Regional development differences and cultural value patterns: The Romanian case

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Starting from the inequalities of regional economic and social development in Romania, this article aims to study regional differences in the dimensions of cultural values, starting from Hofstede and completed with generalized trust, and their role in subjective income. From a methodological point of view, the study considers bivariate and multivariate statistical analyses on the definition of the dimensions of cultural values through which the authors can analyse regional differences in Romania. The territorial units aggregated for the analysis were created through cluster analysis in which the study used more than 20 economic and social development variables.

Introduction

The evolution of socioeconomic development in the territorial profile of Romania from 2000 to the present is of particular interest, both methodologically and empirically, in the scientific field (Dobos et al. 2021, Hung 2022, Szép et al. 2022, Bethlendi–Mérő 2022, Tóth 2023). Especially following the addition of Eastern European countries to the European Union (EU), Romania shows uneven development at both the county and regional levels, which can be seen both in official EU statistics and in the literature (Benedek–Lembcke 2017, Török 2019, Veres 2020, Benedek et al. 2021, Ibiniceanu et al. 2021, Török et al. 2022). The explanation for these differences in the pace of development can be at least partially explained by different patterns in the cultural values of different regions.

This article considers a bivariate and multivariate statistical analysis on defining dimensions of cultural values through which we can study regional differences in Romania. Cluster regions have been defined based on a cluster analysis in which we used more than 20 economic and social development variables, called the PEESH (population, economic, education, social, and health) Development index (see Veres et al. 2022). The paper also seeks an answer to the question of explanatory factors of the material subjective income situation at the individual level, and here, we test the role of cultural indices such as generalized trust, uncertainty avoidance, and power distance.

Literature review and conceptualization

Measuring cultural differences at the cross-national and subnational levels

Unlike individual values, which can be directly detected empirically, guiding individual behavior, cultural values are abstract constructs that are empirically estimated as average values of individuals within a culture - the averaging approach (Schwartz 2014). Witte et al. (2020) examined the extent to which several contextual variables predict countries' relative positioning on dimensions of cultural value priorities. They defined two cultural dimensions: Conservation/Alteration, which is preferred by populations characterized by high levels of economic development and prosperity and low levels of income inequality. Conversely, the dominance/amendment organization of values is preferred by populations with low levels of development and economic prosperity and characterized by high levels of income inequality. In addition, as seen from the correlations with subjective well-being, while the first cultural value dimension appears to be adopted under conditions of low perceived economic stress, the second cultural value dimension is associated with perceptions of high perceived economic stress.

Talking about value sets and culture, Inglehart (1995) considers that sociocultural values form coherent sets, he called value orientations. Inglehart's (1995) model is based on the thesis that value orientations are both cause and effect of economic and political development. Rimac–Štulhofer (2004), using Inglehart's model, concluded that there is a high degree of similarity in value orientations between developed countries as well as between less developed countries but not between these two groups. In our research, we did not use Inglehart's model in the end because in explaining regional development differences in Central Eastern European countries, we consider other types of waves to be relevant.

Thus, we partly opted for the Hofstede model (1980, 1994, 2001), which we supplemented with generalized trust. The three-dimensional measures of culture defined by Hofstede are as follows: power distance is „the extent to which the least powerful of institutions and organizations within a country expect and accept that power is unequally distributed"; uncertainty avoidance is „that members of a culture feel threatened by uncertain or unknown situations"; individualism „refers to societies in which social ties are less rigorous", i.e., „Individuals take care of themselves and their closest family members" (Hofstede 2001).

Using Hofstede's metric, researchers have found significant relationships between national culture and important demographic, geographic and environmental, economic, and political aspects of a society (see Kale–Barnes 1992, Volkema 2004, Paul et al. 2006, Shao–Webber 2006, Swaidan et al. 2008, Cleveland et al. 2009, Limon et al. 2009, Paek et al. 2009).

Blodgett et al. (2008) also examined the reliability and validity of Hofstede's criteria at the individual level and found low reliability of the dimensions, and the results of factor analyses did not show much consistent structure. Thus, the need to develop reliable and valid measurement tools remained a challenge for Hofstede's cultural dimensions at the individual level. Continued efforts have been made to develop a scale to measure Hofstede's cultural characteristics at the individual level. Yoo et al. (2011) felt that only one scale has usually been developed to address one cultural dimension at a time, and they failed to simultaneously develop a common set of scales for this purpose.

Examples are individualism and collectivism by Triandis (1995) and long-term orientation by Bearden et al. (2006). However, the challenge for conceptual conformity with the definition of each cultural dimension originally referred to by Hofstede or methodological uniformity between scales that have been developed by different researchers for different purposes remains valid. Yoo et al. (2011), building on these noted shortcomings, developed a scale to assess Hofstede's cultural dimensions at the individual level (hereafter referred to as the individual cultural values scale (CVSCALE), which measures Hofstede's cultural dimensions at the individual level. In general, social trust can be described as an expectation that people

will behave with goodwill, that they intend to honor their commitments and that they will avoid harming others (see also Glanville–Paxton 2007: p. 231.).

Although in more recent approaches to the Hofstede model the notion of trust also appears (Hofstede et al. 2006, Mooij–Hofstede, 2011), we considered that the initial dimensions should be complemented with this aspect of cultural values. Without reviewing the entire literature through which the notion of trust in the social sciences has emerged, we will only address recent results. Freitag–Bauer (2013) introduced a three-dimensional conception of trust, referring to particularized, identity-based and generalized trust. Thus, we can speak of trust toward personally known people (particularized) or a more abstract trust toward unknown people, including strangers (generalized trust). This notion can also include trust based on identity through elements such as 'trust in people of a different religion or nationality', which can also be addressed as a separate dimension of trust based on identity. To measure generalized trust, Freitag–Bauer (2013) used the items „trust in people you meet for the first time" and „trust in most people". In our research, we included these slightly tailored surveys as part of generalized trust because a separate identity-based dimension of trust would require other identity-based items, which would take the research in a different direction.

In a recent study, Grossmann et al. (2021) noted that energy-poor households in European countries rarely showed widespread trust. With variation across countries, energy-deprived people tend to have very low trust in society at large, including state institutions, the political system and private companies. Kim–Kim (2021) found that the path to achieving a high-trust society starts from overcoming intense family trust by expanding the radius of particularized trust and strengthening institutional trust.

The notion of development, previous analyses on Romanian regional development

In defining the concept of human development, we started from Amarya Sen's conception. In his definition, development is the overall changes implied by the whole social system (which includes the basic needs of both social groups and individuals), leading to more satisfactory living conditions, both materially and spiritually (Sen 2003). Chandler (2013: 5. p.) points out that, with regard to the merits and applicability of Sen's approach, there have been several academic discussions that have generally tried to extend, develop and refine the theoretical framework developed by Sen and to identify methodological benchmarks by which it can be linked with empirics (see various critical approaches in the following works: Stewart–Deneulin 2002, Robeyns 2003, Wolff–de-Shalit 2007, Foster–Handy 2008). Regarding the methodological approach to the notion of human development, international institutions (World Bank, United Nations Development Programme [UNDP]) have made a significant contribution in recent decades to finding ways of measuring human development

from a multidimensional perspective. The Human Development Index, introduced by the UNDP into the academic circuit, although it is based on only three dimensions (economic, knowledge-education and health-lifestyle) (Alkire–Sarwar 2009), already reflects the fact that human development must be conceived as a multiple, economic and social process. Based on previous research findings, including the five forms of freedom as defined by Sen (2003), it was found that the main dimensions for measuring regional development must include the following dimensions: economic and labor force, social opportunities, which we measured through the dimension of education. Then, it also includes demographic aspects such as vitality and population mobility. In the conception of social security, we include not only social and housing conditions but also the medical system and living conditions, the „whole social system" in Sen's definition (2003, see also Seth–Villar 2017: p. 4.), as we described in a previous study (Veres et al. 2022), and for the classification of the level of regional development at the subnational level, we also included some spatial or geographical variables to achieve some territorial homogeneity.

The study of socioeconomic development and catching up to the development gap of Central and Eastern European countries has come into academic focus, especially in the context of EU enlargement in the late 1990s.

A typology of regional development, as well as a regional classification of Romanian counties, was carried out in the period after the collapse of communism in Eastern Europe by D. Sandu, using data from the 1992 census and some other macrosocial indicators collected by the Romanian Statistical Institute. Based on a hierarchical cluster analysis, using aggregate indices measuring urban and rural development, Orthodox population share and agricultural land structure, Sandu defined different regional clusters of counties, called cultural zones (but which became obsolete after 2010). The classification subsequently became a reference point in the regional analysis of Romania for many years. Sandu delimited 18 cultural areas, of which five were in historical Transylvania and 13 each were in Muntenia and Moldova. The cultural areas defined by Sandu have several characteristics of development, as noted by the author. The cultural areas of Moldova have a higher level of poverty than any other area, followed by the western part of Oltenia. Muntenia is the most heterogeneous historical region, with a developed north and a poor south and southeast region. Transylvania, too, is not homogeneous in terms of development, according to Sandu, showing that the differences between the Brasov–Sibiu area and the Sălaj–Bistriţa–Năsăud area are extremely large (Sandu 1999).

Comparing the cultural areas with the development regions created by the Romanian Government Nomenclature of Territorial Units for Statistics (NUTS 2), according to Sandu, we can see that Sandu's regions were much more homogeneous than the development regions, which became the NUTS 2 level once Romania joined the EU (Sandu 1999).

There are other studies that have more recently studied inequalities in local development, poverty and exclusion (Teşliuc et al. 2016). The index constructed by them has three dimensions: human capital (level of general education), local labor force situation (share of unemployed population aged 15–64) and housing conditions based on three indicators (share of dwellings without electricity, without water connection and overcrowded according to Eurostat).

Among recent articles investigating regional development in Romania, Benedek–Moldovan (2015) and Benedek et al. (2021) provided a multidimensional approach to regional polarization and uneven development, highlighting the eminent role of large urban growth poles. Török (2019) analyzed regional disparities in human and economic development in Romania, highlighting the notable territorial differences and disparities in socioeconomic development between Romania's counties, as well as the remarkable stability of historically established core-periphery structures.

However, these studies have not revealed a relatively homogeneous regional structuring in Romania over the last decade. Sandu's cultural cluster areas have undergone important changes with the emergence of urban development poles, such as Cluj, Timis, and Constanta, whereby the „cultural areas" in which these counties were included can no longer be adequately used, thus making it necessary to develop a new regional classification of Romania's counties, using more numbered, more appropriate indicators for 2018 and 2019, reflecting the current, recent realities of resource distribution and territorial development indicators in Romania.

Regional development differences and cultural values

Hauser et al. (2015) have shown that even in a relatively homogeneous area such as Europe, there are strong subnational differences in levels of generalized trust.

Regions in European countries show considerable differences both in gross domestic product (GDP) per capita and in many other indicators of well-being or poverty, and the rate of convergence of these indicators is quite low (Geppert–Stephan 2008, Battisti–Di Vaio 2008, Benedek–Moldovan 2015). Researchers have looked for possible determinants of persistent regional inequalities, given the free movement of labor, capital and goods across Europe. Putnam (1993) focuses on an explanation of the role of historically rooted cultural values reflected in institutional culture and governmental efficiency, which translates into economic development outcomes across regions in countries such as Italy. Putnam (1993) considers that differences in cultural values are due to the legacy of historical institutional cultures, which may convey different relationships to the power and style of government and are relatively stable over long periods of time. Hauser et al. (2015) find that differences in the paternalism of generalized trust constitute transmission mechanisms that are intended to facilitate the transformation of cultural differences that can then lead to different capacities in economic and income growth in different regions. Hauser et al.

(2015) made two important claims in their study: (1) regional differences in social trust endowments change very slowly or are virtually stable; and (2) the pattern of spatial distribution of trust exhibits a remarkable degree of stability and is strongly linked to cultural norms, statistical studies supported by the three waves of the Social Value Survey.

Other researchers, such as Beugelsdijk–van Schaik (2005), have found a weak influence of generalized trust on economic growth. However, in more focused research, such as Akçomak–ter Weel (2009), based on the European Social Survey, they showed a significant impact of social trust on economic growth and material well-being at the regional level in European countries.

Rimac–Štulhofer (2004), in order to determine the determinants of generalized trust, used a number of variables from the Eurostat Regio database as indicators through which we can identify structural characteristics of regions. They used the share of the population with tertiary education, the demographic aging index, but found that social heterogeneity is difficult to measure with simple quantitative indicators at the regional level.

Rimac–Štulhofer (2004) pointed out that neither postmaterialism nor social capital theory can be applied efficiently for the specific, transitional features of postcommunist European societies. Gundelach–Traunmüller's (2014) research results, based on data from German regions (GSOEP), pointed out a negative relationship between cultural diversity and social trust in Germany.

Conceptualization and hypotheses

Comparative studies at the European level have shown (see Beugelsdijk–van Schaik 2005, Rimac–Štulhofer 2004, Hauser et al. 2015) that Romania and other countries with similar levels of development in 1999/2000, such as Bulgaria, Croatia, Latvia, Slovakia, Bulgaria, and Turkey, have an extremely low generalized trust index, especially in the European context. Thus, we hypothesized that differences in economic and social development in Romania may be associated with significant differences in the level of generalized trust at the individual level.

Additionally, as Putnam (1993) pointed out, large regional differences in economic development have cultural roots, especially if they are also deduced by significant historical differences in political culture, power relations and institutional culture, as is the case in Italy between North and South but also in Romania, if we look at multicentury cultural-political influences (Austrian, Ottoman, Tsarist).

Accordingly, we hypothesize that (1) regional differences in economic-social development in Romania can be explained, to some extent, by different levels in patterns of psycho-cultural values, especially uncertainty avoidance, power distance and generalized trust. (2) At the level of individual values, the material situation of individuals/households can also be explained by different relations to power

(distance), trust or uncertainty, beyond the usual sociodemographic characteristics, but the role of education cannot be minimized in this case.

Methodology

Data sources

In this research, we used two databases.

Data source1: territorial level aggregated data of Romanian counties: macrostatistical indicators included in a proprietary database built and calculated by the authors within the project PN-III-P4-ID-PCCF-2016-0084. Raw primary data come from the INS online database TEMPO Online from 2000 and 2018–2019, and some data come from the Romanian Population and Housing Census from 2002 and 2011.

Data source 2: individual-level aggregated survey data from Romania. The sample was selected by a random stratified method, one person from a household, collected in 2019, in the framework of project no. PN-III-P4-ID-PCCF-2016-0084, within PNCDI III, coordinated by Babeş-Bolyai University of Cluj-Napoca. The sample contains 3025 valid cases, distributed proportionally in all counties from Romania.

Methods of analysis

In the first phase of the research, we made a regional classification of Romanian counties based on the PEESH social-economic development indicators of 2018/2019. The method used was hierarchical cluster analysis with the Ward method. Following the classification, after 7 iterations, the method grouped the counties into 10 clusters, of which Bucharest and Ilfov constituted distinct categories.

List of variables included in the cluster analysis:

- Demographic and mobility indicators (Natural‰2018/2019 Migration‰_20éé18/2019 Temporaryabsent‰_2018 Migration‰_2018 Immigrants‰_2018 Migration‰_2018);
- Health indicators (-Physicians/pop_2018/2019 Health care_2018/2019 Hospital_beds2018/2019 Tumours100000_2018 Card_vasc100000_2018);
- Economic indicators (GDP/POP_2018, Employment rate of working age population R_ocup_net2018/2019, Share of population by sector P_Agric2018 P_Ind2018 P_HoReCa2018 Unemployed_2018/2019 P_InfTelec2018, firms/pop2018);
- Educational indicators (Share of population with higher education: Higher education_2011, School dropout rate);

– Social indicators on housing/housing conditions (Floor_area/household _2018/2019, Flat_in_m²2018/2019, housing_2011 kitchen/room_2011 bathroom/room_2011 central heating/room_2011);
– Geographical indicators (densityapop_2018, urbanpop%_2018/2019, commuting (% employed pop), Access_to_county (in minutes) Latitude).

In the second phase of the research, based on the data collected through the individual survey, we created a composite index (Pénzes 2020, Aguilar 2022, Nagy–Veresné Somosi 2022) to measure the psychocultural profiles we wrote about in the theoretical part, i.e., cultural dimensions based on Hofstede's modified model, completed with the trust dimension. For each one, a principal component analysis (PCA) was performed, where we checked the coherence of the future indicators using Kaiser-Meyer-Olkin (KMO) test and communalities. Then, using the factor scores of the principal component from the component matrix, we constructed synthetic indices with the COMPUTE method, weighting the component variables with factor scores from the (PCA) analysis.

The dimensions defined and formulas used are in the Table 1.

Table 1

Component formulas for cultural dimension indices

Dimensions	KMO	TVE[a], %	Compute formula of indices
Power distance(1)	0.52	60.0	PD(1)=(0.79 * PD1 + 0.784*PD2 +0.367*PD3)/1.941
Power distance(2)			PD(2)=PD4 (fear)
Uncertainty avoidance	0.52	41.2	UAv=(0.759 * UA1 + 0.74*UA2 + 0.331*UA3)/1.831
Long term orientation	0.57	43.4	LongTO=(0.737*LTO1 + 0.636*LTO2 + 0.595*LTO3)/1.969
(Generalized) Trust	0.67	62.8	TR=(0.83*TR1 + 0.83*TR2 + 0.711*TR3)/2.371

a) TVE: total variance explained.
Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

In the third phase of the research, we analyzed correlations and mean values and std. deviations with the cultural composite index. We then independently analyzed sample T tests according to the regional cluster groupings of the counties in Romania created in the first part of the study.

Next, we performed a multiple linear regression analysis ordinary least squares (OLS), where the dependent variable was individual subjective income, and the independent variables were the cultural composite variables presented above, age, educational attainment of respondents and gender (dummy, 1: Men). The subjective income variable was scaled from 1 to 5, where 1: [deprived situation] We do not even have enough for the bare necessities, 5 [good situation] We manage to have everything we need without restricting ourselves from anything. The question asked was: How do you rate the material situation of your household?

Results

Cluster analysis

In the second phase of the research, we classified Romanian counties based on the indicators presented in Methodology. The method used was hierarchical cluster analysis with the Ward method (Tésits et al. 2021). In the way of aggregation for the years 2018/2019, we can notice the accelerated development of intensively urbanized areas, which have become poles of economic growth, in addition to Bucharest, which, as a capital city, has maintained a detached advantage over the rest of the country in development indicators, especially economic but also in other dimensions of development, analyzed by us.

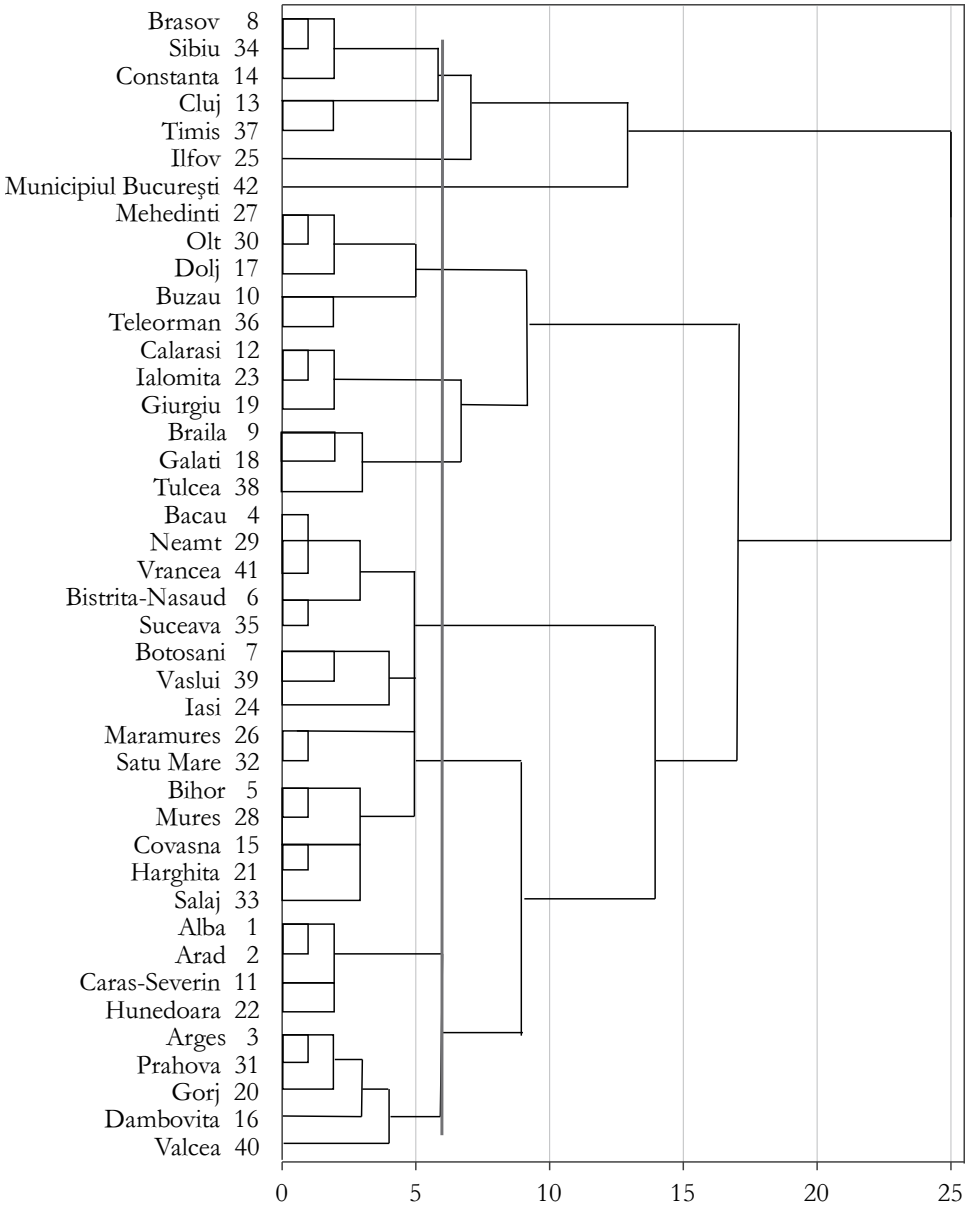
At the same time, following the classification of the 2018/2019 data, after 7 iterations, the Ward cluster method grouped the counties into 10 clusters, of which Bucharest and Ilfov constitute distinct categories, and from the rest of the counties, the first group of counties that had above-average growth was formed, which we call development poles: Cluj, Timiş, Braş, Sibiu and Constanţa. These counties have above-average economic and social indicator values and have distinguished themselves more clearly from the rest of the country (see Table 2).

We can notice some similarity with Dumitru Sandu's (1999) concepts of cultural areas, based on data from 1997, as the dendogram shows, counties such as Braşov–Sibiu, Covasna–Harghita, Cluj, and Mureş are quite close, as are Călăraşi–Ialomiţa, Giurgiu–Teleorman, Dolj, and Mehedinţi–Gorj. In addition to the changes due to development poles, some older clusters noted by Sandu have been retained, such as Covasna-Harghita, Brasov-Sibiu, Calarasi-Ialomita, but quite a few new core cluster associations have been formed, some of them going beyond the boundaries of the historical regions they belong to: Suceava–Bistrita, Bihor–Mures. (See Figure 1 and Appendix Table A1.)

To identify some patterns in the territorial distribution of development in Romania and the changes produced in the period 2000–2019, we built 10 clusters of counties based on the proximity in the profile of socioeconomic development based on indicators from the 5 dimensions analyzed above (see Figure 2).

Figure 1

Dendogram, cluster membership of Romanian counties (Ward method), 2019



Source: Own Macrostatistics Database (counties), project PN-III-P4-ID-PCCF-2016-0084, own calculations. Basic data from NIS.

Figure 2

Socioeconomic clusters of counties

Source: Own Macrostatistics Database (counties), project PN-III-P4-ID-PCCF-2016-0084, own calculations. Basic data from NIS.

As we can see, for the cluster model of 2018/2019, Cluster 5 contains the developed counties, regardless of their geographical location, although most of them are located in Transylvania, but Timis and Constanta counties are quite far from the other counties in the cluster. The rest of the clusters were relatively homogeneous geographically, with a geographical proximity variable included in the clustering (Latitude). Thus, the clusters formed also reflect the socioeconomic-cultural area characteristics of Romania over the long term and the differences traditionally existing within a region (e.g., northern, mountainous and southern Muntenia, plateau-plains), as pointed out by Sandu (1999). However, with the separation of 4 counties from Transylvania and Banat, which constituted this category of developed areas in 2019, the traditional grouping of Transylvania has not been preserved; otherwise, the regional grouping of Romania's counties shows relatively high stability in terms of the socioeconomic development profile (see Table 2).

Table 2

Mean values for the economic and demographic vitality indicators at the cluster level (socioeconomic and cultural area), 2019

Cluster regions/Ward/	GDP/ capita (Ron)	GDP total _RON_	Nr. compa-nies/ capita	Employ-ment rate	Average net wages	Average income/ house-holds	Life expect-ancy at birth	Ageing index
South-West Transylvania	35,495.2	14,382.5	0.021	69.4	2,248.3	1,058.3	75.5	**127.6**
Muntenia – North Oltenia	33,394.5	18,578.8	0.021	61.2	2,349.0	996.4	**76.8**	**126.3**
Moldova, Bistrita	23,569.6	14,268.4	0.016	59.5	2,203.0	722.4	75.4	93.1
North-East Transylvania	28,462.6	11,843.0	0.023	64.8	2,168.6	979.4	75.2	100.1
Developed urban areas	**49,227.5**	**33,373.4**	0.034	64.6	**2,712.0**	1,554.0	**76.7**	104.5
Lower Danube	26,289.5	10,354.8	0.020	61.3	2,235.7	993.9	74.6	121.5
Oltenia and South Muntenia	25,346.6	11,833.8	0.017	64.0	2,246.8	800.6	75.0	**141.3**
Baragan	22,175.7	6,512.9	0.017	51.6	2,235.0	796.3	74.3	113.9
Ilfov	**58,174.1**	24,183.3	0.059	53.0	2,871.0	2,381.1	76.0	75.4
Bucharest	**99,216.3**	**208,919.4**	**0.055**	**96.6**	**3,666.0**	**3,621.9**	**78.2**	**124.0**
Total Romania	32,676.3	20,409.9	0.023	63.0	2,340.1	1,071.3	75.6	112.4

Source: Own Macrostatistics Database (counties), project PN-III-P4-ID-PCCF-2016-0084, own calculations. Basic data from NIS.

Psychoscultural factors

As seen in Table 3, each index has values between 1 and 5, with the exception of the Trust index, which has a maximum value of 4. Based on the mean values, the Power distance 1 and Long term orientation indices have the highest values (m=3.9), the former actually showing a relatively lower power distance, the maximum value in the scale indicating a preference for more equal distribution of power and an appreciation of consultation with those concerned for decisions involving them by management. Power distance 2 is another dimension that could not be included in the first dimension, which refers to the presence of fear in the relationship with power. Here, higher values (5) indicate more power distance (see Table A2). The Trust index, although measured on a scale between 1 and 4, the average of 2 at the national level indicates a relatively low level of generalized trust in Romania, which has been demonstrated in several cross-national comparative studies, as we have seen in the theoretical section.

Next, we studied the relationship between the indices of cultural dimensions. We found that there are medium correlations between power distance1 and long-term orientation indices (r=0.439) and weak correlations with uncertainty avoidance (r=0.222), between the two (r=0.230), or correlations of approximately.1 between trust and other variables, but these cultural dimensions differ quite clearly.

Table 3

Descriptive statistics of cultural dimension indices

Cultural dimension indices	N	Minimum	Maximum	Mean	Std. Deviation
Power distance1	2,921	1.00	5.00	3.8137	0.64391
Power distance2 (fear)	3,025	1.00	5.00	3.1726	1.17682
Uncertainty avoidance	2,944	1.00	5.00	3.5878	0.73127
Long term orientation	2,940	1.00	5.00	3.9940	0.60215
(Generalized) Trust	2,769	1.00	4.00	2.0852	0.60895
Valid N (listwise)	2,672				

Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

Table 4

Pearson correlation coefficients between cultural dimension indices and age, gender (dummy), and education variables

Denomination		Power distance 1	Power distance 2	Uncer-tainty avoi-dance	Long term orien-tation	(Gene-ralized) Trust	Edu-cation	Age	Sub-jective income	Satis-facion with life in present
Power distance1	Pearson r	1	–0.025	0.222**	0.439**	0.119**	0.055**	0.027	0.001	0.115**
	Sig.		0.178	0.000	0.000	0.000	0.003	0.141	0.966	0.000
	N	2,921	2,921	2,918	2,913	2,681	2,910	2,921	2,871	2,921
Power distance2 (fear)	Pearson r	–0.025	1	0.022	0.038*	–0.013	0.068**	–0.088**	0.015	–0.091**
	Sig.	0.178		0.241	0.038	0.495	0.000	0.000	0.409	0.000
	N	2,921	3,025	2,944	2,940	2,769	3,013	3,025	2,974	3,025
Uncertainty avoidance	Pearson r	0.222**	0.022	1	0.230**	–0.019	–0.090**	0.095**	–0.096**	–0.009
	Sig.	0.000	0.241		0.000	0.329	0.000	0.000	0.000	0.634
	N	2,918	2,944	2,944	2,933	2,702	2,932	2,944	2,893	2,944
Long term orientation	Pearson r	0.439**	0.038*	0.230**	1	0.001	0.007	0.012	–0.009	0.083**
	Sig.	0.000	0.038	0.000		0.966	0.724	0.530	0.613	0.000
	N	2,913	2,940	2,933	2,940	2,699	2,928	2,940	2,889	2,940
(Genera-lized) Trust	Pearson r	0.119**	–0.013	–0.019	0.001	1	0.123**	0.016	0.102**	0.119**
	Sig.	0.000	0.495	0.329	0.966		0.000	0.412	0.000	0.000
	N	2,681	2,769	2,702	2,699	2,769	2,758	2,769	2,730	2,769
Education	Pearson r	0.055**	0.068**	–0.090**	0.007	0.123**	1	–0.053**	0.312**	0.093**
	Sig.	0.003	0.000	0.000	0.724	0.000		0.004	0.000	0.000
	N	2,910	3,013	2,932	2,928	2,758	3,013	3,013	2,964	3,013
Age	Pearson r	0.027	–0.088**	0.095**	0.012	0.016	–0.053**	1	–0.299**	–0.204**
	Sig.	0.141	0.000	0.000	0.530	0.412	0.004		0.000	0.000
	N	2,921	3,025	2,944	2,940	2,769	3,013	3,025	2,974	3,025
Subjective income	Pearson r	0.001	0.015	–0.096**	–0.009	0.102**	0.312**	–0.299**	1	0.326**
	Sig.	0.966	0.409	0.000	0.613	0.000	0.000	0.000		0.000
	N	2,871	2,974	2,893	2,889	2,730	2,964	2,974	2,974	2,974
Satisfacion with life in present	Pearson r	0.115**	–0.091**	–0.009	0.083**	0.119**	0.093**	–0.204**	0.326**	1
	Sig.	0.000	0.000	0.634	0.000	0.000	0.000	0.000	0.000	
	N	2,921	3,025	2,944	2,940	2,769	3,013	3,025	2,974	3,025

* Correlation is significant at the p<0.05 level (2-tailed).

** Correlation is significant at the p<0.01 level (2-tailed).

Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

Given that the cross-cultural literature suggests that age, gender, and marital status can affect the values of cultural orientations (Lenartowicz–Roth 1999), we tested the correlation between cultural indices and the variables gender, age and education. Initial analysis of the data showed that the correlation between age and each cultural dimension was small, being significant only with power distance2 (fear) and uncertainty avoidance ($r = 0.09$, $p < 0.01$) (Table 4).

Next, to test the first hypothesis formulated, we performed an AnoVA analysis and independent samples t tests with the index of the cultural dimensions for each cluster region paired with cluster no. 1 (South-West Transylvania). The cluster regions delimited in the previous part of the paper were created on the basis of the development indicators Economy and Labor market, Education, Health infrastructure and social and housing conditions, Life expectancy and demographic vitality. Thus, the cluster-regions reflect different levels and patterns in the level of social-economic development: the most developed clusters are Bucharest–Ilfov, and the clusters that bring together counties with large developed urban agglomerations. The „South-West Transilvania de Sud-Vest" cluster, having code 1, being a unit above the national average, we chose for reference to compare means for an independent samples t test. In this respect, we will analyze the differences in the mean values of the cultural dimensions between the defined regions in Romania.

In the case of the cultural dimension Power distance1, we find significant differences between almost all clusters. In fact, in developed regions, such as the capital, developed areas and southwestern Transylvania with Banat, we find smaller waves, while in the rest of the regions, the values are higher. For Power distance2, the trends are similar, except that here, the clusters in the intra-Carpathian regions (Developed Urban Areas, South–East Transylvania, Eastern Transylvania and Crişana-Maramureş), where power distance 2, which expresses fear of power, have lower values than the rest of the country. This characteristic may be related to the long-standing Western (Austrian, Hungarian) historical influence, as opposed to the regions in the south and east of the country where the influence of Ottoman Turkey was long-standing and where fear management was more present in the exercise of political power. The cultural dimension uncertainty avoidance does not differ significantly between the regions of Romania, or the very small differences do not have a clear trend.

The long-term orientation cultural index has significantly lower values, below the national average in the two regions of Transylvania and in the capital region, which may be an explanation for the greater openness to change, but the differences are small compared to other regions (see Table 5).

Finally, the generalized trust index, although the average cultural index values, based on ANOVA and post hoc tests (least significant difference [LSD]), are significantly higher in the intracarpathian regions (Transylvania, Crişana-Maramureş, and in the Transylvanian counties of the developed areas), the differences are small

between the regions of the country. In fact, trust in people in general is higher in areas inhabited by the Hungarian minority (Eastern Transylvania (2.39), where they live in majority (over 60%), and Crisana-Maramures (2.13), where they live in significant share, toward 30% (see Veres 2015, see Table 5 and 6). The explanation of the differences in values is not very difficult if we take into account a consistent ideological influence of Hungary among the Hungarian-speaking population, and the level of trust is slightly higher in Hungary, according to surveys on this topic (Beugelsdijk–van Schaik 2005, Rimac–Štulhofer 2004, Hauser et al. 2015), but shown empirically and specifically on data from Romania (see Csata 2015).

Thus, on the basis of the empirical results, we can see that there are certain tendencies in the regional differentiation on the dimensions of cultural values in Romania, especially in the case of the cultural dimensions power distance and generalized trust, which can be clearly delineated according to the different historical roots between the intra-Carpathian and extra-Carpathian parts of the country. However, these differences are not statistically large, so we must be careful with the conclusions we can draw from here.

Table 5

Mean values of cultural dimension indices by cluster regions of Romania

Cluster_regions (2019)	Power distance1	Power distance2	Uncertainty avoidance	Long term orientation	(Generalized) Trust
1 South–West Transylvania – Banat Mountain	3.6062	2.9689	3.6524	3.8684	2.1667
2 Muntenia and North Oltenia	4.0000	3.2484	3.7496	4.1560	1.9532
3 Moldova, Bistrița	3.8232	3.1963	3.5620	3.9565	2.1058
4 Eastern Transylvania	3.8765	2.9770	3.6708	3.9052	2.3936
5 Crisana-Maramureş	3.8913	3.0350	3.5227	4.0472	2.1638
6 Lower Danube (BR-GL-TU)	3.7440	3.5943	3.6118	3.9939	1.9073
7 Oltenia and South Muntenia	3.8129	3.2910	3.5423	4.0262	2.0973
8 Bărăgan	3.8801	n.a.[a)]	3.4611	3.9163	1.9494
9 Bucureşti–Ilfov	3.6810	3.1333	3.6274	3.7921	1.9745
10 Developed urban areas (CJ-TM-BV-SB-CT)	3.7598	3.0811	3.5605	3.9954	2.0629
Total	3.8137	3.1726	3.5878	3.9940	2.0852

a) n.a: Data not available (too limited number of cases for calculations).
Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

Table 6

Significance level values of post hoc AnoVa tests (LSD) of cultural dimension indices by cluster regions of Romania (fragment)

Cluster_regions (2019)	Mean difference (I-J) LSD test				
	Power distance1	Power distance2	Uncertainty avoidance	Long term orientation	(Generalized) Trust
1 South–West Transylvania – Banat Mountain	–0.39384**	–0.27950**	–0.09725	–0.28756*	0.21351*
2 Muntenia and North Oltenia	–0.21699**	–0.22737**	0.09040	–0.08811	0.06088
3 Moldova, Bistriţa	–0.27032**	–0.00810	–0.01849	–0.03677	–0.22692*
4 Eastern Transylvania	–0.28508**	–0.06609	0.12967*	–0.17878*	0.00286
5 Crisana-Maramureş	–0.13777*	–0.62537**	0.04052	–0.12545*	0.25938*
6 Lower Danube (BR-GL-TU)	–0.20667**	–0.32209**	0.11001	–0.15773*	0.06942
7 Oltenia and South Muntenia	–0.27394**	0.27742	0.19129**	–0.04790	0.21729*
8 Bărăgan	–0.07479	–0.16442*	0.02494	0.07633	0.19218*
9 Bucureşti–Ilfov	–0.15366*	–0.11222	0.09184	–0.12697*	0.10376

*p<0.05, The mean difference is significant at the 0.05 level. **p<0,01.
Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

Table 7

Linear (OLS) regression coefficients for subjective income as dependent value*

Independent variables	Unstandardized B	Standardized Beta coefficients	t	sig.
(Constant)	3.381		19.180	0.000
Power distance1	–0.031	–0.019	–0.948	0.343
Power distance2	–0.023	–0.026	–1.455	0.146
Uncertainty avoidance	–0.074	**–0.053****	–2.834	0.005
Long term orientation	0.027	0.016	0.768	0.442
(Generalized) Trust	0.111	**0.065****	3.578	0.000
Age	–0.017	**–0.264****	–14.728	0.000
Rural (residence type)	–0.053	–0.024	–1.313	0.189
Education	0.250	**0.284****	15.590	0.000
Gender dummy (Man)	–0.039	–0.019	–1.053	0.292
Transylvania region (settlement)	0.100	**0.046***	2.541	0.011

* Dependent variable: Subjective income (venit).
Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

To verify the role and influence of cultural values and trust on people's material status, we also performed a statistical analysis at the individual level. That is, we analyzed whether these cultural value indices, together with basic sociodemographic variables (education, gender, age, rural/urban), can predict to some extent the material situation of individuals. Material situation was measured as subjective income (see Methodology), and the method chosen was linear (OLS) regression. The model

explanation on the basis of R^2 is 0.18, which is quite modest. On the basis of standardized beta coefficients, we can observe that the cultural dimension values of uncertainty avoidance and generalized trust have a weak significant influence on the subjective material situation, and uncertainty avoidance is negative, i.e., People who strongly look for safe situations tend to earn less. Education is expected to have a substantial influence of 0.284 Std. Beta value, and living in the Transylvanian Region again may not significantly contribute to better material gain (Table 7).

Discussion and conclusions

The results obtained on OLS regression analysis at the individual level confirm the results obtained on aggregated data at the territorial level. Individuals who have higher trust in people and have greater initiative in risky situations are likely to achieve a higher material income situation, but without higher educational attainment, these efforts have more modest results. At the regional level, the share of the population with a high level of education has a substantial influence on regional development in Romania (see Veres et al. 2022), but differences in regional development cannot be reduced to differences in educational level. Thus, these cultural values, and the level of trust, that we have identified in this research, explain, to some extent, both the pace and the level of socioeconomic development.

Of course, differences in value orientation between regions of a country are based on historical experiences and institutional culture, including experiences that have shaped the level of generalized trust. As Putnam (1993) notes, the differences in structural as well as institutional culture are due to the legacy of historical experience toward the institutions. He refers to the different experiences related to the imprint of an authoritarian regime in southern Italy compared to the more democratic functioning in the northern city states.

The results of the cluster analysis, through the formation of geographically homogeneous cluster-regions and in terms of economic and social development, combined with the analysis of the distribution of the average values of the cultural dimensions, brought to the surface certain trends in the regional cultural profile of Romania. These results led us to confirm the first hypothesis formulated, namely, (1) regional differences in economic-social development in Romania can be explained, to some extent, by different levels in patterns of psychocultural values, especially uncertainty avoidance, power distance and generalized trust. More specifically, the results of the research showed that in the regional clusters of Transylvania, in a broad sense, the values of the long-term orientation and generalized trust indices are higher and differ significantly from the rest of the country, although the position of the capital Bucharest is also different from the rest of the country. The power distance indices show significant differences between different regional clusters, but we cannot

delimit them so clearly according to the historical perspective. To explain these phenomena, we have tried to include several historical explanations.

Certain cultural dimensions, such as power distance and generalized trust, can be clearly delimited according to the different historical roots between the intra-Carpathian and extra-Carpathian parts of the country. More precisely, due to the differences in historical roots since the period of modern history, in the regions of Transylvania, Banat and Crişana-Maramures, which also include the majority of the counties in the developed areas, the Austro-Hungarian political tradition and administrative culture had effects, while in the southern and eastern parts of the country, the domination of the Turkish Ottoman empire was very long, from the 16th century until 1877 (Djuvara 1995); thus, the differences in power distance, fear of power and generalized trust can have logical historical explanations, as we have seen in the case of Italy (Putnam 1993).

However, these differences are not as large between different regions of Romania. Thus, it explains to a small extent, and not directly, the differences in economic and social development between the regions of the country.

Based on the individual level data analysis, the second hypothesis has been confirmed. Uncertainty avoidance has a negative influence, while generalized trust has a significant positive influence on the material subjective situation of individuals. A determined attitude for security and stability can be disadvantageous in achieving a better living. However, the influence of these cultural values pales in comparison to the role of education, which remains the decisive factor in predicting the material situation, the economic position of individuals and households, and the regional influence, i.e., living in the Transylvanian Region has a significant but very weak influence on a better material status. The role of the regional residence of persons on material status is probably greater, but the capital Bucharest, where a large part of the high-income population is concentrated, is not in Transylvania, so the conclusion must be qualified.

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Appendix

Table A1

Hierarchical cluster membership d (Ward method), Romanian counties, 2018/2019 (N=42)

Cluster region	Case (2019)	Clusters code
1. South–West Transylvania and Mountain Banat	1: Alba	1
	2: Arad	1
	11: Caras-Severin	1
	22: Hunedoara	1
2. Muntenia, North Oltenia	3: Arges	2
	16: Dambovita	2
	20: Gorj	2
	31: Prahova	2
	40: Valcea	
3. Moldova + Bistriţa	4: Bacau	3
	6: Bistrita-Nasaud	3
	7: Botosani	3
	24: Iasi	3
	29: Neamt	3
	35: Suceava	3
	39: Vaslui	3
	41: Vrancea	3
4. North–East Transylvania	5: Bihor	4
	15: Covasna	4
	21: Harghita	4
	26: Maramures	4
	28: Mures	4
	32: Satu Mare	4
	33: Salaj	4
5. Developed areas (Transylvania + Constanţa)	8: Brasov	5
	13: Cluj	5
	14: Constanta	5
	34: Sibiu	5
	37: Timis	5
6. Lower Danube	9: Braila	6
	18: Galati	6
	38: Tulcea	6
7. Oltenia and South Muntenia	10: Buzau	7
	17: Dolj	7
	27: Mehedinti	7
	30: Olt	7
	36: Teleorman	7
8. Bărăgan	12: Calarasi	8
	19: Giurgiu	8
	23: Ialomita	8
9. Ilfov	25: Ilfov	9
10. Bucharest	42: Municipiul Bucuresti	10

Source: Own Macrostatistics Database (counties), project PN-III-P4-ID-PCCF-2016-0084.

Table A2

Component matrix for cultural factors, determining component scores for weighting the indices (scores, KMO and total variance explained, 2019)

A. Power distance	Component	
	1	2
PD1 (Q5_r2) Important in the ideal job: Having a boss you can respect	0.790	–0.096
PD2 (Q5_r7) Important in the ideal job: To be consulted by your direct superior when making decisions about your work	0.784	–0.139
PD3 (Q13r1). Agree/disagree: A manager can be good even if he or she does not have a precise answer to all the questions that subordinates may ask about their work	0.367	0.276
PD4 (Q12) Experienced situations of fear of subordinates to contradict bosses	0.088	0.948
Total varince expained, %	60.0	
KMO	0.550	

B. Uncertainty avoidance	Component 1
UA1 r4 Q13. Agree/disagree: The rules of an organization should not be broken even when employees think it is in the best interest of the company	0.759
UA2 Q13_r3 Agree/disagree: An organizational structure in which some subordinates have two bosses should be avoided at all costs	0.740
UA3 Q5_r4 Important in the ideal job: Having job security	0.331
Total varince expained, %	41.10
KMO	0.55

C. Long term orientation	Component 1
LTO1 Q5_r10 Q5. Important in postul ideal: A avea oportunitati de avansare	0.718
LTO2 Q6_r4 Q6. Important in viata privata: Chibzuinta (a nu cheltui mai mult decat este necesar)	0.659
LTO3 Q13_r2 Q13. Acord/dezacord: Eforturile persistente sunt cea mai sigura cale spre rezultate	0.579
Total varince expained, %	43.40
KMO	0.55

D. (Generalized) Trust	Component 1
TR1 Q1_r3 Q1. Incredere in oamenii de alta religie	0.830
TR2 Q1_r4 Q1. Incredere in oamenii de alta nationalitate	0.830
TR3 Q1_r2 Q1. Incredere in oamenii pe care ii intalniti pentru prima data	0.711
Total varince expained, %	62.80
KMO	0.65

Note: Obs. Extraction Method: Principal Component Analysis.
Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

Table A3

Mean values of cultural dimension indices by NUTS 2 development regions of Romania

Development regions (NUTS 2)	Power distance1	Power distance2	Uncertainty avoidance	Long term orientation	(Generalized) Trust
Nord-Vest	3.8674	3.0108	3.5800	4.0218	2.1886
Sud-Est	3.7904	3.1224	3.5366	4.0489	1.9500
Sud-Vest	3.7351	3.1370	3.6595	4.0181	1.9809
Sud-Muntenia	3.9908	3.0651	3.6697	4.1237	1.9478
Centru	3.7443	3.2515	3.6656	3.8922	2.2196
Vest	3.6668	3.0211	3.5744	3.8922	2.1328
Nord-Est	3.8183	3.2069	3.5607	3.9492	2.1022
Bucuresti-Ilfov	3.8406	3.4011	3.5237	3.9996	2.1397
Total	3.8137	3.1726	3.5878	3.9940	2.0852

Source: Own Survey Database, project PN-III-P4-ID-PCCF-2016-0084.

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