

RECSM Working Paper Number 29

2012

ESS-DACE

The European Social Survey - Data for a Changing Europe

Contract Number: 262208

Deliverable 12.4

Evaluation of questions and concepts - report 2 (Political Trust)

Start date of project: July 2010

Duration: 48 months

Organisation name of lead contractor for this deliverable: UPF

Dissemination level: PU (PUBLIC)

Due date of deliverable: July 2012

Actual submission date: September 2012

Evaluation of the concepts Trust in institutions and Trust in authorities

Diana Zavala Rojas*
RECSM/UPF

1. Introduction

Cross cultural survey research requires that the measures used to compare groups of countries or populations are comparable. In the European Social Survey (ESS) a large part of the methodological rigour at all stages of the survey design (sampling, questionnaire design, translation, fieldwork monitoring, etcetera) focuses on cross-country comparability. This paper evaluates if the questions used to measure the concepts for political trust in the ESS are equivalent or invariant i.e. they are interpreted in the same way by all respondents regardless of their cultural context or national origin. Only if this requirement is fulfilled models, relationships and means can be used in comparative research.

In the first section, this paper introduces the general framework for the measurement of political trust in the ESS and the operationalization of the indicators.

In the second section it introduces the framework for testing invariance. It also summarizes the work that was done before testing political trust in the ESS and it describes the approach that we will take in this paper.

In the third section the paper presents the procedure to choose the groups for comparison. There are more than 20 participating countries in the ESS and some of them field their questionnaires in minority languages when the speaking population is at least 5%. Analyzing data of the countries that fielded their language in more than one language gives average estimates. Separating the linguistic groups also allows testing of cultural invariance. Within one country other possible factors of deviations are controlled as they are normally the same (sampling, field work, etc.) and the instrument only differs with respect to the language.

In the fourth section the paper presents the results of testing for configural, metric and scalar invariance in the concept *trust in specific institutions and authorities* in Rounds 2 to 5 of the ESS.

The fifth section discusses the quality of the composite score.

1. Measurement of Political trust in the ESS

Political trust is a concept asked in the ESS and in many other surveys that is used both as independent and dependent variables in substantive models. Trust is a feeling, “it is relational; it involves an individual making herself vulnerable to another individual, group, institution that has the capacity to do her harm or to betray her” (Coleman 1990,

* The author is grateful to Willem Saris (Universitat Pompeu Fabra-RECSM and to Sally Widdop (City University) for their valuable comments.

Levi & Stoker 2000). Trust can be measured in many ways, as a bipolar or dichotomous concept with the labels trust and distrust: one can also include a label “neither trust nor distrust” to express neutrality, and it can also use gradation: one trusts or distrusts to a certain extent.

There are two major forms used in surveys to measure political trust. The first is indirect and focuses on evaluations of the government and institutions based on ethical criteria, if they are honest, if they look for the general interest of particular interests, and if they waste resources of the society. The second one is a direct form that asks about trust for a list of specific domains.

The second form is the one used in the ESS. In each round of the ESS, (except the first) seven questions forming a battery were used which asked about trust in institutions and authorities: trust in the parliament, trust in the legal system, trust in the police, trust in the politicians, trust in the political parties, trust in the European Union and trust in the United Nations. Figure 1 shows the exact formulation of the battery of questions in each round of the ESS.

Figure 1. The battery of questions in each round of the ESS except the first Round.

CARD 8 Using this card, please tell me on a score of 0-10 how much you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. Firstly...**READ OUT...**

	<i>No trust at all</i>										<i>Comple trust</i>
B4 ...[country]'s parliament?	00	01	02	03	04	05	06	07	08	09	10
B5 ...the legal system?	00	01	02	03	04	05	06	07	08	09	10
B6 ...the police?	00	01	02	03	04	05	06	07	08	09	10
B7 ...politicians?	00	01	02	03	04	05	06	07	08	09	10
B8 ...political parties?	00	01	02	03	04	05	06	07	08	09	10
B9 ...the European Parliament?	00	01	02	03	04	05	06	07	08	09	10
B10 ...the United Nations?	00	01	02	03	04	05	06	07	08	09	10

Source: European Social Survey (2010) Round 5 Source Questionnaire. London: Centre for Comparative Social Surveys, City University London.

The first five indicators (B4-B8) were used as the latter two define trust in supranational institutions and we consider that they form different aspects of trust. For the evaluation of the concept we concentrated only on national institutions.

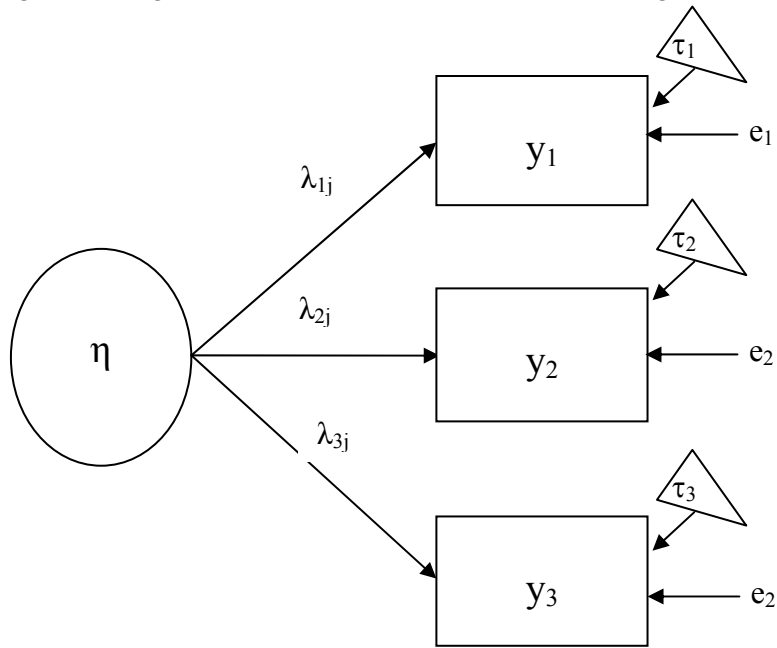
2. Testing equivalence

There is a well-established way to test for equivalence (invariance) of measurement instruments that refers to an analysis of the mean and covariance structure of latent variables (Meredith 1993).

Figure 2 shows a generalized model for a latent variable with three observed indicators. The latent variables can be thought of as predictors of the observed variables and the factor loadings as regression coefficients. In this model y_i is the observed variable, η_j is the j th latent variable, λ_i represents the loading, τ_i is the intercept and e_i is the

disturbance term. It is assumed that the disturbance terms have a mean of zero, they are also uncorrelated to each other and to η_j .

Figure 2 The general measurement model used for testing of invariance across countries



$$y_1 = \tau_1 + \lambda_{1j}\eta_j + e_1$$

$$y_2 = \tau_2 + \lambda_{2j}\eta_j + e_2$$

$$y_3 = \tau_3 + \lambda_{3j}\eta_j + e_3$$

$$E(e_i) = E(e_i \eta_j) = E(e_i e_j) = 0 \text{ for } i \neq j$$

For reasons of identification for latent concept one loading has to be fixed at 1 and its intercept fixed on zero. These models can be estimated and tested using Multi Group Confirmatory Factor Analysis (MG CFA) with any Structural Equation Modelling (SEM) program.

The first step in the analysis is a test of configural invariance. It tests if the factor structure is the same across groups or in other words if the same model holds for all countries/cultures under comparison. The second step is the test for metric invariance. In this test factor loadings (λ) are assumed invariant in all countries. The third step is the test for scalar invariance. In this test the equality of intercepts (τ) across countries is added to the requirement of the metric invariance test. If metric invariance holds, comparisons of relationships can be made. If scalar invariance holds also the means can be compared.

The fit indices of MG-SEM are quite controversial for a comprehensive summary of this discussion see Saris et al., (2009) and Corten et al. (2009). Chi-square and other popular fit indices such as the RMSEA depend on the power of the test. With large samples these test statistics will have a very high power and therefore the model will be rejected with an extremely high probability even if the differences in parameters are

only minimal. The number of cases in each round of the ESS is above 20,000 and groups are above thirty, therefore the tests are too sensitive, leading too frequently to rejection of the model for very small deviations.

A method to determine for which countries equivalence holds was developed by Reeskens and Hooghe (2008) where the country with the largest chi-square contribution is excluded until a model with an acceptable fit over the rest of the countries has been found. Allum et al. (2007) used this procedure to test the invariance of the measures of political and social trust in Rounds 1, 2 and 3 of the ESS. They excluded countries with the largest Chi-square until they got acceptable fitted models with an RMSEA < .08 and SRMR < .05. Under these criteria, only twelve out of seventeen countries available were invariant¹.

Excluding countries based on the Chi-square can lead to wrong conclusions because of the sensitivity of this test to large samples. This is too strict because it only takes into account the presence of deviation not the size of them. It also does not give an insight of which parts of the concept are non-invariant. The approach in this paper was to evaluate the models for local misspecifications instead of global fit indexes.

To determine whether misspecifications are present in the model, a procedure developed by Saris, Satorra and Van der Veld (2009) was used. It tests directly for misspecifications in the model while taking into account the power of the test for each misspecification. A misspecification occurs if a parameter has been given a fixed value (mostly zero), which is incorrect in the population studied (Hu and Bentler, 1998). The misspecification test combines knowledge of: (a) the size of the misspecification (Expected Parameter Change, EPC); (b) the impact on the fit if the parameter were included (Modification Index, MI); and (c) the sensitivity of the test in detecting the misspecification (power of the test). Both (a) and (b) are present in the output files of SEM software; (c) can be calculated based on the noncentrality parameter. The program JRULE (Judgment Rule), developed by Van der Veld, Saris and Satorra (2009), facilitates the procedure. In Table 1 the decision rules are presented based on this information. To analyze the constrained models with respect to configural, metric and scalar invariance JRULE program was used to identify if any misspecifications exist.

Table 1: The decisions to be made in the different situations defined on size of the modification index (MI) and the power of the test.

	High power	Low power
Significant MI	Inspect EPC (EPC)	Misspecification present (m)
Non significant MI	No misspecification (nm)	Inconclusive (I)

In this approach one has to specify in advance which power is required at what α level for specific values of the parameters. A power of .8 was chosen and an α level of .05 as usual while we wanted to detect loading differences larger than .1 and intercept differences larger than .7. As the analysis was aimed to detect in systematic differences, i.e. that all respondents interpret a question consistently but in a different way, it was

¹ In this analysis only countries participating in the three ESS rounds were included.

added to these criteria that an observed deviation was considered as a misspecification only if it appeared in at least two rounds for the same group. The criterion that the deviations should systematically occur in a country (in more than one participating round) is needed given the large number of tests we are doing as it can occur that one gets significant differences just by chance. This is expected in 5 out of the 100 tests ($\alpha=.05$).

3. Cross-country or cross-cultural analysis

In each round about 25 countries and approximately 30 different language versions are used in the ESS. The evaluation of the concept political trust was conducted round by round because an overall analysis would imply a multi-group model of about 120 groups which is very complicated in SEM. We divided the groups by language and by country. A previous study of the MTMM experiments in R2 of political trust (Zavala-Rojas 2012) shows that the quality of the measures is different for different linguistic groups. Adding countries that fielded their questionnaire in more than one language gives average estimation. Separation of the linguistic groups indicates that misspecifications or deviations in quality come generally from only one linguistic group. It was also found that in some cases configural, metric and scalar invariance is achieved in a cross-country analysis, but in some other cases it is not the case and one linguistic group in a country can be non invariant. As there is still little information in which cases countries with different linguistic groups are non-invariant unless the tests are done, we conducted both a cross country and cross cultural analysis where the second or third languages fielded included more than 80 cases in four rounds of the ESS (Round 2 to Round 5). Round 1 was excluded from the analysis because trust in the political parties was not asked and there was no information available about the language of the interview in that round.

If a country fielded their questionnaire in more than one language but there are less than 80 cases, the country was pooled together. Annex 1 and Annex 2 show the composition of different participating groups by round. This paper will show the procedure and results of the cross-cultural analysis, setting the groups as a combination of language and country, results of the cross country equivalence tests are only mentioned if they provide relevant information.

Some interviews had no code indicating the language in which they were administered very few others were done in another language than expected or that. We took those cases out of the analysis².

² Cases were excluded in the analysis if in the dataset they did not have a code indicating the language of administration or if the code did not correspond to one of the country's translations verified by ESS procedures in that country. In R2, 25 cases did not have language code in Finland; 10 cases in Slovakia, and 2 in Spain. In addition, 6 cases were administered in English in Norway. In R4, 47 cases were administered in Galician in Spain; 7 cases were administered in Norway in English and 2 in Spanish; and 9 did not have language variable in Finland. In R5, 5 cases were administered in English in Finland; in Norway 17 in English, 3 without language code, 1 in German and 1 in Swedish.

4. The results of testing on invariance

4.1 Testing the model: configural invariance

An open issue at the design stage of the questionnaire, when the battery of questions was incorporated, was if political trust has reflective or a formative indicators. Thomassen (2000) suggests that it can be formative; people might lose their trust in the legislature, but not in the executive or the judicial branch of government so the items are not necessarily correlated. As political trust is part of the diffuse support, defined by Easton (1965) as a more stable positive or negative feeling towards the political system, we think that the indicators should be seen as reflective.

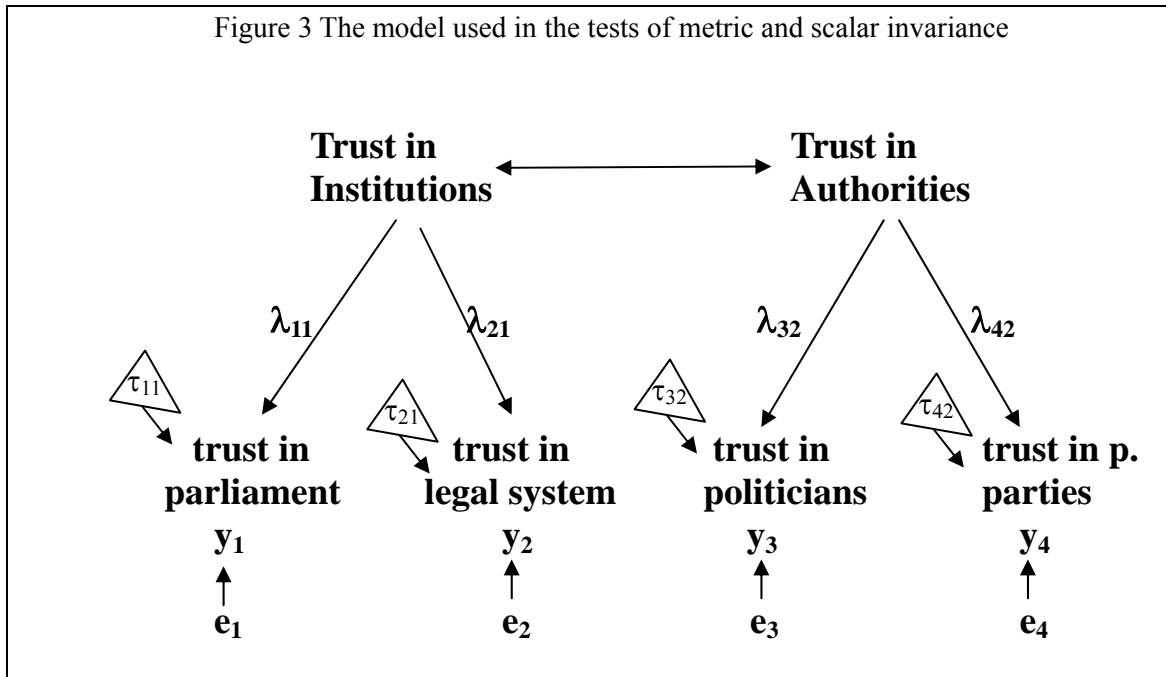
The author firstly explored the possibility of a model with 5 indicators and two factors: trust in institutions: the legal system and the police, and trust in specific authorities: the parliament, the politicians and the political parties. It was expected that the two concepts trust in specific institutions and trust in authorities should be correlated but differentiated factors.

This model was not acceptable according to JRULE. Misspecifications of correlated errors reflected that the appropriate structure is a two factor model: trust in institutions including trust in the parliament and in the legal system, and trust in authorities: politicians and political parties. The variable trust in the police was removed.

This model fits in all countries and in all rounds except very few groups in each round which still show some correlated errors. As these misspecifications were not consistent over rounds in the same groups they can be seen as incidental deviations.

Based on this test the author concluded that political trust is formed by two factors: trust in specific institutions including the parliament (y_1) and the legal system (y_2) and trust in authorities including the politicians (y_1) and the political parties (y_1). Figure 3 shows the model for political trust with the four indicators. In this model, λ_{11} , λ_{11} , λ_{11} , and λ_{11} , are the direct effects of the latent variables in the observed responses; τ_{11} , τ_{21} , τ_{32} , τ_{42} are the intercepts and, e_1 , e_2 , e_3 and e_4 are the errors in observed variables.

Figure 3 The model used in the tests of metric and scalar invariance



With this model we proceeded to test metric and scalar invariance.

4.2 Test of Metric invariance for comparison of relationships

Metric invariance holds if not only the model is the same in all groups but the factor loadings also are the same. We added this restriction to the model and evaluated the model in terms of local fit to see if loadings were invariant.

With these specifications JRULE mentioned deviations concerning loadings in different rounds and groups. To avoid excluding countries or linguistic groups that were invariant but resulted in non-invariance due to random error we only excluded countries which have misspecifications in two or more rounds out of four and the deviation is at least .1. The results of these tests are presented in Table 3 and table 4.

Table 3. The results of the test for metric invariant over all groups in all rounds

	$\lambda_{\text{trust institutions}}$	$\lambda_{\text{trust authorities}}$
25 Invariant groups R2	.851 (.006)	.954(.003)
24 Invariant groups R3	.816 (.006)	.959(.003)
30 Invariant groups R4	.836 (.005)	.955(.003)
27 Invariant groups R5	.807(.005)	.961(.003)

This table shows that a considerable number of groups indeed show metric invariance in all rounds for both concepts. For these groups the relationships between these trust factors and other variables can be compared. The values of the parameters have also been presented in Table 3. Note that the first loading was in each factor fixed on 1, so here the parameter value for the second loading in each factor has been presented.

Besides a large number of groups where the metric invariance holds there are also groups where this requirement for comparison did not hold. This overview is presented in Table 4.

Table 4. The list of countries for which metric invariance does not hold with the size of the deviating values of the loadings

	R2 $\lambda_{\text{trust institutions}}$	R3 $\lambda_{\text{trust institutions}}$	R4 $\lambda_{\text{trust institutions}}$	R5 $\lambda_{\text{trust institutions}}$
Invariant groups	.851 (.006)	.816 (.006)	.836 (.005)	.807(.005)
Austria	.697 (.025)	.626 (.026)	*	*
Belgium – French	.912 (.051)	-	.994(.054)	-
Denmark	.661 (.032)	.483 (.03)	.668(.031)	.531(.027)
Finland- Finnish	-	.627 (.025)	.659(.024)	.591(.023)
Finland- Swedish	-	-	.409(.11)	.283(.13)
Italy	.66 (.036)	*	*	*
Israel - Arabic	*	*	.409(.107)	.458(.075)
Norway	.688 (.029)	.608 (.027)	.629(.028)	.675(.029)
Spain – Spanish	.987 (.041)	-	.999(.039)	-
Slovenia	.94 (.036)	-	-	.995(.028)
* Indicates that the country did not participate or is not part of the ESS integrated file. - Indicates that the country was invariant				

A first observation made is that in all groups the factor representing Trust in the authorities was invariant across all groups. So, all deviations occurred for the factor Trust in the institutions.

The countries that were non-metric invariant in all rounds with respect to Trust in institutions were Denmark and Norway. Slovenia was twice evaluated as non-invariant even though the deviations were significant in all rounds, but when the misspecified parameters were estimated they were just slightly below .1. This indicates that these deviations are not just random although the difference is not large enough to be specified as such according to our rule.

A group that was non-invariant in three rounds was Finland- Finnish. Groups evaluated as non-invariant twice out of two rounds were Austria-German, Israel- Arabic. Italy only participated in one round and it showed misspecifications so it was also evaluated as non-invariant. In Spain-Spanish and Belgium-French the results were twice significantly different and twice not.

Remarkable is that in the deviating countries from the north of Europe the loadings are systematically much lower than in all the other countries. This holds for Denmark, both Finnish groups (Finnish and Swedish) and Norway. On other hand for Spain and Slovenia the coefficients are rather higher than lower. These results require further research. It may relate to the way the answer categories are formulated.

4.3 Scalar invariance for comparing means.

The third level of invariance test is scalar invariance which indicates if means can be compared. This test requires metric invariance and equality of the intercepts in the factor models. Because metric invariance is a requirement for scalar invariance, groups that were not metric invariant could not be scalar invariant. For these countries the non-invariant parameter in the factor ‘Trust in institutions’ was made free to be estimated in order to test if possibly the other factor trust in authorities was scalar invariant. As

criterion for invariance the author took a value of the intercept of .7 because that would create a significant difference in a composite score for these factors. The results are presented in Tables 5 and 6.

Table 5. The values of the intercepts for the groups that are scalar invariant and the number of groups for which this holds.

	$\tau_{\text{trust institutions}}$	$\tau_{\text{trust authorities}}$
21 Invariant groups R2	1.184 (.028)	.177(.012)
19 Invariant groups R3	1.263 (.031)	.174(.013)
20 Invariant groups R4	1.34 (.025)	.173(.01)
22 Invariant groups R5	1.48(.022)	.127(.009)

While the intercept of the first item was fixed on zero for both factors it is seen that the intercept of the second group of items is considerably deviant from zero. This is an interesting issue with respect to the differences in evaluation of these two objects in each case.

The number of groups for which the test suggests that the means can be compared is still quite large even though the tests are quite rigorous. However there are also many groups for which scalar invariance does not hold as is indicated in Table 6.

Table 6. The values of the intercepts for those countries that were non scalar invariant

	R2 $\tau_{\text{trust institutions}}$	R3 $\tau_{\text{trust institutions}}$	R4 $\tau_{\text{trust institutions}}$	R5 $\tau_{\text{trust institutions}}$
Invariant groups	1.184 (.028)	1.263 (.031)	1.34 (.025)	1.48(.022)
Austria	2.506 (.128)	2.936 (.132)	*	*
Belgium – French	.403 (.245)	-	.406(.259)	-
Denmark	3.06 (.204)	4.361 (.199)	2.94(.241)	4.249(.164)
Finland- Finnish	1.789(.056)	3.283 (.154)	3.153(.15)	3.739(.127)
Finland- Swedish	-	2.26(.13)	4.674(.13)	5.671(.832)
Italy	2.042 (.161)	*	*	*
Israel - Arabic	-	-	4.835(.454)	4.231(.312)
Norway-Norwegian	2.621 (.166)	3.114(.158)	3.125 (.167)	2.784(.18)
Spain – Spanish	-.268 (.212)	-	-.642(.2)	-
Slovenia	-.028 (.161)	-	.582(.059)	.121(.094)
Germany	1.915(.047)	2.115(.048)	1.822(.047)	2.167(.044)
Ukraine-Russian	.017 (.068)	.303(.066)	.482(.06)	.505(.051)
Ukraine-Ukrainian	-.527(.297)	.601(.071)	.416(.069)	.48(.107)
Bulgaria	*	.671(.057)	.654(.04)	.575(.043)
Israel- Hebrew	*	*	2.099(.059)	2.3(.061)
Latvia-Latvian	*	*	2.384(.063)	*
Latvia-Russian	*	*	2.218(.102)	*
Romania	*	*	.585(.045)	*
Croatia	*	*	.598(.047)	-
* Indicates that the country did not participate or is not part of the ESS integrated file. - Indicates that the country is invariant				

The list of groups that does not satisfy the criterion of scalar invariance is larger than the list for metric invariance however half of the deviations are due to the fact that these groups were already not metric invariant with respect to ‘Trust in institutions’. This is true for the countries listed from the top of the table (Austria) down to and including

Slovenia. From Germany downwards the groups were metric invariant but are shown at least to be partially not scalar invariant.

An important remark is that in all of the groups, the measure ‘Trust in authorities’ was scalar invariant. So this concept can be used for comparison of relationships and means across all groups. This is an important result. This is not true for the concept ‘Trust in institutions’ because we have seen above that in several groups metric invariance does not hold and now we see that also in several cases scalar invariance does not hold.

Starting with the countries that were not metric invariant (Austria down to Slovenia) it is interesting to see that a deviation downwards in the loading went together with a deviation upwards in the intercept and in the opposite direction for the other countries.

With respect to the groups that were metric invariant we see that for Germany and Ukraine in both languages the intercept for the second item are considerably different from the value in the other groups in all rounds. In Germany the value is systematically higher and in the Ukraine systematically lower. In Bulgaria the same is found as in the Ukraine but only 3 rounds of data were available.

Furthermore we see that in several countries that only participated in Round 4 the intercept was also considerably different. For all these countries there is a problem with the comparison of the means because the respondents reply to the questions on trust in institutions in a different way than in the other countries. The reasons need to be explored in further research - they may be related to translation of the instruments or cultural differences in interpretation and definitions, among other possibilities.

5. Quality of the composite scores.

Once equivalence was tested, the second step was to construct the composite scores of “trust in institutions” and “trust in authorities” and to evaluate the quality of these composite scores. In this case we used as the sum of the responses to the two questions (which are the indicators for each concept) as the composite score. So the score can vary between 0 and 20.

The quality of any measure can be defined as

$$\text{Quality of composite score} = 1 - (\text{error variance} / \text{total variance})$$

The error variance of the composite score is in this case³ equal to the sum of the error variances of the two indicator variables while the total variance has been computed directly from the composite score. The results of these calculations are presented in Table 7.

³ without correlated errors.

Table 7. Quality for composite scores

	R2		R3		R4		R5	
	Trust institut.	Trust authorities	Trust institut.	Trust authorities	Trust institut.	Trust authorities	Trust institut.	Trust authorities
Austria	0.766*	0.919	0.783*	0.937	-	-	-	-
Belgium - Dutch	0.714	0.890	0.726	0.900	0.725	0.902	0.740	0.901
Belgium-French	0.726*	0.904	0.673	0.888	0.752*	0.916	0.730	0.933
Bulgaria	-	-	0.814	0.910	0.803	0.932	0.753	0.923
Croatia	-	-	-	-	0.835	0.913	0.810	0.935
Cyprus	-	-	0.816	0.953	0.729	0.958	0.768	0.949
Czech Republic	0.799	0.937	-	-	0.783	0.943	0.827	0.941
Denmark	0.698*	0.902	0.687*	0.900	0.724*	0.911	0.717*	0.924
Estonia-Estonian	0.766	0.899	0.772	0.864	0.770-	0.891	0.801-	0.905
Estonia-Russian	0.856	0.900	0.797	0.857	0.799	0.877	0.820	0.847
Finland-Finnish	0.722	0.903	0.781*	0.911	0.754*	0.910	0.775*	0.926
Finland-Swedish	0.826	0.928	0.894	0.940	0.768*	0.908	0.804*	0.897
France	0.700	0.913	0.626	0.883	0.692	0.878	0.694	0.916
Germany	0.750	0.904	0.725	0.923	0.723	0.898	0.724	0.908
Greece	0.704	0.938	-	-	0.798	0.929	0.675	0.924
Hungary	0.809	0.912	0.798	0.920	0.760	0.912	0.846	0.934
Iceland	0.767	0.918	-	-	-	-	-	-
Ireland	0.712	0.926	0.694	0.922	0.681	0.908	0.715	0.943
Italy	0.685	0.924	-	-	-	-	-	-
Israel –Arabic	-	-	-	-	0.733*	0.949	0.786*	0.964
Israel - Hebrew	-	-	-	-	0.747	0.902	0.698	0.916
Israel – Russian	-	-	-	-	0.724	0.866	0.707	0.870
Latvia-Latvian	-	-	-	-	0.671	0.933	-	-
Latvia-Russian	-	-	-	-	0.742	0.901	-	-
Luxemburg - French	0.723	0.878	-	-	-	-	-	-
Luxemburg-Luxembourgish	0.731	0.881	-	-	-	-	-	-
Netherlands	0.721	0.895	0.727	0.882	0.753	0.902	0.757	0.887
Norway	0.720*	0.913	0.715*	0.912	0.738*	0.910	0.761*	0.922
Poland	0.738	0.894	0.699	0.914	0.725	0.888	0.793	0.930
Portugal	0.741	0.922	0.753	0.920	0.749	0.932	0.775	0.940
Romania	-	-	-	-	0.848	0.946	-	-
Russia	-	-	0.791	0.893	0.797	0.907	0.840	0.935
Slovakia	0.724	0.882	0.744	0.912	0.742	0.926	0.757	0.894
Slovenia	0.743*	0.908	0.737*	0.889	0.772*	0.931	0.855*	0.925
Spain	0.738*	0.940	0.718	0.943	0.732*	0.957	0.718	0.942
Sweden	0.725	0.917	0.735	0.910	0.732	0.909	0.737	0.907
Switzerland-French	0.731	0.878	0.770	0.881	0.672	0.860	0.715	0.876
Switzerland-German	0.737	0.852	0.723	0.855	0.764	0.889	0.737	0.871
Turkey	0.742	0.860	-	-	0.795	0.899	-	-
Ukrainian-Russian	0.805	0.870	0.720	0.891	0.734	0.879	0.807	0.931
Ukrainian-Ukrainian	0.705*	0.871	0.729	0.894	0.668	0.886*	0.781	0.941
United Kingdom	0.709	0.923	0.703	0.917	0.735	0.910	0.770	0.932

- indicates the country did not participate

* indicates the measure was not metric invariant

Table 7 shows that the quality of the composite scores for “trust in authorities” is considerably better than the quality of the composite score for “trust in institutions”. This follows from the different in strength in relationships between the concepts and their indicators.

The quality of the composite score of trust in authorities is below 1.0 especially between .8 and .95 in all countries. This means that there are still errors in the composite score. For ‘Trust in institutions’ the quality is considerably lower, between .66 and .94. This may indicate that people see politicians and parties as more similar than the parliament and the legal system.

It is also observed that the difference in quality across countries and rounds is smaller for the ‘Trust in authorities’ variables than for ‘Trust in institutions’ variables. This means that the relationships between the former variable and the other variables will be quite comparable even without correction for measurement errors. This does not hold true for the latter variable. However it would be better to correct for measurement errors in both cases because both contain measurement errors anyway.

Comparison of relationships is only possible if the variables are metric invariant. Therefore it is indicated with an asterisk in which countries the composite score for ‘Trust in institutions’ cannot be used for comparing relationships across countries and time. ‘Trust in authorities’ is metric invariant in all countries, languages and rounds.

6. Comparing means

Means were computed as an illustration of the use of the composite scores for trust in institutions and authorities for all countries and all rounds present so far. As we said before the composite scores can vary between 0 and 20. In table 8 the results of the computations have been presented.

In Table 8 some numbers are combined with an asterisk again because means can only be compared across countries and time if the measures are scalar invariant. In Table 8 problematic values are indicated again with an asterisk.

For the other cases the means can be compared across countries and across time. It does not come as a surprise that ‘Trust in the institutions’ is higher in the Northern European countries than in the East European countries while the EU countries with economic problems are in between the two with respect to trust in the institutions most of the time.

With respect to ‘Trust in the authorities’ we see a similar pattern but on a much lower level. Higher evaluations, above 10, (middle of the scale of trust) happen only seldom. This suggests that the public has much less trust in the politicians (the authorities) than in the institutions of the state. This is in line with the ideas of Easton (1965). Because we have separated the different language groups in the countries for which this applies, we see that different cultural groups in the same country have different levels of trust in the political authorities and in the institutions.

Table 8. Mean of the composite scores. Unweighted sum

	R2		R3		R4		R5	
	Trust institutions	Trust authorities	Trust institutions	Trust authorities	Trust institutions	Trust authorities	Trust institutions	Trust authorities
Austria	10.576*	6.695	10.884*	6.673	-	-	-	-
Belgium - Dutch	9.849	9.163	10.170	9.406	9.542	8.418	9.318	8.109
Belgium-French	9.075*	7.676	9.416	7.578	9.482*	7.439	9.494	7.016
Bulgaria	-	-	4.587*	3.5066	4.07*	3.286	4.872*	3.979
Croatia	8.052	5.523	7.813	5.158	6.063*	4.431	5.505	3.374
Cyprus	-	-	11.774	8.504	11.673	8.627	10.177	7.11
Czech Republic	6.842	5.374	-	-	7.302	5.386	7.367	5.317
Denmark	13.513*	11.237	13.884*	11.282	13.811*	11.279	13.198*	10.217
Estonia-Estonian	9.310	6.669	10.296	7.431	9.298	6.952	9.875	7.276
Estonia-Russian	8.495	5.469	8.609	6.180	7.285	5.393	7.729	6.040
Finland-Finnish	12.884*	9.821	12.979*	9.890	13.054*	9.766	12.226*	8.924
Finland-Swedish	13.281	10.487	14.358*	11.011	13.842*	11.093	13.796*	10.029
France	9.015	6.899	9.195	6.490	9.482	6.824	9.047	6.266
Germany	9.562*	6.310	9.5623*	6.367	10.205*	6.894	9.714*	6.551
Greece	10.160	7.203	-	-	8.321	4.960	5.851	2.738
Hungary	-	-	-	-	6.392	3.946	8.866	6.265
Iceland	12.018	9.817	-	-	-	-	-	-
Ireland	9.936	8.017	9.731	7.711	8.803	6.478	8.657	6.081
Israel - Hebrew	-	-	-	-	9.061*	5.809	8.821*	5.830
Israel - Russian	-	-	-	-	7.844	6.674	7.471	6.915
Israel -Arabic	-	-	-	-	10.506*	5.622	9.648*	5.899
Italy	9.463*	6.562	-	-	-	-	-	-
Latvia-Latvian	-	-	-	-	5.905*	3.077	-	-
Latvia-Russian	-	-	-	-	6.004*	3.981	-	-
Luxemburg - French	12.476	10.743	-	-	-	-	-	-
Luxemburg-Luxembourgish	11.519	9.908	-	-	-	-	-	-
Netherlands	10.062	9.404	11.000	10.121	11.418	10.311	11.225	10.441
Norway	11.761*	8.568	12.212*	8.930	12.521*	9.367	12.879*	9.887
Poland	5.374	3.791	6.409	4.218	6.868	4.583	7.704	5.175
Portugal	7.601	4.145	7.879	5.093	7.337	4.753	6.364	4.028
Romania	-	-	-	-	7.576*	6.157	-	-
Russia	-	-	6.997	5.650	8.087	6.535	7.369	6.181
Slovakia	6.611	5.173	8.430	7.182	8.313	7.294	7.907	2.837
Slovenia	8.000*	6.323	8.385*	6.460	8.693*	6.849	6.063*	4.497
Spain	9.819*	7.280	10.006	6.918	9.334*	6.592	8.721	5.422
Sweden	11.131	8.575	11.665	9.091	11.857	9.391	12.817	10.152
Switzerland-French	11.504	8.953	11.917	9.246	12.409	9.44	12.131	9.132
Switzerland-German	11.596	9.453	11.89	9.72	11.942	9.422	12.08	10.003
Turkey	12.756	6.062	-	-	12.234	5.478	7.003	5.826
Ukrainian-Russian	6.814*	5.933	4.852*	4.364	3.230*	3.137	4.463*	4.016
Ukrainian-Ukrainian	9.249*	7.818	4.460*	4.023	3.493*	2.798	3.931*	3.818
United Kingdom	9.251	7.134	9.150	6.833	9.413	7.091	9.267	6.891

- indicates the country did not participate
- indicates the measure was not scalar invariant

Finally one can see the change in trust over time for the last 10 years (5 rounds). In many cases we see that trust in the authorities has been reduced to some extent. Only in very few countries we see an increase in trust in the authorities. This phenomenon cannot be observed for trust in the institutions. In some countries levels of trust remain the same, such as Austria, Belgium – Dutch, Belgium-French, Bulgaria, Czech Republic, Denmark, Finland-Finnish, Finland-Swedish, France, Germany, Israel – Russian. In some countries even an increase can be observed such as in Estonia (Estonian speaking groups), The Netherlands, Norway, Slovakia, Sweden and Switzerland and in only a few a decrease of trust such as Croatia, Cyprus, Greece and, Spain.

7. Conclusions

The first conclusion is that there is no such a variable as “Political Trust”. The two components: Trust in institutions and Trust in authorities correlate too weakly with each other to be regarded as one concept. Besides that the changes in the former and the latter are rather different. This also suggests that these two concepts should not be combined.

Overall, the two measures for Trust in authorities and Trust in institutions have rather high quality where the former is better than the latter. However, it is also concluded that quality differences across countries are still important and it indicates that correction for measurement error is absolutely necessary. How this can be done in an easy way has been described by Saris and Gallhofer (2007).

A major difference between the two concepts is that the concept trust in authorities is metric and scalar invariant over all countries and rounds while this is not true for the concept trust in institutions. This means that the relationships and means of Trust in authorities can be compared across all countries and rounds while this is not true for Trust in institutions. In Table 5 we indicated which countries cannot be compared with respect to relationships in at least one round (Austria, Belgium – French, Denmark, Finland- Finnish, Finland- Swedish, Italy, Israel – Arabic, Norway, Spain – Spanish, Slovenia) and in Table 6 we indicated which countries cannot be compared with respect to means in at least one round (Austria, Belgium – French, Denmark, Finland- Finnish, Finland- Swedish, Italy, Israel – Arabic, Norway-Norwegian, Spain – Spanish, Slovenia, Germany, Ukraine-Russian, Ukraine-Ukrainian, Bulgaria, Israel- Hebrew, Latvia-Latvian, Latvia-Russian, Romania, Croatia).

With respect to the explanation for these differences between the different countries further research is necessary to see whether the differences are due to cognitive differences or the cultural patterns of answers (for example a tendency to avoid the extreme points of the scale and a preference for moderate responses in some cultures in contrast to a tendency to use more extreme categories in other place for a same opinion). In the latter case, correction is possible but in the former case this is not possible.

References

- Allum N, Sturgis, P and Read, S (2010). Evaluating change in social and political trust in Europe. In Davidov, E, Billiet, J and Schmidt, P (eds) *Methods for Cross-Cultural Analysis: Basic Strategies and Applications*. Taylor & Francis.
- Coleman, James S. 1990. *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.
- Corten, I.W., Saris, W.E., and Satorra, A. (2009) "Can Fit Indices be used to evaluate Structural Equation Models?". RECSM Working Paper 7. (.pdf)
- Easton, David. 1965. *A Systems Analysis of Political Life*. New York: John Wiley.
- Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3, 424–453.
- Levi, M., and Stoker, L., (2000) Political Trust and Trustworthiness. *Annual Review of Political Science* 3:475– 507.
- Meredith, W. (1993). Measurement invariance, factor analysis and factorial invariance. *Psychometrika* 58: 525 - 543.
- Reeskens, T., Hooghe, M. (2008). Cross-cultural measurement equivalence of generalized trust. Evidence from the European Social Survey (2002 and 2004). *Social indicators research*, 85 (3), 515-532.
- Saris, W.E, and Gallhofer, I. (2007). *Design, Evaluation, and Analysis of Questionnaires for Survey Research*. New York: Wiley
- Saris, W.E., A.Satorra and W.Van der Veld (2009) Testing Structural equation models or detection of misspecifications? *Structural Equation Modeling*, 16: 561 - 582.
- Thomassen, J. (2000) Opinions about Political Issues. Suggestions prepared in the context of the design of the core module of the ESS. Chapter 5. Downloaded September 10, 2012 from:
http://www.europeansocialsurvey.org/index.php?option=com_docman&task=doc_view&gid=124&Itemid=80
- Zavala-Rojas, D (2012) Cross-culture or cross-country analysis?: the effect of minority languages in the quality survey questions in the ESS”, *working draft*.

Programs

- Jöreskog, K.G. & Sörbom, D. (2004). LISREL 8.7 for Windows [Computer software]. Skokie, IL: Scientific Software International, Inc.
- Van der Veld, W., Saris, W., Satorra, A. Judgement Rule Aid for Structural Equation Models 3.0.4 [Computer software]

Annex 1. Participating and non-invariant groups after test of metric invariance

Country	Round 2	Round 3	Round 4	Round 5
Austria	x (non-inv)	x (non-inv)	-	-
Belgium-Dutch	x	x	x	x
Belgium-French	x (non-inv)	x	x (non-inv)	X
Bulgaria	-	X	X	X
Croatia	-	-	X	X
Cyprus	-	X	X	X
Czech Republic	X	-	X	X
Denmark	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Estonia –Estonian	x	X	X	X
Estonia-Russian	X	X	X	X
Finland-Finnish	X	x (non-inv)	x (non-inv)	x (non-inv)
Finland-Swedish	X	X	x (non-inv)	x (non-inv)
France	X	X	X	X
Germany	X	X	X	X
Greece	X	-	X	X
Hungary	X	X	X	X
Iceland	X	-	-	-
Ireland	X	X	X	X
Israel-Hebrew	-	-	X	X
Israel-Arabic	-	-	x (non-inv)	x (non-inv)
Israel-Russian	-	-	X	X
Italy	x (non-inv)	-	-	-
Latvia-Latvian	-	-	X	-
Latvia-Russian	-	-	X	-
Luxemburg	X	-	-	-
Netherlands	X	X	X	X
Norway	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Poland	X	X	X	X
Portugal	X	X	X	X
Romania	-	-	X	-
Russia	-	X	X	X
Slovakia	X	X	X	X
Slovenia	x (non-inv)	X	X	x (non-inv)
Spain	x (non-inv)	x	x (non-inv)	X
Sweden	X	X	X	X
Switzerland-German	X	X	X	X
Switzerland-French	x	X	X	X
Turkey	X	-	X	-
Ukraine-Ukrainian	x (non-inv)	X	X	x (non-inv)
Ukraine-Russian	X	X	X	X
United Kingdom	X	X	X	X

X indicates that the country participated in that Round
- indicates that the country did not participate or is not in the integrated file
(non-inv) indicates that the country is non-invariant

Annex 2. Participating and non-invariant groups after test of scalar invariance

Country	Round 2	Round 3	Round 4	Round 5
Austria	x (non-inv)	x (non-inv)	-	-
Belgium-Dutch	x	x	x	x
Belgium-French	x (non-inv)	x	x (non-inv)	X
Bulgaria	-	x (non-inv)	x (non-inv)	x (non-inv)
Croatia	-	-	X	X
Cyprus	-	X	X	X
Czech Republic	X	-	X	X
Denmark	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Estonia –Estonian	x	X	X	X
Estonia-Russian	X	X	X	X
Finland-Finnish	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Finland-Swedish	X	x (non-inv)	x (non-inv)	x (non-inv)
France	X	X	X	X
Germany	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Greece	X	-	X	X
Hungary	X	X	X	X
Iceland	X	-	-	-
Ireland	X	X	X	X
Israel-Hebrew	-	-	x (non-inv)	x (non-inv)
Israel-Arabic	-	-	x (non-inv)	x (non-inv)
Israel-Russian	-	-	X	X
Italy	x (non-inv)	-	-	-
Latvia-Latvian	-	-	x (non-inv)	-
Latvia-Russian	-	-	x (non-inv)	-
Luxemburg	X	-	-	-
Netherlands	X	X	X	X
Norway	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Poland	X	X	X	X
Portugal	X	X	X	X
Romania	-	-	x (non-inv)	-
Russia	-	X	X	X
Slovakia	X	X	X	X
Slovenia	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Spain	x (non-inv)	x	x (non-inv)	X
Sweden	X	X	X	X
Switzerland-German	X	X	X	X
Switzerland-French	x	X	X	X
Turkey	X	-	X	-
Ukraine-Ukrainian	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
Ukraine-Russian	x (non-inv)	x (non-inv)	x (non-inv)	x (non-inv)
United Kingdom	X	X	X	X

X indicates that the country participated in that Round
- indicates that the country did not participate or is not in the integrated file
(non-inv) indicates that the country is non-invariant