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A multidimensional assessment of social cohesion in 47 European countries

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L'European Values Study (EVS) est une enquête réalisée au Luxembourg en 2008 auprès d'un échantillon représentatif de la population résidante composé de 1610 individus âgés de 18 ans ou plus.

Au niveau national, cette enquête fait partie du projet de recherche VALCOS (Valeurs et Cohésion sociale), cofinancé par le FNR dans le cadre du programme VIVRE. Au niveau international, elle est partie intégrante d'une enquête réalisée dans 45 pays européens qui a pour objectif d'identifier et d'expliquer en Europe les dynamiques de changements de valeurs, et d'explorer les valeurs morales et sociales qui sous-tendent les institutions sociales et politiques européennes (www.europeanvaluesstudy.eu).

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A multidimensional assessment of social cohesion in 47 European countries[1]

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Abstract

This paper presents a theoretically based, multidimensional and comparable measurementof social cohesion applicable in 47 European countries using the most recent micro-level data of European Value Study (EVS) from 2008. The analysis is conducted in four steps. In the first part, we create a set of measurable intermediate indicators that correspond to social cohesion dimensions suggested by the theory. In the second part, we verify whether these indicators empirically corroborate the multidimensional structure of the concept proposed by the theory. The third part examines whether the obtained intermediate indicators of social cohesion form the same constructs across countries and whether they can yield a cross country equivalent measure of social cohesion. In the fourth step, composite scores of all dimensions of social cohesion are calculated for all 47 countries to demostrate applicability of this constructed measurement in comparative research.

Keywords: social cohesion; measurement equivalence; multidimensional scaling; LISREL; multidimensional indicators.

JEL classification codes: D63; Z13

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1 Theory

There have been many attempts to conceptualize and measure social cohesion. Different definitions and approaches have yield different types of indicators and empirical results. However, most of these attempts only partially cover the complex and multidimensional nature of the concept.

Definition of social cohesion in the present paper is based on the theory of Jenson (1998), Bernard (1999) and Chan *et al.* (2006) and was already applied on the 1999 files of the EVS survey (Dickes, *et al.* 2009). Main features of this theoretical construct are: 1) Social cohesion is an attribute of social groups or of societies and not of individuals who composed them. It concerns relationships among individuals, between individuals and groups/organizations and between individuals and society/state. 2) Social cohesion is a multidimensional construct: on the one hand, it measures social connectedness in different life domains, such as political and sociocultural spheres. On the other hand, it covers subjective representations (attitude) as well as behavioral outcomes (involvement).

A detailed structure of the multidimensional construct of social cohesion is presented in Table 1 where rows represent two main life domains and columns stand for nature of social relations. At the cross-section of these two axes one can find four dimensions of the concept of social cohesion: (1) affiliation/isolation (share of common values, feeling of belonging to a same community); (2) participation/passivity (involvement in management of public affairs, third sector); (3) acceptance/rejection (pluralism in facts and also as a virtue, i.e. tolerance with respect to differences); (4) legitimacy/illegitimacy (maintenance of public and privates institutions which act as mediators, i.e. how adequately the various institutions represent the people and their interests). This theoretical construct is validated in the empirical part of the study and serves as a base for construction of the measurement.

Table 1: Measured concept of social cohesion

Domains	Nature of relations	
	Formal/attitudinal	*Substantial/behavioural*
Political	Legitimacy/illegitimacy: maintenance of public and private institutions which act as mediators	Participation/passivity: involvement in management of public affairs, third sector (in opposition to political disenchantment)
	Trust in public, political and other major social institutions	*Political participation*
Sociocultural	Acceptance/rejection: pluralism in facts and also as a virtue *i.e.* tolerance in differences	Affiliation/isolation: share of common values, active participation and belonging to a same community
	Solidarity	*Socio-cultural participation*

Source: Bernard (1999)

2 Data

Empirical analyses are based on the fourth wave of the European Values Study (EVS) of 2008 conducted in 47 countries. EVS is a large-scale, cross-national, cross-sectional and repeated research program on basic human values.

There are two main reasons behind choosing this database. First, it contains a great number of subjective and objective items that measure attitudes toward and behavior regarding social relations, socio-cultural participation, and institutional trust at many levels of social reality, as well as in many spheres/domains of everyday life, corresponding more or less to the dimensions of social cohesion mentioned in the theoretical literature. Second, this dataset covers a great number of countries with a very different history, level of economic development and socio-demographic structure. This diversity assures that the proposed measure of social cohesion is easily applicable in rather heterogeneous cultural, social and economic contexts.

In our study we work on representative samples of the adult population (aged at least 18) of 47 European countries[2]. Original weighted pooled sample consisted

[2] Albania, Armenia, Austria, Azerbaijan, Bosnia Herzegovina, Belgium, Bulgaria, Belarus, Switzerland, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, Great Britain, Georgia, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Kosovo, Lithuania, Luxembourg, Latvia, Moldova, Montenegro, Macedonia, Malta, Northern Cyprus, Northern Ireland, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Russian Federation, Sweden, Slovenia, Slovak Republic, Turkey, Ukraine.

of 67492 individuals. The number of cases in each country has been adjusted to 1000 to ensure equal weighting in the analyses. Due to this, the number of cases for each country represents 2.1% of the countries pooled sample. Final number of the cases entering the enalysis is 46801[3].

3 Methodology

With respect to methodology, from the EVS common questionnaire only items relevant to the above specified theoretical framework of social cohesion were selected by our research team and used to create a set of intermediate indicators. These are used in core analysis. The analysis is conducted in two steps. First, we verify whether these indicators empirically reflect/corroborate the multidimensional structure of the concept proposed by the theory. In the second step, we test for cross-country equivalence of this multidimensional measurement of social cohesion. To empirically validate the theoretial construct we use multidimensional scaling – MDS and confirmatory factor analysis (Lisrel) and to verify cross-country measurement equivalence multidimensional scaling – MDS and in particular, the INDSCAL module.

Keeping in mind the theoretical framework and the nature of the available data, we operationalize the concept of social cohesion as follows. In a first step, 56 items are selected from the questionnaire and assigned to the theoretical frame. Only items applicable in all countries are retained. Then a pre-treatment of the retained items was done. Missing values were replaced by mode or mean values or other plausible values estimated with Multiple Correspondence Analysis. If necessary the coding scheme of the variables was reversed.

In a second step, in order to construct intermediate variables suitable for Multidimensional analysis (MDS) and structural equation modeling (SEM), some preliminary grouping of items (parcels) was necessary. Table 2 summarizes the link between the items and intermediate variables, as well as the hypothetical assignation

[3] The fact that there are 46801 cases in the final pooled sample instead of expected 47000 is due to rounding errors in the SPSS programme.

of the parcels in the used theoretical frame. If the following conditions are met, the grouping of items in each of the different parcels is justified: In the case where only two items constitute a parcel, the correlation between the two items must be significant in each of the countries; if more than two items form a parcel, they must have high enough saturations on the first principal component (equal or greater than 0.10).

Table 2: Intermediate variables

Intermediates variables	**items**	**α**	**M** **sd**	**Skew** **Kurt**
	Political sphere – Formal relations Dimension: **Legitimacy/Illegitimacy**			
VAI01 Confidence in national distributive systems	v207r Confidence in: education system v213r Confidence in: social security system v217r Confidence in: health care system v218r Confidence in: justice system	.77	10.32 2.54	-.102 -.130
VAI02 Confidence in national organizations	v208r Confidence in: the press v209r Confidence in: trade unions v211r Confidence in: parliament v212r Confidence in: civil service	.74	9.15 2.41	.194 .130
VAI03 Confidence in authority institutions	v205r Confidence in: church v206r Confidence in: armed forces v210r Confidence in: the police	.57	8.02 1.97	-.109 -.232
VAI04 Satisfaction and approval of democracy and government	v221r Confidence in: political parties v222r Confidence in: government v223r Are you satisfied with democracy v224r View government: very bad-very good (4 categories)	.76	9.15 2.64	.059 -.566
	Sociocultural sphere – Formal relation Dimension: **Acceptance/Reject**			
VAI05 Proximal solidarity	v285r Concerned with people in the neighbourhood v286r Concerned with people in the region v287r Concerned with fellow countrymen	.87	9.05 2.83	-.024 -.219
VAI06 Distal solidarity	v290r Concerned with elderly people v291r Concerned with unemployed people v292r Concerned with immigrants v293r Concerned with sick and disabled people v294r Concerned with poor children	.85	17.48 4.12	-.323 .053
	Political sphere –substantial relation Dimension: **Participation/Passivity**			
VAI07 ***Participation in legal political activities***	v187r Signing a petition v188r Joining in boycotts v189r Attending lawful demonstrations	.75	5.16 1.84	.356 -.931
VAI08 ***Participation in illegal political activities***	v190r Joining unofficial strikes v191r Occupying buildings/factories	.63	2.44 0.82	1.94 3.32
VAI09 ***Political concern***	v7r How often discuss politics with friends v281r How often do you follow politics in media (3 categories)	.51	3.94 1.27	-.072 -1.100
	Sociocultural sphere - substantial relation Dimension: **Belonging/Isolation**			

VAI10 Participation in social associations	v10r Do you belong to: welfare organisation v28r Do you work unpaid for: welfare organisation v15r Do you belong to: local community action v33r Do you work unpaid for: local community action	.68	4.12 0.45	4.77 25.94
VAI11 Participation in political associations	v13r Do you belong to: trade unions v31r Do you work unpaid for: trade unions v14r Do you belong to: political parties/groups v32r Do you work unpaid for: political parties/groups v18r Do you belong to: professional associations v36r Do you work unpaid for: professional associations	.66	6.27 0.72	3.70 17.85
VAI12 Participation in cultural associations	v11r Do you belong to: religious organisation v29r Do you work unpaid for: religious organisation v12r Do you belong to: cultural activities v30r Do you work unpaid for: cultural activities v21r Do you belong to: women's groups v39r Do you work unpaid for: women's groups	.66	6.30 0.77	3.25 13.00
VAI13 Participation in youth & leisure associations	v19r Do you belong to: youth work v37r Do you work unpaid for: youth work v20r Do you belong to: sports/recreation v38r Do you work unpaid for: sports/recreation	.68	4.24 0.65	3.10 10.46

Source: EVS 2008, CEPS/INSTEAD

Note: α=coefficient Cronbach Alpha; sd=standard deviation ; skew=skeweness; kurt=kurtosis.

Two measurement models are applied on the data in order to verify the theoretical propositions of the integrated scheme presented in table 1: Multidimensional scaling (MDS) and confirmatory factor analysis (CFA).

MDS is mainly conceived as a "method that represents measurement of similarity (or dissimilarity) among pairs of objects as distances between points of a low-dimensional multidimensional space" (see Borg and Groenen, 2005:3). Carrol and Chang (1970) extended the basic MDS model, referred as INDSCAL or weighted MDS, to include also group differences. This application takes into account the structure common to all the countries as well as the structure of each of them. Comprehensive presentation of MDS and INDSCAL can be found in Kruskal and Wish (1978), Coxon (1982), Tournois and Dickes (1993), and Borg and Groenen (2005). Links between theoretical propositions and their validation with MDS can be found in Cantor (1982).

CFA belongs to the family of structural equation models, where constraints about linear relationship between observed and unobserved (latent) variables can be introduced and tested. LISREL's (Linear Structural Relationships) model (Jöreskog

and Sörbom, 1993) allows testing a theoretical representation of dimensions about social cohesion and can assess if they are in accordance with the observed data.

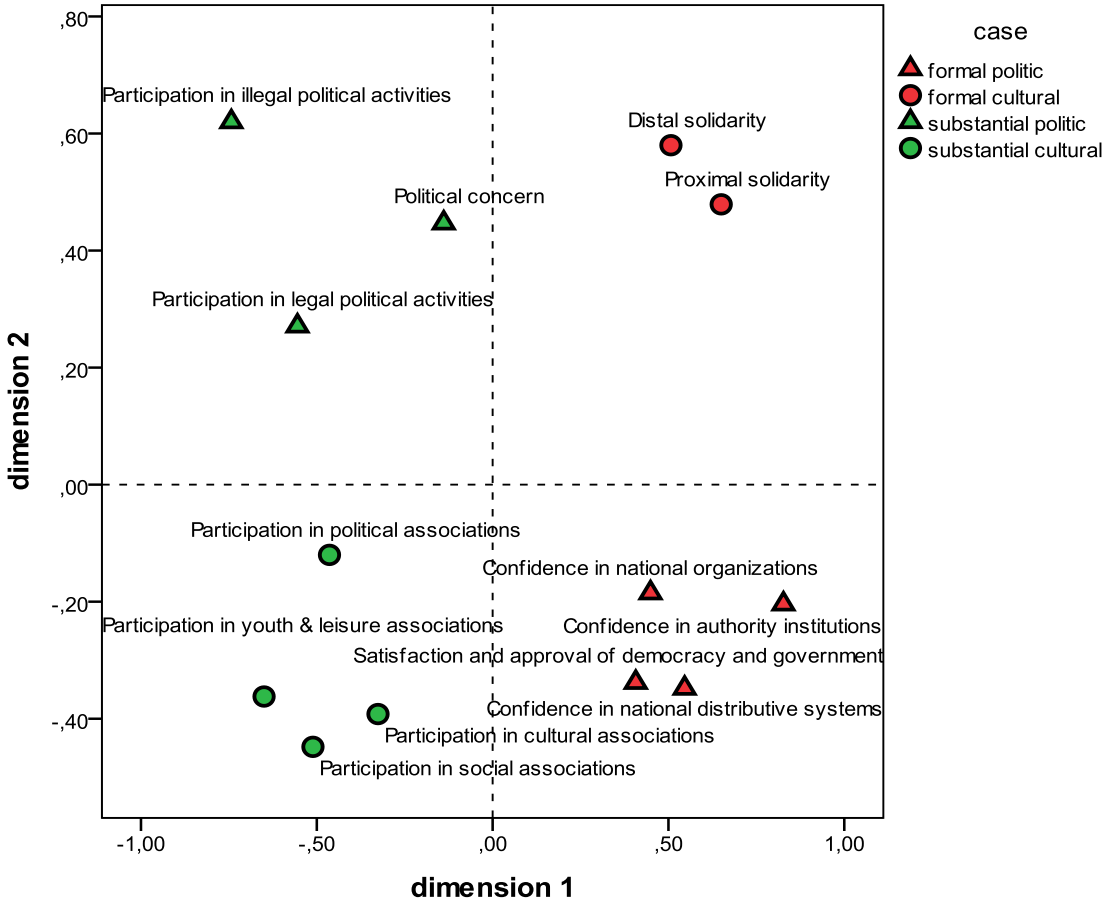
MDS leads to compact representations of relations between the variables and is especially fruitful in testing facetted theories (Cantor et al. 1970). On the other hand, only CFA can lead to composite social indicators taking group differences into account. MDS can consider qualitative (monotonic) relationship between observed dissimilarities and obtained distances between the variables. CFA is more restrictive and admit only linear relationships. We consider that the theory is validated if the MDS results and the measurement by confirmatory factor analysis represent all or most of the features of the integrated conceptual scheme.

4 Results

4.1 Multidimensional scaling

The outcomes of the MDS applied on the used intermediate variable suggested that two dimensions are sufficient to interpret the results and lead to a fair corroboration of the used theory. 1) The formal and substantial relations indicators are clearly located in the MDS space. 2) Each of the indicators for a given theoretical case is clearly identifiable and isolated in a quadrant whose borders join together in the centre of the MDS figure. Thus, regions of political participation, sociocultural participation, institutional trust, solidarity, measure the hypothetical constructs. The central component of balance between the different dimensions and domains can be observed. Potential conflict between formal and substantial dimensions can be observed for each measured domain.

Figure 1: Multidimensional space of the 47 countries



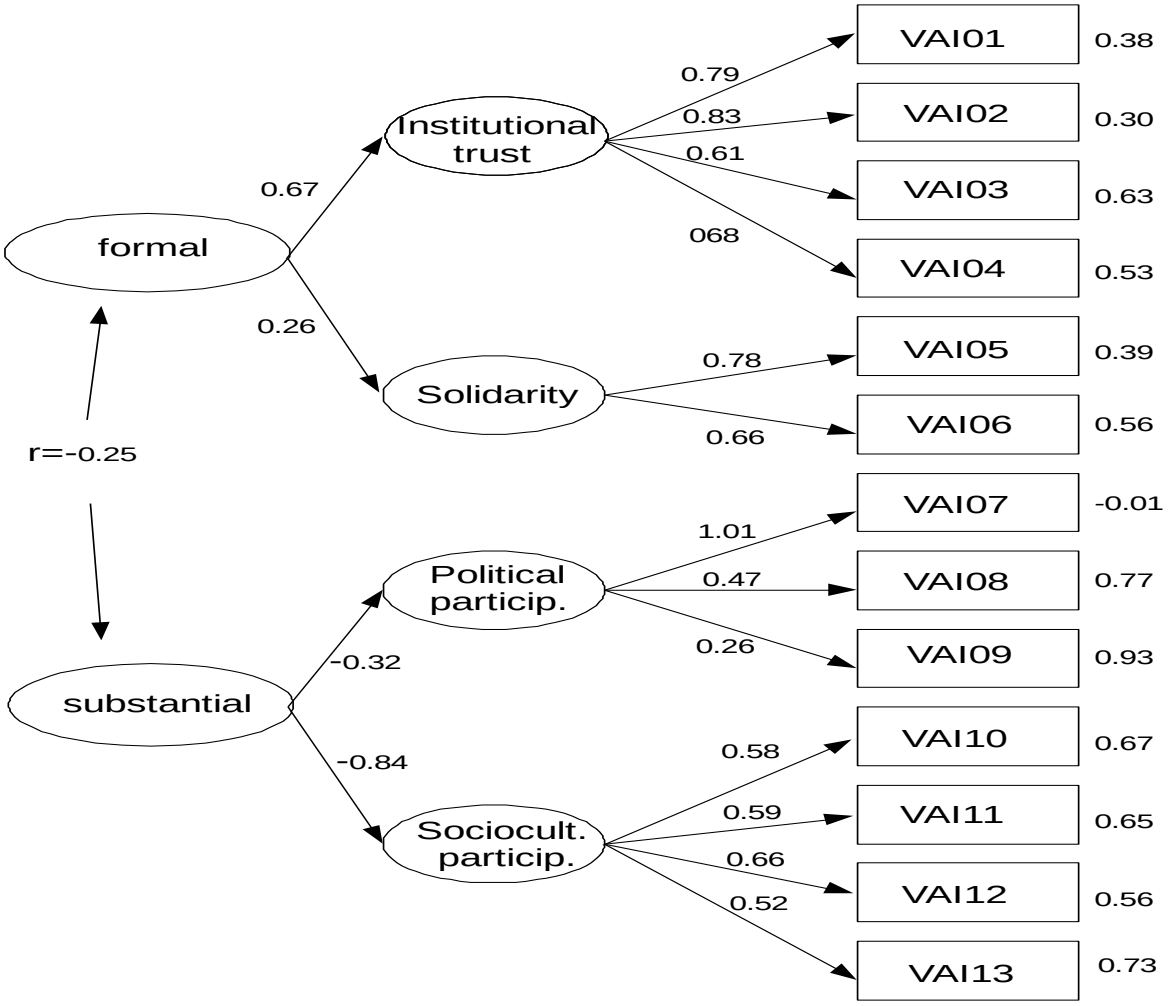
Source: EVS 2008, CEPS/INSTEAD

4.2 Confirmatory factor analysis

Given a significant and rather large Chi-Square, we would have to reject hypothesis that observed and theoretical covariance matrix fit. However, this result is not suprising, given the large number of case in the analysed sample. Other model fit indications (RMSEA<0.05 and CFI>0.95) provide us with evidence that the proposed model is acceptable.

The outcomes of confirmatory factor analysis show that the model cooraborates the structrure proposed by the theory. It has been observed that there is a correlation between the two second-order factors. However, a general factor of social cohesion is not possible to identify.

Figure 2: Confirmatory factor analysis – hierarchical model of four obligue factors



Source: EVS 2008, CEPS/INSTEAD
Note: Model fit indicies of the CFA model (LISREL, N=46801): RMSEA=0.057, Chi-Square =7305.72 (P<0.001), DF= 60, CFI=0.94.
All coeficietns are significant at the p<0.05 level.

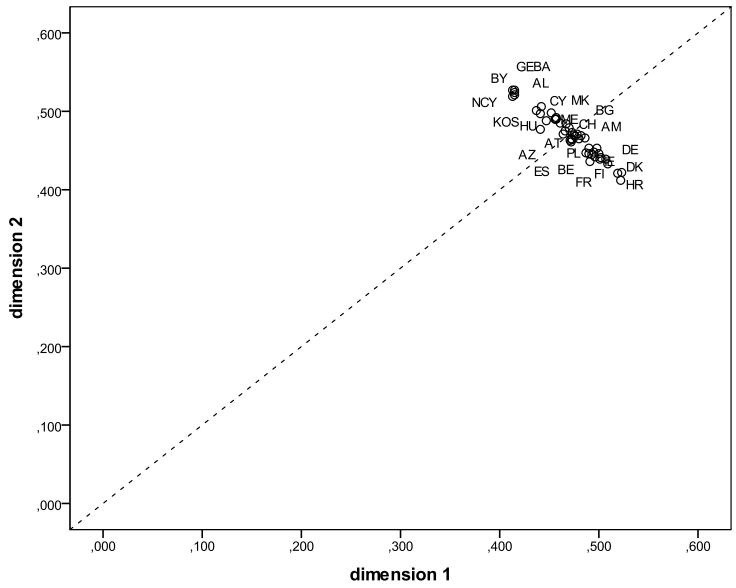
4.3 Test of cross-country equivalence of measurement

The models must also have the power of taking into account group differences. The challenge of our research is not only to test the theory on the 47 countries taken as a whole, but also to verify the generalization of the results on the different countries. To test for a cross-country equivalence of measurement we use weighted MDS, considering countries differences (group/country comparison in LISREL was not possible due to impossibility to identify the model). This technique transforms the results of all the countries in common and individual spaces. This can be done if the transformations are applied across all countries simultaneously, or if the transformations are applied within each country separately. We opt here for the first condition and are in agreement with the individual differences model of Carroll and Chang (1970).

Quantitative evaluation of the congruence of the MDS solutions of the 47 countries is provided by the inspection of the weights of their own MDS representations.

We consider for each country, its position in a weight space (figure 3), expressing its attractiveness towards the dimensions of the common space. The closer the points are in the weights space, the better is the congruence among the countries. The angle between the coordinates of the points in the weights space informs about the similarity of the configurations of the countries. The outcomes of the analysis suggest that in our case these coordinates cluster together so that the same interpretation can be given to the resulting configurations of each country.

Figure 3: Weights of INDSCAL for 47 countries



Source: EVS 2008, CEPS/INSTEAD

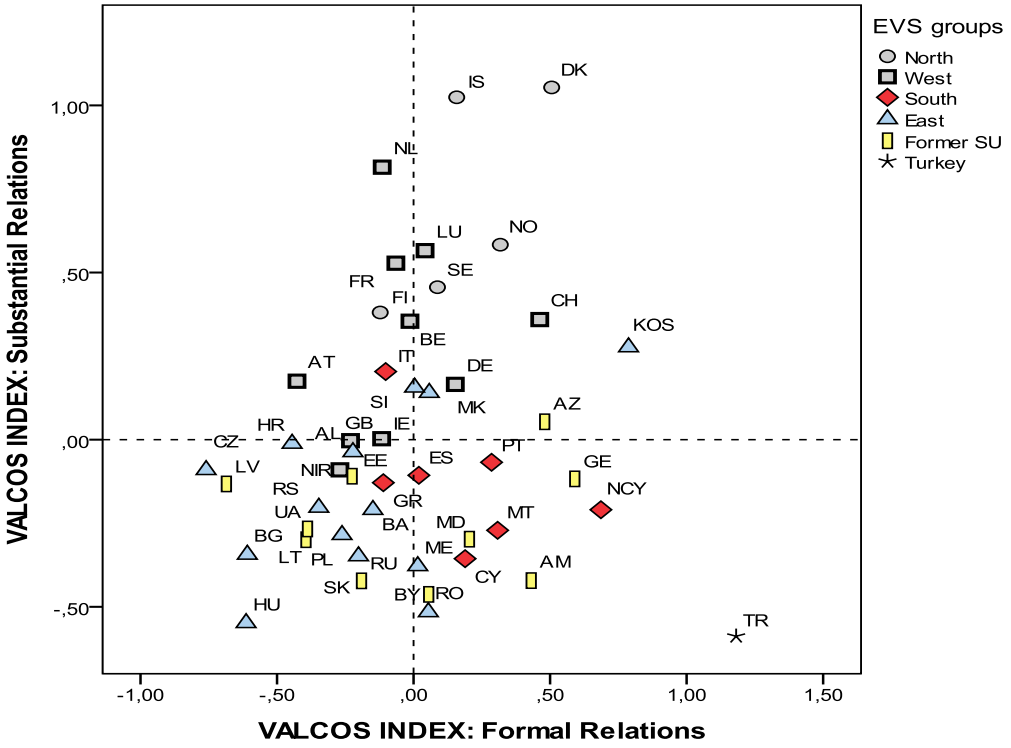
4.4 Creation of composite scores of social cohesion

After all necessary verifications, composite scores of particular dimensions of social cohesion were created. This was done by summing up standardized intermediate variables that, according to the theory and our empirical tests, load this dimensions and divide this sum by the number of variables. Afterwards, the obtained composite scores were standardized to assure their comparability (mean =0 and standard deviation =1).

5 Application

When applying the prosed measurement we can, for example, observe that different groups countries show significantly different patterns with respect to their social cohesiveness and group in six distinctive clusters: North, South, West, East, Former Soviet Union and Turkey[4] (see figure 4). Norhern European countries are more cohesive, especially at the level of behaviour, than the remaining groups (figures 4 and 5).

Figure 4: MDS, formal and substantial dimansions, 47 countries and country groups

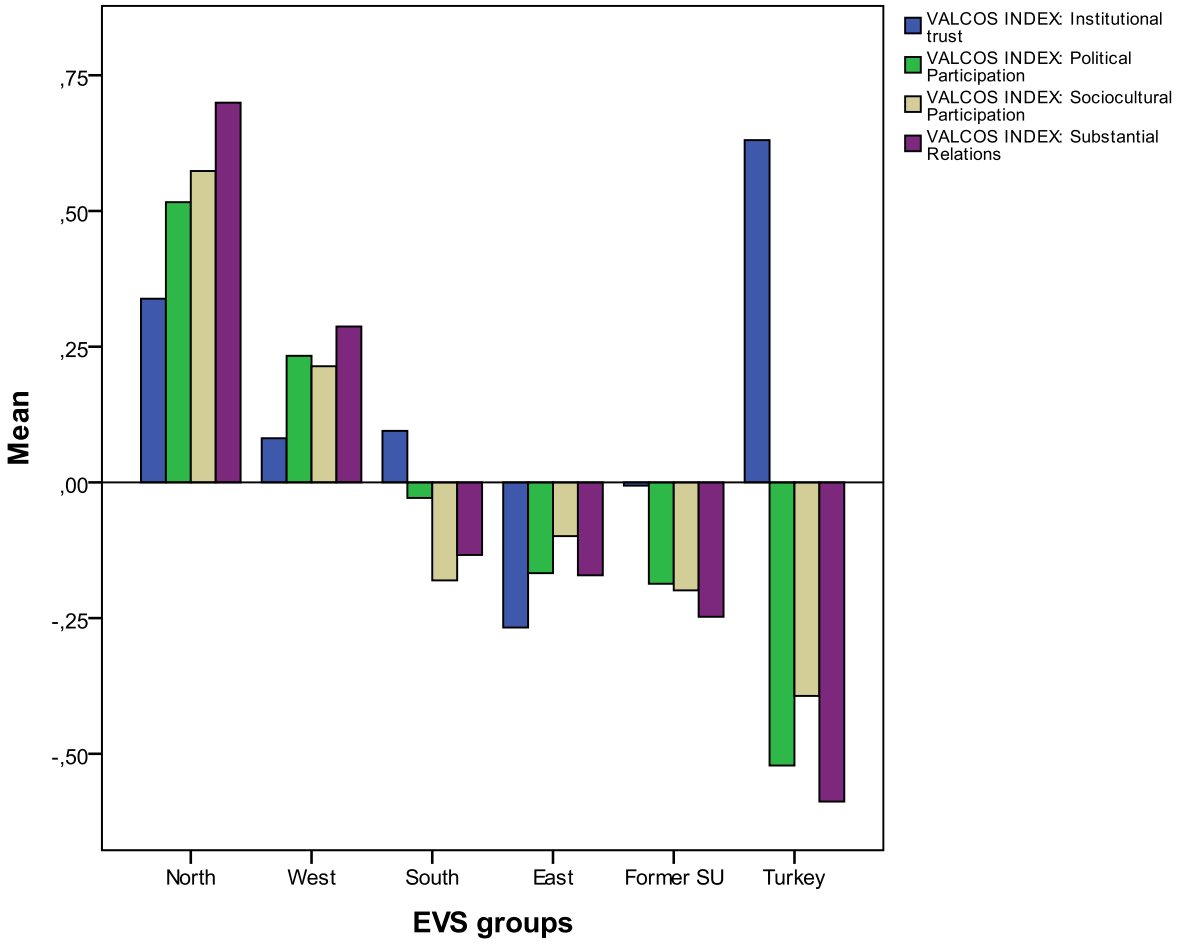


Source: EVS 2008, CEPS/INSTEAD

[4] These country groups were defined, according to geographic criteria. Figure 4 provides information on group membership of analyzed countries.

When comparing social cohesion scores in their formal and substantial dimensions, it can be observed that Norhern European countries are significantly more cohesive, especially at the level of behaviour, than the remaining groups (figure 5). The least cohesive apper to be Former Soviet Union Countries and Turkey (with the exception of political participation).

Figure 5: Social cohesion scores by country groups



Source: EVS 2008, CEPS/INSTEAD

6 Conclusions

The definition of social cohesion theory, expressed in facets based on Bernard's (1999) and Chan *et al.* (2006) conceptualizations is partially verified with data of the 2008 European Value Study. Items covering the political and sociocultural spheres as well as the formal and substantial relationships could be found in the EVS Survey questionnaire and transformed into 13 intermediate variables. From a theoretical perspective, the conception of social cohesion seen as the result of the balance between its components has been verified at least for each dimensions of the both measured domains (political and sociocultural).

The outcomes of the analyses (both MDS and CFA) reveal that, firstly, the existence of the multifaceted construct of social cohesion suggested by the theory has been corroborated by empirical analysis of the data (i.e. social cohesion consists of components of formal and substantial relationships and political and sociocultural domains).

Secondly, the INDSCAL analysis reveal that the proposed constructs measuring social cohesion are equivalent across all analyzed countries and thus allow the calculation of internationally comparable scores of social cohesion.

The here proposed multidimensional aggregate measure of social cohesion is used in international comparisons and therefore it contributes significantly to the discussion on social cohesion indicators. Its main advantages are: theoretical coherence, comparability and robustness holding even across countries with rather different socio-economic and cultural backgrounds and characteristics.

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