.915	300.971	12	0	0.149	0.135	0.164	NA	0.560	0.000
Uganda	AB_6	19.417	1110.621	25	0	0.150	0.142	0.157	NA	0.149	0.000
Malawi	AB_6	16.292	1252.630	25	0	0.156	0.149	0.164	NA	0.574	0.112
India	SASB_2	32.570	1708.803	33	0	0.157	0.151	0.163	NA	0.462	0.013
Sierra Leone	AB_6	19.563	614.563	25	0	0.157	0.146	0.168	NA	0.541	0.043
Cyprus	WVS_6	4.200	312.282	12	0	0.162	0.146	0.177	NA	0.281	0.000
Zimbabwe	AB_6	17.208	1326.205	25	0	0.162	0.154	0.169	NA	0.676	0.325
Sri Lanka	SASB_2	34.116	1006.553	33	0	0.162	0.154	0.171	NA	0.422	0.000
Algeria	AB_6	20.417	654.146	25	0	0.162	0.152	0.173	NA	0.769	0.518
Japan	ASB_3	12.553	1472.344	33	0	0.163	0.156	0.170	NA	0.486	0.058
Bangladesh	SASB_2	28.301	508.625	18	0	0.163	0.151	0.176	NA	0.666	0.141
Morocco	AB_6	17.833	507.056	18	0	0.166	0.154	0.179	NA	0.705	0.242
Benin	AB_6	8.000	792.608	25	0	0.167	0.157	0.177	NA	0.629	0.227
Kenya	AB_6	18.690	1451.020	25	0	0.171	0.164	0.179	NA	0.175	0.000
Poland	WVS_6	17.184	302.199	12	0	0.174	0.157	0.191	NA	0.485	0.000
Argentina	WVS_6	7.476	358.214	12	0	0.174	0.159	0.190	NA	0.458	0.000
Slovenia	WVS_6	7.390	392.313	12	0	0.179	0.164	0.194	NA	0.590	0.000
Australia	WVS_6	4.672	553.898	12	0	0.179	0.167	0.192	NA	0.296	0.000
Sweden	WVS_6	20.564	381.103	12	0	0.179	0.164	0.195	NA	-0.081	0.000
Uruguay	WVS_6	17.300	336.469	12	0	0.181	0.164	0.198	NA	0.270	0.000
Mauritius	AB_6	9.250	973.332	25	0	0.187	0.177	0.197	NA	0.543	0.048
Germany	WVS_6	8.016	839.380	12	0	0.191	0.181	0.203	NA	-0.024	0.000
Cote d'Ivoire	AB_6	10.842	1171.053	25	0	0.207	0.197	0.217	NA	0.365	0.000
Hong Kong	ASB_3	35.957	1162.373	33	0	0.211	0.200	0.221	NA	-0.131	0.000
Romania	WVS_6	10.246	741.546	12	0	0.212	0.199	0.225	NA	0.437	0.000
Korea (South)	WVS_6	0.833	666.249	12	0	0.214	0.200	0.228	NA	0.236	0.000

Table 23: Global Fit Indices of List-Wide Deleted Data in all Country Surveys (*continued*)

country	survey_wave	perc_miss	M2	df	p	RMSEA	RMSEA_5	RMSEA_9	RMSR	TLI	CFI
Estonia	WVS_6	7.958	812.649	12	0	0.218	0.205	0.230	NA	-0.183	0.000
Netherlands	WVS_6	10.568	1012.109	12	0	0.221	0.210	0.233	NA	0.242	0.000
United States of America	WVS_6	4.839	1360.736	12	0	0.230	0.220	0.240	NA	-0.136	0.000
Mainland China	ASB_3	16.556	2783.855	18	0	0.230	0.223	0.238	NA	-0.072	0.000
Venezuela	LB_2017	4.083	808.489	12	0	0.240	0.226	0.254	NA	0.321	0.000
Japan	WVS_6	21.326	1666.991	12	0	0.268	0.257	0.279	NA	-0.357	0.000

Note:

Table Sorted by Survey Wave, RMSEA values.

MIRT Goodness of Fit Results for List-Wide Deleted Data in all 161 country surveys

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## resized.
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Table 24: Andersen LR test in all country-surveys where estimation was possible

country	survey_wave	model	LRsplit	LR	Chi2.df	p.value	Items.kept
Slovakia	EUB_87.3	RM	Median"	6.554	6	0.364	courts, police, pubadmin, polpart, loggov, natgov, parl
Romania	EUB_87.3	RM	Median"	6.942	6	0.326	courts, police, pubadmin, polpart, loggov, natgov, parl
Slovenia	WVS_6	RSM	Median"	3.796	3	0.284	police, courts
Malta	EUB_87.3	RM	Median"	7.179	5	0.208	courts, police, polpart, loggov, natgov, parl
Northern Ireland	EUB_87.3	RM	Median"	9.514	6	0.147	courts, police, pubadmin, polpart, loggov, natgov, parl
Korea (South)	WVS_6	RSM	Median"	5.988	3	0.112	police, civserv
Poland	WVS_6	RSM	Median"	6.123	3	0.106	police, courts
Turkey	EUB_87.3	RM	Median"	12.099	6	0.060	courts, police, pubadmin, polpart, loggov, natgov, parl
Bulgaria	EUB_87.3	RM	Median"	11.474	5	0.043	courts, police, pubadmin, loggov, natgov, parl
Spain	EUB_87.3	RM	Median"	11.719	5	0.039	courts, police, pubadmin, loggov, natgov, parl
Czech Republic	EUB_87.3	RM	Median"	14.699	6	0.023	courts, police, pubadmin, polpart, loggov, natgov, parl
Greece	EUB_87.3	RM	Median"	15.876	6	0.014	courts, police, pubadmin, polpart, loggov, natgov, parl
Tunisia	ARB_4	PCM	Median"	24.409	11	0.011	gov, justice, police, parties
Japan	WVS_6	RSM	Median"	11.543	3	0.009	police, parties
France	EUB_87.3	RM	Median"	17.917	6	0.006	courts, police, pubadmin, polpart, loggov, natgov, parl
Lithuania	EUB_87.3	RM	Median"	17.932	6	0.006	courts, police, pubadmin, polpart, loggov, natgov, parl
Jordan	ARB_4	PCM	Median"	22.818	8	0.004	gov, justice, parl
Estonia	EUB_87.3	RM	Median"	20.023	6	0.003	courts, police, pubadmin, polpart, loggov, natgov, parl
Great Britain	EUB_87.3	RM	Median"	20.506	6	0.002	courts, police, pubadmin, polpart, loggov, natgov, parl
Finland	EUB_87.3	RM	Mean	16.819	4	0.002	courts, pubadmin, polpart, natgov, parl
Latvia	EUB_87.3	RM	Median"	20.733	6	0.002	courts, police, pubadmin, polpart, loggov, natgov, parl
Hungary	EUB_87.3	RM	Median"	21.763	6	0.001	courts, police, pubadmin, polpart, loggov, natgov, parl
Netherlands	WVS_6	RSM	Median"	15.746	3	0.001	police, civserv
Costa Rica	LB_2017	RSM	Median"	24.268	6	0.000	police, parl, gov, justice, elecsys
Nepal	SASB_2	PCM	Median"	38.472	14	0.000	pres, courts, civserv, parties, police
Portugal	EUB_87.3	RM	Median"	24.793	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Germany West	EUB_87.3	RM	Mean	25.480	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Sweden	EUB_87.3	RM	Median"	26.129	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Cyprus (Republic)	EUB_87.3	RM	Median"	26.566	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Thailand	ASB_4	PCM	Median"	36.534	11	0.000	parties, police, loggov, nec
Croatia	EUB_87.3	RM	Median"	28.508	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl

Table 24: Andersen LR test in all country-surveys where estimation was possible (*continued*)

country	survey_wave	model	LRsplit	LR	Chi2.df	p.value	Items.kept
Honduras	LB_2017	RSM	Median"	29.779	6	0.000	police, parl, justice, parties, elecsys
Serbia	EUB_87.3	RM	Median"	30.696	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Bolivia	LB_2017	PCM	Median"	41.977	11	0.000	police, parl, gov, elecsys
Morocco	ARB_4	PCM	Median"	36.900	8	0.000	gov, justice, police
Sweden	WVS_6	RSM	Median"	25.546	3	0.000	civserv, courts
Slovenia	EUB_87.3	RM	Median"	34.320	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Portugal	ESS_8	PCM	Median"	59.159	19	0.000	justice, parl
Luxembourg	EUB_87.3	RM	Mean	34.852	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Montenegro	EUB_87.3	RM	Median"	36.585	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Denmark	EUB_87.3	RM	Median"	38.579	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
El Salvador	LB_2017	RSM	Median"	33.910	4	0.000	police, parl, justice
Paraguay	LB_2017	RSM	Median"	33.273	3	0.000	parl, gov
Spain	WVS_6	RSM	Median"	41.980	6	0.000	police, parl, civserv, parties, courts
Poland	EUB_87.3	RM	Median"	42.510	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Singapore	ASB_4	PCM	Median"	40.897	5	0.000	natgov, parties
Makedonia/FYROM	EUB_87.3	RM	Median"	44.905	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Korea	ASB_4	RSM	Median"	45.217	6	0.000	pres, courts, civserv, loggov, nec
Germany	ESS_8	PCM	Mean	72.490	19	0.000	justice, parties
Palestine	ARB_4	PCM	Median"	57.666	11	0.000	gov, justice, police, parties
Ireland	EUB_87.3	RM	Median"	50.541	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Albania	EUB_87.3	RM	Median"	50.706	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl
Cambodia	ASB_4	PCM	Median"	86.313	23	0.000	pres, courts, natgov, parties, civserv, police, loggov, nec
Argentina	LB_2017	RSM	Median"	53.565	7	0.000	police, parl, gov, justice, parties, elecsys
Mongolia	ASB_4	PCM	Median"	95.763	26	0.000	pres, courts, natgov, parties, parl, civserv, police, loggov, nec
Chile	LB_2017	RSM	Median"	52.080	4	0.000	police, gov, elecsys
Hong Kong	ASB_3	PCM	Mean	63.702	8	0.000	pres, parties, nec
Argentina	WVS_6	RSM	Median"	59.883	6	0.000	police, civserv, gov, parties, courts
Lesotho	AB_6	RSM	Median"	68.855	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Chile	WVS_6	RSM	Median"	54.379	3	0.000	police, parties
Ecuador	LB_2017	RSM	Median"	61.535	5	0.000	police, gov, justice, elecsys
Germany East	EUB_87.3	RM	Median"	64.392	6	0.000	courts, police, pubadmin, polpart, loggov, natgov, parl

Table 24: Andersen LR test in all country-surveys where estimation was possible (*continued*)

country	survey_wave	model	LRsplit	LR	Chi2.df	p.value	Items.kept
Sri Lanka	SASB_2	PCM	Median"	97.118	20	0.000	pm, parl, locgov, courts, civserv, parties, police
Brazil	WVS_6	PCM	Median"	79.079	11	0.000	police, civserv, gov, courts
Nicaragua	LB_2017	RSM	Median"	72.934	7	0.000	police, parl, gov, justice, parties, elecsys
Morocco	AB_6	PCM	Median"	97.783	17	0.000	president, tax, locgov, rulpart, police, courts
Estonia	WVS_6	RSM	Median"	66.030	4	0.000	police, gov, courts
The Netherlands	EUB_87.3	RM	Mean	72.294	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Peru	LB_2017	RSM	Median"	72.421	6	0.000	police, parl, gov, parties, elecsys
Dominican Rep.	LB_2017	RSM	Median"	69.647	5	0.000	police, parl, gov, parties
Egypt	ARB_4	RSM	Median"	70.018	5	0.000	gov, justice, parl, parties
Egypt	AB_6	RSM	Median"	75.798	7	0.000	president, nec, tax, locgov, police, courts
Tunisia	AB_6	PCM	Median"	115.807	23	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Guatemala	LB_2017	RSM	Median"	82.289	7	0.000	police, parl, gov, justice, parties, elecsys
Swaziland	AB_6	PCM	Median"	114.064	20	0.000	president, parl, nec, tax, locgov, police, courts
Mauritius	AB_6	PCM	Median"	110.339	17	0.000	president, tax, locgov, rulpart, police, courts
Austria	EUB_87.3	RM	Median"	84.543	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Italy	EUB_87.3	RM	Median"	84.292	5	0.000	courts, police, pubadmin, locgov, natgov, parl
Belgium	EUB_87.3	RM	Median"	113.973	6	0.000	courts, police, pubadmin, polpart, locgov, natgov, parl
Algeria	AB_6	PCM	Median"	143.652	20	0.000	president, parl, nec, tax, locgov, police, courts
Benin	AB_6	PCM	Median"	320.846	23	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Botswana	AB_6	RSM	Median"	191.176	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Burkina Faso	AB_6	RSM	Median"	178.263	8	0.000	president, parl, nec, tax, locgov, police, courts
Burundi	AB_6	RSM	Median"	489.830	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Cameroon	AB_6	RSM	Median"	229.269	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Cape Verde	AB_6	RSM	Median"	12494429.463	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Cote d'Ivoire	AB_6	RSM	Median"	391.548	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Gabon	AB_6	RSM	Median"	130.409	8	0.000	president, parl, nec, tax, locgov, police, courts
Ghana	AB_6	RSM	Median"	575.089	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Guinea	AB_6	RSM	Median"	344.056	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Kenya	AB_6	RSM	Median"	464.100	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Liberia	AB_6	RSM	Median"	161.788	9	0.000	president, parl, nec, tax, locgov, rulpart, police, courts
Madagascar	AB_6	PCM	Median"	202.184	23	0.000	president, parl, nec, tax, locgov, rulpart, police, courts

Table 24: Andersen LR test in all country-surveys where estimation was possible (*continued*)

country	survey_wave	model	LRsplit	LR	Chi2.df	p.value	Items.kept
Malawi	AB_6	PCM	Median"	170.047	23	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Mali	AB_6	RSM	Median"	167.097	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Mozambique	AB_6	RSM	Median"	269.411	8	0.000	parl, nec, tax, loggov, rulpart, police, courts
Namibia	AB_6	RSM	Mean	163.963	8	0.000	president, nec, tax, loggov, rulpart, police, courts
Niger	AB_6	RSM	Mean	15653917.813	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
SÃ£o TomÃ© and PrÃncipe	AB_6	RSM	Median"	306.758	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Senegal	AB_6	PCM	Median"	226.155	23	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Sierra Leone	AB_6	RSM	Median"	218.957	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
South Africa	AB_6	PCM	Median"	233.836	23	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Sudan	AB_6	RSM	Median"	225.994	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Tanzania	AB_6	RSM	Median"	506.992	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Togo	AB_6	RSM	Median"	103.784	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Uganda	AB_6	RSM	Median"	324.122	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Zambia	AB_6	RSM	Median"	192.626	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Zimbabwe	AB_6	RSM	Median"	681.944	9	0.000	president, parl, nec, tax, loggov, rulpart, police, courts
Algeria	ARB_4	PCM	Median"	157.611	14	0.000	gov, justice, parl, police, parties
Lebanon	ARB_4	RSM	Median"	1127686.609	4	0.000	parl, police, parties
Indonesia	ASB_3	PCM	Median"	121.168	14	0.000	courts, natgov, parties, parl, nec
Japan	ASB_3	PCM	Median"	142.589	20	0.000	pres, courts, parties, civserv, police, loggov, nec
Mainland China	ASB_3	PCM	Median"	228.727	11	0.000	courts, civserv, police, loggov
Malaysia	ASB_4	PCM	Median"	121.574	14	0.000	natgov, parties, civserv, police, nec
Myanmar	ASB_4	RSM	Median"	14451209.842	7	0.000	pres, natgov, parties, civserv, loggov, nec
Philippines	ASB_4	RSM	Median"	15586342.002	10	0.000	pres, courts, natgov, parties, parl, civserv, police, loggov, nec
Taiwan	ASB_4	PCM	Median"	138.585	20	0.000	pres, courts, natgov, civserv, police, loggov, nec
Israel	ESS_8	RSM	Median"	128.399	11	0.000	justice, police, parl
Russian Federation	ESS_8	RSM	Median"	18473314.866	12	0.000	justice, police, parl, parties
Brazil	LB_2017	RSM	Median"	101.731	4	0.000	police, justice, electsys
Colombia	LB_2017	RSM	Median"	194.788	5	0.000	police, parl, justice, electsys
Mexico	LB_2017	RSM	Median"	125.066	6	0.000	police, parl, gov, justice, electsys
Panama	LB_2017	RSM	Median"	88.737	5	0.000	police, parl, parties, electsys
Uruguay	LB_2017	RSM	Median"	207.569	6	0.000	police, gov, justice, parties, electsys

Table 24: Andersen LR test in all country-surveys where estimation was possible (*continued*)

country	survey_wave	model	LRsplit	LR	Chi2.df	p.value	Items.kept
Venezuela	LB_2017	PCM	Median"	515.588	17	0.000	police, parl, gov, justice, parties, elecsys
Bangladesh	SASB_2	RSM	Median"	101.325	7	0.000	pm, parl, loggov, courts, parties, police
India	SASB_2	RSM	Median"	256.856	10	0.000	pres, pm, natgov, parl, loggov, courts, civserv, parties, police
Pakistan	SASB_2	PCM	Median"	259.270	23	0.000	pres, pm, natgov, parl, courts, civserv, parties, police
Australia	WVS_6	RSM	Median"	127.345	5	0.000	police, parl, civserv, courts
Cyprus	WVS_6	RSM	Median"	118.860	7	0.000	police, parl, civserv, gov, parties, courts
Germany	WVS_6	RSM	Median"	187.965	7	0.000	police, parl, civserv, gov, parties, courts
India	WVS_6	PCM	Median"	124.487	17	0.000	police, parl, civserv, gov, parties, courts
Mexico	WVS_6	PCM	Median"	178.168	17	0.000	police, parl, civserv, gov, parties, courts
Peru	WVS_6	RSM	Median"	119.425	5	0.000	police, civserv, gov, courts
Philippines	WVS_6	RSM	Median"	13783097.215	7	0.000	police, parl, civserv, gov, parties, courts
Romania	WVS_6	RSM	Median"	133.021	7	0.000	police, parl, civserv, gov, parties, courts
South Africa	WVS_6	PCM	Median"	234.029	17	0.000	police, parl, civserv, gov, parties, courts
Taiwan, Republic of China	WVS_6	RSM	Median"	18511187.548	6	0.000	police, civserv, gov, parties, courts
United States of America	WVS_6	RSM	Median"	123.877	5	0.000	police, civserv, gov, courts
Uruguay	WVS_6	PCM	Median"	160.788	14	0.000	police, parl, civserv, gov, courts
Nigeria	AB_6	RSM	error	NA	NA	NA	NA
Vietnam	ASB_3	PCM	error	NA	NA	NA	NA
Austria	ESS_8	PCM	error	NA	NA	NA	NA
Belgium	ESS_8	PCM	error	NA	NA	NA	NA
Czechia	ESS_8	PCM	error	NA	NA	NA	NA
Estonia	ESS_8	PCM	error	NA	NA	NA	NA
Finland	ESS_8	PCM	error	NA	NA	NA	NA
France	ESS_8	PCM	error	NA	NA	NA	NA
Hungary	ESS_8	PCM	error	NA	NA	NA	NA
Iceland	ESS_8	PCM	error	NA	NA	NA	NA
Ireland	ESS_8	PCM	error	NA	NA	NA	NA
Italy	ESS_8	PCM	error	NA	NA	NA	NA
Lithuania	ESS_8	PCM	error	NA	NA	NA	NA
Netherlands	ESS_8	PCM	error	NA	NA	NA	NA
Norway	ESS_8	RSM	error	NA	NA	NA	NA

Table 24: Andersen LR test in all country-surveys where estimation was possible (*continued*)

country	survey_wave	model	LRsplit	LR	Chi2.df	p.value	Items.kept
Poland	ESS_8	PCM	error	NA	NA	NA	NA
Slovenia	ESS_8	PCM	error	NA	NA	NA	NA
Spain	ESS_8	PCM	error	NA	NA	NA	NA
Sweden	ESS_8	PCM	error	NA	NA	NA	NA
Switzerland	ESS_8	PCM	error	NA	NA	NA	NA
United Kingdom	ESS_8	PCM	error	NA	NA	NA	NA

Note:

Table Sorted by p-values.

Institutions per country-survey

Table 25: Country Surveys, Proportion of Missing Respondents with list-wide Deletion, and Institutions Included in the Scale

country	survey	perc_miss	Justice	Police	Parl.	Parties	rulpart	Natgov	Elecsys	Loggov	Presi.	Civserv	Tax	pm
Malta	EUB_8	49.800	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Myanmar	ASB_4	42.531	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Great Britain	EUB_8	39.347	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Estonia	EUB_8	37.624	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Nepal	SASB_	36.350	Yes	Yes	NA	Yes	NA	NA	NA	NA	Yes	Yes	NA	NA
Hong Kong	ASB_3	35.957	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Luxembourg	EUB_8	34.766	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Sri Lanka	SASB_	34.116	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes
India	SASB_	32.570	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes
Lesotho	AB_6	32.417	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Northern Ireland	EUB_8	28.793	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Bangladesh	SASB_	28.301	Yes	Yes	Yes	Yes	NA	NA	NA	Yes	NA	Yes	NA	Yes
Jordan	ARB_4	27.800	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA
Cambodia	ASB_4	27.583	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Latvia	EUB_8	27.572	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Egypt	AB_6	27.546	Yes	Yes	NA	NA	NA	NA	Yes	Yes	Yes	NA	Yes	NA
Senegal	AB_6	26.833	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Swaziland	AB_6	25.833	Yes	Yes	Yes	NA	NA	NA	Yes	Yes	Yes	NA	Yes	NA
Makedonia/FYROM	EUB_8	25.636	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
France	EUB_8	25.460	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Serbia	EUB_8	24.826	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Vietnam	ASB_3	24.601	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	NA	Yes	NA	NA
Lithuania	EUB_8	23.909	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Poland	EUB_8	23.033	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Mozambique	AB_6	22.958	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Bulgaria	EUB_8	22.868	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Lebanon	ARB_4	21.333	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA
Japan	WVS_€	21.326	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Cyprus (Republic)	EUB_8	21.200	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Tunisia	AB_6	20.583	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Sweden	WVS_€	20.564	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA

Table 25: Country Surveys, Proportion of Missing Respondents with list-wide Deletion, and Institutions Included in the Scale (*continued*)

country	survey	perc_miss	Justice	Police	Parl.	Parties	rulpart	Natgov	Elecsys	Loggov	Presi.	Civserv	Tax	pm
Algeria	AB_6	20.417	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
SÃ£o TomÃ© and PrÃncipe	AB_6	20.234	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Ireland	EUB_8	20.020	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Tunisia	ARB_4	19.917	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA
Egypt	ARB_4	19.667	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA
Sierra Leone	AB_6	19.563	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Indonesia	ASB_3	19.484	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Uganda	AB_6	19.417	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Thailand	ASB_4	19.250	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Kenya	AB_6	18.690	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Denmark	EUB_8	18.307	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Morocco	AB_6	17.833	Yes	Yes	Yes	NA	Yes	NA	NA	Yes	Yes	NA	Yes	NA
Slovakia	EUB_8	17.791	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Albania	EUB_8	17.636	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Taiwan	ASB_4	17.381	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Italy	EUB_8	17.366	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Uruguay	WVS_6	17.300	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Zimbabwe	AB_6	17.208	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Poland	WVS_6	17.184	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Cape Verde	AB_6	17.167	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
The Netherlands	EUB_8	16.667	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Mainland China	ASB_3	16.556	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Pakistan	SASB_4	16.486	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	Yes	Yes	NA	Yes
Malawi	AB_6	16.292	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Togo	AB_6	15.917	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Sweden	EUB_8	15.286	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Austria	EUB_8	15.000	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Zambia	AB_6	14.846	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Germany West	EUB_8	14.765	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Botswana	AB_6	14.500	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA

Table 25: Country Surveys, Proportion of Missing Respondents with list-wide Deletion, and Institutions Included in the Scale (*continued*)

country	survey	perc_miss	Justice	Police	Parl.	Parties	rulpart	Natgov	Elecsys	Loggov	Presi.	Civserv	Tax	pm
Montenegro	EUB_8	14.451	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Palestine	ARB_4	14.250	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA
Malaysia	ASB_4	14.167	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Romania	EUB_8	14.144	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Spain	EUB_8	13.911	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Sudan	AB_6	13.833	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Burundi	AB_6	13.583	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Czech Republic	EUB_8	13.538	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Germany East	EUB_8	13.523	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Panama	LB_201	13.400	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Finland	EUB_8	13.142	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
South Africa	AB_6	12.762	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Slovenia	EUB_8	12.648	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Japan	ASB_3	12.553	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Portugal	EUB_8	12.213	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Hungary	EUB_8	12.026	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Morocco	ARB_4	11.917	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA
Taiwan, Republic of China	WVS_6	11.551	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Cameroon	AB_6	11.506	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Nicaragua	LB_201	11.200	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Cote d'Ivoire	AB_6	10.842	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Netherlands	WVS_6	10.568	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Romania	WVS_6	10.246	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Mongolia	ASB_4	10.016	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Burkina Faso	AB_6	9.917	Yes	Yes	Yes	NA	NA	NA	Yes	Yes	Yes	NA	Yes	NA
Guatemala	LB_201	9.900	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Tanzania	AB_6	9.765	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Ghana	AB_6	9.708	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Argentina	LB_201	9.583	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Guinea	AB_6	9.583	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA

Table 25: Country Surveys, Proportion of Missing Respondents with list-wide Deletion, and Institutions Included in the Scale (*continued*)

country	survey	perc_miss	Justice	Police	Parl.	Parties	rulpart	Natgov	Elecsys	Loggov	Presi.	Civserv	Tax	pm
Uruguay	LB_201	9.500	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Namibia	AB_6	9.417	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Mauritius	AB_6	9.250	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Bolivia	LB_201	9.167	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Niger	AB_6	9.167	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Russian Federation	ESS_8	9.053	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Singapore	ASB_4	9.047	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	Yes	Yes	NA	NA
Spain	WVS_6	8.915	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Turkey	EUB_8	8.774	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Paraguay	LB_201	8.417	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
South Africa	WVS_6	8.383	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Mexico	LB_201	8.250	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Germany	WVS_6	8.016	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Algeria	ARB_4	8.000	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	NA	NA	NA
Benin	AB_6	8.000	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Estonia	WVS_6	7.958	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Honduras	LB_201	7.800	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Nigeria	AB_6	7.667	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Belgium	EUB_8	7.610	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Philippines	ASB_4	7.583	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Argentina	WVS_6	7.476	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Brazil	LB_201	7.417	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Slovenia	WVS_6	7.390	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
El Salvador	LB_201	7.300	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Poland	ESS_8	7.202	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Spain	ESS_8	6.895	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Switzerland	ESS_8	6.689	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Croatia	EUB_8	6.445	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Costa Rica	LB_201	6.300	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Israel	ESS_8	6.257	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA

Table 25: Country Surveys, Proportion of Missing Respondents with list-wide Deletion, and Institutions Included in the Scale (*continued*)

country	survey	perc_miss	Justice	Police	Parl.	Parties	rulpart	Natgov	Elecsys	Loggov	Presi.	Civserv	Tax	pm
Chile	WVS_6	6.200	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Chile	LB_201	6.083	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Peru	LB_201	6.083	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Dominican Rep.	LB_201	5.700	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Ireland	ESS_8	5.296	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
United States of America	WVS_6	4.839	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Korea	ASB_4	4.833	Yes	Yes	Yes	Yes	NA	Yes	Yes	Yes	Yes	Yes	NA	NA
Australia	WVS_6	4.672	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Lithuania	ESS_8	4.618	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Liberia	AB_6	4.587	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Peru	WVS_6	4.380	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Greece	EUB_8	4.257	Yes	Yes	Yes	Yes	NA	Yes	NA	Yes	NA	Yes	NA	NA
Hungary	ESS_8	4.213	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Slovenia	ESS_8	4.208	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Cyprus	WVS_6	4.200	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Sweden	ESS_8	4.191	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Italy	ESS_8	4.189	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Colombia	LB_201	4.083	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Venezuela	LB_201	4.083	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Portugal	ESS_8	4.016	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Estonia	ESS_8	4.012	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Brazil	WVS_6	3.836	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Netherlands	ESS_8	3.212	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Ecuador	LB_201	3.083	Yes	Yes	Yes	Yes	NA	Yes	Yes	NA	NA	NA	NA	NA
Gabon	AB_6	3.005	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
United Kingdom	ESS_8	2.808	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Mexico	WVS_6	2.650	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Germany	ESS_8	2.630	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Madagascar	AB_6	2.333	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Iceland	ESS_8	2.273	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA

Table 25: Country Surveys, Proportion of Missing Respondents with list-wide Deletion, and Institutions Included in the Scale (*continued*)

country	survey	perc_miss	Justice	Police	Parl.	Parties	rulpart	Natgov	Elecsys	Loggov	Presi.	Civserv	Tax	pm
Austria	ESS_8	2.239	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Mali	AB_6	2.167	Yes	Yes	Yes	NA	Yes	NA	Yes	Yes	Yes	NA	Yes	NA
Czechia	ESS_8	2.027	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
France	ESS_8	1.932	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Belgium	ESS_8	1.529	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Norway	ESS_8	1.359	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Finland	ESS_8	0.883	Yes	Yes	Yes	Yes	NA	NA	NA	NA	NA	NA	NA	NA
Korea (South)	WVS_6	0.833	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
Philippines	WVS_6	0.500	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA
India	WVS_6	0.443	Yes	Yes	Yes	Yes	NA	Yes	NA	NA	NA	Yes	NA	NA

Note:

Table Sorted in Descending Order by Percent of Sample dropped as a result of list-wide deletion

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