*Article*

# European Social Survey as a source of new cultural dimensions estimates for regions

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## Abstract
This article draws attention to the European Social Survey (ESS) database that widens the horizon of cross-cultural studies. The ESS has the potential to overcome several weaknesses of earlier data sets used for cross-cultural analysis – it provides unique opportunities for the analysis of differences between regions within nation states, and the data are representative of entire populations. We aim to develop a measurement tool of cultural dimensions based on the ESS that enables a deeper comparison of European regions besides country-level analysis. For creating ESS-based indicators, the initial indicators were selected based on Hofstede (2001), using the double classification method. Latent variables of cultural dimensions were computed using confirmative factor analysis. The results enable us to evaluate cross-cultural differences between regions inside the nation state as well as to figure out culturally close regions across nation state borders. The results of our analysis confirm that countries may be much more heterogeneous in terms of cultural variation than several cultural studies presume. Cultural heterogeneity varies across countries, and there are some quite homogeneous countries in the meaning of cultural dimensions, but most countries face cultural differences between its regions that have to be taken into account. It is also very important that the deeper the subdivision, the larger the differences. In some cases, border regions are remarkably less similar to the rest of the regions of the country than to the neighbouring regions of another country with a common border. In the case of countries with high cultural homogeneity, the use of nation-level cultural indicators may be justified, but in the case of highly heterogeneous countries a regional approach could be suggested instead.

## Keywords
Culture, Hofstede, Europe, European Social Survey, regions

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## Introduction

The need to understand cross-cultural differences and similarities has provoked intensive research. Since the early works by Parsons and Shils (1951) and Kluckhohn and Strodtbeck (1961), a variety of approaches to the classifications of cross-cultural differences have been offered. Hofstede (1980) proposed a new paradigm in social science research, creating a data set of cultural dimensions on the national level based on a huge survey of values. Although largely criticised, already by the mid 1990s, the paradigm was widely taken over by many others: hundreds of papers were written using the Hofstede approach in many areas of management, international business, marketing, etc. It launched an intensive dispute about the ways how to improve the approach, add new dimensions or modify existing ones, etc. Different authors and teams of researchers, for example Schwartz (1994), the World Values Survey led by Inglehart (Inglehart & Baker, 2000), GLOBE – Global Leadership and Organizational Behavior Effectiveness led by House (House et al., 2002), etc. have created their own original data sets that allowed them to put forward original approaches how to classify cultures. These value frameworks offer various sets of dimensions and levels of generalisation.

However, a research gap still exists in several areas. Hofstede, Inglehardt, Schwartz and several others paid major attention to country-level analysis. On the basis of their data, they predicted how value orientations are different across cultures on the country level. This may lead to a limited understanding of cultural dimensions. For example, Dolan et al. (2004) identified significant differences between two regions of one country (Spain (ES)) along four work and life values, and, therefore, they argued that culture as proposed by Hofstede was not entirely confirmed in the Spanish context.

There is a wide range of criticism (see e.g. Jones, 2007; Lenartowics and Roth, 2001; McSweeney, 2002), which argues that the nation state is a relatively new concept, and it is a great simplification to limit cross-cultural analyses with the country level. There are often regions or ethnic units with a different culture and different values within the country, and cultures are not necessarily bound by borders. Consequently, the question about cross-cultural differences and similarities between regions inside countries is relatively under researched. It could also be possible to identify cross culturally close regions that may move across nation state borders. One of the reasons for such a variation within the country is that there were several multi-ethnic empires in Europe in the 20th century when political decisions and social developments resulted in independent or united states.

Another important problem is related to the dynamic character of culture and social life. Several authors have demonstrated that cultural values can change over time. Political, societal, economic, environmental and technological changes bring about changes also in cultural values (Wu, 2006). The need to consider changes inside the countries is also focused on by Tipton (2009) when he analyses how historical and societal developments lead to significant modifications of cultural values. Therefore, cultural theories should be updated and re-evaluated periodically in order to determine how those changes would be reflected if the proposed systems of cultural dimensions would change. In other words, it is related to the permanent need to renew data sets used for working out cultural dimensions. In order to avoid criticism about the cultural dimensions being outdated, there need to be databases which are periodically renewed and which allow to measure or recalculate those dimensions on regular bases.

Many weaknesses of previous studies are caused by the limitations of the original data sets used by various authors on cross-cultural dimensions. We propose that the use of the European Social

Survey (ESS) could help to overcome or at least diminish the impact of various weaknesses. The ESS is a systematically designed developing database conducted regularly since 2002, and it intends to cover the whole Europe including Central and Eastern European countries. The ESS has the potential to overcome several weaknesses of the data sets previously used for cross-cultural analysis – it is regular, allows to analyse cultural differences between regions within nation states, and the data are representative of entire populations.

The goal of the current article is to develop a measurement tool for cultural dimensions based on the ESS data set that could shed some light on Hofstede's dimensions in European countries at the beginning of the 21st century and to explore further the cultural differences at the regional level within European countries: are countries sufficiently homogeneous or are there differences within countries that have to be taken into account? We base our measurement tool on Hofstede's original approach as the most generalised and most widely used approach.

## The strengths of the ESS in the analyses of cross-cultural differences

The indicators describing cultural dimensions used in this study came from the database of the ESS (Jowellet al., 2003; Norwegian, 2007), which among others, includes various questions pertaining to all four cultural dimensions. The ESS is a new biennial multi-country survey covering an increasing number of European countries. The first round was conducted in 2002/2003, and the fourth in 2008/2009. The questionnaire includes 'core' questions, which remain relatively constant from round to round, and additional questions that are not included in every round. For our analysis, we mainly used data from round 2002/2003, but some indicators also from round 2004/2005 (see Appendix 1) because not all questions are included in every round and data were available for 20 countries.[1]

There are many reasons why the ESS, a developing widely accessible database, would be an appropriate source of information when measuring cultural dimensions in Europe and more specifically focusing on regional differences.

First, from the ESS, both country-level and regional-level indicators can be obtained as means of individual values. It is commonly known that countries are not always homogeneous in regard to culture. As noted before, there are often regions or ethnic units with a different culture and different values within the country. Moreover, there are also differences between urban (cities and big towns) and rural regions. Although it has been claimed that despite within-country heterogeneity there is one set of values that is common for a country and, thus, constitutes a country's "national culture" (Sivakumar and Nakata, 2001), in order to get an appropriate evaluation of culture in the whole country, the sample must be representative of all regions. The ESS includes respondents from all regions of a particular country. Moreover, the ESS data are presented on three regional levels – NUTS0, NUTS1 and NUTS2 level. The NUTS – Nomenclature of Territorial Units for Statistics – was established by Eurostat. This hierarchical classification subdivides each country (NUTS0 level) into a number of NUTS1 regions, each of which is in turn subdivided into a number of NUTS2 regions and so on (see European Communities, 2007 for further information). This enables to analyse regions inside countries separately, adding a new dimension to the analysis.

Second, the ESS data are representative of entire populations. Surveys conducted in some companies or industries cannot be representative of the whole population in a country in terms of, for example, gender, age, education, class and occupation. The ESS covers the whole population aged 15 and older (The Steering Committee and the Methodology Committee for an ESS, 1999). Weighted data are available in order to ensure that the data drawn from the ESS would be representative of the demographic structure of a country or a region.

Third, as many factors, for instance, globalisation, increased opportunities to travel abroad, the unifying influence of the European Union may have changed the pattern of culture variations, up-to-date data are needed to assess current differences in culture. Moreover, a rapid transition in Central and Eastern Europe from a centrally planned and extremely closed model of society toward an open and market based system has changed the whole society, including the whole value system of the citizens of the region. The ESS is a continuous biennial survey that has been conducted since 2002, and it intends (with an increasing success) to include the countries of Central and Eastern Europe as well.

## Description of data analysis

In order to construct latent variables reflecting cultural dimensions, a confirmative factor analysis was conducted separately for every dimension using the principal components method. While in the case of exploratory factor analysis any indicator may be associated with any factor, in the case of confirmatory factor analysis the indicators describing a particular latent factor are pre-determined on the basis of theoretical considerations (see, for instance, Maruyama, 1998). Confirmative factor analysis takes previous cultural studies into account, whereas exploratory factor analysis is a rather data-mining technique.

In order to give more reliability to the analysis, together with country-level analysis, the same analysis is performed at two different regional levels. Although while performing regional-level analysis, the authors' intention was to include all countries at the NUTS2 level (European Communities, 2007), the ESS data were only available at the NUTS1 level for Belgium, France, Germany and the United Kingdom. These countries thus had to be included in the analysis at this level and, therefore, this level of analysis is referred to as the NUTS2(1) level analysis. In order to control for a possible inadequate representation of the four countries mentioned, the analysis of the NUTS2(1) level data (168 observations) is complemented by the analysis of data at the NUTS1 level (80 observations). The country-level analysis can also be called a NUTS0 level analysis, as at this level all countries are viewed as one region. Despite the possible misrepresentation at the NUTS2(1) level and a small number of observations at the country level, using these three levels enables to validate the analysis.

For the data analysis here and hereafter, SPSS for Windows 17.0 was used. The factor scores of latent variables were saved as variables enabling to evaluate the relative position of different countries or regions according to cultural dimension. Unfortunately, some questions were not asked in all countries, and, therefore, it was not possible to calculate scores for some dimensions in some countries. However, in order to capture all the information available, pairwise deletion was used when performing the factor analysis.

We base our analysis on Hofstede's original approach (1980) that incorporated four basic dimensions. First, power distance (PDI) reveals the extent to whichthe unequal distribution of power in organisations and institutions, centralisation, and hierarchical relations are accepted in a culture. Second, uncertainty avoidance (UAI) reflects to what degree people feel comfortable with uncertainty, ambiguity, and unstructured situations. Third, masculinity (MAS) (as opposed to femininity) describes to what degree masculine values, such as achievement, success, assertiveness and competitiveness, prevail over values like modesty, good relationships, caring, tolerance, and the quality of life. Fourth, individualism (IND) (as opposed to collectivism) shows the extent to which autonomy and individual freedom are valued as opposed to collectivist cultures where tight social relations are important, and individuals expect groups to look after them in exchange for loyalty. Later, an additional dimension of long-term/short-term orientation was added by Hofstede

**Table 1.** Latent factors of power distance: indicators, factor loadings and variance explained.

| Indicator | NUTS2 (1) N = 159 | NUTS1 N = 72 | NUTS0 N = 19 |
|---|---|---|---|
| Politicians care what people think | −0.90 | −0.92 | −0.96 |
| Politicians interested in votes rather than in people's opinions | 0.81 | 0.83 | 0.93 |
| Trust in country's parliament | −0.73 | −0.72 | −0.86 |
| Satisfied with the way democracy works in country | −0.57 | −0.52 | −0.77 |
| Allowed to influence decisions about work directions | −0.83 | −0.82 | −0.89 |
| Allowed to decide how respondent's daily work is organised | −0.81 | −0.81 | −0.91 |
| Allowed change your work tasks | −0.74 | −0.77 | −0.86 |
| Variance explained (%) | 59.96 | 61.04 | 78.32 |
| KMO measure of sampling adequacy | 0.71 | 0.71 | 0.78 |

KMO: Kaiser–Meyer–Olkin.

(2001). Unfortunately, for this dimension there were no appropriate indicators available in the ESS. Therefore, only the four dimensions of the original approach are included into the current analysis. The dimension of long-term orientation becomes more important when comparing, for example, European countries with Asian countries. This can partly explain the deficiency of questions corresponding to this dimension in the ESS that is a European-centred study.

In order to construct latent variables reflecting cultural dimensions, we use a theory-based rather than an empirically driven approach. Each of the four cultural dimensions is described using seven initial indicators. Our choice of indicators for describing the essence of cultural dimensions is based on Hofstede's (2001) overview about the characteristics and differences of dimension extremes: low and high PDI, low and high UAI, IND and collectivism, MAS and femininity. In order to attain a less subjective choice of indicators to describe the dimensions of culture, a process similar to double classification was carried out. First, indicators possibly measuring cultural dimensions were chosen separately by two authors. Next, only those indicators were considered that were selected by both authors. Finally, the remaining indicators were discussed to reach a consensus about the best set of indicators for each culture dimension. The exact descriptions of the indicators used are presented in Appendix 1. The indicators used for describing cultural dimensions had no outlier values (no values more than three standard deviations away from the mean).

## Power distance

PDI is described using two indicators showing the attitude to politicians, two indicators related to institutional trust, and three indicators describing work-related PDI. All seven indicators loaded into one factor. The indicators, factor loadings, percentages of total variance explained by the factor and Kaiser–Meyer–Olkin (KMO) measure[2] indicating the appropriateness of the factor model are presented in Table 1 for all levels analysed.

## Uncertainty avoidance

UAI is measured using the following indicators. Two indicators reflecting the importance of a secure society are complemented with an indicator of the importance of a secure job. In addition, two indicators reflect the importance of trustworthiness and two indicators describe attitudes to

**Table 2.** Latent factors of uncertainty avoidance: indicators, factor loadings and variance explained.

| Indicator | NUTS2(1) N = 149 | NUTS1 N = 74 | NUTS0 N = 18 |
|---|---|---|---|
| Important: government is strong and ensures safety | 0.93 | 0.93 | 0.95 |
| Important: to live in secure surroundings | 0.92 | 0.93 | 0.94 |
| Important when choosing a job: secure job | 0.70 | 0.75 | 0.81 |
| Most people can be trusted | −0.82 | −0.79 | −0.88 |
| Important: to behave properly | 0.86 | 0.80 | 0.85 |
| Better if almost everyone share customs and traditions | 0.80 | 0.78 | 0.84 |
| Immigrants make country a better place to live | −0.64 | −0.56 | −0.74 |
| Variance explained (%) | 66.67 | 63.74 | 74.40 |
| KMO Measure of Sampling Adequacy | 0.91 | 0.84 | 0.86 |

KMO: Kaiser–Meyer–Olkin.

**Table 3.** Latent factors of masculinity: indicators, factor loadings and variance explained.

| Indicator | NUTS2(1) N = 149 | NUTS1 N = 74 | NUTS0 N = 18 |
|---|---|---|---|
| Important to get respect | 0.82 | 0.79 | 0.89 |
| Important to show abilities and to be admired | 0.75 | 0.72 | 0.78 |
| Important to be successful and recognised for achievements | 0.74 | 0.64 | 0.82 |
| Important in life: work | 0.67 | 0.60 | 0.67 |
| Important in life: religion | 0.80 | 0.78 | 0.78 |
| Men should have more rights when jobs scarce | 0.75 | 0.75 | 0.75 |
| Gays and lesbians should be free to live | −0.73 | −0.74 | −0.70 |
| Variance explained (%) | 56.81 | 52.00 | 59.72 |
| KMO measure of sampling adequacy | 0.82 | 0.72 | 0.76 |

KMO: Kaiser–Meyer–Olkin.

immigrants and the dissimilar customs related to them. Again, all seven indicators loaded into one factor. The results are presented in Table 2.

## Masculinity

MAS (as an opposite to femininity) is first described using three indicators showing different aspects of assertiveness, which are complemented with the importance of work. Masculine values also include the importance of religion. The last two indicators reflect attitudes to gender inequality and sexual minorities. Again, all seven indicators loaded into one factor. The results are presented in Table 3.

In order to measure IND (as an opposite to collectivism), the following indicators were included. Two indicators describe the importance of being independent and two indicators are related to the satisfaction of individual needs. In addition, three indicators describe collectivism on three levels: organisations, friends and family. Dissimilar to the other dimensions, the indicators of individualism–collectivism loaded into two factors. The indicators, the rotated (equamax rotation)

**Table 4.** Latent factors of individualism−collectivism: indicators, factor loadings and variance explained.

| Indicator | NUTS2(1) N = 141 | | NUTS1 N = 73 | | NUTS0 N = 17 | |
|---|---|---|---|---|---|---|
| | F1 | F2 | F1 | F2 | F1 | F2 |
| Important to think new ideas and do things in original way | 0.85 | −0.10 | 0.81 | −0.25 | 0.84 | −0.22 |
| Important to make own decisions and to be free | 0.80 | −0.05 | 0.81 | 0.07 | 0.66 | 0.28 |
| Important to have a good time | 0.68 | −0.07 | 0.64 | −0.06 | 0.78 | 0.20 |
| Important to seek fun and pleasure | 0.69 | 0.26 | 0.56 | 0.03 | 0.72 | 0.02 |
| Family ought to be the main priority in life | −0.12 | 0.77 | −0.17 | 0.75 | −0.05 | 0.87 |
| Membership of voluntary organisations | 0.05 | −0.86 | 0.11 | −0.85 | −0.17 | −0.89 |
| Important in life: friends | −0.14 | −0.68 | −0.15 | −0.78 | −0.05 | −0.80 |
| Variance explained (%) | 33.29 | 26.94 | 30.18 | 28.03 | 32.30 | 33.20 |
| Cumulative variance explained (%) | 33.29 | 60.23 | 30.18 | 58.21 | 32.30 | 65.50 |
| KMO measure of sampling adequacy | 0.66 | | 0.60 | | 0.63 | |

KMO: Kaiser–Meyer–Olkin.

matrix of factor loadings, the percentages of total variance explained by the factor(s) and KMO measures are presented in Table 4. The first factor (F1) captures individualistic values and can thus be referred to as overall IND (OIND). The second factor (F2) demonstrates the contradiction between collectivistic attitudes depending on the target groups. This result is in accordance with Realo et al.(1997) who found that collectivism can be viewed on three levels: family-related, friends-related and society-related collectivism. Here, the results show that family-related collectivism has a negative relationship with friends-(peers-)related and organisations-(society-) related collectivism. This factor can be called family-related collectivism (FCOL) (as an opposite to friends-related collectivism).

The fact that the results are quite similar on the NUTS2(1), NUTS1 and NUTS0 levels in all cases serves as a certain kind of validation of the results. The values of the KMO measure indicate that in all cases the initial indicators fit together well in order to form one factor. The factor scores resulting from this analysis were saved for each level of analysis and are hereafter named as the ESS-based indicators of cultural dimensions.

## The results compared to Hofstede's scores

Next, the obtained ESS-based indicators of cultural dimensions on the country level will be compared to the country scores of Hofstede. The correlations of the ESS-based indicators and Hofstede's (2001) scores[3] are presented in Table 5. As our factors were constructed with the help of separate confirmative factor analyses, some ESS-based indicators are correlated: UAI, PDI, MAS and FCOL are positively correlated with each other. The correlations ranging between 0.04 and 0.80 (all below the threshold of 0.85 (Kline, 1998)) allow to view the level of discriminant validity as acceptable.

It appeared that UAI is the dimension for which the differences between the ESS-based indicators and Hofstede's scores are the smallest (correlation coefficient 0.84). Considering PDI, the positioning of countries by the ESS-based indicators and Hofstede's scores is quite similar – this is also confirmed by the correlation coefficient (0.69). In the case of MAS, there are bigger

**Table 5.** Correlations between the ESS-based indicators and Hofstede's scores of cultural dimensions (including score estimates for countries not in the IBM set).

| | ESS-based indicators | | | | | Hofstede's scores | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PDI | UAI | MAS | OIND | FCOL | PDI | UAI | MAS | IDV |
| PDI | 1.00 | 0.80*** | 0.63*** | 0.04 | 0.74*** | 0.69*** | 0.78*** | 0.59*** | −0.53** |
| UAI | | 1.00 | 0.78*** | 0.17*** | 0.79*** | 0.67*** | 0.84*** | 0.58*** | −0.51** |
| MAS | | | 1.00 | 0.12* | 0.69*** | 0.46** | 0.73*** | 0.47** | −0.63*** |
| OIND | | | | 1.00 | 0.00 | −0.04 | 0.14 | 0.26 | 0.02 |
| FCOL | | | | | 1.00 | 0.60*** | 0.70*** | 0.64*** | −0.23 |

PDI: power distance; UAI: uncertainty avoidance; MAS: masculinity; IND: individualism; FCOL: family-related collectivism; ESS: European Social Survey.
***Significant at the 0.01 level; **significant at the 0.05 level; *significant at the 0.10 level (two-tailed test).

differences between the ESS-based indicators and Hofstede's scores (correlation coefficient 0.47). This may indicate differences between what has been measured by Hofstede's score of MAS and what is reflected by the ESS-based MAS indicator; but it is also possible that in the case of the masculinity–femininity dimension, there have been more extensive changes in Europe in the last three decades.

There is no relationship between the ESS-based indicator of OIND and Hofstede's score of IND (the correlation coefficient is 0.02), but this could be assumed, considering that the results of the factor analysis concerning IND turned out to be different from the expectations based on Hofsetede's results. Also, the countries with higher scores for Hofstede's dimension of IND tend to have a lower level of FCOL (the corresponding correlation coefficient is −0.23, after omitting two outliers −0.59) and hence (as FCOL turned out to be an opposite to friends-related collectivism), a higher level of friends-related collectivism.

## New prospects for the regional-level analysis

As already mentioned, the question about cross-cultural differences and similarities between regions inside countries is relatively under researched. There is a wide range of criticism, which argues that the nation state is a relatively new concept, and it is a great simplification to limit cross-cultural analyses with the country level. We conditionally follow the path of analysis by Beugelsdijk et al. (2006) who used a panel of 55 European regions and scores on two basic cultural dimensions (traditional/rational and survival/self-expression) in 1990 and 1999 to explain value differences between European regions. Their results show considerable regional differences within countries studied (France, Italy, Germany, ES, Portugal (PT), the Netherlands, Belgium and Great Britain).

In order to tackle the question about cross-cultural differences and similarities between regions inside a nation state as well as between culturally close regions across nation state borders, the analyses were performed separately on the country level and two regional levels; the scales of the factor scores are different. However, for comparing the country level factor score with scores of different regions in a particular country when looking for within-country differences, comparable scores would be useful. Hence, the same analysis was performed for the joint sample of all three samples and the resulting factor scores (now all in the same scale) were saved. The correlations of these scores with the scores obtained from separate analyses of three levels were ranging from

**Table 6.** Mean absolute deviations of the ESS-based indicators of cultural dimensions for different region groups (the number of observations in parentheses).[a,b]

| Group | PDI | UAI | MAS | OIND | FCOL |
|---|---|---|---|---|---|
| Country level: | | | | | |
| All countries analysed | 0.92 (19) | 0.8 (18) | 0.77 (18) | 0.70 (17) | 0.77 (17) |
| Countries having subdivisions at NUTS1 | 0.61 (10) | 0.76 (10) | 0.77 (10) | 0.49 (10) | 0.74 (10) |
| Countries having subdivisions at NUTS2(1) | 0.86 (16) | 0.76 (16) | 0.74 (16) | 0.71 (15) | 0.75 (15) |
| Spain, Portugal, France | 0.36 (2) | 0.31 (3) | 0.58 (3) | 0.53 (3) | 0.06 (3) |
| Regional level: | | | | | |
| Austria at NUTS1 | 0.03 (3) | 0.23 (3) | 0.07 (3) | 0.14 (3) | 0.29 (3) |
| Austria at NUTS2 | 0.20 (9) | 0.25 (9) | 0.18 (9) | 0.45 (9) | 0.31 (9) |
| Belgium at NUTS1 | 0.38 (3) | 0.40 (3) | 0.29 (3) | 0.66 (3) | 0.36 (3) |
| Czech Republic at NUTS2 | 0.26 (8) | 0.29 (8) | 0.19 (8) | | |
| Germany at NUTS1 | 0.41 (16) | 0.51 (16) | 0.23 (16) | 0.47 (16) | 0.26 (16) |
| Spain at NUTS1 | 0.13 (7) | 0.22 (7) | 0.43 (7) | 0.52 (7) | 0.21 (7) |
| Spain at NUTS2 | 0.37 (17) | 0.44 (17) | 0.44 (17) | 1.19 (17) | 0.31 (17) |
| Finland at NUTS2 | 0.08 (4) | 0.13 (4) | 0.14 (4) | 0.20 (4) | 0.17 (4) |
| France at NUTS1 | 0.27 (8) | 0.27 (8) | 0.23 (8) | 0.08 (8) | |
| Greece at NUTS1 | 0.24 (4) | 0.16 (4) | 0.19 (4) | 0.40 (4) | 0.27 (4) |
| Greece at NUTS2 | 0.59 (13) | 0.32 (13) | 0.46 (13) | 0.88 (13) | 0.47 (13) |
| Hungary at NUTS1 | 0.21 (3) | 0.22 (3) | 0.05 (3) | 0.15 (3) | 0.15 (3) |
| Hungary at NUTS2 | 0.23 (7) | 0.21 (7) | 0.14 (7) | 0.20 (7) | 0.22 (7) |
| Ireland at NUTS2 | 0.06 (2) | 0.04 (2) | 0.04 (2) | 0.13 (2) | 0.15 (2) |
| Italy at NUTS1 | 0.26 (5) | | | | |
| Italy at NUTS2 | 0.50 (17) | | | | |
| Netherlands at NUTS1 | 0.13 (4) | 0.10 (4) | 0.05 (4) | 0.13 (4) | 0.08 (4) |
| Netherlands at NUTS2 | 0.23 (12) | 0.25 (12) | 1.63 (12) | 0.22 (12) | 0.30 (12) |
| Norway at NUTS2 | 0.19 (7) | 0.18 (7) | 0.10 (7) | 0.29 (7) | 0.16 (7) |
| Poland at NUTS1 | 0.15 (6) | 0.11 (6) | 0.18 (6) | 0.20 (6) | 0.08 (6) |
| Poland at NUTS2 | 0.39 (16) | 0.24 (16) | 0.27 (16) | 0.39 (16) | 0.26 (16) |
| Portugal at NUTS2 | 0.21 (5) | 0.52 (5) | 0.51 (5) | 0.58 (5) | 0.27 (5) |
| Sweden at NUTS2 | 0.21 (8) | 0.23 (8) | 0.24 (8) | 0.41 (8) | 0.13 (8) |
| United Kingdom at NUTS1 | 0.30 (12) | 0.29 (12) | 0.28 (12) | 0.23 (12) | 0.16 (12) |

PDI: power distance; UAI: uncertainty avoidance; MAS: masculinity; IND: individualism; FCOL: family-related collectivism; ESS: European Social Survey.
[a] Shading is for better readability only.
[b] Larger mean absolute deviations correspond to higher heterogeneity.

0.999 to 1.000. Therefore, these scores can be used when comparing the country-level scores with the regional-level scores. The comparable country-level and regional-level scores are presented in Appendix 2.

Next, mean absolute deviations were used in order to shed some light on cultural differences within countries in comparison to differences between countries. The mean absolute deviation of a group was calculated as a mean of absolute values of deviations from the group mean, and it describes the variability of a particular indicator within the particular group. The mean absolute deviations of the ESS-based indicators of cultural dimensions at NUTS0 (country), NUTS1 and NUTS2(1) levels are presented in Table 6. Some countries were not subdivided at NUTS1 level,

and for some countries (as mentioned before) data for NUTS2 were not available. The number of observations depended on data availability and was different for different indicators.

The results presented in Table 6 reveal that Finland, Norway, Ireland and Hungary, for example, are quite homogeneous by the cultural dimensions under discussion, being thus in accordance with the results of Minkov and Hofstede (2011) about different culture-related indicators in countries outside Europe. At the same time Belgium, Germany, Greece, ES and PT have quite large within-country differences in terms of the ESS-based indicators. Thus there are, indeed, some countries for which the assumption that there is one set of values that is common for the whole country could be quite reasonable. However, in the rest of the countries, culture does not seem to be so homogeneous, and in some cases the within-country variability is of almost the same magnitude as the between-country variability. Another observation from our analysis indicated that the more detailed the subdivision of a country is, the larger the differences are – this can be seen when looking at the countries for which both NUTS1 and NUTS2 level data were available (e.g. Poland, Greece, ES or Austria).

The findings are even more significant if we focus on a smaller group of neighbouring countries with common borders like ES, PT and France. When we compare the mean absolute deviations of the ESS-based indicators between these three countries (see Table 6) and within these countries, then it appears that the within-country variability is of the same magnitude or even larger than the variability between these countries. This can probably be explained by the existence of several national minorities with a strong cultural identity (e.g. Basques and Catalans in ES, etc.) but also by the importance of historical regions, geographical isolation in the case of mountain regions, etc.

Next, we look more closely at cultural dimensions in these countries on the regional level, using both NUTS1 and NUTS2 level data. In this manner, we are also trying to figure out whether deepening the regional classification would increase cultural heterogeneity. In the first case, using NUTS1 classification, France was divided into eight, ES into seven regions and PT was presented as a single region. The factor scores of the ESS-based indicators of regions at the NUTS1 level are presented in Table 7. Results from Table 7 reveal differences in the values of the ESS-based indicators across regions in France and ES.[4] For example, the ESS-based IND indicator in Spanish regions varied between two extremes – Madrid with the highest value of 1.88 and Noroeste with the lowest value of −1.14. For other dimensions, differences across regions were also remarkable. Similarly, in France when the ESS-based UAI indicator was taken into account, the highest value was in the Nordic region Nord-Pas-de-Calais (0.61) and the lowest factor score in Ouest (–0.75).

Next, we deepen the regional differentiation and use the NUTS2 level ESS-based indicators for ES and PT (see Table 8).[5] ES was divided into 17 and PT into five regions. We revealed an even more heterogeneous picture of cultural dimensions across regions within ES and PT. For example, in ES the ESS-based IND indicator varied from 2.05 in LaRioja to −1.74 in Cantabria. Moreover, in the much smaller PT also regional differences across regions were highly remarkable. The ESS-based UAI indicator varied from 0.63 in Norte to −1.20 in Alentejo. Hence, the results show the richness of culture across different regions.

However, results from Table 8 also provide first insights into cross-cultural similarities across the nation state borders. On the basis of our results, we are able to graphically locate different regions, for example in two neighbouring countries by two cultural dimensions. One example is shown in Figure 1 that represents a location of different regions of PT and ES by two cultural dimensions – MAS and UAI. Figure 1 focuses on Norte as the most Nordic region of PT. It borders the Spanish regions of Galicia and Castilla y León. Based on the data from Table 8, we conclude

**Table 7.** The ESS-based indicators of cultural dimensions (factor scores in standard deviations) across regions of France, Spain and Portugal (on the NUTS1 level).[a]

| Country | Region (NUTS 1 level) | PDI | UAI | MAS | IND | FCOL |
|---------|----------------------|-----|-----|-----|-----|------|
| France | ÎledeFrance | n.a. | −0.48 | −0.85 | 0.93 | 0.05 |
| | BassinParisien | n.a. | 0.01 | −0.86 | 0.15 | 0.55 |
| | Nord-Pas-de-Calais | n.a. | 0.61 | −0.34 | 0.64 | 0.44 |
| | Est | n.a. | 0.02 | −0.61 | 0.36 | 0.56 |
| | Ouest | n.a. | −0.75 | −1.06 | −0.01 | 0.38 |
| | Sud-Ouest | n.a. | −0.65 | −1.59 | 0.64 | 0.45 |
| | Centre-Est | n.a. | −0.23 | −1.11 | 0.37 | 0.44 |
| | Méditerranée | n.a. | −0.18 | −1.27 | 0.70 | 0.31 |
| Spain | Noroeste | 0.59 | 0.72 | −0.17 | −1.14 | −0.42 |
| | Noreste | 0.60 | 0.32 | 0.02 | 0.57 | −0.58 |
| | Comunidad de Madrid | 0.42 | 1.56 | 1.28 | 1.88 | −0.31 |
| | Centro | 0.17 | 0.61 | 0.79 | −0.19 | −0.14 |
| | Este | 0.66 | 0.44 | −0.18 | 0.42 | 0.60 |
| | Sur | 0.79 | 0.59 | 0.19 | 0.34 | 0.12 |
| | Canarias | 0.51 | 0.64 | −0.51 | 0.20 | −0.19 |
| Portugal | Continente | 1.01 | 0.46 | 0.72 | −0.95 | 0.36 |

PDI: power distance; UAI: uncertainty avoidance; MAS: masculinity; IND: individualism; FCOL: family-related collectivism; ESS: European Social Survey.

[a] Adjacent regions of France and Spain are marked with darker grey, and adjacent regions of Portugal and Spain with a lighter grey tone.

that the difference of Norte compared to Castilla y León bordering the Spanish region is much smaller than that from the Alentejo – southern region of PT (see Figure 1). The ESS-based masculinity indicator in Norte (PT) is 0.66, in Castilla y Leon is (ES) 0.93 but in Alentejo (PT) is −0.57. Similarly, the UAI indicator for Norte (PT) is 0.63, Castilla y Leon (ES) is 0.89 but in Alentejo (PT) is −1.20, which is much closer to Extremadura, a southern region of ES. Similar connections can be seen for Centro (PT). Hence, Figure 1 demonstrates how regions across nation states (e.g. Norte and Castilla y Leon in our case) may be closer to each other by various cultural dimensions than with other regions in their home country.

Altogether, Tables 7 and 8 and Figure 1 provide a very heterogeneous picture about cultural dimensions across regions within and between nation states on the example of ES, PT and France.

## Discussion

Our findings contribute to existing literature on the variation in cultural dimensions on the region and country level in several ways. First, our results confirm that alongside the nation- or country-level measures of culture, possible regional differences need investigation as well. The analysis of the ESS-based indicators of cultural dimensions developed in our analysis indicates that countries may be much more heterogeneous than that assumed by several cultural studies. The importance of regional differences of culture has been widely acknowledged, but our analysis of the ESS data set-based indicators of cultural dimensions for regions provides a tool to test its validity. Cultural heterogeneity varies across countries and there are some quite homogeneous countries in terms of cultural dimensions, but most countries face cultural differences between its regions that have to be

**Table 8.** The ESS-based indicators of cultural dimensions (factor scores in standard deviations) across regions of Spain and Portugal (on the NUTS2 level).[a]

| Country | Region (NUTS2 level) | PDI | UAI | MAS | IND | FCOL |
|---|---|---|---|---|---|---|
| Spain | Galicia | 0.58 | 0.10 | −0.11 | −1.17 | −0.41 |
|  | Principado de Asturias | 0.37 | 1.46 | −0.26 | 0.95 | 0.15 |
|  | Cantabria | 0.13 | 1.07 | −1.08 | −1.74 | −0.14 |
|  | Pais Vasco | 0.91 | 0.24 | 0.01 | 1.10 | −0.31 |
|  | ComunidadForal de Navarra | 1.08 | −0.58 | −0.44 | −0.53 | −1.21 |
|  | La Rioja | −0.88 | 0.40 | −0.13 | 2.05 | −0.11 |
|  | Aragón | 0.06 | 0.57 | −0.01 | 0.68 | −0.39 |
|  | Comunidad de Madrid | 0.36 | 1.25 | 1.03 | 1.87 | −0.06 |
|  | Castilla y León | −0.11 | 0.89 | 0.93 | 0.74 | −0.35 |
|  | Castilla-la Mancha | 0.47 | 0.29 | 0.47 | −0.11 | −0.18 |
|  | Extremadura | −0.01 | −0.21 | −0.51 | −1.36 | 0.26 |
|  | Cataluna | 0.49 | 0.50 | 0.05 | 1.62 | 0.29 |
|  | ComunidadValenciana | 0.60 | 0.35 | −0.64 | −0.87 | 0.69 |
|  | IllesBalears | 0.83 | −0.89 | −0.60 | −1.36 | −0.57 |
|  | Andalucia | 0.56 | 0.42 | 0.04 | 0.79 | 0.02 |
|  | Región de Murcia | 1.08 | 0.44 | 0.44 | −1.53 | 0.06 |
|  | Canarias (ES) | 0.41 | 0.48 | −0.57 | 0.34 | −0.21 |
| Portugal | Norte | 0.89 | 0.63 | 0.66 | −0.21 | 0.45 |
|  | Algarve | 0.29 | −0.02 | 1.30 | 0.15 | 0.32 |
|  | Centro (PT) | 0.95 | 0.50 | 0.20 | −0.72 | −0.15 |
|  | Lisboa | 0.84 | 0.09 | 0.52 | −0.65 | −0.14 |
|  | Alentejo | 0.94 | −1.20 | −0.57 | −2.00 | −0.14 |

PDI: power distance; UAI: uncertainty avoidance; MAS: masculinity; IND: individualism; FCOL: family-related collectivism; ESS: European Social Survey.
[a] Adjacent regions of Northern Portugal and Spain are marked with darker grey, and adjacent regions of Southern Portugal and Spain with a lighter grey tone.

taken into account. It is also essential to emphasise that the deeper the subdivision, the larger the differences – aggregating regions into larger regions and into a nation state smoothens and hides actual differences. Also, in some cases border regions resemble other regions of the country remarkably less than the neighbouring regions of another country with a common border.

We propose that in addition to using indicators of cultural dimensions of nation states, we have to figure out the degree of cultural heterogeneity within a nation state. In the case of countries with high cultural homogeneity (e.g. Norway in our calculations), the use of nation-level cultural indicators may be justified; but in the case of highly heterogeneous countries like ES or PT, a regional approach could be suggested. Our results concerning PT, ES and France demonstrate a very promising area for future research on cultural differences beyond national state boundaries.

Regionally specified indicators of cultural dimensions are valuable in many situations where the culture concept is applied as the indicator of that specific context. Here communication, education, tourism, multinational business (i.e. expatriates, managerial behaviour), marketing activities, etc., can be mentioned. For example, if we apply the knowledge that Portuguese regions (for example Norte and Alentejo) differ significantly in the aspects of MAS, we may use it in the development of differently adjusted advertising messages for both regions. There are
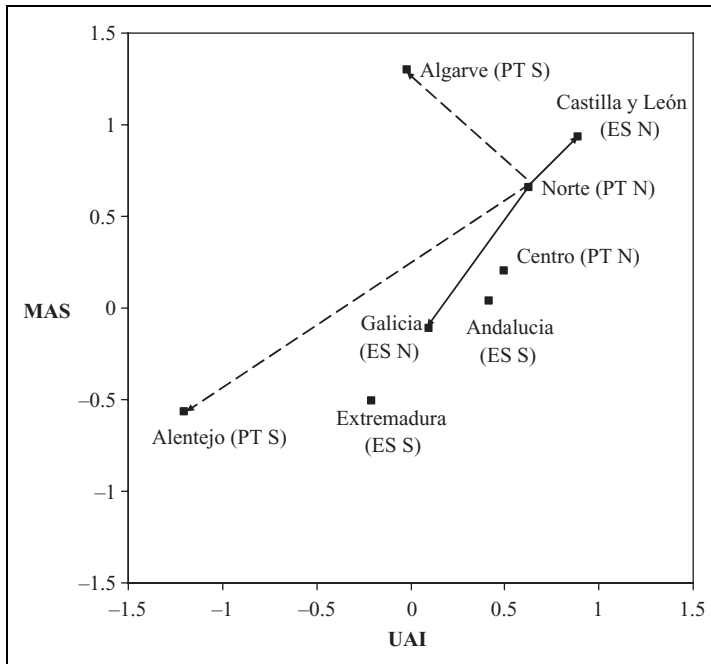
**Figure 1.** Location of different regions of Spain and Portugal across the ESS-based indicators of maculinity and uncertainty avoidance (PT: Portugal; ES: Spain; N: North; S: South).

also many consequences on work behaviour (i.e. managerial role, job stress, quality of work life), and multinational corporations may encounter serious problems by equalizing these regions. When considering the regional level, we can improve the ability to foresee potential problems and develop appropriate solutions.

The other side of the picture is that differences and similarities of regions form different patterns along cultural dimensions. A region could be close to other regions of the country and to this country as a whole according to one cultural dimension; but considering another cultural dimension, the region could be rather similar to its bordering region from a neighbouring country. This means that regions cannot be easily grouped according to cultural dimensions, as a different pattern evolves for every cultural dimension. The complexity of patterns of cultural dimensions at the regional level implies that there are no simple generalised solutions. It also has important practical consequences for example firms entering foreign market are often trying to find one generalised understanding about the culture of the target market, but in such circumstances a regional approach to cultural dimensions can be much more preferable.

## Conclusions

The current article intends to reduce the gap in the research of cross-cultural differences. Many weaknesses of previous studies are caused by the limitations of the original data sets used. Our aim was to create new indicators of cultural dimensions based on the ESS, an underutilised database that widens the horizon of cross-cultural studies. The ESS has potential to overcome several weaknesses of previously used data sets of cross-cultural analysis – it is regular, allows analysis of

cultural differences between regions within nation states, the data are representative of entire populations and include also Central and Eastern European countries that are not well covered by previous surveys. We also intended to apply our indicators to a deeper comparison of European regions to complement country-level analysis.

In order to form the ESS-based indicators of cultural dimensions, the initial indicators were selected using the double classification method based on Hofstede (2001). Latent variables of cultural dimensions were computed for European countries using confirmative factor analysis; three regional levels were used in order to validate the results. The ESS-based indicators and Hofstede's (2001) scores are strongly correlated in the case of UAI, PDI and MAS. Our proposed methodology and data from the ESS allowed us to evaluate cross-cultural differences between regions inside the nation state as well as to figure out culturally close regions across nation state borders.

Our results indicated that there are remarkable cultural differences between regions in most countries and that the deeper the subdivision, the larger the differences that are masked when using one indicator for the whole country. Also, in some cases the pattern of cultural dimensions does not follow the borders – some regions differ from the rest of the regions of the same country and are rather similar to the neighbouring regions of another country. All this is well illustrated by the example of ES, PT and France. In addition, there is no common pattern of differences and similarities between regions that would hold for all cultural dimensions. At the same time, some countries, such as for example Finland, Norway, Ireland and Hungary, for example, are quite homogeneous by the cultural dimensions under discussion. Hence, a thorough analysis of cultural dimensions at the regional level is clearly useful and benefitting, especially, for example, for firms that plan to set up their activity or to improve their performance in different regions.

The ESS database has many advantages compared to previously used databases but, of course, there are some limitations as well. Although the survey is conducted biennially, some questions forming the base for our indicators are not included in every round. For example, questions regarding membership involuntary organisations can be found only in the first round. Therefore, for repeating the analysis at some new point of time, all questions used for the ESS-based indicators of cultural dimensions have to be included in the questionnaire again. This would be especially useful as the number of Central and Eastern European countries covered by the ESS is increasing, and this would give us information about some new countries as well. In addition, a more detailed division of countries like Belgium, France, Germany and the United Kingdom is needed as the NUTS1 level regions may consist of rather different NUTS2 regions, which are not pointed out at the moment. Also, the ESS enabled us to create indicators for culture dimensions only for European countries and, therefore, conclusions can be drawn concerning Europe only. In case appropriate data become available for other countries as well, it would be very interesting to repeat the analysis.

## Notes

1. The countries included in the analysis are Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal (PT), Slovenia, Spain (ES), Sweden and the United Kingdom. In the case of Switzerland, innovation data were not available. Therefore, Switzerland was not included in the analysis.
2. Values of the Kaiser–Meyer–Olkin (KMO) measure larger than 0.6 or 0.5 are considered as acceptable.
3. Here and hereafter, our score for Slovenia is compared with Hofstede's score for former Yugoslavia as Hofstede (2001) found that all regions of former Yugoslavia, including Slovenia, had very similar scores.
4. Unfortunately, for France data were missing about one indicator for the calculating power distance (PDI) factor (politicians interested in votes rather than in people's opinions), therefore this dimension is not presented in the case of France.
5. For France, unfortunately, the NUTS2 level data were not available.

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# Appendix 1.

## *Indicators measuring cultural dimensions*

| Concept | Indicator | The exact name of the indicator according to the source |
| --- | --- | --- |
| Power distance | Politicians care what people think | Do you think that politicians in general care what people like you think? (Average on scale 1–5)[a] |
| | Politicians interested in votes rather than in people's opinions | Would you say that politicians are just interested in getting people's votes rather than in people's opinions? (Average on scale 1–5) |
| | Allowed to decide how respondent's daily work is organised | How much the management at your work allows you . . . to decide how your own daily work is organised? (Average on scale 0–10) |
| | Allowed to influence decisions about work directions | How much the management at your work allows you . . . to influence decisions about the general direction of your work? (Average on scale 0–10) |
| | Allowed change your work tasks | How much the management at your work allows you . . . to change your work tasks if you wish to? (Average on scale 0–10) |
| | Trust in country's parliament | How much you personally trust each of the institutions: country's parliament? (Average on scale 0–10) |
| | Satisfied with the way democracy works in country | On the whole, how satisfied are you with the way democracy works in your country? (Average on scale 0–10) |
| Uncertainty avoidance | Important: government is strong and ensures safety | How much each person is or is not like you: it is important to her/him that the government ensures her/his safety against all threats. She/he wants the state to be strong so it can defend its citizens. (Average on scale 1–6) |
| | Important: to live in secure surroundings | How much each person is or is not like you: It is important to her/him to live in secure surroundings. She/he avoids anything that might endanger her/his safety. (Average on scale 1–6) |
| | Important when choosing a job: secure job | For you personally, how important do you think each of the following would be if you were choosing a job: a secure job. (Average on scale 1–5)[b] |
| | Most people can be trusted | Would you say that most people can be trusted or that you can't be too careful in dealing with people? (Average on scale 0–10) |
| | Important: to behave properly | How much each person is or is not like you: it is important to her/him always to behave properly. She/he wants to avoid doing anything people would say is wrong. (Average on scale 0–10) |
| | Better if almost everyone shares customs and traditions | Better for a country if almost everyone shares customs and traditions. (Average on scale 1–5) |
| | Immigrants make country a better place to live | Is country made a worse or a better place to live by people coming to live here from other countries? (Average on scale 0–10, 0 = worse, 10 = better) |

*(continued)*

**Appendix 1.** (continued)

| Concept | Indicator | The exact name of the indicator according to the source |
|---|---|---|
| Individualism–collectivism | Membership of voluntary organisations | For each of the voluntary organisations,[c] please tell me whether any of these things apply to you now or in the last 12 months, and, if so, which: member. (Average number of memberships per person) |
| | Family ought to be the main priority in life | A person's family ought to be his or her main priority in life. (Average on scale 1–5)[D] |
| | Important in life: friends | How important are friends in your life? (Average on scale 0–10) |
| | Important to think new ideas and do things in original way | How much each person is or is not like you: thinking up new ideas and being creative is important to her/him. She/he likes to do things in her/his own original way (Average on scale 0–10) |
| | Important to have a good time | How much each person is or is not like you: having a good time is important to her/him. She/he likes to "spoil" herself/himself. (Average on scale 0–10) |
| | Important to seek fun and pleasure | How much each person is or is not like you: She/he seeks every chance she/he can to have fun. It is important to her/him to do things that give her/him pleasure. (Average on scale 0–10) |
| | Important to make own decisions and to be free | How much each person is or is not like you: it is important to her/him to make her/his own decisions about what she/he does. She/he likes to be free and not depend on others. (Average on scale 0–10) |
| Masculinity–femininity | Important to get respect | How much each person is or is not like you: it is important to her/him to get respect from others. She/he wants people to do what she/he says. (Average on scale 0–10) |
| | Important to be successful and recognised for achievements | How much each person is or is not like you: being very successful is important to her/him. She/he hopes people will recognise her/his achievements. (Average on scale 0–10) |
| | Important to show abilities and to be admired | How much each person is or is not like you: it's important to her/him to show her/his abilities. She/he wants people to admire what she/he does. (Average on scale 0–10) |
| | Important in life: work | How important is work in your life? (Average on scale 0–10) |
| | Important in life: religion | How important is religion in your life? (Average on scale 0–10) |
| | Men should have more rights when jobs are scarce | Men and women and their place in the family: when jobs are scarce, men should have more right to a job than women. (Average on scale 1–5)[b] |
| | Gays and lesbians should be free to live | Gay men and lesbians should be free to live their own life as they wish. (Average on scale 1–5) |

[a] Here and hereafter, if the indicator shows agreement with a statement, the scales are chosen so that larger values reflect more agreement.
[b] Data from round 2004/2005 (other data originate from round 2002/2003).
[c] Trade unions, business/professional/farmers' organisations, political parties, sports/outdoor activity clubs, cultural /hobby activity organisations, religious/church organisations, consumer/automobile organisations, humanitarian organisations, etc., environmental/peace/animal organisations, science/education/teacher organisations, social clubs, etc., other voluntary organisations.

# Appendix 2.

*The ESS-based indicators of cultural dimensions (factor scores in standard deviations) at the country level and at the first regional level that divides a country (if available)*

| Country and level | Country/region | PDI | UAI | MAS | IND | FCOL |
|---|---|---|---|---|---|---|
| | Austria | −0.16 | −0.50 | 0.36 | 0.61 | −0.75 |
| Austria (NUTS1) | Ostösterreich | −0.14 | −0.76 | 0.29 | 0.43 | −0.83 |
| | Südösterreich | −0.13 | −0.13 | 0.49 | 0.74 | −0.24 |
| | Westösterreich | −0.20 | −0.37 | 0.37 | 0.74 | −0.97 |
| | Belgium | −0.57 | −0.18 | −0.24 | 0.82 | −0.42 |
| Belgium (NUTS1) | Région de Bruxelles-Capitale | −1.31 | −0.95 | 0.38 | 2.28 | −0.34 |
| | Région Wallonne | −0.22 | 0.16 | 0.07 | 1.52 | 0.24 |
| | VlaamsGewest | −0.68 | −0.28 | −0.44 | 0.42 | −0.79 |
| | CzechRepublic | 0.98 | 0.54 | −0.69 | n.a. | n.a. |
| CzechRepublic (NUTS2) | Jihozapad | 0.56 | 0.35 | −0.31 | n.a. | n.a. |
| | Jihovychod | 1.38 | 0.87 | −0.66 | n.a. | n.a. |
| | Moravskoslezsko | 1.02 | 1.00 | −0.52 | n.a. | n.a. |
| | Praha | 0.43 | −0.19 | −0.88 | n.a. | n.a. |
| | Severozapad | 0.83 | 0.39 | −0.89 | n.a. | n.a. |
| | Severovychod | 1.20 | 0.80 | −0.83 | n.a. | n.a. |
| | StredniCechy | 1.19 | 0.32 | −1.01 | n.a. | n.a. |
| | Stredni Morava | 0.98 | 0.48 | −0.62 | n.a. | n.a. |
| | Germany | 0.39 | −0.42 | −0.41 | 0.44 | −0.26 |
| Germany (NUTS1) | Baden-Württemberg | 0.12 | −0.84 | −0.51 | 0.53 | −0.78 |
| | Bayern | 0.26 | −0.75 | −0.09 | 0.64 | −0.60 |
| | Berlin | 0.02 | −0.63 | −0.59 | 0.35 | −0.24 |
| | Brandenburg | 1.09 | 0.27 | −0.22 | 1.47 | −0.06 |
| | Bremen | 0.79 | −0.12 | −0.58 | 1.68 | −0.76 |
| | Hamburg | 0.16 | −1.10 | 0.29 | −0.36 | 0.07 |
| | Hessen | 0.22 | −0.53 | −0.35 | 0.47 | −0.34 |
| | Mecklenburg-Vorpommern | 0.96 | 0.13 | −0.71 | −0.17 | 0.04 |
| | Niedersachsen | −0.25 | −0.46 | −0.46 | 0.28 | −0.01 |
| | Nordrhein-Westfalen | 0.42 | −0.60 | −0.48 | 0.47 | −0.20 |
| | Rheinland-Pfalz | 0.64 | −0.37 | −0.31 | 0.13 | −0.22 |
| | Saarland | 0.95 | 1.15 | 0.06 | 2.07 | 0.08 |
| | Sachsen | 1.06 | 0.14 | −0.78 | 0.44 | 0.25 |
| | Sachsen-Anhalt | 0.89 | 0.43 | −0.20 | 0.23 | 0.19 |
| | Schleswig-Holstein | 0.19 | 0.43 | −0.31 | 0.53 | 0.20 |
| | Thüringen | 1.30 | 0.54 | −0.76 | −0.30 | −0.18 |
| | Denmark | −2.26 | −2.00 | −1.11 | 1.14 | −1.91 |
| | Spain | 0.52 | 0.58 | 0.17 | 0.49 | 0.03 |
| Spain (NUTS1) | Canarias (ES) | 0.44 | 0.54 | −0.56 | 0.29 | −0.21 |
| | Centro (ES) | 0.15 | 0.54 | 0.62 | −0.01 | −0.17 |
| | Comunidad de Madrid | 0.39 | 1.34 | 1.13 | 1.91 | −0.10 |
| | Este | 0.60 | 0.38 | −0.21 | 0.49 | 0.42 |
| | Noreste | 0.55 | 0.26 | −0.04 | 0.71 | −0.50 |
| | Noroeste | 0.53 | 0.62 | −0.19 | −0.77 | −0.28 |
| | Sur | 0.67 | 0.49 | 0.13 | 0.49 | 0.09 |
| | Finland | −1.51 | −0.68 | −0.82 | −0.51 | −0.51 |
| Finland (NUTS2) | Etelä-Suomi + Åland | −1.59 | −0.81 | −0.92 | −0.37 | −0.57 |
| | Itä-Suomi | −1.34 | −0.51 | −0.82 | −0.53 | −0.42 |
| | Länsi-Suomi | −1.33 | −0.46 | −0.70 | −0.78 | −0.33 |
| | Pohjois-Suomi | −1.42 | −0.38 | −0.49 | −0.91 | −0.87 |
| | France | n.a. | −0.21 | −0.94 | 0.56 | 0.14 |

*(continued)*

**Appendix 2.** (continued)

| Country and level | Country/region | PDI | UAI | MAS | IND | FCOL |
|---|---|---|---|---|---|---|
| France (NUTS1) | BassinParisien | n.a. | 0.01 | −0.86 | 0.23 | 0.25 |
| | Centre-Est | n.a. | −0.17 | −1.09 | 0.46 | 0.29 |
| | Est | n.a. | 0.03 | −0.64 | 0.39 | 0.18 |
| | Île de France | n.a. | −0.41 | −0.80 | 0.99 | −0.04 |
| | Méditerranée | n.a. | −0.14 | −1.19 | 0.75 | 0.08 |
| | Nord - Pas-de-Calais | n.a. | 0.52 | −0.39 | 0.66 | 0.11 |
| | Ouest | n.a. | −0.64 | −1.04 | 0.14 | 0.13 |
| | Sud-Ouest | n.a. | −0.56 | −1.51 | 0.69 | 0.19 |
| Greece (NUTS1) | Greece | 1.06 | 1.94 | 2.05 | 0.90 | 0.60 |
| | Attiki | 1.28 | 1.79 | 1.72 | 1.15 | 0.56 |
| | KentrikiEllada | 1.35 | 2.08 | 2.40 | 0.18 | 1.16 |
| | NisiaAigaiou, Kriti | 0.97 | 1.69 | 2.17 | 1.60 | 0.38 |
| | VoreiaEllada | 0.68 | 2.05 | 2.11 | 0.97 | 0.33 |
| Hungary (NUTS1) | Hungary | 0.40 | 1.10 | 0.99 | 0.94 | 2.00 |
| | AlföldésÉszak | 0.63 | 1.36 | 0.94 | 0.89 | 2.14 |
| | Dunantul | 0.38 | 1.02 | 1.07 | 0.81 | 1.96 |
| | Közép-Magyarorszag | 0.04 | 0.74 | 0.96 | 1.20 | 1.70 |
| Ireland (NUTS2) | Ireland | −0.33 | −0.32 | −0.03 | −0.39 | −0.74 |
| | Border, Midlands and Western | −0.23 | −0.37 | −0.07 | −0.58 | −0.51 |
| | Southern and Eastern | −0.35 | −0.30 | 0.00 | −0.32 | −0.81 |
| Italy (NUTS1) | Italy | 0.01 | n.a. | n.a. | n.a. | n.a. |
| | Centro (IT) | −0.13 | n.a. | n.a. | n.a. | n.a. |
| | Isole (IT) | −0.23 | n.a. | n.a. | n.a. | n.a. |
| | Nord Est | −0.13 | n.a. | n.a. | n.a. | n.a. |
| | Nord Ovest | −0.39 | n.a. | n.a. | n.a. | n.a. |
| | Sud (IT) | 0.61 | n.a. | n.a. | n.a. | n.a. |
| | Luxembourg | −0.89 | n.a. | n.a. | n.a. | n.a. |
| Netherlands (NUTS1) | Netherlands | −1.18 | −1.00 | −0.78 | 0.44 | −1.13 |
| | Noord-Nederland | −1.12 | −1.02 | −0.92 | 0.23 | −1.28 |
| | Oost-Nederland | −1.23 | −1.02 | −0.79 | 0.32 | −1.21 |
| | Zuid-Nederland | −0.90 | −0.79 | −0.74 | 0.28 | −1.11 |
| | West-Nederland | −1.30 | −1.12 | −0.78 | 0.62 | −1.06 |
| Norway (NUTS2) | Norway | −1.98 | −1.44 | −0.97 | −1.33 | −1.66 |
| | AgderogRogaland | −1.94 | −1.18 | −0.65 | −0.94 | −1.60 |
| | HedmarkogOppland | −2.30 | −1.24 | −1.02 | −1.65 | −1.40 |
| | Nord-Norge | −1.92 | −1.21 | −1.21 | −1.02 | −1.29 |
| | OsloogAkershus | −2.24 | −1.81 | −0.99 | −1.07 | −1.92 |
| | Sør-Østlandet | −1.71 | −1.32 | −1.00 | −1.58 | −1.53 |
| | Trøndelag | −2.15 | −1.48 | −0.95 | −1.53 | −1.60 |
| | Vestlandet | −1.80 | −1.51 | −1.03 | −1.67 | −1.84 |
| Poland (NUTS1) | Poland | 1.27 | 0.90 | 1.17 | −1.44 | 1.40 |
| | Centralny | 1.13 | 0.80 | 0.88 | −1.39 | 1.25 |
| | Pólnocno-Zachodni | 1.24 | 0.84 | 1.14 | −1.32 | 1.42 |
| | Pólnocny | 1.14 | 0.92 | 1.14 | −1.17 | 1.37 |
| | Poludniowo-Zachodni | 1.35 | 0.66 | 1.38 | −1.25 | 1.45 |
| | Poludniowy | 1.11 | 0.96 | 1.01 | −1.79 | 1.57 |
| | Wschodni | 1.65 | 1.10 | 1.51 | −1.66 | 1.35 |
| Portugal (NUTS2) | Portugal | 0.90 | 0.38 | 0.56 | −0.67 | 0.20 |
| | Alentejo | 0.98 | −1.25 | −0.55 | −2.26 | −0.06 |
| | Algarve | 0.31 | 0.00 | 1.40 | 0.05 | 0.40 |
| | Centro (PT) | 1.00 | 0.56 | 0.25 | −0.88 | −0.12 |
| | Lisboa | 0.89 | 0.12 | 0.60 | −0.82 | −0.07 |
| | Norte | 0.94 | 0.70 | 0.75 | −0.32 | 0.54 |
| Sweden (NUTS2) | Sweden | −1.92 | −2.04 | −1.28 | −0.68 | −1.59 |
| | MellerstaNorrland | −1.69 | −1.59 | −1.63 | −0.81 | −1.60 |

*(continued)*

**Appendix 2.** (continued)

| Country and level | Country/region | PDI | UAI | MAS | IND | FCOL |
|---|---|---|---|---|---|---|
| | NorraMellansverige | −1.35 | −1.73 | −1.59 | −0.86 | −1.53 |
| | Småland med öarna | −2.06 | −1.82 | −0.94 | −1.10 | −1.81 |
| | Stockholm | −2.23 | −2.42 | −1.26 | −0.03 | −1.40 |
| | Sydsverige | −1.76 | −1.85 | −1.00 | −0.66 | −1.81 |
| | Västsverige | −1.87 | −2.08 | −1.18 | −0.39 | −1.39 |
| | ÖstraMellansverige | −2.08 | −2.18 | −1.47 | −0.81 | −1.66 |
| | ÖvreNorrland | −1.94 | −2.11 | −1.57 | −2.29 | −1.70 |
| | Slovenia | 0.69 | 0.47 | 0.99 | 0.36 | 0.08 |
| | United Kingdom | −0.55 | −0.46 | −0.60 | −0.35 | −0.46 |
| United Kingdom (NUTS1) | East Midlands | −0.18 | −0.18 | −0.41 | −0.47 | −0.55 |
| | Eastern | −0.71 | −0.68 | −0.60 | −0.37 | −0.54 |
| | London | −1.03 | −0.78 | 0.03 | −0.33 | −0.31 |
| | North East | −0.12 | −0.34 | −1.19 | −0.64 | −1.04 |
| | North West (including Merseyside) | −0.69 | −0.49 | −0.88 | −0.20 | −0.32 |
| | Northern Ireland | −0.27 | −0.17 | −0.49 | −1.32 | −0.23 |
| | Scotland | −0.22 | −0.77 | −0.91 | −0.35 | −0.44 |
| | South East | −0.80 | −0.56 | −0.53 | −0.16 | −0.46 |
| | South West | −0.50 | −0.93 | −0.65 | −0.70 | −0.70 |
| | Wales | −0.22 | −0.10 | −0.85 | −0.04 | −0.56 |
| | West Midlands | −0.20 | 0.35 | −0.10 | −0.27 | −0.29 |
| | Yorkshire and The Humber | −1.04 | −0.53 | −0.95 | −0.38 | −0.38 |

PDI: power distance; UAI: uncertainty avoidance; MAS: masculinity; IND: individualism; FCOL: family-related collectivism; n.a.: not available.