

# Poverty and Social Exclusion in Europe: Differences and Similarities across Regions

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– DRAFT –

## Abstract

In recent years there has been a shift in public discourses of several European countries from “poverty” to “social exclusion”, a terminology emerged with reference to problems related to a new poverty that is not just monetary. The current European debate has revitalized the path towards Lisbon 2010, making social inclusion a key element of socio-economic development.

After giving an operational definition of “social exclusion” referring to different areas of human life, in this contribution we propose a hierarchical Latent Class (LC) model for the analysis of the differences and the similarities about experiences and perceptions of social exclusion in European regions. Social exclusion is a situation that affects individuals, and derives from a multidimensional deprivation in different domains of their life, namely an economic, a social and an institutional dimension. We treat social exclusion as a latent construct, quantified via indirect manifest indicators referring to the identified dimensions.

The latent classes represent the latent levels of social exclusion, which structure the individuals with respect to a set of observed indicators. The regional differences in the latent variable distribution are modelled following a nonparametric approach for the random-effects at regional level. This multilevel extension leads to the identification of a typology of regions, underlying a different social exclusion structure for different European areas. The model allows showing the relevance of the different dimensions and risk factors of social exclusion across regions, verifying whether and to what extent the same risks and disadvantages determine the same perception of marginalization and exclusion in different political, economic, social and cultural contexts.

Data are taken from the 2001 round of Eurobarometer Survey, and refer to the 27 countries of the enlarged European Union.

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## 1 Introduction

In recent years, the term “social exclusion” has taken a prominent place in discussions concerning social policies and inequalities, in all European countries. Social exclusion is not only a negative condition *per se*, it also represents a disruptive element for social and economic development, both at individual and societal level, entailing “*the risk of allowing a two-tier society to become established by default*” (European Commission, 1993, p. 1). The fight against poverty and social exclusion is now one of the central objectives of the European Union (EU) and of its member States, in a context where the links between the economic and the social spheres are assuming an increasing central importance (Atkinson *et al.*, 2004). At the launch of the Lisbon strategy in 2000, the European Council invited member States and the Commission to take steps to make a decisive impact on the eradication of poverty and social exclusion by 2010 (European Union, 2007a; 2007b). The quality of a society cannot ignore the classification and the extent of inequalities among its inhabitants.

Social exclusion is a complex state that emerges when deprivation on material, cultural and social resources are as severe as to exclude people from the mainstream society. In this sense, social exclusion is a multidimensional concept, which includes different forms of disadvantage and marginality, and may affect individuals from different activities in their daily life.

In a previous work (Pirani, 2009) we proposed a conceptual model in order to study the condition and the perception of social exclusion in the 15 countries of European Union. Referring to those countries, we identified three dimensions of human life in which it is most important for individuals to be included and to participate: an economic, a social and an institutional dimension. This conceptual model was analysed in a hierarchical Latent Class (LC) framework. This approach allowed us treating social exclusion as a multidimensional concept thus underlying different types of exclusion, according to the different identified dimensions. Secondly, the multilevel modelling led to the identification of a typology of regions, underlying different structures of the same latent concept “social exclusion” for different European regions.

Our aim here is to extend the analysis in order to include also the eastern European countries that joined the EU in recent years. It is clear that a lot of differences exist between the two groups of countries – the “older” European members (EU-15) and the group of “new” member states – from several points of view: economic and financial, social, historical, cultural, political, and so on. The equilibrium reached by the 15 EU countries risks now to fail due to the onset of EU 27 imbalances: the entry of these countries draws new elements and new profiles in the map of social inequalities of the European Union. In the EU-27, the pressure of inequalities is remarkably increasing for specific population segments. Since the relevance of the different elements of exclusion is strictly related to the context, in term of time and place (Atkinson and Davoudi, 2000; Mayes *et al.*, 2001; Bhalla and Lapeyre, 2004), the objective of our analysis is thus to enhance the comprehension of the concept of social exclusion and of its characteristics in the “enlarged” Europe, characterized by different backgrounds and by more or less marked situations of social vulnerability.

The analysis is carried out using together the 56.1-2001 round of Eurobarometer Survey referred to the 15 “old” EU countries, and the 2002.1 survey carried out in the candidate countries some months later. The data structure allows performing the analysis below

the national level, using the so-called NUTS regions at the first level of Eurostat classification (NUTS-1).

This paper proceeds as follow. Section 2 first presents a general overview of the concept of social exclusion, and introduces the conceptual model adopted in this paper; secondly, we describe the statistical framework in which we will carry out the analysis (§ 2.2). Section 3 depicts an overview of poverty and social exclusion indicators of the European regions. In Section 4 we present our model: after a presentation of the data and indicators used, along with the individual and contextual covariates (§ 4.1-4.3), in § 4.4 we present our model specification. Finally, in section 5 our mainly results are highlighted and discussed. Section 6 concludes the paper with a brief discussion.

## 2 Modelling social exclusion: conceptual and methodological framework

### 2.1 A conceptual model for social exclusion

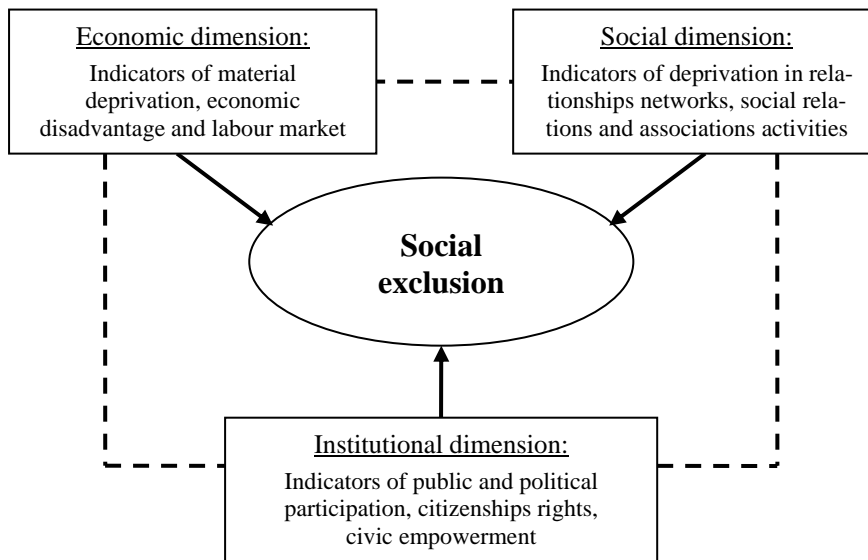
The terminology linked to social exclusion has emerged with reference to the problems related to a “new poverty” that is not just monetary. Weakening of family ties, increasing of the job precariousness and unemployment rate, decline in social participation, and growing feeling of insecurity, are concrete current problems that cannot be adequately described by standard measures of poverty. In this sense, social exclusion is a comprehensive and multidimensional concept (e.g. Silver, 1994; Room, 1995; Jordan, 1996; Peace, 2001; Burchardt *et al.*, 2002), which includes different forms of disadvantage and marginality, and may affect individuals from different activities in their daily life.

The characteristic of *multidimensionality* implies that deprivation and lack of resources determining social exclusion have to refer to a broad set of quantitative and qualitative elements. In this perspective, the evaluation of the individuals’ standard of life cannot be based merely on economic indicators – namely income measures – and it involves the necessity to extend the analysis to the field of social relationships. Both relational and distributional factors are relevant in social exclusion issue (Room, 1995; Bhalla and Lapeyre, 1997, 2004). Weak social interactions and inadequate social participation represent a serious threat to social integration, both at individual and at collective level. However, while the multidimensional nature of social exclusion is widely acknowledged, empirical studies have seemed to fail the multidimensional approach.

According to recent literature (e.g. Berghman, 1995; Hills *et al.*, 2002; Bhalla and Lapeyre, 2004), we proposed (Pirani, 2009) a conceptual model of social exclusion based on the identification of three principal dimensions we consider relevant on this issue: an economic, a social and an institutional dimension. Figure 1 depicts the proposed conceptual model.

The *economic dimension* relies directly to the concept of poverty. It refers principally to monetary and financial aspects, such as income, wealth, saving capability, and so on. Indeed, in a broader sense, it includes also people’s capability to access to goods and services market, their actual living conditions and their employment condition. The concepts of poverty and social exclusion are related and, to some extent, complementary, even if they are not the same thing (Atkinson, 1998): while economic factors are undoubtedly a key aspect of social exclusion, social exclusion cannot be reduced to economic factors.

Figure 1 – Proposed conceptual model



The economic dimension may be evaluated both from an objective and a subjective perspective. Two individuals or households with the same level of absolute resources may feel the situation differently and assess differently the difficulties they have to face with (Strobel, 1996), and this subjective perception is particularly useful, if not necessary, in a such composite and variegated context we deal with, such as the EU-27.

The *social dimension* concerns primarily with the domain of relations among individuals: social relationships with family, friends, neighbours, local community, and so on. These relationship networks may be viewed as forms of social capital at individual level, that can be activated when necessary, mainly in case of emergencies or transitional troubles, thus providing not only emotional support but also material assistance. The presence of a reliable social network around individuals constitutes a “life net” that may allow triggering mechanisms of solidarity (Böhnke, 2008). Moreover, these social relations act as facilitators of access to information and contacts (Granovetter, 1985), and in this way they may play an important role in overcoming unemployment. At macro level, all these elements combine to determine the sense of solidarity of a society and its social cohesion. The social participation of individuals in all its different forms represents an important indicator of integration, raising the sense of belonging to a social community. The strength of social networks and the possibility to feel part of a wide community are conceived as basic human needs. Through social relations, people develop their own personality and realize themselves.

Finally, we identify an *institutional dimension*, which concerns relationships between people and the State. In a sense, while social dimension accounts for the private sphere of people, the institutional one focuses on individuals as citizens. These relations may be measured, from both an objective and a subjective perspective, in terms of offer and enjoyment of civil, political and socio-economic rights, and they include the so-called active citizenship rights (Marshall, 1964; Berghman 1995). In this perspective, elements such as the access to right to justice, the limitation of personal freedoms, the exercise of political power and the public participation, or the right to personal security, to a minimum health care and so on, come to be relevant to account for the level of resources available to individuals (Tsakoglou and Papadopoulos, 2002; Ogg, 2005).

Together with familial and sociability models, also social policy models play an important role in preserving from social exclusion situations. Economic difficulties, limitation in the access to goods and services market, situations of disease or disabilities, could be mitigated by the effect of social protection policies (Atkinson, 1998; Mayes *et al.* 2001) – e.g. through social transfers and measures of social assistance – even if the relationship between a country’s welfare regime and the risk of social exclusion its population faces varies across countries (Tsaklogou and Papadopoulos, 2002), and the effectiveness of social transfers and social benefits in reducing the proportion of people at risk of poverty varies greatly in different countries (Bhalla and Lapeyre, 2004).

Such a comprehensive and multidimensional approach is more appropriate in a debate that considers social exclusion as a relative concept. *Relativity* means that an individual is socially excluded only with respect other members of his society, and it does not exist an “absolute” social exclusion condition. In this sense, in order to reach a meaningful understanding of factors determining social exclusion, one needs to adopt an appropriate spatial-temporal perspective: to judge if a person is excluded or not, we should observe the person relative to the context and the society he lives in. The nature of social exclusion and its causes are likely to vary a great deal from society to society, across countries and, even, within national boundaries. It is reasonable to hypothesize that the indicators or criteria to identify critical situations may have different weight depending on the reference context (Silver and Miller, 2003). The context of the analysis, e.g. the socio-economic level of the area under investigation, is important also to determine the relative relevance of distributional and relational aspects (Bhalla e Lapeyre 2004). The attribute of “relativity” of social exclusion entails to define the context, in term of time and place, of the analysis. Different histories, cultures and demography, condition the relevant dimensions of exclusion. Moreover, whether both distributional and relational aspects of exclusion are relevant, distributional equity may be particularly important above all for low-income countries with very unequal income distributions and an inadequate presence of the social security system (Bhalla and Lapeyre, 1997).

Therefore, we deem crucial to introduce into the analysis also subjective elements. Previous findings (Petrucci and Schifini, 2004; Pirani and Schifini, 2008) have highlighted that there exist differences across European regions in the individual perception of social exclusion. Particularly, areas characterized by a high perception of social exclusion include not only poor regions, but also some areas that would not be classified as disadvantaged based on objective indicators: the role of economic conditions seems to be reduced introducing also elements of subjective perception.

## **2.2 *The Multilevel Latent Class Framework***

Starting from the previous conceptualization of social exclusion, we propose a hierarchical LC model for the analysis of the differences and of the similarities about experiences and perceptions of social exclusion among European regions.

Through LC Analysis (McCutcheon, 1987; Clogg, 1995; Hagenaars and McCutcheon, 2002) we treat social exclusion as a latent construct that can be quantified via indirect manifest indicators, which are assumed to be related in some way with its dimensions. The latent classes identify different typologies of excluded people referring to the different dimensions of the phenomenon, and enhance the comprehension of the relations among the different factors that could trigger situations of exclusion.

In our analysis, the latent class model is placed in a multilevel statistical framework (Vermunt, 2003). We consider individuals nested in regions. Sharing the same region-specific influence, observations within a region tend to be more alike than observations coming from different regions. Treating within-region observations as independent may thus produce invalid standard errors (Agresti, 2002), when the clustering of units is considered a phenomenon of interest rather than a mere disturbance, such as the phenomena we are studying (Rampichini and Schifini, 1998). The approach followed to deal with the *intra-region* correlation is the so-called multilevel or hierarchical approach (Snijders and Bosker, 1999; Skrondal and Rabe-Hesketh, 2004), which applications in a latent class framework have recently received a renewed attention (see e.g. Vermunt, 2003; Skrondal and Rabe-Hesketh, 2007; Asparouhov and Muthén, 2008; Vermunt, in press).

The proposed hierarchical LC model allows focusing on individual differences of social exclusion and, at the same time, on its latent distribution among European regions. The first level of analysis is represented by individuals, and it corresponds to a standard LC analysis. Based on the observed indicators, individuals are classified in latent classes, representing the latent levels of social exclusion. The regions in which individuals live represent the second level: the regional differences in the distribution of the latent variable are modelled allowing some parameters to vary across regions.

Assuming observed responses nested within individuals, who are in turn nested within regions, the multilevel extension of the latent class probability structure is built by introducing a mixture model at each level of nesting. Particularly, for the specification of the mixing distribution we follow a nonparametric approach, using a discrete latent variable for the random-effects at regional level. In this way, the homogeneity within group is dealt with the random-effects introduced by means of a finite mixture model.

This model specification yields a multilevel LC model in which one assumes a multinomial distribution for the latent variables at both levels. Unlike a parametric approach, in this case the second level latent variable serves to structure the second level units (i.e. regions) into a small number of latent classes, instead of placing them on a continuum. This choice is useful from both a substantial and a technical point of view (Vermunt, 2003). Firstly, the proposed approach allows the identification of different profiles both for respondents and for regions, allowing social exclusion to manifest itself in different ways for different subgroups across European regions. Secondly, we deem that in our context, Normal distributional assumptions about the random effects are not reliable, and they would lead to misleading inferences.

### **3 Social exclusion in the enlarged Europe: an overview**

In this paragraph, referring to the covariates and the indicators of social exclusion included in the analysis, we briefly describe some principal findings about differences among regions of 27 European countries. All these indicators prove that variability is high not only between nations, but also between regions within nations, showing as well as poverty and social exclusion represent a major challenge for all countries in European Union.

Table 1 shows how heterogeneous are, at the regional level, the perception of poverty and of some aspects we relied to social exclusion, according to the indicators used in the analysis. The negative perception of income is present all over European regions, even if with different intensities. The highest proportions of people who perceive to be poor are in eastern European countries: from 96.1% registered in Bulgaria to 83.2% in Hungary and 81% in Latvia and Romania. The better situation is found in Slovenia, Cyprus and Malta

(respectively 37,2, 47 and 47,2% of people feel poor). In other new members countries the perception of a negative economic situation concerns from an half to three-fourths of the population. Referring to the “old” EU countries, most of Southern regions experience the higher levels of subjective poverty (above all in Portugal and Greece, and in south of Italy and Spain, which register proportions from 39 to 78%), as well as in almost all French regions and in England, where from 25 to 43% of people declares that their income is not sufficient to make ends meet. On the contrary, in Scandinavian countries, The Netherlands, Germany and Austria, the perception to be poor is lower than the EU-15 average.

*Table 1 – Percentage of respondents having negative income perception, feeling of inferiority, feeling of social exclusion, feeling of usefulness, by European countries*

	negative income perception		feeling of inferiority		feeling of social exclusion		feeling of usefulness	
	mean	sd	mean	sd	mean	sd	mean	sd
France	35.53	6.06	10.68	3.44	8.08	2.43	16.37	4.73
Belgium	25.39	5.81	10.76	0.10	6.88	2.09	12.79	5.15
The Netherland	24.06	1.76	7.95	1.02	4.17	1.19	7.16	1.28
Germany	18.87	5.74	10.84	4.06	7.83	3.28	15.92	6.46
Italy	29.23	5.05	10.28	1.78	5.65	2.52	15.63	3.99
Luxembourg	14.33	--	10.83	--	3.33	--	6.67	--
Denmark	11.19	--	6.29	--	4.90	--	7.89	--
Ireland	23.19	2.58	9.04	1.32	6.63	0.58	10.14	1.52
United Kingdom	31.44	4.91	13.95	4.39	8.20	3.57	12.04	2.88
Greece	52.09	3.71	6.67	0.58	8.07	0.26	12.65	4.37
Spain	29.50	6.99	10.60	3.88	3.74	1.49	6.80	3.34
Portugal	56.44	5.46	12.29	3.85	10.39	3.38	17.08	3.45
Finland	25.21	2.12	14.06	1.40	10.95	0.78	14.46	1.99
Sweden	16.10	--	7.80	--	5.20	--	11.10	--
Austria	18.00	3.13	9.50	2.81	5.00	2.11	7.90	0.95
Bulgaria	96.10	0.78	57.70	0.23	53.20	2.20	28.50	1.36
Cyprus	47.00	--	81.60	--	87.00	--	77.80	--
Czech Republic	52.20	--	59.40	--	62.30	--	46.70	--
Estonia	70.59	--	59.60	--	64.65	--	47.92	--
Hungary	83.24	1.75	70.88	3.20	67.25	5.29	57.94	2.32
Latvia	81.30	--	58.90	--	69.60	--	45.70	--
Lithuania	72.81	--	52.41	--	55.07	--	57.44	--
Malta	47.20	--	81.60	--	83.20	--	77.40	--
Poland	76.10	4.12	70.75	3.01	86.50	2.92	60.85	5.35
Romania	81.32	3.15	49.95	3.59	60.92	5.78	42.71	6.50
Slovakia	73.66	--	67.48	--	35.71	--	39.08	--
Slovenia	37.23	--	79.44	--	82.04	--	77.15	--
<i>EU15</i>	<i>27.24</i>	<i>12.84</i>	<i>10.20</i>	<i>3.50</i>	<i>6.80</i>	<i>3.04</i>	<i>12.04</i>	<i>5.08</i>
<i>EU 27</i>	<i>46.06</i>	<i>25.90</i>	<i>33.87</i>	<i>27.97</i>	<i>32.98</i>	<i>31.67</i>	<i>29.96</i>	<i>22.90</i>

*Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.*

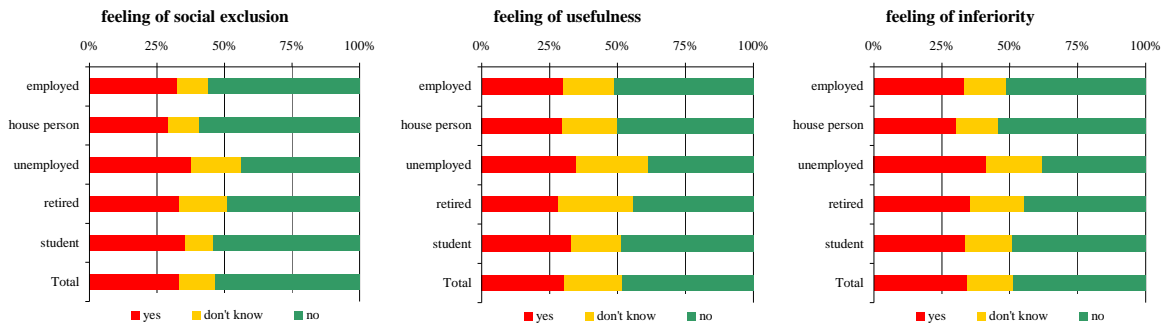
The other columns of Table 1 show the geographical distribution of some of the variables used in our analysis to approximate the perception to be integrated in the society. The Table shows that the majority of European citizens perceive himself as socially integrated, however, there are some areas in which high percentages of people have negative perception about it. Once more, these areas are represented by eastern European countries: in this case, the difference between old EU countries and new members is clear and considerable. The feeling of social exclusion concerns more than the 80% of the people in Cyprus, Malta, Poland and Slovenia, while in Bulgaria, Czech Republic, Hungary, Latvia, Lithuania and Romania this percentage goes from 53 to 69.6%, with some differences among regions. The

lowest percentage of this group of countries is in Slovakia (35,7%). The percentage detected for the other variables, are slightly lower.

If we consider the EU-15, the worst situation about the feeling to be inferior due to one's own income or job situation is in Finland, in UK and in continental Europe, while southern European countries register, on average, lower levels. Finland's regions have also high levels of social exclusion perception, beside East Germany and French regions, some UK and southern European regions (namely Greece, south of Italy and some Portuguese regions). The sense of usefulness is high in almost all French regions, Italy, Portugal, East Germany and Finland. Citizens of Spain (with exception for the north), Austria and The Netherlands experience the lowest level for this variable.

The self-perception of being part of a society is related with the occupational status. For example, unemployed people register the worst situation on all the three variables (Figure 2). Both employed people and house persons perceive themselves as socially integrated, together with students, even if in a lower measure.

Figure 2 – Feeling of social exclusion, feeling of usefulness and feeling of inferiority by occupational status of respondents



Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.

Table 2 shows that the worst evaluation about the social life is provided by unemployed people, followed by retired one. Moreover, they declare also in a measure higher than the overall mean to not to have someone, external to their family, to rely on in case of help. Referring to unemployed people, this finding is not surprising: their scarce availability of help is probably due to the fact that their social networks are mainly represented by other unemployed people, who are therefore poorly placed to offer significant support. As expected, the participation in social, cultural and sports association is high for students.

Table 2 –Social life assessment, availability of help and participation in associations by occupational status of respondents

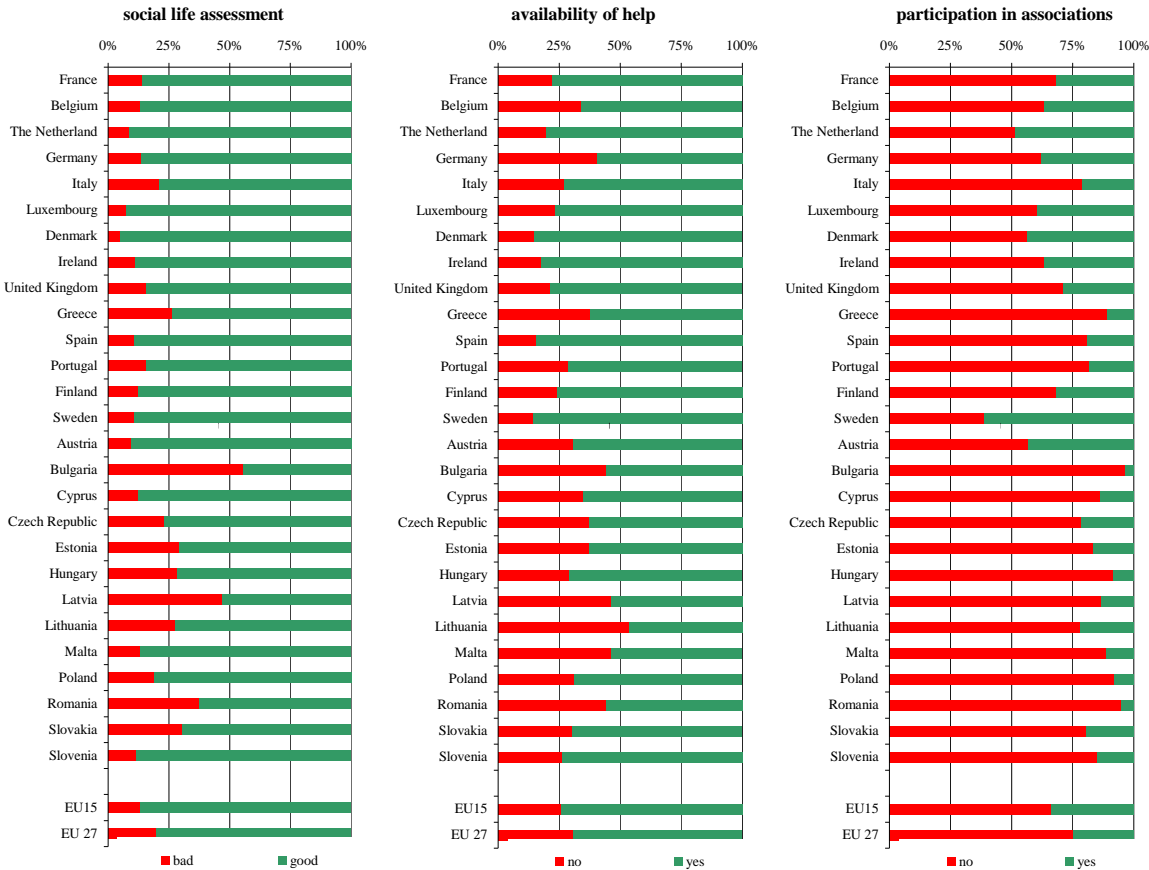
	assessment of social life			help availability			participation in associations		
	bad	good	Total	no	yes	Total	no	yes	Total
Employed	17.8	82.2	100.0	25.0	75.0	100.0	73.2	26.8	100.0
Homemaker	20.5	79.5	100.0	31.4	68.7	100.0	84.4	15.7	100.0
Unemployed	36.2	63.8	100.0	40.4	59.6	100.0	88.4	11.6	100.0
Retired/unable	25.5	74.5	100.0	41.5	58.5	100.0	85.7	14.3	100.0
Student	9.7	90.3	100.0	21.7	78.3	100.0	62.2	37.8	100.0
Total	20.7	79.4	100.0	30.9	69.1	100.0	77.7	22.3	100.0

Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.



Figure 3 shows that people in eastern countries are the less satisfied of their social life, on average. However, in this case, also in Southern European countries (Spain, Portugal, Greece) together with Ireland, people declare to be dissatisfied with their social relationships and social life. In line with the sociability models in European countries, in Northern countries there are the lowest levels of social contacts (Pirani, 2009), however in this countries there are generally high proportions of people with someone to count on, outside their family, in case of need (in case of depression, search for a job or to borrow money). In eastern European countries these proportions are, once more, the lowest. The highest levels of people participating in associations are found in Denmark, Sweden, The Netherlands, Austria and Luxembourg (from 40 to 60%). On the contrary, for Greece, Italy, Spain and Portugal, from 80 to 92% of people do not take part in associations, like in eastern European countries.

Figure 3 –Social life assessment, availability of help and participation in associations by European countries



Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.

Also the level of dissatisfaction with the variables we link to the institutional dimension varies across European countries and across European regions (Table 3). The worst situation is detected for eastern European countries, for all the indicators: except for Malta, Cyprus, and Slovenia, the dissatisfaction with social and protection system concern more than an half of the population, and in some cases the proportions raise to the 75-80%. In Southern European regions, except Spain, from 25 to 63% of citizens are unsatisfied with the presence of health and medical services in the area where they live. Dissatisfaction is

present also in Sweden, Finland, Scotland, Northern Ireland and East Germany (10-20%), while continental Europe, together with England, seems to be overall satisfied with respect this aspect of daily life. As regard the social discontent about the social assistance and protection system, Southern European countries have high level of dissatisfaction in this respect (from 40 to 70%), while the situation in this case is good for Swedish and Finland citizens, and in some continental regions (less than 20%). Finally, the presence of violence and theft does not represent a problem for Spain, Germany (except the Hamburg region), Austria and Ireland.

*Table 3 – Percentage of respondents having negative perception of health services, of social assistance and of the presence of theft and violence, by European countries*

	negative perception of health services		negative perception of social assistance		presence of theft and violence	
	mean	sd	mean	sd	mean	sd
France	6.39	2.28	10.28	2.90	26.15	6.07
Belgium	4.36	1.98	10.37	2.78	23.93	7.29
The Netherland	4.57	0.70	7.55	1.37	22.17	4.29
Germany	9.49	4.91	22.80	7.54	13.91	7.48
Italy	30.54	7.87	35.58	9.47	32.36	6.48
Luxembourg	8.83	--	5.33	--	21.83	--
Denmark	4.80	--	9.49	--	28.37	--
Ireland	12.35	1.42	22.69	0.47	19.38	4.90
United Kingdom	10.74	4.09	19.64	6.35	35.60	10.28
Greece	47.71	5.51	57.77	5.86	28.88	5.62
Spain	8.30	2.61	14.60	4.66	12.10	4.79
Portugal	50.05	3.25	53.05	5.67	31.97	7.32
Finland	12.84	3.54	16.86	1.52	31.61	5.75
Sweden	18.20	--	14.80	--	19.20	--
Austria	8.80	1.51	13.70	2.72	12.70	3.75
Bulgaria	76.70	1.00	80.90	2.93	35.20	0.54
Cyprus	36.60	--	40.00	--	82.40	--
Czech Republic	49.70	--	51.00	--	31.30	--
Estonia	70.79	--	71.09	--	29.31	--
Hungary	72.84	5.07	70.69	3.46	55.98	10.61
Latvia	69.10	--	63.00	--	30.10	--
Lithuania	72.71	--	69.16	--	25.91	--
Malta	31.40	--	31.80	--	63.00	--
Poland	72.10	3.24	77.05	1.82	39.45	4.78
Romania	71.31	4.75	68.92	5.28	59.87	5.74
Slovakia	77.88	--	77.69	--	27.65	--
Slovenia	45.61	--	54.99	--	52.50	--
<i>EU15</i>	<i>15.52</i>	<i>14.53</i>	<i>21.43</i>	<i>15.48</i>	<i>23.65</i>	<i>9.75</i>
<i>EU 27</i>	<i>37.17</i>	<i>28.54</i>	<i>40.95</i>	<i>26.59</i>	<i>31.43</i>	<i>15.30</i>

*Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.*

Table 4 shows the average national values of the two contextual variables used in the analysis: the ratio between taxes and income, and the GDP. Concerning the first one, we note scarce differences within nations. This is not surprising, as well as the fact that the highest level of taxation and social contributions (from 48 to 60%) are for Scandinavian countries (namely Sweden, Finland, Denmark) and The Netherlands, followed by Eastern Germany, Belgium and Austria. On the other side, we find southern European countries and Ireland (from 20 to 40%), together with the eastern European countries. Major differences among regions, also within nations, are for the mean level of GDP for inhabitants. As expected, the richest regions are in the Northern Europe, UK, Germany, The Netherlands, be-

side Ile de France and North-western Italy (higher than 26,000 of Euro per inhabitant on average). The lowest levels are for the South of Italy, Greece, Spain and Portugal, and regions of East Germany (less than 17thousand Euro). Referring to the GDP, the gap among west and east of EU is relevant: only in Cyprus, Malta and Slovenia the GDP per inhabitant exceed 10,000 Euro on average, while in other countries it goes from about 2,000 in Bulgaria and Romania, to about 6,000 in Czech Republic or Hungary.

*Table 4 – National distribution of the ratio between taxes level and the income, and of the mean national level of GDP per inhabitant (thousands of Euro)*

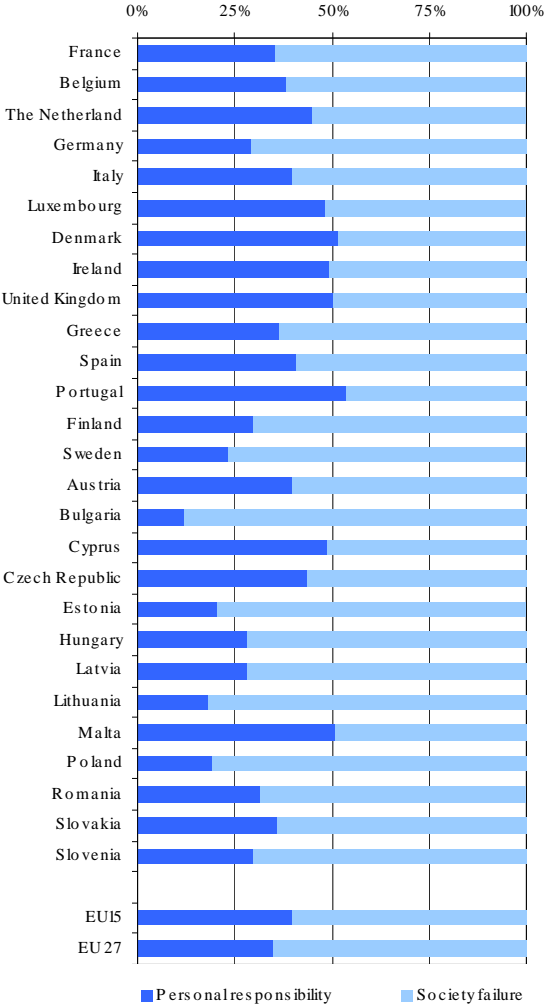
	ratio between taxes and income		average GDP per inhabitant	
	mean	sd	mean	sd
France	45.49	0.56	24888.38	6582.34
Belgium	48.03	0.69	25209.03	9038.77
The Netherland	56.08	0.40	27960.99	2664.60
Germany	47.10	3.10	22644.25	5699.88
Italy	40.11	2.13	22442.82	5481.60
Luxembourg	43.79	--	51126.50	--
Denmark	61.53	--	33456.40	--
Ireland	31.44	1.46	30121.31	5295.91
United Kingdom	40.77	0.80	26114.95	5498.65
Greece	22.75	0.99	11555.65	584.11
Spain	38.48	1.72	16670.10	3524.03
Portugal	33.19	3.48	13135.43	3380.92
Finland	50.33	0.82	28093.87	4966.18
Sweden	56.35	--	28253.10	--
Austria	46.46	1.24	26835.71	2359.61
Bulgaria	32.66	0.00	1951.92	205.56
Cyprus	32.66	--	15397.10	--
Czech Republic	38.48	--	6753.10	--
Estonia	32.72	--	5059.60	--
Hungary	34.77	2.04	5920.72	2206.58
Latvia	30.01	--	3957.40	--
Lithuania	24.33	--	3895.80	--
Malta	32.66	--	10939.90	--
Poland	31.77	0.98	5510.58	1082.12
Romania	26.46	2.46	2009.82	407.62
Slovakia	31.58	--	4372.20	--
Slovenia	39.06	--	11256.80	--
<i>EU15</i>	<i>44.27</i>	<i>9.78</i>	<i>25060.07</i>	<i>9039.75</i>
<i>EU 27</i>	<i>39.03</i>	<i>9.89</i>	<i>16701.32</i>	<i>11946.39</i>

*Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.*

Finally, the distribution of the responses about the causes of poverty and social exclusion is shown in Figure 4. Only in Denmark, Portugal, UK and Malta personal causes are more important than social causes in explaining poverty. However, personal responsibility is over the European average in Ireland, Luxembourg, The Netherlands, Cyprus and Czech Republic. On average, in eastern European countries, the conditions of poverty and social exclusion are considered mainly as a consequence of social inequalities and injustices. Social causes predominate as an explanation of poverty also in Sweden, Germany, and Finland, and, in a lower measure, in France and Belgium too. These results pose some questions about the solidity of the European social model based on social justice (Bhalla and Lapeyre, 2004). It is worthwhile noting, also, that the injustice explanation varies

greatly over time and is related to the overall socioeconomic conditions (European Commission, 2004).

Figure 4 – Percentage of respondents by poverty and social exclusion as a personal responsibility or as a failure of the society, by European countries



Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.

## 4 A multilevel latent class model to study social exclusion

### 4.1 Data

Using the 56.1-2001 Eurobarometer (EB) survey for the EU-15 and the 2002.1 Eurobarometer for eastern European countries that were candidates to EU in 2002, indicators about involvement in the three dimensions previously described are considered for all EU-27 countries. Eurobarometer data enables to go below the national level, and to use the so-called NUTS regions at the first level of Eurostat classification (NUTS-1). NUTS-1 represent a sort of meso-level between macro social structures and micro-demographic charac-

teristics, although they are not defined all over in the same way (Pirani, 2009). The choice of NUTS at the first level of classification represents a compromise between the territorial homogeneity and meaningfulness on the one hand, and the availability of statistical information on the other. Moreover, NUTS-1 have the advantage to have become a sort of standard of reference in the literature, also for the formulation and implementation of social policies at European level (e.g. Stewart, 2003; Vignoli and De Santis, 2009).

To summarise, the hierarchical structure of our analysis consists of 28,090 individuals nested in 100<sup>4</sup> regions belonging to 27 countries, with minimum and maximum group sizes equal to 11 and 1,067 respondents respectively (Table 5). The unbalanced structure is not a problem, as it is efficiently handled by maximum likelihood methods. The number of clusters and their sizes are sufficient to achieve high power and good accuracy of the asymptotic distributions of the estimators (Snijders and Bosker, 1999; Maas and Hox, 2004).

*Table 5 – Respondents, regions and countries, EB sample 56.1-2001*

Countries	N. regions	N. respondents	Respondents in Regions	
			minimum	maximum
France	8	1,002	73	196
Belgium	3	1,032	100	590
The Netherland	4	1,006	93	479
Germany	16	2,009	11	303
Italy	5	992	106	284
Luxembourg	1	600	---	600
Denmark	1	1,001	---	1,001
Ireland	2	996	278	718
United Kingdom	12	1,288	44	304
Greece	3	1,004	100	580
Spain	7	1,000	38	273
Portugal	7	1,001	22	343
Finland	4	996	105	645
Sweden	1	1,000	---	1,000
Austria	3	1,000	225	433
Bulgaria	2	1,000	485	515
Cyprus	1	500	---	500
Czech Republic	1	1,000	---	1,000
Estonia	1	1,010	---	1,010
Hungary	3	1,020	293	423
Latvia	1	1,000	---	1,000
Lithuania	1	1,015	---	1,015
Malta	1	500	---	500
Poland	6	2,000	210	390
Romania	4	1,049	206	313
Slovakia	1	1,067	---	1,067
Slovenia	1	1,002	---	1,002
<i>Total</i>	<i>100</i>	<i>28,090</i>	<i>11</i>	<i>1,067</i>

*Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.*

<sup>4</sup> For some countries constituted by a unique NUTS at first level, we used NUTS level-2, whereas Eurobarometer and Eurostat data made it possible.

## 4.2 *Indicators of social exclusion*

Reckoning with limited data availability, we selected from the Eurobarometers 56.1-2001 and 2002.1 some indicators for each identified domain of exclusion: the economic, the social and the institutional dimensions.

In our analysis, the objective measure of the economic and financial situation is introduced by means of the income quartile of individuals, together with a composite indicator of the economic difficulties that people coped with in last twelve months<sup>5</sup>. Then, for comparative purposes, we introduce the self-rated measure of income<sup>6</sup>. The subjective perception of one's own economic situation may be considered a measure of "economic pressure" (Robila, 2006), which for some purposes is more useful than objective economic evaluation in assessing the overall quality of life. Research showed that the proportion of people who feels poor, is much greater than that of people considered as poor according to objective measures of poverty (Bhalla and Lapeyre, 2004). Finally, to better characterize the economic dimension from a subjective perspective we refer to the degree of agreement expressed by the respondents to the EB question: "Some people look down on me because of my income or job situation" (agree, neither agree nor disagree, disagree).

The indicators referring to the social dimension provided by Eurobarometer datasets are various. First, the surveys provide information about the satisfaction of the social life of individuals<sup>7</sup>. Moreover, to capture the existence of effective social networks, we consider how much practical and emotional support people would expect to get from members outside their household in three situations of need: whether they feel depressed, they help need to find a job, they urgently need to borrow money. In fact, it is not merely the actual existence of social ties that matters, but also the potentiality, for individuals, to have confidence in one's own personal networks and to can rely upon them whether the need arises. The subjective expectation of remaining isolated in situations of need and the personal dissatisfaction with one's family life and participation in society, are warning symptoms of social exclusion. Finally, another indicator offers the possibility to investigate also the participation in social activities like leisure or sport clubs.

An Eurobarometer question is attention-getting for the purpose of our analysis: "Do you feel left out of society?". Respondents had to say whether they agree (via a five-level Likert scale) with this statement. Using this subjective perception of social exclusion we can investigate to what extent risk factors traditionally relied to social exclusion are really decisive in individual perception. Secondly, people were asked the degree of agreement with the statements: "I don't feel that the value of what I do is recognised by the people I meet" and "I don't feel that I have the chance to play a useful part in society". To be engaged in activities which are positively valued by others is important for the psychological wellbeing of people, and may contribute to enhance social relations and social participation.

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<sup>5</sup> Using the responses given to questions concerning the occurrence of problems like paying rent or mortgage, paying bills, paying food and repaying loans, we build a composite indicator measuring the overall magnitude of economic difficulties, taking the following modalities: a lot of difficulties, some difficulties, no difficulties.

<sup>6</sup> Eurobarometer asked individuals how well they get by with their income via four categories of response (with great difficulty, with difficulty, easily, very easily), which have been aggregated in two categories (with difficulties, without difficulties) for the analysis.

<sup>7</sup> Indeed, the 56.1 Eurobarometer provided also some questions about the frequency of the relationships with the "immediate" sphere of individual, useful in order to build a composite indicator measuring the overall magnitude of personal relationships (Pirani, 2009). However, these indicators are not available in the 2002.1 survey for the candidate countries.

Finally, referring to the institutional dimension, the Eurobarometer questions enable to account, to some extent, for the attachment between citizens and public institutions, and their satisfaction about them. Data are provided about the subjective evaluation (satisfied, not satisfied) of the respondents about the medical services in their local area, their social entitlements in case of sickness, invalidity and unemployment. As indicators of personal security, we chose the perception, expressed by individuals, of the presence of vandalism and theft in the place where they live. Unfortunately, the lack of appropriate data referring to this dimension prevents from an accurate and a comprehensive evaluation of the “institutional” context in which individuals live.

### 4.3 *Individual and contextual covariates*

In LC models, the indicators are used to define and measure the latent concept, while covariates help to predict the membership to latent classes, thus improving their description.

The individual attributes used in the model are sex (male and female), age (15-24, 25-34, 35-44, 45-54, 55-64, >65) and occupational status of the respondents (employed, homemaker, unemployed, retired/unable, student). These elements are not properly indicators of exclusion *per se*, even if we can hypothesize that they involve differences in experiencing and in perceiving the risk factors of social exclusion, in all the considered dimensions. Particularly, the unemployment status has several consequences on the individual (Negri e Saraceno, 2000), involving not just a lack of financial resources, but also a weakening and a change in social network of individuals.

Other individual covariates had been tested, but not included in the final model, because of they were not significant.

In social exclusion evaluation, also elements operating at regional level are relevant. Solidarity with and willingness to help the poors will probably be more widespread when responsibility is largely ascribed to injustice in society (Böhnke, 2008). In this sense, starting from individual responses of Eurobarometer, we compute an indicator in order to quantify, for each European region, the percentage of people attributing the responsibility of poverty and social exclusion either to individual or to societal failure (see Pirani, 2009 for more details). This indicator describes whether the prevalent opinion in a population is that poverty and social exclusion are personal responsibility of each individual living in these situations, or are instead a consequence of injustice in society. Moreover, in order to account for economic situations at regional level, we consider the level of gross domestic product (GDP), particularly its quartile distribution among European regions. Then, we define an indicator given by the ratio between the amount of taxes, social contribution and transfers paid, and the primary income. This indicator could represent a *proxy* of social protection expenditure of the region or, even, the amount of expenditure financed using public taxation.

### 4.4 *Model specification*

The probability structure of a multilevel latent class model is composed by two finite mixture models, each of them referring to a level of analysis, individuals and regions. Consider individuals  $i = 1, \dots, I$  originated from an international sample of 100 European regions,  $j = 1, \dots, 100$ ; for each individual  $i$  we dispose of the set of  $K$  indicators previously described denoted by  $Y_{ik}$  with  $k = 1, \dots, 12$ . So,  $Y_{ijk}$  represents the response to item  $k$  of

person  $i$  coming from region  $j$ , whereas  $\mathbf{Y}_{ij}$  refers to the full vector of responses of the same individual  $i$ , and  $\mathbf{Y}_j$  to the full vector of responses of all individuals in region  $j$ .  $\mathbf{Z}_{ij}$  and  $\mathbf{Z}_j^s$  denote respectively the individual and the contextual covariates. We assume a latent variable  $X_{ij}$  that represents the individual condition of social exclusion. Given their response patterns to the selected indicators, individuals will be classified in a probabilistic way in one of the  $T$  latent classes of  $X_{ij}$ , with  $t = 1, \dots, T$ . This represents the *lower-level part* of the model, that is a standard LC model for the selected indicators with a categorical latent variable. The *upper-level part* of the model, that is the multilevel extension, is implemented assuming the existence of a latent variable  $W_j$  at regional level, with  $m = 1, \dots, M$  classes, conditionally on which the individual responses are assumed to be mutually independent. This multilevel component implies that the latent class probabilities vary across regions, that is, the second level latent variable has the role of a random effect in the model for  $X_{ij}$ , and it aims to identify latent types of regions for which parameters in the specified model differ. Note that one knows to what  $j$ -th region individuals belong to, but the membership of the  $m = 1, \dots, M$  classes of the discrete latent variable at group level  $W_j$  is unknown a priori, as well as it is unknown the membership of individuals to the first level latent classes of  $X$ .

Thus, the lower level part of the model refers to the conditional probabilities of the response vector  $\mathbf{Y}_{ij}$  conditional on the latent variable at second level and the covariates:

$$\begin{aligned} P(\mathbf{Y}_{ij} = \mathbf{s} | W_j = m, \mathbf{Z}_{ij}) &= \sum_{t=1}^T P(X_{ij} = t | W_j = m, \mathbf{Z}_{ij}, \mathbf{Z}_j^s) P(\mathbf{Y}_{ij} = \mathbf{s} | X_{ij} = t) \\ &= \sum_{t=1}^T P(X_{ij} = t | W_j = m, \mathbf{Z}_{ij}, \mathbf{Z}_j^s) \prod_{k=1}^K P(Y_{ijk} = s_k | X_{ij} = t) \end{aligned} \quad (1)$$

The probability associated with all responses of a given region, denoted by  $P(\mathbf{Y}_j | \mathbf{Z}_j)$  can be obtained by taking the sum over  $m$  of the products of  $P(\mathbf{Y}_{ij} = \mathbf{s} | W_j = m, \mathbf{Z}_{ij})$  over the  $n_j$  individuals belonging to each region, and multiplying by the probability that region  $j$  belongs to a particular class at group level:

$$P(\mathbf{Y}_j | \mathbf{Z}_j) = \sum_{m=1}^M \left[ P(W_j = m | \mathbf{Z}_j^s) \prod_{i=1}^{n_j} P(\mathbf{Y}_{ij} = \mathbf{s} | \mathbf{Z}_{ij}) \right] \quad (2)$$

Substituting (1) in (2), we obtain

$$P(\mathbf{Y}_j | \mathbf{Z}_j) = \sum_{m=1}^M \left[ P(W_j = m | \mathbf{Z}_j^s) \left[ \prod_{i=1}^{n_j} \sum_{t=1}^T P(X_{ij} = t | W_j = m, \mathbf{Z}_{ij}, \mathbf{Z}_j^s) \prod_{k=1}^K P(Y_{ijk} = s_k | X_{ij} = t) \right] \right] \quad (3)$$

which shows the probability structure of the model we adopted. From (3) it is clear the presence of a separate finite mixture distribution at each level of nesting.



The right-hand side of equation (3) consists of three components, specified using multinomial logit models:

- a) the probability that region  $j$  belongs to a particular level of the latent variable  $W_j$ , given two regional covariates

$$P(W_j = m | \mathbf{Z}_j^g) = \frac{\exp(\alpha_{0m} + \alpha_{1m}Z_{1j}^g + \alpha_{2m}Z_{2j}^g)}{\sum_{m'=1}^M \exp(\alpha_{0m'} + \alpha_{1m'}Z_{1j}^g + \alpha_{2m'}Z_{2j}^g)} \quad (4)$$

- b) the probability that respondent  $i$  belongs to a particular class of the latent variable at the first level  $X_{ij}$ , given regional latent class membership, the three individual covariates, and one contextual covariate

$$P(X_{ij} = t | W_j = m, \mathbf{Z}_{ij}, \mathbf{Z}_j^g) = \frac{\exp(\gamma_{0tm} + \gamma_{1t}Z_{1ij} + \gamma_{2t}Z_{2ij} + \gamma_{3t}Z_{3ij} + \gamma_{4t}Z_{4j}^g)}{\sum_{t'=1}^T \exp(\gamma_{0t'm} + \gamma_{1t'}Z_{1ij} + \gamma_{2t'}Z_{2ij} + \gamma_{3t'}Z_{3ij} + \gamma_{4t'}Z_{4j}^g)} \quad (5)$$

- c) the joint probability that the  $i$ -th respondent follows the pattern  $\mathbf{s}_i$  given individual latent class membership

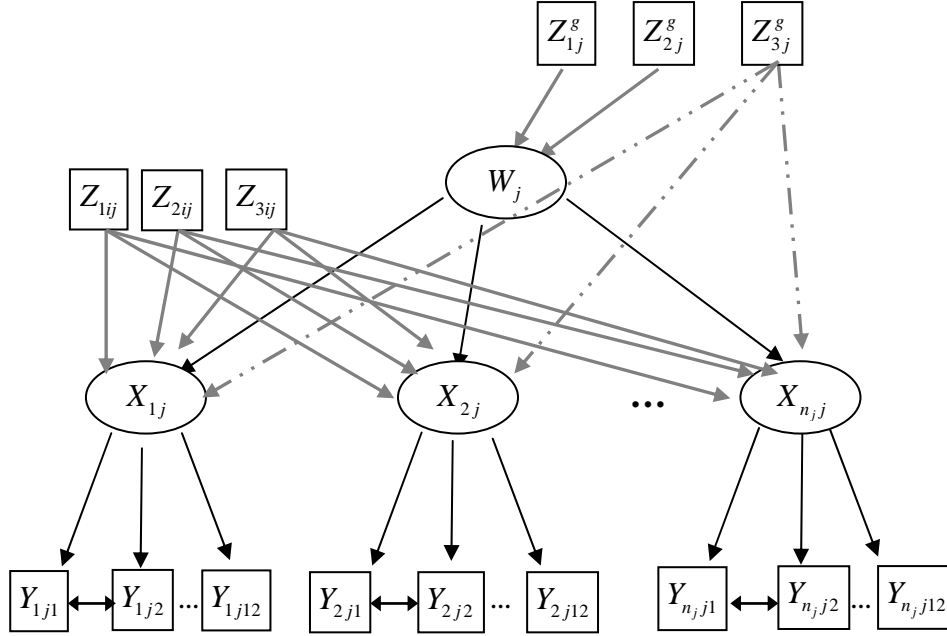
$$\prod_{k=1}^K P(Y_{ijk} = s_k | X_{ij} = t) = \prod_{k=1}^K \frac{\exp(\beta_{0s_k} + \beta_{1s_k t})}{\sum_{s'} \exp(\beta_{0s'} + \beta_{1s' t})} \quad (6)$$

In equation (4) we are assuming that two group level covariates – namely the level of GDP and the indicator representing the social protection expenditure of the region – affect the level-2 latent class membership. In equation (5) the probability of belonging to a certain level-1 latent class depends on the group-level latent variable, on the three level-1 covariates, and on one of the level-2 covariates. In this case, also a contextual covariate is modelled to have direct effects on the latent variable at first level, that is on the social exclusion condition. The  $\alpha_{0m}$  and the  $\gamma_{0tm}$  intercepts represent respectively the category effects of the group-level latent variable and the  $W_j$ -dependent category effects of the latent variable at individual level  $X_{ij}$ . In equation (6) conditional probabilities depend on the individual level latent variable  $X_{ij}$ , as indicated by parameters  $\beta_{1s_k t}$ . Finally, we estimated some additional parameters  $\beta_{2s_k s_h}$  accounting for the interaction between some pairs of indicators, i.e.:

$$P(Y_{ijk} = s_k, Y_{ijh} = s_h | X_{ij} = t) = \frac{\exp(\beta_{0s_k} + \beta_{1s_k t} + \beta_{0s_h} + \beta_{1s_h t} + \beta_{2s_k s_h})}{\sum_{s''=1}^{s_h} \sum_{s'=1}^{s_k} \exp(\beta_{0s'} + \beta_{1s' t} + \beta_{0s''} + \beta_{1s'' t} + \beta_{2s' s''})} \quad (7)$$

The model structure is depicted in the path diagram of Figure 5, which highlights the presence of effects between indicators, between covariates and latent variables, and between latent variables and indicators.

Figure 5 – Path diagram of the multilevel Latent Class model adopted for the analysis of social exclusion



## 5 Results

In the multilevel LC framework, model estimates can be obtained for a fixed number of classes at group and at individual level,  $M$  and  $T$  respectively. In order to choose among multilevel Latent Class models for different values of  $M$  and  $T$ , many models have been estimated, and the relative fit of the alternative model specifications examined by means of the minimum BIC rule (Vermunt and Magidson, 2005). The model we discuss here involves 9 distinctly different respondent types as regard their deprivation status in all the relevant domains, i.e.  $T = 9$  latent classes at individual level, and 4 clusters at regional level, i.e.  $M = 4$  which enable to differentiate rather well among regions. Raising the number of latent classes and clusters does not provide an effective model improvement, both in terms of model fitting and of substantial meaning.

### 5.1.1 Individual profiles: the latent levels of social exclusion

The characteristics of each class, in terms of their similarities and differences, are shown in Table 6. This “profile” table contains, in the first line, the *estimated marginal latent probabilities*  $\hat{P}(X = t)$  for each  $t$ -th class. These probabilities represent the class size. Secondly, in the core of the Table, the *class-specific marginal probabilities* associated with each indicator  $\hat{P}(Y_{ijk} = s_k | X = t)$  show how the latent classes are related to the 12 indicator variables used in the analysis. Through the examination of the profile table, we can charac-

terize each class of the latent variable in term of response probability to each level of the indicators, and thus to describe the different typologies that emerge.

Our model allows, first, the identification of two “extreme” profiles of respondents: class number 9 encompasses individuals who have negative and “deprived” responses on all the indicators. Individuals classified in this class have high risk to be in the first two income quartiles, to perceive difficulties to make ends meet with their income, to feel excluded from the society, to be unsatisfied with their social life, and to have a negative perception of the institutional system. For this class, which groups the 11.9% of the sample, the probability to answer in a “disadvantaged” manner is high for all the indicators – leading to a situation of exclusion from all the dimensions identified – even if the probability to feel left out of the society (0.37) is not the highest.

In the opposite situation, we find one-fifth of the population (20.1%): in class 1 individuals have a positive situation, that is high levels of income, good social relationships, and a solid social network on which they could rely on in case of problems. Also from a subjective point of view, their situation is not problematic: they do not feel inferior to the others or excluded, and they judge positively their institutional environment in terms of social assistance, health services and security. Class 1, moreover, has the highest probability to participate in social leisure and sport associations. Thus, class 9 raises to be the “excluded class”, and class 1 the “not excluded class”.

In class 8 (size equal to 9.2%) the probability to feel excluded from the society is 0.32, slightly higher than the overall mean, and the probability to be uncertain in this regard is 0.27. Thus, in this case, it seems to emerge a situation “at risk of exclusion”, where the problem is not yet widespread, even if alarming symptoms exists, such as the dissatisfaction with social relations, and the feeling of inferiority and usefulness of people. The unique positive indicator in this class is the evaluation of the health services in the area where people live.

The 12.6% of the sample classified in class 7 does not suffer of economic problems (these individuals have a probability higher than the overall mean to be in the third and fourth income quartiles) and can rely on other people in case of need. Anyway, these individuals have a high probability to feel poor (0.82), and a relevant probability (0.82) to feel excluded from the society, too. Class 7 draws a situation of exclusion from institutional and relational dimensions, which may affects in a negative manner the subjective perception and evaluation in different domains of life.

An interesting characteristic in class 6 (size equal to 5.6% of the sample) is the disagreeing between the objective measure of the income (income quartile) and the perception to get by with that income. Individuals classified in this class, have a high probability to be in the lowest income quartiles, but answer that their income is sufficient to make ends meet. This class has high probability to include people who feel satisfied with their social life and with the social and security system. Nevertheless, the positive situation of the social and institutional dimensions is not sufficient to protect people in this class from the perception of exclusion, usefulness and inferiority in the society. In this case, thus, the economic dimension is relevant in determine social exclusion situation. In this class the probability to feel unsafe due to the presence of theft and vandalism in the area where one lives, is the highest (0.7).

A similar situation emerges from class 3 (size equal 10%). Individuals classified in class 3, in fact, have a high probability to be in the first and second quartile of income (the poorest) but they do not perceive to be in a situation of poverty. Moreover, like class 6, people in this class cannot rely on help on case of need, and are satisfied with the health

services and the social and protection system of their area. The difference is that in this class people do not perceive a feeling of exclusion, usefulness or inferiority: the objective situation of poverty does not entail a condition (or a perception) of social exclusion for these people. In this class, it seems that the institutional system has an important role in contrasting the economic difficulties of citizens and in defending them against social exclusion and marginality, while it does not happen in class 6.

The last class where the probability to feel excluded from the mainstream society is relevant (0.83) is class 5 (class size equal to 6.4%). In this case the economic dimension, both objective and subjective, is good (the probability to be in the richest quartile of income is the highest), and the probability to answer in a positive manner to indicators referring to the social relationships and the social network is high. However, in this case, people have a high probability to answer in a disadvantaged manner to the indicators of the institutional dimension.

A positive situation for the economic and the relational dimension emerges also for class 4 (which groups the 8.4% of the sample), together with a negative institutional dimension: for this class the dissatisfaction with the social protection system and the health services is high, but people do not perceive to live in an area characterized by violence and theft. Unlike class 5, however, these negative indicators of the institutional dimension are not sufficient to raise the sense of exclusion, marginality and usefulness of people (probability equal to 0.03)

Finally, in class 2 only the objective economic domain registers a negative situation. In class 2 (size equal to 16%) individuals suffer of some economic difficulties, but they do not perceive this situation as problematic. Moreover, people in this class may rely on people outside their family in case of need. These solid social networks, together with an efficient and well-evaluated social and protection system, are probably key elements in preserving people from situations of exclusion in this class, nevertheless the economic difficulties.

Summarizing, we identify 9 latent levels of social exclusion, according to different domains of life. Whether we consider only the indicator “perception to be left out from society” as indicator of social exclusion situations, some of them are not properly situation of social exclusion: individuals in class 1, 2, 3 and 4 do not perceive to be socially excluded. The low level of income, when not associated to a negative perception of the economic situation (classes 2 and 3), does not represent an element that influences negatively the perception of social marginalization, and do not affect the capability of these individuals to integrate in the mainstream society and to feel overall satisfied.

Classes 4, 5, 7 and 9 identify a typology that is dissatisfied with the social and protection system, but they do not all entail situations of exclusion, so that the “institutional” dimension *per se* is not sufficient to determine negative perception of social exclusion and social usefulness. Conversely, classes 5, 6 and 7 have high probabilities to include people that feel excluded (respectively 0.83, 0.87 and 0.82), even if they present important differences in the response probabilities of the indicators referred to the three dimensions: class 5 identifies a typology of people with negative indicators mainly in the institutional dimension; class 6 refers mainly to economic exclusion, above all from an objective point of view; class 7 refers instead to relational and institutional exclusion. Finally, classes 8 and 9 identify people with almost all negative indicators, and thus excluded from all the dimensions.

Table 6 – Profile table of the latent variable at individual level  $X_{ij}$ : class size  $\hat{P}(X = t | \mathbf{Z}_i)$  and class specific marginal probabilities  $\hat{P}(Y_{ijk} = s_k | X = t)$  by indicator

	Latent classes of $X_{ij}$									
$t$	1	2	3	4	5	6	7	8	9	Overall
Class size $\hat{P}(X = t   \mathbf{Z}_i)$	0.201	0.160	0.100	0.084	0.064	0.056	0.126	0.092	0.119	
<b>Indicators <math>Y_k</math></b>										
<b>Income perception</b>										
with difficulties	0.084	0.316	0.148	0.445	0.511	0.381	0.789	0.822	0.969	0.463
without difficulties	0.916	0.684	0.852	0.555	0.489	0.619	0.211	0.178	0.031	0.537
<b>Economic difficulties</b>										
a lot of difficulties	0.011	0.092	0.010	0.143	0.119	0.035	0.141	0.436	0.342	0.138
some difficulties	0.031	0.243	0.044	0.220	0.262	0.160	0.265	0.304	0.447	0.208
no difficulties	0.959	0.666	0.946	0.637	0.619	0.805	0.594	0.259	0.210	0.654
<b>Income quartiles</b>										
-- (first quartile)	0.098	0.251	0.325	0.192	0.053	0.270	0.134	0.536	0.365	0.236
- (second quartile)	0.196	0.292	0.311	0.258	0.143	0.289	0.224	0.291	0.315	0.256
+ (third quartile)	0.306	0.262	0.226	0.281	0.293	0.250	0.297	0.125	0.206	0.255
++ (fourth quartile)	0.400	0.196	0.139	0.269	0.510	0.191	0.345	0.047	0.114	0.253
<b>Feeling of inferiority</b>										
yes	0.028	0.139	0.039	0.055	0.716	0.853	0.742	0.338	0.480	0.311
don't know	0.049	0.210	0.180	0.115	0.182	0.120	0.163	0.235	0.332	0.171
no	0.923	0.651	0.781	0.829	0.102	0.027	0.095	0.428	0.187	0.519
<b>Social life assessment</b>										
bad	0.020	0.122	0.107	0.118	0.101	0.074	0.211	0.515	0.588	0.198
good	0.978	0.869	0.859	0.878	0.880	0.910	0.764	0.468	0.287	0.775
dk	0.002	0.009	0.034	0.004	0.019	0.016	0.025	0.017	0.126	0.027
<b>Participation in association</b>										
no	0.543	0.634	0.787	0.892	0.634	0.930	0.971	0.904	0.980	0.777
yes	0.457	0.366	0.213	0.108	0.366	0.070	0.029	0.096	0.020	0.223
<b>Availability of help</b>										
no	0.116	0.193	0.475	0.210	0.204	0.342	0.241	0.570	0.632	0.309
yes	0.884	0.807	0.525	0.790	0.796	0.658	0.759	0.430	0.368	0.691
<b>Feeling of social exclusion</b>										
yes	0.004	0.046	0.048	0.028	0.832	0.871	0.824	0.321	0.367	0.293
don't know	0.012	0.127	0.169	0.048	0.124	0.095	0.118	0.268	0.322	0.135
no	0.984	0.827	0.783	0.924	0.044	0.034	0.058	0.411	0.311	0.572
<b>Feeling of usefulness</b>										
yes	0.013	0.098	0.171	0.073	0.746	0.731	0.642	0.441	0.235	0.279
don't know	0.040	0.223	0.312	0.145	0.183	0.171	0.242	0.295	0.418	0.215
no	0.948	0.680	0.517	0.782	0.071	0.097	0.117	0.264	0.348	0.506
<b>Health services assessment</b>										
bad	0.056	0.110	0.089	0.452	0.615	0.247	0.753	0.322	0.786	0.346
good	0.898	0.826	0.890	0.510	0.320	0.730	0.234	0.661	0.160	0.614
dk	0.046	0.064	0.021	0.039	0.064	0.023	0.012	0.018	0.054	0.040
<b>Social assistance assessment</b>										
bad	0.064	0.178	0.107	0.484	0.593	0.267	0.782	0.613	0.780	0.393
good	0.842	0.584	0.792	0.407	0.268	0.657	0.148	0.344	0.109	0.492
dk	0.094	0.238	0.102	0.109	0.140	0.076	0.069	0.044	0.111	0.115
<b>Theft and violence</b>										
yes	0.145	0.266	0.207	0.300	0.394	0.702	0.438	0.393	0.292	0.308
don't know	0.112	0.299	0.252	0.238	0.314	0.194	0.265	0.271	0.356	0.247
no	0.743	0.435	0.541	0.462	0.291	0.104	0.297	0.335	0.353	0.446

Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.

### 5.1.2 *The higher level: clusters of regions*

Let us now move to the second level of the analysis. Following the BIC criterion, the choice of 4 latent levels for the variable  $W_j$  seems to operate quite well, providing a clear classification of regions.

Cluster 1 is the biggest one (size equal to 39% of the sample): it groups all UK regions, almost all German regions, the Centre-North of Italy, some Spanish regions (Madrid, the east and the north-east), the area of Lisbon, the South-east of Ireland, the South and West of Austria, Belgium (except the area of Brussels), France, Luxembourg and the North and East Dutch regions. The only candidate country belonging to this cluster is Cyprus. These regions are characterized by a medium-high level of GDP and of the ratio between taxation and primary income, while the condition of poverty and social exclusion is mainly seen as individual responsibility. In terms of response probabilities to the indicators, the first cluster groups together regions for which individuals do not seem to be in a disadvantaged condition. The probability to feel good with the economic situation, given the latent class, is higher than the average, as well as the probability to be satisfied of one's own social life and the social and protection system.

A positive situation is identified also for regions belonging to cluster 2, which are, on average, in the fourth GDP quartile and have high levels of taxation. The regions classified with the highest probability in this cluster are the west and south of the Netherlands, Sweden, Denmark, the South of Finland, the area of Brussels in Belgium, Hessen in Germany, and east Austria. Here people have high probabilities to have high levels of income, and all other dimensions seem to go well. In this cluster, which size equals 26.1%, we register the highest probability to participate in leisure, culture or sport activities and associations, and a high probability that people may rely on someone from outside their own household in case of problems. In these regions we depict a sociability model according to which social contacts and social networks are mainly established via friends and organized activities, rather than to be family-centred.

The latent regional cluster 3 is in the opposite situation. This cluster groups together southern European regions (Greece and most Portuguese regions), some Polish regions and the centre-north of Ireland, for a cluster size equal to 12.1%. These areas are at medium levels of GDP, and where the share of social security and protection system financed by means of public taxation is rather low. The probability that an individual classified in this cluster is in the lowest income quartiles is 0.3, and in this cluster the subjective evaluation of the personal income has an high probability to be negative. High probabilities are found also for "negative" responses concerning the institutional dimension, primarily the indicator concerning the social assistance system. This cluster identifies regions where the satisfaction with the social life is not good, and people have high risk to suffer of a lack of potential support outside the one's own household. However, these conditions do not undermines the individual perception of social integration.

Finally, the group-level cluster 4 (size equal to 23.9%) includes all regions of eastern European countries (Bulgaria, the Czech and the Slovak Republics, Estonia, Latvia, Lithuania, Malta, Romanian and Hungarian regions, some Polish regions and Slovenija) together with some Spanish regions (North, Centre and South), the North of Portugal and the South and Islands of Italy. The most pronounced feature of this cluster is that it groups regions where the probability to have low levels of income is higher than the average, but the individuals perceive their income to be sufficient to make ends meet. All the indicators assume negative values with high probabilities, e.g. social contacts, availability of help, and

subjective feeling of exclusion, usefulness and inferiority. For this cluster the probability to feel left out of society is the highest (0.68). In terms of group level covariates, this cluster is characterized by a low level of taxation and of GDP. A remarkable characteristic is the high percentage of people who declare that the condition of poverty and social exclusion is due to a failure of the society and to their injustices, and it is an inevitable part of modern progress.

The different composition of individual social exclusion typologies among the four clusters of regions is analysed by computing the probability of being in a certain latent class of  $X_{ij}$  for each level of  $W_j$  that is  $P(X_{ij} = t | W_j = m)$ , that are obtained aggregating over covariates patterns. Considering the relative size of individual-class within a region-cluster (Table 7), we note that individual latent classes 1 and 2 (which are “not excluded classes”) are highly present mainly in region-clusters 1 and 2 (which, in fact, are the less disadvantaged). Individual-level class 3 is present mostly in cluster 1 and 2, and the class 4 in cluster 3. In cluster 3 we note also a relevant presence of class 8. Finally, the class 9 (exclusion from all the dimensions) is mainly present in cluster 4, together with classes 5, 6 and 7.

Table 7 – Probability of being in each latent class of  $X_{ij}$  for each level of  $W_j$  :  $P(X_{ij} = t | W_j = m)$

		Latent cluster for $W_j$				Marginal
		1	2	3	4	probabilities $\hat{P}(X = t)$
Latent classes for $X_{ij}$	1	<b>0.262</b>	<b>0.522</b>	0.040	0.000	0.201
	2	<b>0.325</b>	<b>0.249</b>	0.034	0.000	0.160
	3	<b>0.208</b>	0.153	0.012	0.000	0.100
	4	0.067	0.001	<b>0.578</b>	0.000	0.084
	5	0.000	0.000	0.000	0.178	0.064
	6	0.004	0.006	0.008	0.145	0.056
	7	0.000	0.000	0.000	<b>0.348</b>	0.126
	8	0.131	0.069	<b>0.248</b>	0.025	0.092
	9	0.001	0.000	0.080	<b>0.304</b>	0.119
<b>Marginal probabilities <math>\hat{P}(W_j = m)</math></b>		1.000	1.000	1.000	1.000	1.000

Source: Our elaboration on Eurobarometers 56.1-2001 and 2002.1 data.

Table 7 presents model results linking the individual and the regional classes, and enables to quantify the influence of the level-one latent classes across level-two latent clusters. These findings highlight the presence of different structures for the same latent variable “social exclusion” across regions, depending on the effect of the latent variable grouping the regions, and, at the same time, they show how the importance of the different dimensions change across groups of regions. For instance, while the probability to belong to the individual latent class 9 (the most disadvantaged one) equal 0 or 0.001 for regions belonging to clusters 1 and 2, it raises to 0.3 for regions belonging to cluster 4.

It seems that in certain regions (e.g. cluster 4) social exclusion situations are mainly linked to a lack of economic wellness and stability and dissatisfaction about social life, whereas cluster 3 is characterized by the dissatisfaction with the institutional system, even if it does not necessarily lead to situations of exclusion. In some other areas (cluster 4) the most important elements in determine social exclusion situation and/or perception are the material and economic deprivation, together with the dissatisfaction of the system of social assistance in case of unemployment, sickness and invalidity. Cluster 4 is also characterized

by exclusion from all the dimensions together. We can thus remark that the meaning, the interpretation and the comprehensiveness of the concept of social exclusion may change across Europe, given different social, economic, cultural, political and historical contexts.

### 5.1.3 *Effects of individual and contextual covariates*

Membership to individual latent classes, that is characterization of social exclusion situations, is often related to external variables describing the demographic and the socio-economic condition of individuals. Hence, the probability that an individual belongs to a particular latent class has been modelled to depend also on his socio-demographic characteristics (equation (5)). Sex, age of individuals and their occupational status are statistically significant.

The effect of age is relevant, particularly for some profiles. The class number 1 is under-represented in the age groups 35-44 and 45-54, whereas the classes 2 and 5 are overrepresented among young people (15-34). Class 3 is overrepresented among older people (>65), and the disadvantaged classes 8 and 9 are overrepresented among 35-44 and >65. Students have a higher presence in class 2 and 5, the last one characterized by institutional dissatisfaction. The occupational status helps to predict the class membership probabilities, too. As expected, employed people, together with house-persons, present a high proportion of people in class 1, which included a positive individual condition for all the dimensions. Retired people have high probability to belong to class 3 and 6, characterized by a low level of income but, on the whole, a global satisfaction about the other aspects investigated. The unemployment increases the probability to be in the classes characterized by the higher risk of social exclusion, mainly in the economic dimension (classes 8 and 9). Women are overrepresented above all in class 7, where the social exclusion is related to the dissatisfaction with the social assistance and protection system, and in class 9. These classes are the most disadvantaged ones. On the contrary, men are prevalent in class 1 (the “not excluded” one). This mean effect of the covariates changes according to the region to which individuals belong, that is depending on the cluster membership.

## 6 **Concluding remarks**

A modern society cannot disregard both an equally income distribution and the promotion of a high social cohesion. However, current empirical analyses, even if they recognize social exclusion as a multidimensional and comprehensive concept, fail to treat it through a multidimensional approach. In this paper, we wanted to enhance our understanding of social exclusion across European (EU 27) regions, evaluating this condition from an individual point of view, in a multidimensional perspective and accounting for contextual environment in which people live.

Starting from a working definition of social exclusion, which encompasses some founding elements of social exclusion notion, namely multidimensionality, subjectivity and relativity, we implemented a multilevel Latent Class model, which simultaneously derives regional and individual profiles.

Firstly, LC models allow treating social exclusion as a multidimensional concept thus underlying different types of exclusion, according to the different identified dimensions. Our outcomes have proved that an individual might be excluded from the economic point of view, but not deprived in his social relationships; conversely, situations in which individuals suffer for weak social relations and interactions do not always go with a disadvan-



tagged economic situation. The role of economic conditions in determining social exclusion situations seems thus to be reduced whether one considers in the analysis also the relational and the institutional dimension. Moreover, the financial and economic problems may be overcome through solid relationships networks and/or an efficient social and protection system. Our findings identify also a profile for individuals who result excluded from all the dimensions, which represents the most serious situation, and a profile of individuals for whom the social exclusion does not represent a concrete threat. The latent class modelling allows introducing in the analysis also subjective elements in all the dimensions, highlighting that negative objective situations are not always perceived in the same way. The profiling of social exclusion situations is strongly related to demographic variables, as well as to other cultural, social and environmental elements.

Secondly, the multilevel modelling enables to take into account the hierarchical structure of the population under investigation, and to carry on a comparative perspective. The multilevel extension, particularly the choice of a non-parametric approach to model the regional level, leads to the identification of a typology of regions, underlying different structures of the same latent concept “social exclusion” for different European regions. Considering the multidimensionality of the concept, it emerges that the importance of the different dimensions varies across regions. For some European areas identified in cluster 1– like the continental regions, Great Britain and Ireland, the North of Italy, the richest regions of Spain and Portugal and the Finland – the condition of social exclusion, whether present, is mainly due to the economic deprivation and difficulties. In the Netherlands, Denmark, Sweden and in some other regions (South-Finland, East-Austria and Hessen in Germany) even whether the financial situation is not completely positive, people do not perceive to be in a disadvantaged condition, neither for the economic nor for the social and institutional sphere of their life. In countries that have a solid institutional system and where the welfare system is well-implemented, negative economic situations at individual level are well balanced, so reducing the risk of social exclusion. In Portugal, Greece and in some Polish regions it is the institutional dimension which performances worse, even if it does not necessarily determine social exclusion situations. In these regions, the condition of social exclusion appears to be related to all the elements considered. Finally, for the new members of Europe Union and some south European areas (that is the South and Islands of Italy, some Spanish regions and the North of Portugal) we found a strong detachment of the citizens with respect the institutions and the public context, and social exclusion situations also in presence of good economic conditions. In these regions, moreover, the social exclusion is linked to all the three considered dimensions.

It is worthwhile to note that, notwithstanding the identification of certain national patterns in some cases, the analysis identify clearly the presence of relevant intra-national differences among the regions (NUTS-1 level).

The analysis confirms the hypothesis that the different social, economic, historical and cultural backgrounds affect the processes and the risk factors that may trigger social exclusion situations, above all in such a variegated context as the enlarged European Union. These findings lead to the conclusion that social networks, as well as the social and protection systems, might not to have the same impact both in influencing the perception of social exclusion and in reducing the risk of social exclusion in all European regions. We thus deem that these differences should be accounted for during the formulation and implementation of the measures and policy strategies at European level, in order to guarantee to all European citizens a high and lasting quality of life in all its domains and aspects.

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