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Testing for measurement equivalence of individuals' left-right orientation

Wiebke Weber
University of Pompeu Fabra

Subjective variables such as opinions, attitudes or preferences cannot be measured directly. Researchers have to rely on the answers people give in surveys, and whenever those answers shall be compared it is required that people answer these questions in the same way. Only then a concept can be used in different contexts. This paper deals with the measurement of the left-right concept: it analyses whether people make a distinction between a scale labelled 0 left and 10 right to one which is labelled 0 extreme left and 10 extreme right and tests whether the instrument is equivalent across groups. Following the three steps of invariance testing, configural, metric and scalar invariance, we find that the left-right response scale is on average equivalent across groups with different levels of political interest and different levels of education. This finding holds also in 23 of the 25 European countries tested, with the exception of the eastern part of Germany, Finland and France. In order to estimate how serious the difference between these two groups of countries is, we compare the observed means (which are affected by the difference) to the latent means (which are free of those effects), and the effect of the observed variable "attitude towards government's intervention in the economy" on the observed variable "left-right self-placement" with the effect between these variables after correcting for scale difference. It was found that countries' means can be compared but that the relationship with other variables might not be comparable among East Germany, Finland, France and the remaining countries.
Keywords: left-right orientation, left-right response scale, response function, measurement invariance, multiple group confirmatory factor analysis

1 Introduction

Ever since Downs (1957) ideology is seen as a key-factor influencing political behaviour, and in European democracies the most common used ideological concept is the left-right dimension which describes a one-dimensional political spectrum. It shall help people to orientate themselves in the world of politics, has a communication function for the political system (Fuchs & Klingemann, 1989; Hinich & Munger 1994; Knight, 1985; Popkin, 1991), and was found to be a major predictor of voting decisions (Eijk et al., 2005; Franklin et al., 1992; Gunther & Montero, 2001). Therefore it is a crucial concept in political science but at the same time it remains a black box. Scholars find that the concept varies over time (Inglehart, 1985), across countries (Eijk et al., 2005; Gunther & Montero, 2001; Klingemann et al., 2006) and among individuals (Fuchs & Klingemann, 1989; Weber & Saris, 2010). However, so far the literature did not contest the comparability of the left-right response scale. Thereby, the distinction between individuals' left-right orientation (opinion) and the position individuals take when they are asked to place themselves on the left-right scale (response) should be emphasised.[1] In this study the focus is on the response. I attempt to fill the gap in the literature by assessing the comparability of the measurement which is also known as functional equivalence or invariance of measures. As Wu et al. (2007) state "unless evidence is demonstrated, construct comparability should never be naively assumed" because observed differences might reflect systematic biases of response or different understanding of the concept across countries or individuals rather than substantive differences, or the other way around observed similarities might hide substantive differences (Steenkamp & Baumgartner, 1998).

Most frequently two types of comparison are made: comparison of means and comparison of relationships with other variables (Saris & Gallhofer, 2007:329). In order to test the comparability of the measurement of individuals' left-right opinion multigroup confirmatory factor analyses (MGCFA) (Billiet, 2002; Jöreskog & Sörbom, 1993) is employed, following three steps of invariance testing, configural, metric and scalar invariance (Meredith, 1993). Before conducting the test and presenting the results, the particularities of the left-right concept are described and a case for fixed reference points is made.

Contact information: Wiebke Weber, Research and Expertise Centre for Survey Methodology, Universitat Pompeu Fabra, Spain, e-mail: wiebke.weber@upf.edu

[1] People's left-right orientation will be called left-right opinion in order to highlight the distinction to the reponse they give when asked to place themselves on the left-right scale.

2 The left-right scale - a challenged concept

Ever since Inglehart and Klingemann's (1976) seminal article there has been a consensus that there are three major components of the left-right concept: the social, value and partisan components. Freire (2008) constraints this consistency only to Western Europe. The social component refers to individuals' location in a social surrounding which corresponds with their social identity and their left-right opinion (Freire, 2008:5). The value component refers to the link of values and attitudes towards certain issues and the left-right self-placement. The partisan component refers to the link between individuals' ideological orientation and political parties (Fuchs & Klingemann, 1989; Huber, 1989). I followed the literature by calling these variable sets "components", however, this term is rather misleading as the term "component" implies being a constituent part of the left-right ideology but those elements are in relation with it. In other words, the three variable sets are not parts of individuals' left-right opinion but are separate variables related with the left-right opinion (Figure 1).

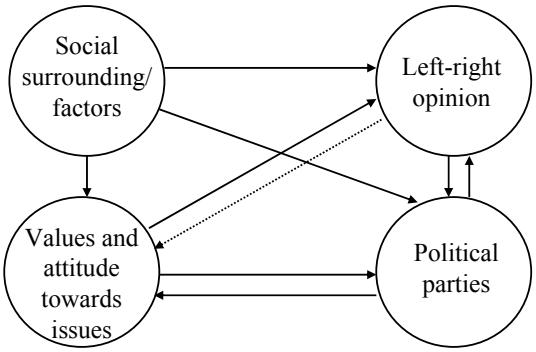
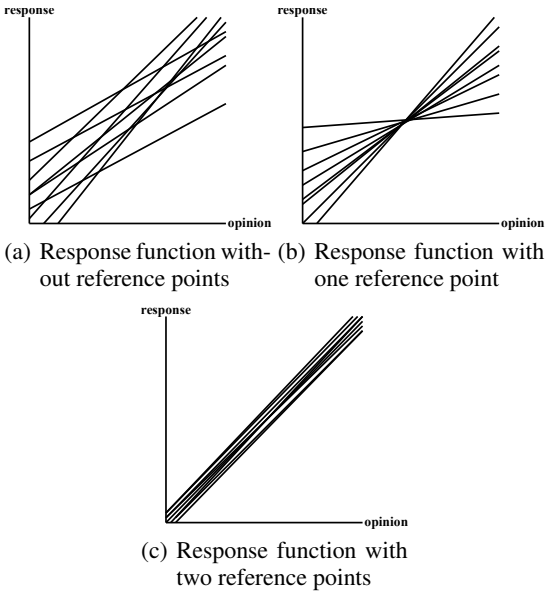


Figure 1: Elements which are in relation with the left-right concept

Whenever scholars study the left-right opinion or its relationship with the three elements or other variables they assume that individuals use the left-right response scale as offered in surveys in the same way, this means that persons with the same left-right position will give the same answer to the question. The same use of the left-right scale is an essential precondition for any comparison among individuals or countries, and for any conclusion drawn including this concept. As this precondition is so crucial, this study intents to test whether this assumption is actually met.

3 The use of the left-right scale

The left-right self-identification, like other subjective variables such as opinions, attitudes or preferences, cannot be measured directly. Researchers have to rely on the answers people give in surveys. The majority of cross-national surveys such as Eurobarometer, European Election Studies, European Social Survey, World Value Survey but also national election studies ask people to place themselves on a scale from left to right. There seems to be an implicit agreement that



(a) Response function without reference points

(b) Response function with one reference point

(c) Response function with two reference points

Figure 2: Response function with no, one and two reference points

this scale is the adequate instrument to measure people's left-right orientation. However, as Kroh (2007:205) points out only few studies examine the data quality of different instruments for surveying the left-right dimension and shows with data from the German Socio-Economic Panel that the 11-point scale in comparison to the 10 or 101-point scales performs the best. Yet besides the length of the scale the labels may also affect the quality and equivalence of the instrument. This shall be the focus of this study.

In order to assure equivalence of the measurement instrument, the fundamental assumption that the response function is the same for all respondents has to be fulfilled (Dijkstra & Zouwen, 1982). Response function refers to the relationship between opinion (here the true left-right orientation) and the response given when asked (here the placement on the left-right scale), and can be formulated, assuming a linear function, as:

$$R = \tau + \lambda O + \xi \tag{1}$$

R : Response
τ : Intercept
λ : Loading
O : Opinion
ξ : Error term

If the assumption is true, then $\tau_1 = \tau_2 = ... = \tau$ and $\lambda_1 = \lambda_2 = ... = \lambda$, i.e. the intercepts and slopes are the same for everyone which means that all respondents understand and use the left-right response scale in the same way (H_0).

This null hypothesis is not necessary true. For instance, Saris (1988) has demonstrated in several studies that people can use very different response functions if the scale is not

fixed. Saris et al. (1988:168) find that there is large variation in the response function if no reference point is given because then people have to choose it themselves and everybody will do it in a different way. If one reference point is provided in the question there is still large variation because respondents still have the freedom to choose their own scale as just one reference point is fixed. Finally the variation is more limited when at least two reference points are given and respondents have a linear response function. Those three scenarios are illustrated in Figure 2.

Yet it is not enough to introduce any two references points, they have to be chosen in such a way that there is no doubt in the mind of all respondents what the positions are of the reference points on their subjective opinion scale (Saris & Rooij, 1988:217). Saris already stated in 1988 that "the very common measurement of ideological orientation cannot be operationalized with the reference point left and right because many people will see these terms on different positions on the scale". Figure 3 illustrates how misleading the left-right self-placement may be if people see the terms left and right on different positions on the scale. The given responses appear different but the actual opinion of all respondents is the same.

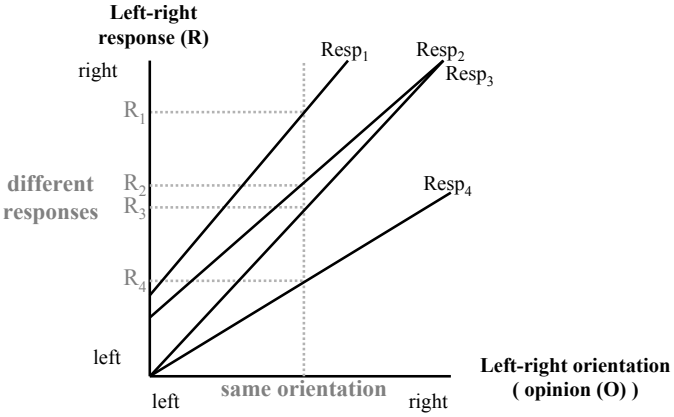


Figure 3: Relationship between opinion and response without fixed reference points and variation in response style

The illustrated phenomenon is not impossible because one can imagine that a person whose opinion is "right" will provide a response 10 but another person with the same opinion could think that the scale goes from extreme left to extreme right and so, as the labels are left and right, choosing the category 9 or 8. It appears clearly that these people would use the response scale in a different way. At the left side of the scale the same can occur, of course. This suggests that the response scale can be used by different people in different ways when as usually done, the scale is labelled with left and right. In order to prevent this problem it is necessary to fix the relation between the subjective opinion scale and the response scale for all respondents in the same way using what Saris and de Rooij (1988) call "fixed references points". The addition of the term "extreme" will fix this relation for the left-right scale as there is no doubt that the most leftist (rightist) position on the scale is the extreme left (right). So the opinion scale of all respondents and the response scale are equally starting from "extreme left" and ending with "extreme right" which describes this political dimension definitively. Respondents may adjust their answer given the new response scale with fixed reference points and thus make a distinction between the left-right and extreme left-right response scale. It can be expected that respondents perceive the difference between the two scales more, the more they are interested in politics and thus are more aware of or familiar with the left-right concept (H_1). People with higher levels of education are equally expected to be more aware of the concept and thus to make a distinction between the two scales (H_2). Moreover, the use of the left-right ideology depends on the time of the democratic history of a country. The longer a country is democratic and thus allows political actors with different left-right positions to participate, the more the political debate incorporates the concept and the more individuals will be familiar with it. Therefore, the longer a country is democratic, the more people are likely to make a distinction between a scale labelled left/right and one with extreme left/right (H_3).

4 Case and data

The left-right concept is a European concept as it has its origins in the seating arrangements of the French National Assembly 1789 where the right belonged to the aristocracy and the left to the radical republicans (Goodsell, 1988). The concept is also used in other continents but has the longest tradition in Europe. Therefore, this analysis concentrates on European countries, and the European Social Survey Round 4, 2008/09 (ESS 4) is employed.[2] This dataset has the advantage that it contains repetitions of the left-right self-placement question in the supplementary questionnaires. In the main questionnaire the commonly used question is asked:

"In politics people sometimes talk about 'left' and 'right'. Using this card, where would you place yourself on this scale, where 0 means left and 10 means right?"

For the repetitions the split ballot multitrait-multimethod (SB-MTMM) design (Saris et al., 2004) was employed, i.e. one random group gets one type and another random group another type of question. Group one was asked exactly the same question again and got exactly the same answer categories. Group two got also the same question but the answer categories change to 0 "extreme left" and 10 "extreme right", all other categories remain unlabelled. The main questionnaire is always conducted by face-to-face interviews and the supplementary questionnaires in the majority of the countries as well with the exception of Estonia, Finland, Latvia, the Netherlands, Norway and

[2] ESS Round 4: European Social Survey Round 4 Data (2008). Data file edition 1.0. Norwegian Social Science Data Services, Norway Data Archive and distributor of ESS data.

Sweden where they were self-completed by the respondent. Given that between the repetition of the question lays more than 20 minutes memory effects are avoided (Van Meurs & Saris, 1990).

5 Methodology

The most widely used method to test for measurement invariance is multigroup confirmatory factor analyses (MGCFA) (Billiet, 2002; Jöreskog & Sörbom, 1993). For our analysis the measurement model is specified as presented in Figure 4.

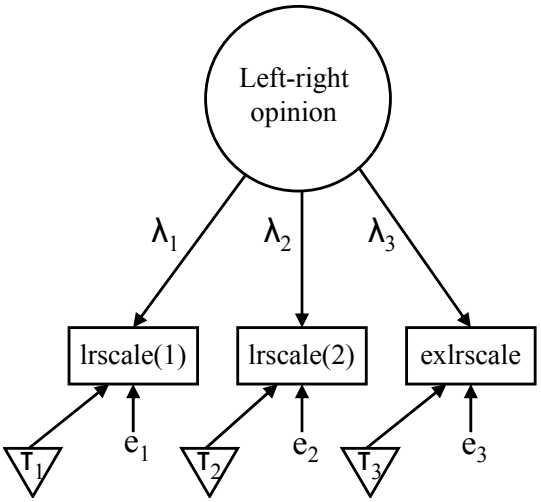


Figure 4: Measurement model

Where the "left-right opinion" is the unobserved latent concept, lrscale(1) is the observed variable in the main questionnaire, lrscale(2) and exlrscale are the observed variables in the supplementary questionnaires, λ_i is the loading, τ_i is the intercept and e_i is the disturbance terms for the i^{th} method. It is assumed that the disturbance terms have a mean of 0, and are uncorrelated with each other and with the latent variable.

The items lrscale(1) and lrscale(2) are identical questions with the same answer categories. As Van Meurs and Saris (1990) find that memory effects disappear if the time interval between the questions is at least 20 minutes which is in the ESS the case, it is reasonable to expect people answering both questions in the same way; therefore the loadings and the intercepts are set to be equal: $\lambda_1 = \lambda_2$, $\tau_1 = \tau_2$.

As argued before, the end points of the response scale should have fixed positions on the opinion scales of all respondents and extreme left/right provides those fixed reference points for the left-right dimension. Therefore, the scale of the latent variable is set to be equal to the scale of the extreme left-right scale, by fixing the loading of exlrscale to one and the intercept to zero: $\lambda_3 = 1$, $\tau_3 = 0$. This is the formulation of the assumption that fixed references points create an more equivalent scale which then reduces the possible error to merely random error. Moreover, in this way the scale of the latent variable is also specified: it is expressed in the same units as the observed variable exlrscale.

5.1 Testing measurement invariance

Measurement invariance means that individuals' answers are not dependent on their group characteristics (Mellenbergh, 1989; Meredith, 1993; Meredith & Millsap, 1992). There are three different levels of invariance testing, in order: configural, metric, and scalar invariance. Configural invariance is achieved if the model of interest fits across the groups. Metric invariance is a necessary condition for comparing relationships with other variables, and it requires that the loadings are the same across groups.

$$\begin{aligned} \lambda_{1i} &= \lambda_{1j} ... = \lambda_1 \\ \lambda_{2i} &= \lambda_{2j} ... = \lambda_2 \\ \lambda_{3i} &= \lambda_{3j} ... = \lambda_3 \end{aligned} \tag{2}$$

λ : Loading
i, j : Different countries

The comparison of means requires scalar invariance which means that the intercepts of the items are also equal across groups (Horn, 1983; Meredith, 1993; Steenkamp & Baumgartner, 1998).

$$\begin{aligned} \tau_{1i} &= \tau_{1j} ... = \tau_1 \\ \tau_{2i} &= \tau_{2j} ... = \tau_2 \\ \tau_{3i} &= \tau_{3j} ... = \tau_3 \end{aligned} \tag{3}$$

τ : Intercept
i, j : Different countries

The null hypothesis that people use the left-right scale in the same way across groups (H_0) implies that loadings and intercepts will be equal across groups. If this model is rejected the alternative hypotheses might be considered.

5.2 Testing the measurement model

For estimation the maximum likelihood estimator of LISREL 8.57 (Jöreskog and Sörbom, 2005) is used and for model evaluation and testing I rely on JRule software (Van der Veld et al., 2008) based on the procedure developed by Saris, Satorra and Van der Veld (2009). Saris et al. show that the commonly used evaluation procedures for structural equation models cannot be trusted as the test statistics and Fit indices are unequally sensitive for different misspecifications. They propose using the modification index (MI) as test statistic for detection of misspecifications (expressed as expected parameter change; EPC) in combination with the power of the MI test. The criterion for misspecification in this analysis is a deviation of .1 between the groups. Data have been generated in order to see if the above specified tests would have sufficient power to detect a deviation in parameter values are equal or larger than .1. It turned out that this was in general indeed the case.[3]

[3] The only exception was if the values of the parameter λ_1 and λ_3 would be exactly equal. However that is unlikely and was also

Table 1: Countries and number of observations

First and second wave of democratization	Third wave of democratization
Belgium	Bulgaria
Denmark	Croatia
Finland	Czech Republic
France	Cyprus
Great Britain	East Germany[a]
The Netherlands	Estonia
Norway	Greece
Sweden	Latvia
Switzerland	Poland
West Germany[a]	Portugal
	Romania
	Russia
	Slovakia
	Slovenia
	Spain
	Ukraine

[a] Note that Berlin had to be excluded from the analysis as it belonged to former East and West Germany.

5.3 Separation of the sample

In order to test the hypotheses the sample will be separated sequentially by political interest, by education levels, by countries, and finally by the combination of political interest or education with countries. Political interest is measured in the ESS by the question:

"How interested are you in politics?"

The categories offered are: 1 Very interested, 2 Quite interested, 3 Hardly interested and 4 Not at all interested.

The education level is asked in each country differently but then harmonised to seven levels in order to allow comparability across countries: Not completed primary, Primary or first stage of basic, Lower secondary or second stage of basic, Upper secondary, Post secondary, Non-tertiary, First stage of tertiary, and Second stage of tertiary education. The countries are categorized as presented in Table 1.

5.4 Comparison of means and relationships with other variables across groups

If variation across the groups is found, the follow-up question is whether this does not allow across-group comparisons. Therefore, the observed means will be compared with the means after correction for the difference of scales (means of the latent variable, the opinion), and the relationship with another variable as observed and after correction for scale difference (latent variable) will be compared, too. There is consensus among political scientist that the content of the left-right dimension is linked to economic issues (among other issues). The conventional interpretation is, among others, that "left" is associated with support for government control of the economy, meanwhile "right" is linked to support for free market (Eisinga and Ooms, 2007:54). Therefore, the attitude towards governments' intervention in the economy in order to reduce differences in income levels is employed as independent variable affecting the left-right self-placement. Even though the direction of causality could also be the other way around (Weber & Saris, 2010), for the sake of this analysis assuming this relation will be sufficient. The regression coefficient of the observed variables is compared with the one of the latent variables after correcting for measurement error. The attitude towards income equality is measured by the following question:

"Please say to what extent you agree or disagree with each of the following statements: The government should take measures to reduce differences in income levels."

The answer categories are: 1 Agree strongly, 2 Agree, 3 Neither agree nor disagree, 4 Disagree and 5 Disagree strongly.

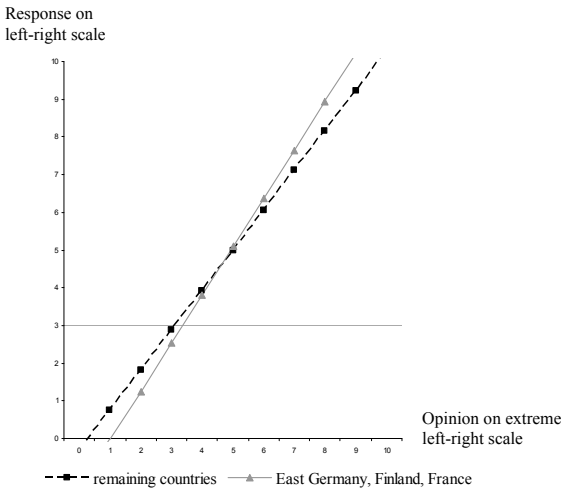


Figure 5: Relation between opinion and response on average in the two country groups

6 Test of hypotheses

When the intercepts and slopes are set to be equal for the four groups of political interest, JRule does not detect any misspecifications even though the power of the test is very high >.9 which means that the likelihood of detecting misspecifications is high. This means that scalar invariance holds and that there is one response function for all groups which is specified below with the standard error in brackets and beneath the t-values:

not the case as we will show below.

Table 2: Relation between opinion and response on average in the two country groups

	Opinion										
Response	0	1	2	3	4	5	6	7	8	9	10
Most countries	−0.31	0.75	1.81	2.87	3.93	4.99	6.05	7.11	8.17	9.23	10.29
East Germany, Finland, France	−1.31	−0.03	1.25	2.53	3.81	5.09	6.37	7.65	8.93	10.21	11.49
Difference	−1.00	−0.78	−0.60	−0.30	−0.10	0.10	0.32	0.54	0.76	0.98	1.20

Table 3: Comparison of observed and latent mean and percentage of non-response by country

Country	Observed mean	Ranking observed mean	Ranking latent mean	Latent mean	Missing in %
Belgium	4.93	10	10	4.91	4.60
Bulgaria	4.92	8	6	4.83	27.89
Croatia	5.26	17	20	5.32	24.66
Cyprus	5.07	12	12	5.08	16.54
Czech Republic	5.42	22	21	5.38	9.66
Denmark	5.31	19	19	5.27	3.98
East Germany	4.00	1	1	4.13	21.67
Estonia	5.19	16	14	5.12	4.97
Finland	5.72	24	23	5.47	5.98
France	4.79	5	5	4.82	7.79
Great Britain	5.01	11	11	5.04	1.03
Greece	5.12	13	13	5.11	17.18
Latvia	5.75	25	25	5.68	16.21
Netherlands	5.15	15	15	5.12	4.05
Norway	5.33	20	17	5.26	2.07
Poland	5.75	26	26	5.69	16.80
Portugal	4.83	6	8	4.87	32.49
Romania	5.59	23	24	5.65	31.13
Russia	5.39	21	22	5.43	36.66
Slovakia	4.73	4	4	4.77	14.31
Slovenia	4.63	3	3	4.69	2.53
Spain	4.54	2	2	4.53	19.72
Sweden	5.12	14	16	5.17	2.90
Switzerland	4.92	9	9	4.90	7.42
Ukraine	5.26	18	18	5.26	42.93
West Germany	4.86	7	7	4.86	8.34

Pearson's correlation of observed and latent mean: .99
Spearman's rank correlation of rank ordering: .99

$$\begin{array}{lccccc} \text{Response} = & -.41 & + & 1.06 & * & \text{Opinion} \\ & (.04) & & (.01) & & \\ & -1.78 & & 149.91 & & \end{array}$$

Thus, we have to reject the hypothesis H_1 that the more people are interested in politics, the more they are familiar with the left-right concept and make a distinction between the two differently labelled scales. Likewise, we have to reject H_2 that people with higher education would make a distinction between the two scales as we find that scalar invariance holds over all groups with different education level. Finally, when we test for scalar and metric invariance across countries, JRule detects misspecifications in East Germany, Finland and France. The deviations are not in agreement with hypothesis H_3 that the longer a country is democratic, the more people are likely to make a distinction between a scale labelled left/right and one with extreme left/right and thus we have to reject this alternative hypothesis. Given that all alternative hypotheses had to be rejected and East Germany, Finland and France can be considered outliers, overall we cannot reject the null hypothesis that people use the left-right scale in the same way across groups.

7 Further exploration

Following the suggestions for modifications provided by JRule we detect the following response function (with the standard error in brackets and beneath the t-values) for all countries except East Germany, Finland and France:

$$\begin{array}{lccccc} \text{Response} = & -.31 & + & 1.06 & * & \text{Opinion} \\ & (.04) & & (.01) & & \\ & -8.75 & & 156.99 & & \end{array}$$

And a different one for these three remaining countries:

$$\begin{array}{lccccc} \text{Response} = & -1.31 & + & 1.28 & * & \text{Opinion} \\ & (.14) & & (.03) & & \\ & -9.57 & & 47.34 & & \end{array}$$

Table 2 and Figure 5 show the relations between the opinion and response on average for people in the countries of the two groups, and highlights the difference. It appears that people in East Germany, Finland and France clearly make a distinction between the two response scales meanwhile people in Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Great Britain, Greece, Latvia, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, Ukraine and West Germany do not make this distinction.

8 Consequences of the differences

Given that statistically significant variation was found in the comparison of the European countries the question is whether it is so serious that it does not allow cross-country comparisons? Therefore the means and the relationship with

Table 4: Comparison of observed and latent effect of the attitude towards income equality on left-right self-placement by country

Country	Rank	Observed coefficient	Standard error	Rank	Latent coefficient	Standard error	Difference
Belgium	8	.19	.04	8	.18	.04	.01
Bulgaria	11	.32	.06	11	.30	.06	.02
Croatia	4	.12	.08	2	.01	.08	.11
Cyprus	17	.41	.10	17	.38	.10	.03
Czech Republic	25	.71	.04	25	.68	.04	.03
Denmark	24	.69	.05	24	.65	.04	.04
East Germany	7	.17	.07	4	.08	.06	.09
Estonia	14	.37	.05	14	.35	.05	.02
Finland	22	.63	.04	22	.49	.03	.14
France	21	.53	.05	19	.42	.04	.11
Great Britain	15	.37	.04	15	.35	.03	.02
Greece	19	.48	.07	20	.45	.07	.03
Latvia	2	.06	.07	3	.05	.07	.01
Netherlands	20	.49	.04	21	.46	.04	.03
Norway	23	.66	.05	23	.62	.05	.04
Poland	1	−.01	.06	1	−.01	.06	.00
Portugal	6	.15	.07	7	.15	.06	.00
Romania	9	.21	.08	9	.20	.08	.01
Russia	5	.14	.05	6	.13	.05	.01
Slovakia	18	.45	.06	18	.42	.05	.03
Slovenia	3	.09	.09	5	.09	.09	.00
Spain	10	.27	.05	10	.26	.05	.01
Sweden	26	.95	.05	26	.89	.05	.06
Switzerland	16	.39	.05	16	.36	.04	.03
Ukraine	12	.34	.07	12	.32	.06	.02
West Germany	13	.35	.04	13	.33	.04	.02

Pearson's correlation of observed and latent mean: .99
Spearman's rank correlation of rank ordering: .99

another variable are considered. As Table 2 shows, the differences in the response function only matter towards the end points of the left-right scales in the two groups. So if most people are in the middle of the scale the difference in the means will not matter much. As this is the case for all countries (Figure 1, Appendix), the ranking of country's mean changes only slightly when the observed and the latent mean are compared as shown in Table 3. The Pearson's correlation between the observed means (affected by the difference in response function) and latent means (free of these effects) is .99 and the Spearman's rank correlation between the observed and latent rank ordering is .99. This implies that even though differences in the use of the left-right response scale across countries were found, countries' means can still be compared.

As the differences seem to be relevant towards to the end of the scale this might not be captured by the means but might still affect the relationship with other variables. Therefore, the effect of the attitude towards government's intervention in the economy on left-right self-placement as observed is compared to the effect between the variables after correcting for the scale difference. Table 4 shows the results. We find differences between the observed and latent regression coefficient >.1 in Croatia, Finland and France. However, overall this also has only a minor effect as the Pearson's correlation is .99 and the Spearman's rank correlation of the rank ordering is .99. Yet, this may only be true for this specific analysis of the relationship of left-right self-placement and the attitude towards governments' intervention in the economy as the differences between regression coefficient between the observed variables and the one after correction for the scale difference depends also on the size of the observed regression coefficient.

9 Conclusion

In this study I tested the equivalence of the measurement for individuals' left-right orientation. There was reason to believe that the terms "left" and "right" would be seen by many people on different positions on the scale as they are not fixed reference points. Therefore, I compared the extreme left-right to the usually employed left-right scale and argued that people who are more aware and/or familiar with the concept will be more likely to make a distinction between these scales. I reasoned that these people are those with more interest in politics, those who are more educated and those who live in a country with a longer democratic history as democracy allows political actors with different political positions

to participate which facilitates the incorporation of the concept in the political debate and thus make individuals more familiar with the concept.

Variation was not found across the groups with different political interest and the seven education levels but across the countries. I found that on average people in East Germany, Finland and France perceive the two scales differently and adjust their responses accordingly. One response function was identified for these three countries which is significantly different to the one found for the remaining 22 countries and West Germany. Explaining this variation goes beyond the scope of this study but it seems that differences in the formulation of the request for answer could be the reason for the divergence in the case of Finland and France. Further research on this issue is needed. Thus, with the exception of East Germany, Finland and France the null hypothesis cannot be rejected for the other groups. It appears that people on average independent of their education, their interest in politics and their residence use the left-right response scale in the same way.

However, the differences between the countries due to the time of their democratic experience may not be captured by the approach of this study. Given that the use of response scales was analysed, only those who actually responded could be considered. However, the particular high non-response among people from countries with a shorter democratic history is striking: with the exception of Estonia (4.97%), it varies from 9.66% in the Czech Republic to 42.93% in the Ukraine. In comparison, the Western European countries have much lower non-response rates: it varies from 1.03% in Great Britain to 8.34% in West Germany. Unfortunately my approach does not allow finding out whether non-respondents make a difference between the two response scales and whether they would place themselves differently on them.

To sum up, this analysis yields an important finding for scholars who are studying the left-right concept as it was shown that the precondition for comparing group means of left-right self-placement is fulfilled. However, this was not found for the relationship with another variable, here government's intervention in the economy. Given that people on average in the two groups of countries use the left-right response scale differently, the relationship after correcting for the scale difference changes. In this study these differences were not very salient, but as they also depend on the size of the coefficients, in another analyses this could be more pronounced and thus may not allow comparisons of East Germany, Finland and France with the remaining European countries. Therefore, the regression coefficients for these three countries should always be corrected for the scale difference by dividing them by the ration of the two slopes 1.28/1.06 as the slope has an increasing effect on the size of the effect of the unstandardized regression coefficient between the left-right scale and another variable.

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Appendix

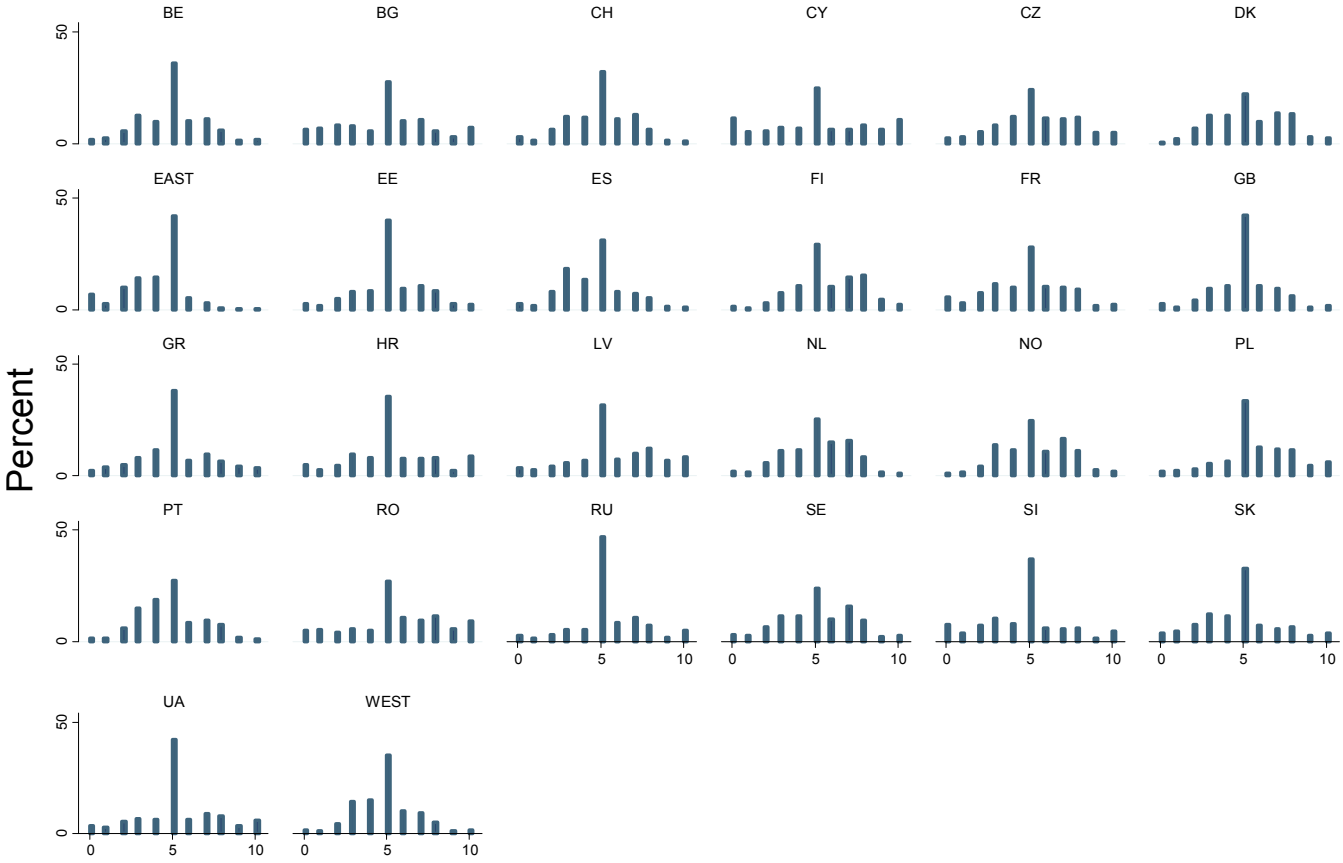

Figure 1: Individuals' self-placement on the left-right scale in all countries