



PERCEIVE

Perception and Evaluation of Regional
and Cohesion Policies by Europeans and
Identification with the Values of Europe



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Mapping EU citizens and regions' identification with the EU project. Insights from a novel probabilistic model

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Research questions and outcomes

- To what extent do EU citizens identify with Europe and the EU project?
- Have European regions different patterns and level of identification?
- Are the results driven by specific socio-economic variables?
- We develop a probabilistic model for:
 - the classification of individuals in clusters characterized by different patterns and level of identification with the EU project
 - mapping the European regions according to the pattern and levels of identification of their citizens.



Theoretical framework: defining European identity

- We based on the concept of individual identification with Europe derived from social psychology (Mendez and Batchler, 2017; Bergbauer, 2018)
- According to Bergbauer (2018), the individual identification with Europe can be defined as the “citizens’ self-categorisation as European together with their evaluations of their membership in the European collective and their affective attachment to Europe and other Europeans”
- Three dimensions compose this subjective perception of identification:
 - the *cognitive* component refers to self-categorization as a member of a group (Awareness);
 - the *evaluative* component refers to the assignment of value connotation (negative or positive) to the social group and his membership, by comparing people from the group with people out of the group (Evaluation).
 - the *affective* component refers to the emotional attachment and feeling of love and concern for the group, i.e. a “we-feeling” dimension (Attachment)



The model: Hierarchical Latent Class (LC) model

- LC model: starting from a set of K categorical observed indicators, identify T classes of a latent variable that describes an unobservable construct (identification with EU) and provides a classification of individuals based on the response patterns to the K indicators.
- Hierarchical model: exploits the nested structure of the data; first-level units (individuals) nested into second-levels units (regions). Accounts for unobserved (latent) regional effects.
- The model also accounts for the effect of individual and regional characteristics on the probabilities of class membership



Model specification: observed variables

- K indicators (responses) referring to the concept of identification with EU

Y_{ijk} response to item k of person i coming from region j

- Y_{ij} vector of responses of the same individual i
- Y_j vector of responses of all individuals in region j
- Z_{ij} vector of individual covariates
- Z_j^g vector of covariates at regional level



Model specification: individual latent variable

- X_{ij} is the first-level latent variable: represents identification with EU at individual level
- Given their response patterns to the observed indicators, individuals are classified in one of the T latent classes of X_{ij} , $t = 1, \dots, T$
- Each latent class is identified by the pattern of the K individual responses with the highest probability in that class (Standard LC Model)



Model specification: regional latent variable

- The random effects at regional level are specified as a discrete latent variable W_j (the individual responses are assumed to be mutually independent given W_j)
- W_j describes latent types (groups) of regions for which the parameters in the model differs
- it allows to cluster the regions into a small number of latent classes, $m=1, \dots, M$



Joint probability of response patterns

$$P(\mathbf{Y}_j | \mathbf{Z}_j) =$$

$$\sum_{m=1}^M \left[P(W_j = m | \mathbf{Z}_j^g) \left[\prod_{i=1}^{n_j} \sum_{t=1}^T P(X_{ij} = t | W_j, \mathbf{Z}_{ij}) \prod_{k=1}^K P(Y_{ijk} = s_k | X_{ij}, W_j) \right] \right]$$

- Three components:
 - Latent class probability at regional level
 - Latent class probability at individual level
 - Conditional probability of individual response pattern



Latent class probability at regional level

$$P(W_j = m | \mathbf{z}_j^g) = \frac{\exp(\alpha_{0m} + \sum_l \alpha_{lm} Z_{lj}^g)}{\sum_{m'=1}^M \exp(\alpha_{0m'} + \sum_l \alpha_{lm'} Z_{lj}^g)}$$

- The probability that region j belongs to a particular class of the latent variable W_j , given the regional covariates
- Provides information about the distribution of the population among the regional classes



Latent class probability at individual level

$$P(X_{ij} = t | W_j = m, \mathbf{Z}_{ij}) = \frac{\exp(\gamma_{0tm} + \sum_l \gamma_{lt} Z_{lij})}{\sum_{t'=1}^M \exp(\gamma_{0t'm} + \sum_l \gamma_{lt'} Z_{lij})}$$

- The probability that the respondent i of the j -th region belongs to a particular class of the first level latent variable X_{ij} , given regional latent class membership and the individual covariates
- Provides information about the distribution of the population among the individual classes



Conditional probabilities of individual response pattern

$$\prod_{k=1}^K P(Y_{ijk} = s_k | X_{ij} = t, W_j = m) = \prod_{k=1}^K \frac{\exp(\beta_{0s_k} + \beta_{1s_k}t + \beta_{2s_k}m)}{\sum_{s'_k=1}^{S_k} \exp(\beta_{0s'_k} + \beta_{1s'_k}t + \beta_{2s'_k}m)}$$

- The joint probability that the i-th respondent follows the response pattern s_i (for the K indicators) given individual and regional latent class membership
- Provides information for describing the latent classes



Data and empirical analysis

- **Perceive Survey:**
- Sample survey with more than 17,000 respondents from 15 EU member States in the summer of 2017 (Bauhr and Charron, 2018)
- Focusing on: awareness and support of Cohesion Policy, identification with Europe, Country and Region and European values, political attitudes (also demographic and socio-economic characteristics)
- Selection of the K observed indicators and individual covariates
- **Data set at regional level:**
- Socio-economic variables from several official secondary sources at NUTS1 and NUTS2 regional level
- Selection of the contextual covariates at regional level.



Operationalising individual identification: the «Awareness» component

Variable	Description	Values
Awareness of Cohesion Policy	Q1. Have you ever heard about the following EU policies? (EU Cohesion Policy; EU Regional Policy; EU Structural Funds; any EU funded project in your region or area)	0 None of these 1 Only local project 2 At least one among CP, RP, SF
Identification with Europe (Q9_3)	Q9. On a 0-10 scale, with '0' being 'I don't identify at all' and '10' being "I identify very strongly", how strongly you identify yourself with the following: Q9_1: Your region; Q9_2: Your country; Q9_3: Europe	1 Not much (0-3) 2 Somewhat strongly (4-6) 3 Strongly (7-10)
Identification with Europe vs Country	Comparing Q9_3 to Q9_1	1 Less 2 Equal 3 More



Operationalising individual identification: the «Evaluation» component

Variable	Description	Values
Effectiveness of EU (Q5_1)	Q5. How effective do you think the following institutions will be at dealing with the biggest problem in your region? Q5_1: The EU; Q5_2: National governing institutions; Q5_3: Regional/local Institutions	1 Not very effective 2 Somewhat effective 3 Very effective
Effectiveness of EU vs National government	Comparing Q5_1 to Q5_2	1 Less 2 Equal 3 More
Evaluation of EU membership	Q8. In general, do you think that (YOUR COUNTRY'S) EU membership is a good thing, a bad thing, neither good nor bad?	1 Good 0 Bad / Neither good or bad/ Not sure
Corruption in EU (Q16_1)	Q16. On a 0-10 scale, with '0' being that 'there is no corruption' and '10' being that corruption is widespread, how would you rate: Q16_1: The European union; Q16_2: The national government; Q16_3: The region/local government?	1 Low (0-3) 2 Medium (4-6) 3 High (7-10)
Corruption in EU vs National government	Comparing Q16_1 to Q16_2	1 Less 2 Equal 3 More



Operationalising individual identification: the «Attachment» component

Variable	Description	Values
Vote in the EU elections	Q7. Have you voted in either of the last two EU parliamentary elections?	0 Neither 1 Once 3 Both Don't know/RF
Support to Cohesion Policy	Q20: In your opinion, the EU should continue this policy, where wealthier countries contribute more, and poorer EU regions receive more funding?	1 – Agree; 2 – Disagree; 3 – D/K



Individual covariates and contextual (regional level) covariates

Covariates		
Gender	Gender	1 Male; 2 Female
Age	Age in years	
Education	Level of education	1 - Up to first level secondary 2 - High school 3 - Degree and PhD
Income	Net income per month (after taxes)	1 – Low; 2 – Medium; 3 - High
Occupation	Occupational status	1 - Employed 2 - Unemployed 3 - Housewife, Pensioner, Retired, Other 4 Students, Trainee
GDP	GDP per inhabitant in Euro at 2014 as percentage of EU average	Percentage
EQI	European Index of Institutional Quality at 2013	Normalized: 0-100
Absorption Rate	Ratio of SF expenditures to the SF allocation, 2007-2013	From 0 to 1
Structural Fund per capita	Total SF expenditures divided by average population in a region in the period 2007-13	Euros
Unemployment rate	Unemployment rate: population 20-64 years	Percentage



Profile of the latent variable at individual level: size class $\hat{P}(X_i = t|Z_i)$ and $\hat{P}(Y_{ijk} = s_k|X = t)$

	Cluster1 Disappointed Pro -Europe	Cluster2 EU Denier	Cluster 3 Confident Europeans	Cluster 4 Wary Pro- Europe	Cluster 5 Disaffected Europeans	Cluster 6 Wary Cons- Europe
Cluster Size	0.2727	0.1972	0.1752	0.1495	0.1056	0.0999
How strongly identify with Europe						
Not much strongly	0	0.4612	0.0362	0	0.2704	0.2857
Somewhat	0.0995	0.5387	0.0681	0.0726	0.7293	0.7142
Strongly	0.9005	0	0.8957	0.9273	0.0003	0.0001
Europe vs Country identification						
Less	0	0.6849	0	0	0.6716	0.7187
Equal	0.8595	0.2942	0.8271	0.8557	0.3193	0.2573
More	0.1405	0.0209	0.1729	0.1443	0.0091	0.0241
Effectiveness in solving problems						
Not so Effective	0.7413	0.9007	0.3498	0.0001	0.7966	0.0001
Somewhat effective	0.2587	0.0957	0.4656	0.6501	0.2033	0.7156
Very effective	0	0.0036	0.1845	0.3498	0	0.2843
EU vs National effectiveness						
Less	0.3386	0.3069	0.1694	0.0071	0.3654	0.0085
Equal	0.6614	0.6931	0.5138	0.4274	0.6346	0.4143
More	0	0	0.3168	0.5655	0	0.5772
Corruption in EU						
Low	0.0820	0.0006	0.3341	0.0846	0.2302	0.1165
Medium	0.3462	0.1368	0.6659	0.2663	0.7697	0.3861
High	0.5718	0.8625	0	0.6491	0.0001	0.4974
EU vs National Corruption						
Less	0.0001	0	0.9998	0	0.5253	0.255
Equal	0.7792	0.729	0.0002	0.8458	0.4226	0.6135
More	0.2207	0.2709	0	0.1542	0.0522	0.1315
Vote						
Neither	0.2869	0.3916	0.2533	0.2642	0.3904	0.3718
Once	0.1481	0.1433	0.168	0.1755	0.1924	0.1797
Both times	0.5468	0.4456	0.5561	0.5423	0.3945	0.4181
(d/k-refused)	0.0182	0.0195	0.0227	0.018	0.0226	0.0304
Support to Cohesion policy						
Agree	0.8291	0.6238	0.9022	0.8845	0.7556	0.8007
Disagree	0.1576	0.3642	0.087	0.1061	0.2271	0.1832
d/k	0.0133	0.012	0.0108	0.0094	0.0173	0.0162
EU membership						
Bad thing	0.2751	0.7464	0.1743	0.1727	0.4786	0.4718
Good Thing	0.7249	0.2536	0.8257	0.8273	0.5214	0.5282
Awareness of Cohesion policy						
None	0.1819	0.2664	0.1019	0.1141	0.2578	0.2082
only local project	0.0863	0.1053	0.1291	0.1023	0.1078	0.1236
Cohesion/regional policies	0.7318	0.6283	0.769	0.7836	0.6344	0.6683



Profile of individuals's clusters

Identification with EU project		Cluster 1 Disappointed pro-europe	Cluster 4 Wary pro-Europe	Cluster 3 Confident Europeans
	+	EU membership + Redistribution and CP + Effectiveness of EU - Corruption in EU -	EU membership ++ Redistribution and CP ++ Effectiveness of EU + Corruption in EU + -	EU membership ++ Redistribution and CP ++ Effectiveness of EU + - Corruption in EU +
	-	Cluster 2 EU Deniers EU membership - - Redistribution and CP + - - effectiveness of EU - - Corruption in EU - -	Cluster 5 Disaffected Europeans EU membership - + Redistribution and CP + - Effectiveness of EU - - Corruption in EU +	Cluster 6 Wary cons Europeans EU membership - + Redistribution and CP + - Effectiveness of EU ++ Corruption in EU -



Profile of the latent variable at regional level: size class $\hat{P}(W_j = m | Z_j^g)$ and $\hat{P}(Y_{ijk} = s_k | W_j = m)$

		Group 1 Lower EU identification	Group 2 High EU identification	Group 3 Medium-high EU identification – Critics	Group 4 Low EU identification – Skeptical
Group Size		0.386	0.322	0.151	0.142
Identify with Europe	Not much strongly	0.195	0.119	0.130	0.179
	Somewhat	0.360	0.261	0.282	0.318
	Strongly	0.445	0.620	0.588	0.504
Europe vs Country identification	Less	0.349	0.221	0.241	0.304
	Equal	0.569	0.666	0.658	0.605
	More	0.081	0.113	0.101	0.092
Effectiveness	Not so Effective	0.619	0.381	0.577	0.625
	Somewhat effective	0.303	0.449	0.335	0.299
	Very effective	0.079	0.171	0.088	0.076
EU vs National effectiveness	Less	0.256	0.168	0.249	0.259
	Equal	0.608	0.534	0.598	0.610
	More	0.136	0.298	0.152	0.131
Corruption in EU	Low	0.107	0.161	0.111	0.119
	Medium	0.374	0.431	0.381	0.383
	High	0.519	0.409	0.508	0.498
EU vs National Corruption	Less	0.188	0.358	0.170	0.233
	Equal	0.636	0.517	0.657	0.597
	More	0.175	0.125	0.174	0.170
Vote	Neither	0.333	0.303	0.316	0.325
	Once	0.161	0.167	0.160	0.159
	Both times	0.486	0.509	0.504	0.496
	(d/k-refused)	0.021	0.022	0.020	0.020
Support to Cohesion policy	Agree	0.771	0.831	0.800	0.779
	Disagree	0.216	0.157	0.187	0.208
	d/k	0.013	0.012	0.013	0.013
EU membership	Bad thing	0.444	0.291	0.238	0.563
	Good Thing	0.556	0.710	0.762	0.437
Awareness of Cohesion policy	None	0.266	0.123	0.224	0.140
	Only local project	0.085	0.122	0.090	0.122
	Cohesion/regional policies	0.649	0.755	0.686	0.738



Characteristics of latent classes at regional level

Identification with EU project		Group 2 High EU identification	Group 3 Medium-high EU identification – Critics
	+	EU membership ++ Redistribution and CP ++ Effectiveness of EU ++ Corruption in EU +- Awareness of CP ++	EU membership ++ Redistribution and CP ++ Effectiveness of EU +- Corruption in EU -- Awareness of CP +-
		Group 1 Lower EU identification	Group 4 Low EU identification – Skeptical
	-	EU membership - Redistribution and CP +- effectiveness of EU -- Corruption in EU -- Awareness of CP +-	EU membership -- Redistribution and CP +- Effectiveness of EU -- Corruption in EU -- Awareness of CP ++



Regions classification: posterior probabilities

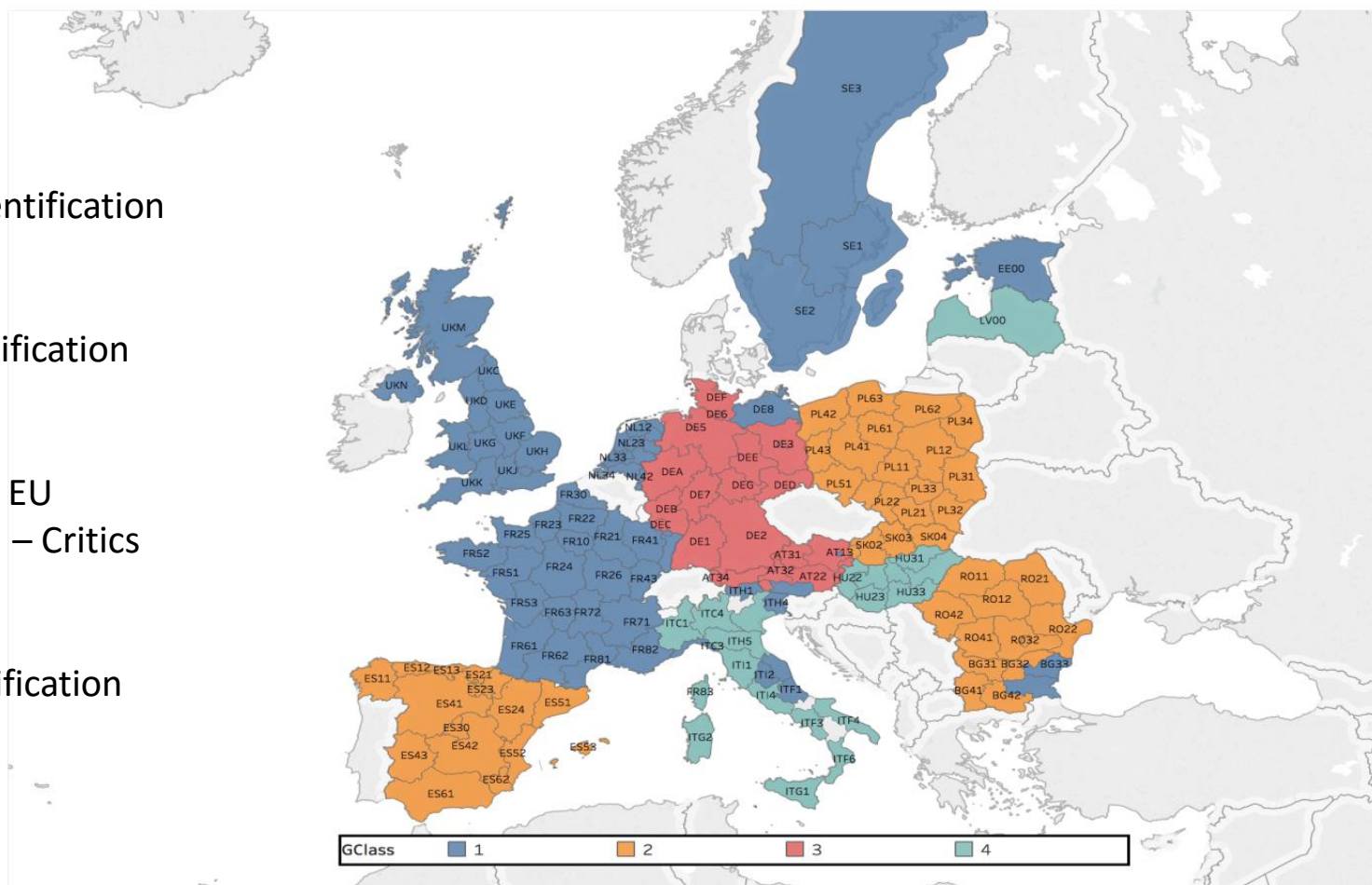
GClass

Group 1
Lower EU identification

Group 2
High EU identification

Group 3
Medium-high EU
identification – Critics

Group 4
Low EU identification
Skeptical



Effect of individual level covariates: $P(X = t | Z_p = z)$.

	Cluster1 Disappointed pro- Europe	Cluster2 EU Deniers	Cluster3 Confident Europeans	Cluster4 Wary pro- Europe	Cluster5 Disaffected Europeans	Cluster6 Wary Cons- Europe
Overall	0.273	0.197	0.175	0.150	0.106	0.100
Age (years)						
18-33	0.231	0.178	0.189	0.150	0.127	0.125
33-44	0.262	0.190	0.195	0.139	0.107	0.107
45-55	0.288	0.208	0.166	0.143	0.103	0.092
56-65	0.278	0.209	0.166	0.159	0.101	0.087
More than 65	0.303	0.202	0.161	0.156	0.091	0.088
Education						
Up to lower secondary	0.261	0.245	0.116	0.131	0.124	0.123
High secondary	0.251	0.213	0.177	0.146	0.105	0.109
Degree and PhD	0.297	0.161	0.202	0.161	0.098	0.081
Income						
Low	0.245	0.217	0.156	0.142	0.113	0.127
Medium	0.249	0.215	0.166	0.160	0.110	0.101
High	0.312	0.170	0.192	0.149	0.096	0.081
DK/R	0.285	0.180	0.209	0.141	0.105	0.080
Not Included in the Model						
Gender						
Male	0.263	0.2049	0.1732	0.1517	0.1069	0.1002
Female	0.2822	0.1896	0.1772	0.1473	0.1042	0.0995
Occupation						
Employed	0.2709	0.1912	0.1827	0.1457	0.1071	0.1023
Unemployed	0.2314	0.2544	0.1346	0.1386	0.1147	0.1263
Housewife, Pensioner, Retired, Other	0.2878	0.2046	0.1646	0.1555	0.097	0.0905
Student, Trainee	0.2397	0.1352	0.2159	0.1695	0.1383	0.1014
Satisfied with economic situation						
Not satisfied	0.2375	0.238	0.1745	0.1327	0.1068	0.1105
Satisfied	0.2997	0.1658	0.1758	0.1623	0.1046	0.0917



Effect of contextual covariates: $\hat{P}(W = m | Z_q^g = z)$

	Group 1 Lower EU identification	Group 2 High EU identification	Group 3 Medium-high EU identification – Critics	Group 4 Low EU identification Skeptical
Overall	0.386	0.322	0.151	0.142
GDP				
0-37	0.051	0.739	0.016	0.194
37-59	0.008	0.615	0.061	0.317
59-97	0.361	0.403	0.086	0.151
97-118	0.687	0.069	0.137	0.107
More 118	0.515	0.003	0.418	0.064
Unemployment rate				
0-5.5	0.387	0.091	0.457	0.065
5.5-8	0.540	0.120	0.233	0.107
8-9.5	0.383	0.428	0.028	0.161
9.5-14	0.404	0.411	0.010	0.174
more 14	0.103	0.677	0.000	0.220
Absorption rate				
0-0.5	0.198	0.451	0.033	0.318
0.5-0.6	0.421	0.259	0.104	0.216
0.6-0.65	0.448	0.309	0.183	0.060
0.65-0.78	0.433	0.225	0.267	0.076
more 0.78	0.390	0.417	0.161	0.032
SF per capita				
0-108	0.461	0.171	0.316	0.052
108-215	0.679	0.116	0.130	0.075
215-935	0.371	0.350	0.131	0.148
935-2059	0.051	0.687	0.080	0.182
More 2059	0.001	0.443	0.055	0.501
Quality of institution Index				
0-36	0.226	0.537	0.020	0.216
36-42	0.147	0.474	0.039	0.340
42-56	0.164	0.664	0.034	0.138
56-66	0.549	0.175	0.188	0.088
More 66	0.606	0.009	0.360	0.026



Concluding remarks

- The results help to shed light on the patterns of EU individual and regional identification with the European project, as well as their drivers.
- The pattern identified are heterogeneous with regard to dimensions as:
 - the national vs EU identification,
 - the evaluation of the EU membership and its effectiveness,
 - the level of citizens' awareness of the existence of the Cohesion Policy and the agreement on its solidarity value
 - the trust in EU institutions
 - the perceived level of corruption



Concluding remarks

Different regional patterns of identification with the EU project:

- *Group 4 “Low EU identification – Skeptical” and Group 1 “Lower EU identification” :*
characterized by the citizens' worst attitude toward the EU, have lower levels of identification and higher critical views of EU institutions.
UK regions and North Ireland, all the French regions, Netherland, Sweden and Estonia are more likely to be classified in Group 1, while Group 4 is mostly composed by Italian and Hungarian regions.
- *Group 2 “High EU identification”*
higher level of identification with Europe, trust the EU and considers it more effective and less corrupt than their national governments. Several of the Eastern European regions and from Spain belong to Group 2 “High EU identification.
- Despite sharing criticism towards institutions, most of the German and Austrian regions strongly identify with EU and belong to Group 3 “Medium-high EU identification – Critics”.



Concluding remarks

- Our results are consistent with the latest tendencies emerged in the EU, i.e. the growing Euro-Skepticism that boomed with the Brexit referendum in the UK and the results of the recent elections in France, Hungary, Italy. Indeed, it emerges that the most hostile regions to the EU project are somehow the richest ones.
- On the other hand, we find a high level of trust in EU institutions, in its transparency and effectiveness in Central and Eastern European countries (Hungary excluded), which instead perceive high internal level of corruption.
- The influencing variables that mostly affect citizens and regions' identification with the European project are those currently driving the discussion on the challenges for reforming the EU, i.e. trust in the EU institutions, the effectiveness of EU Cohesion Policy and spending, and the level of corruption.



Concluding remarks

- These issues are relevant at the light of three main challenges that affected the EU socio-economic development path in the last decade, i.e. the 2008 financial crisis, the globalization process, and Brexit, which might have had some effect on the perception and the identification with the European project.
- However, regions similar with respect to social and economic context may have different patterns of identification with the EU project and perception of Cohesion Policy.
- This call for the role of other influencing factors on the formation of perceptions and identification with the EU project and Cohesion Policy, for example the media representation of European issues and communication of Cohesion Policy.

