

TiPSE

The Territorial Dimension of Poverty and Social Exclusion in Europe

Final Report

Annex 7

**Commentary on Poverty Maps and Analysis**

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The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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The web site provides the possibility to download and examine the most recent documents produced by finalised and ongoing ESPON projects.

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LIST OF ABBREVIATIONS

EC European Commission

ECB European Central Bank

IMF International Monetary Fund

MS Member State

NMS New Member States

NSI National Statistical Institute

OMC Open Method of Coordination

TPG Transnational Project Group

WB World Bank

Standard Abbreviations for Country Names:

AL Albania

AT Austria

BA Bosnia Hezegovina

BE Belgium

BG Bulgaria

CH Switzerland

CR Croatia

CY Cyprus

CZ Czech Republic

DE Germany

DK Denmark

EE Estonia

ES Spain

FI Finland

FR France

MK FYROM

EL Greece

HU Hungary

IE Ireland

IS Iceland

IT Italy

KO Kosovo

LI Liechtenstein

LT Lithuania

LU Luxemburg

LV Latvia

ME Montenegro

MT Malta

NO Norway

NL Netherlands

PL Poland

PT Portugal

RO Romania

RS Serbia

SE Sweden

SI Slovenia

SK Slovakia

TR Turkey

UK United Kingdom

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# Introduction and Background

This annex continues the description of research relating to spatial patterns of at-risk-of-poverty (ARoP) rates which was begun in Annex 5. The latter described how NUTS 3 ARoP rate data was collected or estimated for 23 European countries. The remaining countries within the ESPON space are the responsibility of a parallel project conducted by the World Bank. All the individual maps, country by country, are reproduced in Annex 5, together with full details of the several kinds of data source and estimation methods.

In this paper we begin by presenting all the ARoP rates on a single map. We then consider two simple ways in which the data may be made more comparable between countries, bearing in mind the fact that the most obvious solution - re-estimation using a common (European) poverty line – seems to be precluded by the nature of the data provided for most countries.

This is followed by a simple graphical analysis of the relationship between ARoP rates and the different kinds of region specified by the ESPON typologies. This provides the first insights into the complexity of the distribution of poverty across the ESPON space. Further information is provided by carrying out correlation analysis to explore relationships with some key socio-economic indicators. This final stage of our research will continue to be developed, and final results will be presented in the Final Report (August 2014).

Before embarking on this empirical analysis, however it will be helpful to reflect upon certain peculiarities of the ARoP rate, which must be kept in mind when attempting to interpret spatial patterns.

# Interpreting ARoP rates

This ARoP rate is defined as the percentage of people or households who have a net income of less than 60% of the national median *equivalised* disposable income (after social transfers). “Equivalised” disposable income is adjusted to take account of the size of the household, using standard factors first developed by the OECD.

The ARoP indicator has some rather unusual characteristics, which makes it rather tricky to interpret. It is both an indicator of the regional *level* of income, and its *distribution*. The relative strength of these two sources of variation depends upon the choice of “benchmark” to define the “60%” of median disposable income. Thus if a single European benchmark was used, the ARoP rate in any individual region would be closely correlated with the average regional disposable income level. At the other extreme, if each region had its own ARoP benchmark, based upon its own median income, variation in the ARoP would be entirely a function of the local income distribution – or degree of inequity (Eurostat 2004). To express it another way the geography of ARoP rates is a complex combination of variations in income levels and distributions. In terms of Figure 1, regional rates vary partly as a result of *shifts* in the income distribution curve to the left or right, and partly due to changes in the *shape* of the distribution.

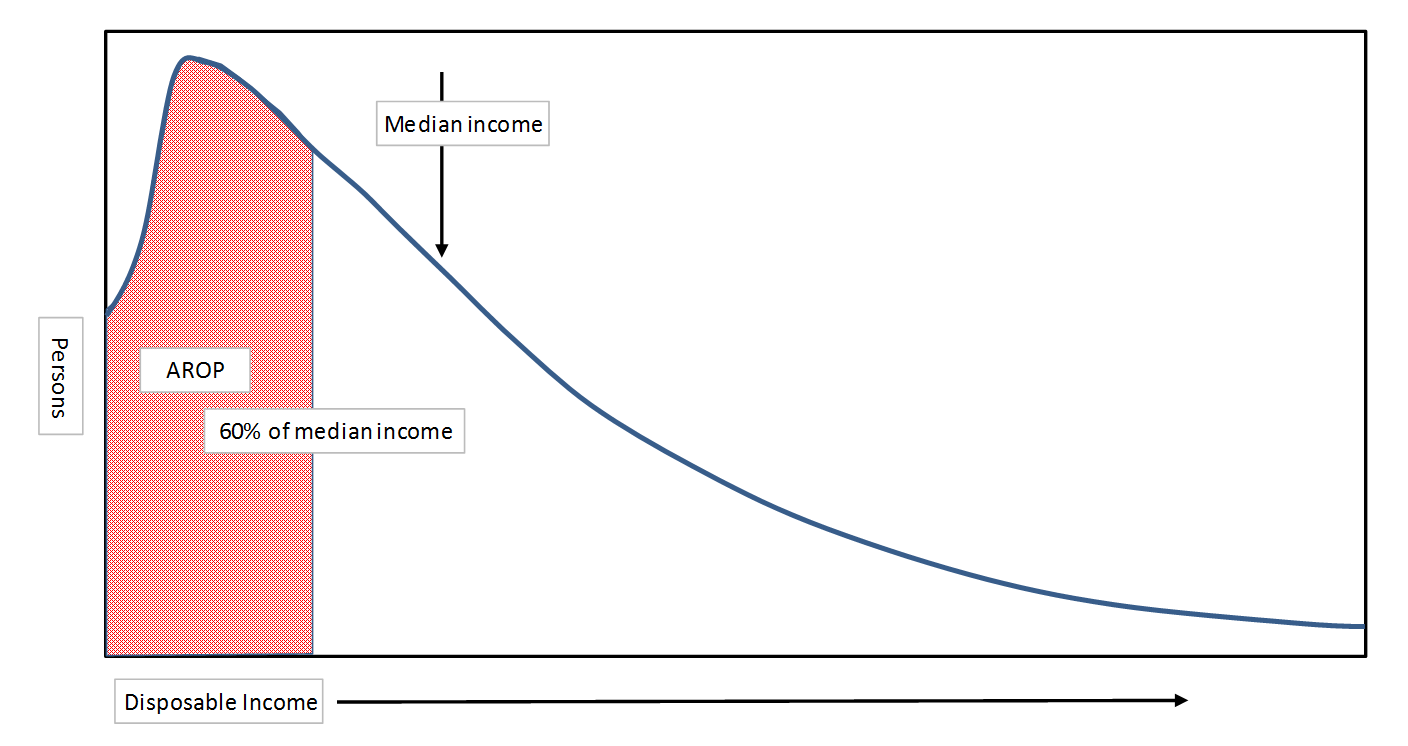


Figure 1: The ARoP Rate

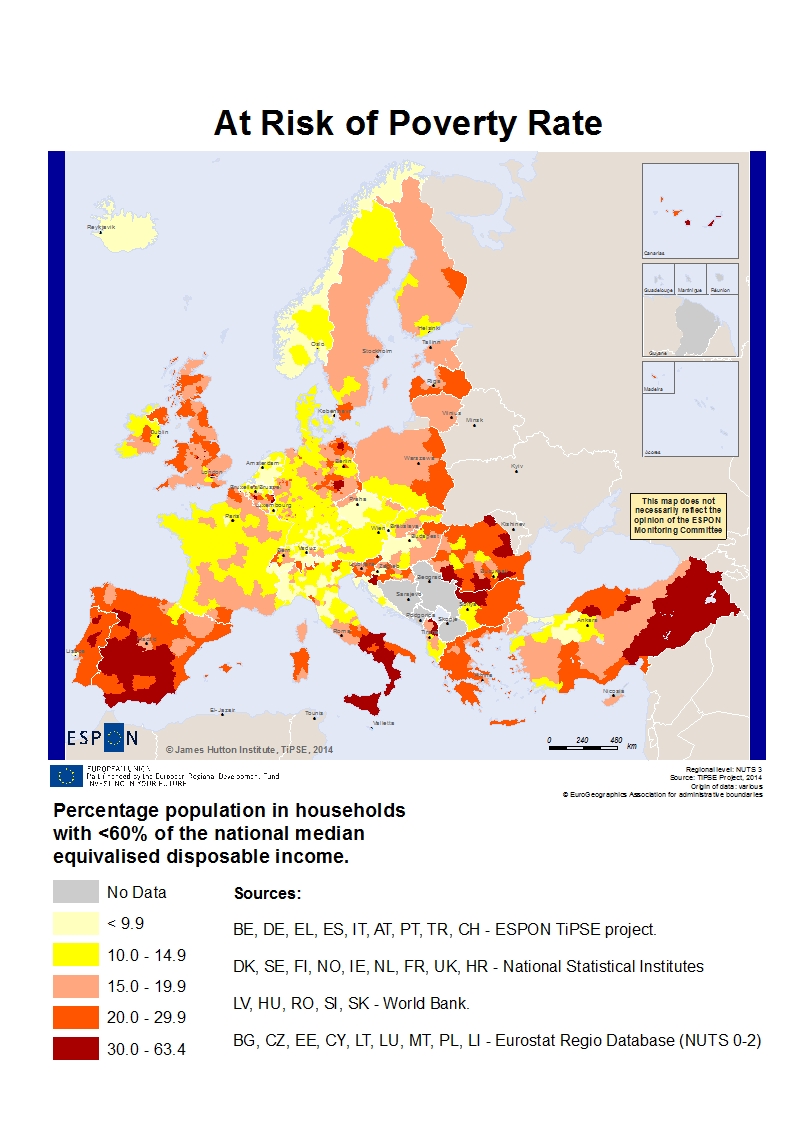
The EU2020 ARoP indicator is specified in terms of national benchmarks. It therefore reflects both income levels and distribution within each region. In addition the poverty line varies from country to country, raising questions of comparability. If the principal concern is *within-*country variation this is not an issue. On the other hand in order to better illustrate macro-scale patterns it would have been preferable to estimate the rates on the basis of a standardised poverty line. Unfortunately the variety of sources and estimation methodologies which have been involved in the TiPSE data collection precludes this.

Thus the following composite maps of the ESPON space require careful interpretation. First the (unadjusted) map of available NUTS 3 ARoP rates is presented, followed by two further versions illustrating simple adjustments which can aid the understanding of the macro-scale pattern.

# Merging the Individual Poverty Maps

Map 1 shows all the NUTS 3 ARoP rates estimated or collected by the TiPSE research team, and by the World Bank Team, with EUROSTAT (NUTS 0-2) data “patched in” where gaps exist. As already explained each country has a different poverty threshold, depending upon the distribution of household disposable income across its population. These range from €20,362 in Switzerland to €5,520 in Greece. From one perspective this could be said to be justified by differences in the cost of living, and by different expectations or perceptions of poverty. Nevertheless it seems problematic that such differences take place abruptly along national borders, and either the map must be carefully interpreted with this in mind, or some form of adjustment must be attempted.

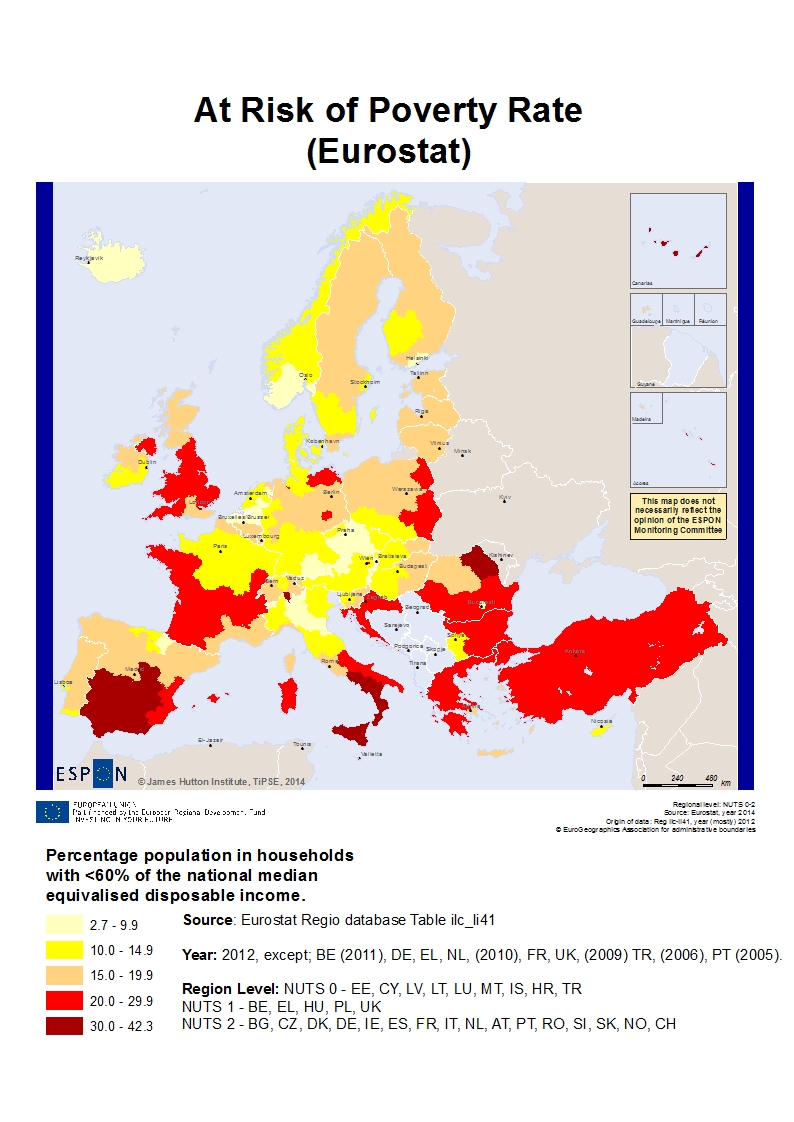
Taking the first of these options, the pattern revealed by Map 1 is mostly quite reassuring. The highest rates of poverty are in Southern Spain, Southern Italy, Eastern Turkey, and Romania, whilst the lowest rates are generally found in Northern Italy, Austria, Southern Germany, Netherlands, Norway, and Iceland.



Map 1: NUTS 3 At Risk of Poverty Rates: Unadjusted

Comparison with the map based on Eurostat data at NUTS 2, 1 or 0 (Map 2) shows a broadly similar pattern, except that Map 1 has greater detail. Turkey is a good illustration of this – in Map 1 Turkey is mapped at NUTS 3, whilst in Map 2 only NUTS 0 is available.

However, some areas of the map are slightly different. For example rates are lower in Map 1 than in Map 2 in France, Italy Greece, and Bulgaria. There are also substantial differences in the UK.

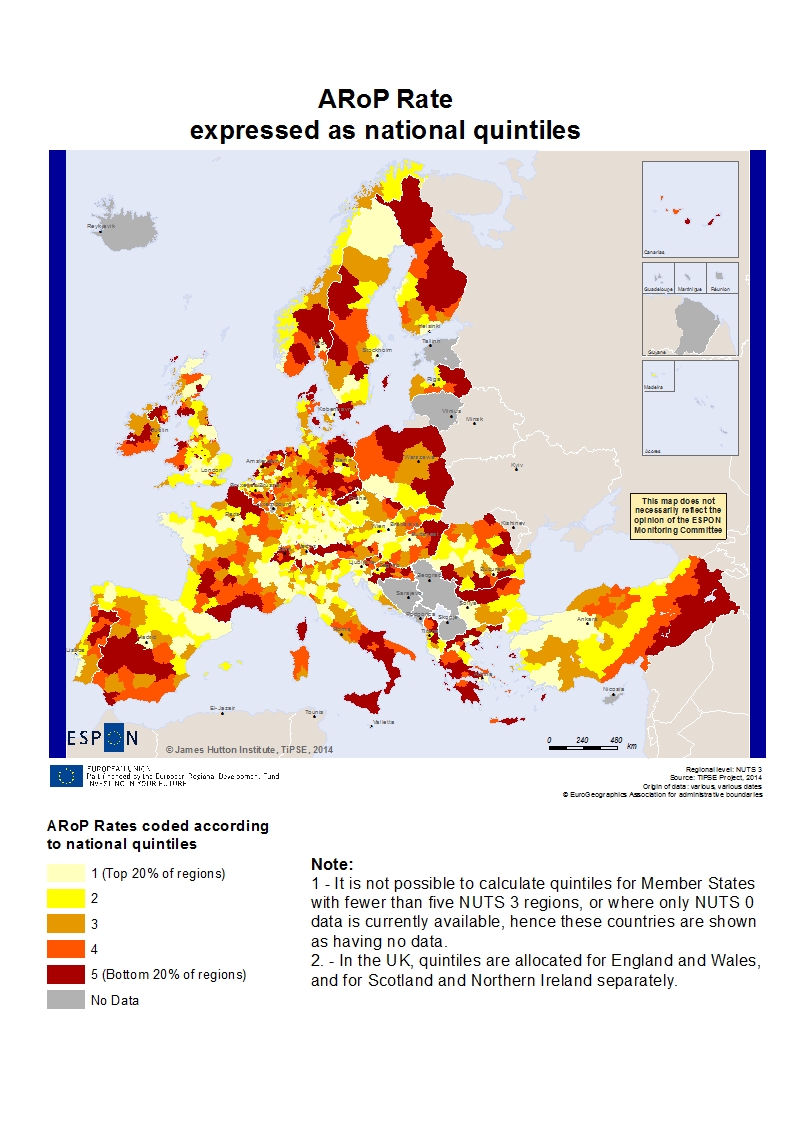


Map 2: Eurostat ARoP Rates (NUTS 2/1/0)

# Simple Adjustments to Enhance the Macro-Scale Pattern

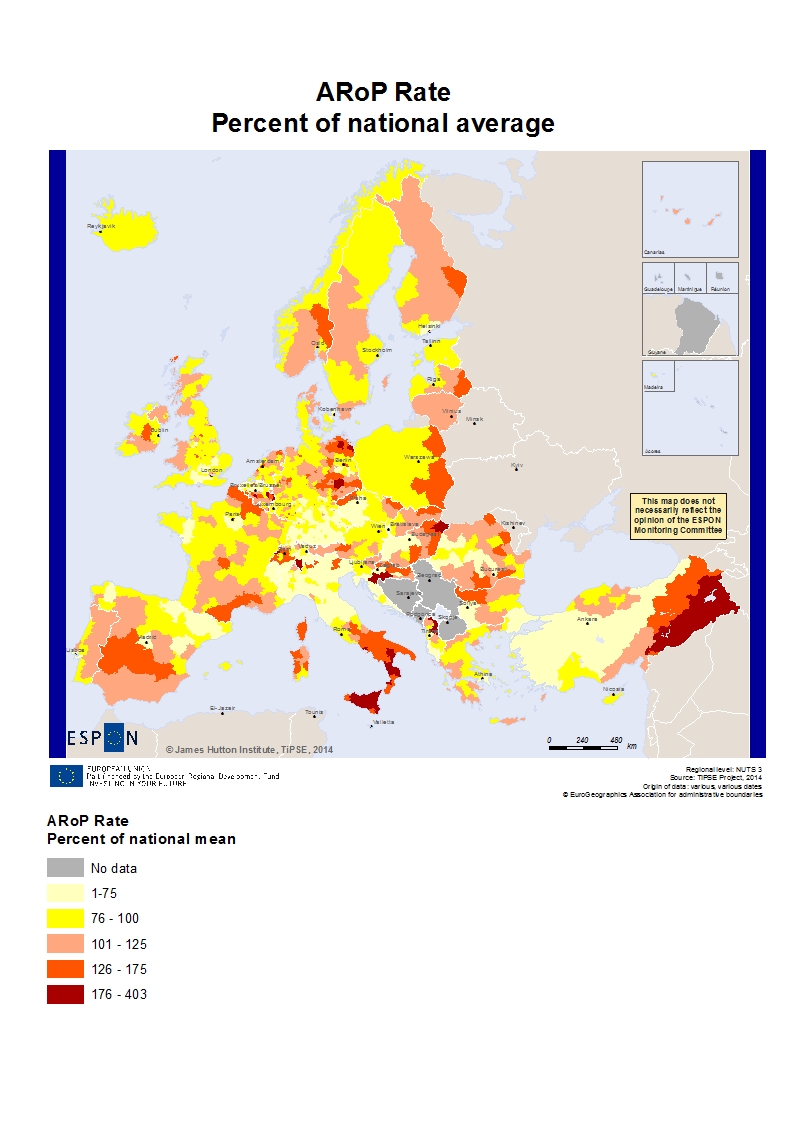
As already mentioned, the pattern shown in Map 1 is not easy to interpret because each country uses a different poverty threshold to define their ARoP rate. Unfortunately, because it was not possible to model disposable income distribution (using the World Bank PovMap procedure) in the majority of countries, it seems not possible to adjust the ARoP rates shown in Map 1 to a single European poverty line. In his section we show two simple ways in which the data may be manipulated in order to reveal different patterns inherent within it.

In Map 3 the ARoP rates are shown as *within-country-quintiles*. The darkest reds pick out those regions within the highest 20% in each country, whilst the palest yellow regions are those in the 20% of regions with the lowest ARoP rates. In this map broad macro-regional disparities are “downplayed” whilst more localised variation is emphasised. The pattern reveals a tendency for lower ARoP rates in the vicinity of capitals and other large cities (but not necessarily in the cities themselves, if tightly bounded), and relatively high rates of income poverty in remoter regions (such as Eastern Turkey, the Southern parts of Italy, Greece, France and Spain, South-West Ireland, West Wales, Western Scotland, Eastern Germany, Northern Sweden and Eastern Finland. The area along the Franco-Belgian border, and the North-East coast of the Netherlands also show up as having relatively high rates of income poverty.



Map 3: NUTS 3 At Risk of Poverty Rates: National Quintiles

Map 4 shows the same ARoP data, but this time expressed as an index of the national mean. The difference between this approach and the previous map is that the index reflects the scale/degree of the disparity between each region and the national mean, a metric which is to some extent lost in the quintile approach. Map 4 therefore enables us to pick out the more extreme values, both positive and negative. Some of these reinforce the generalisations derived from Maps 1 and 2 (for example low rates around capital cities, high rates in Southern Italy and Spain). Others are less expected, such as the low rates of poverty along the border between Spain and France, in Brittany, and in parts of Northern England.



Map 4: NUTS 3 At Risk of Poverty Rates: National Average =100

# Comparing with the ESPON Typologies

The above maps and commentary provide some initial first impressions of the spatial variation of income poverty at the NUTS 3 level. However they do not take us very far in terms of developing an explanation of the processes which cause regional differentiation in income poverty. One simple way to begin to shed light upon such processes is to use the ESPON regional typologies to explore how ARoP rates vary in different kinds of region. A large number of typologies have been devised within the auspices of the ESPON programme. In the following analysis we will restrict ourselves to what may be described as the “core” typologies, which relate to rurality, metropolitan regions, border regions, islands, mountain regions, coastal regions, and regions in industrial transition[[1]](#footnote-1). Two typologies (sparsely populated regions and outermost regions) have been excluded from this review, since they relate to a relatively small number of regions.

The review has been implemented through a series of simple bar charts, which present ARoP rates averaged across each type of region within each country. This approach both avoids including data from countries in which a typology is not relevant (such as island regions in Austria), and means that we are not combining data from different countries, with different poverty lines.

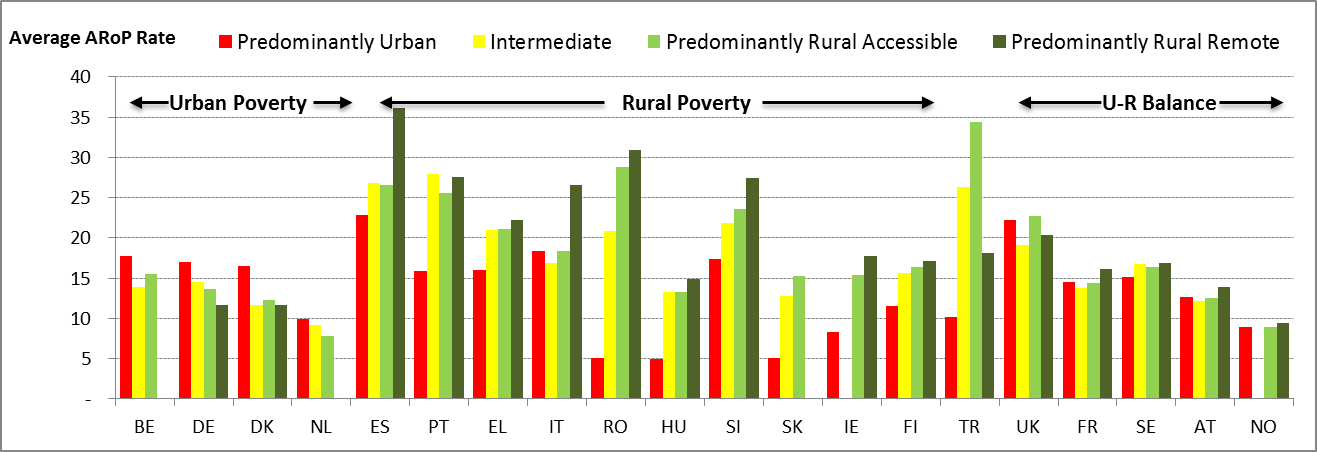


Figure 2: At Risk of Poverty by Urban-Rural Type

The first typology (Figure 2) is the classification of NUTS 3 regions by **rurality and accessibility[[2]](#footnote-2)**. The five categories are; predominantly urban, intermediate close to a city, intermediate remote, predominantly rural close to a city, and predominantly rural remote. There are very few regions in the third category, and for this reason we do not distinguish accessible and remote intermediate regions.

Figure 2 shows that there are some quite substantial differences between ARoP rates across this typology. In four central countries (Belgium, Germany Netherlands and Denmark) income poverty rates are higher in urban areas than in intermediate or rural areas. In another eleven countries, income poverty rates are higher in rural and/or intermediate regions. The strongest associations with rurality are in the Mediterranean countries (Spain, Portugal Greece and Italy), and in Romania, Slovenia and Slovakia. In most of these there is also an apparent association between poverty and remoteness. In Turkey accessible rural areas (mostly along the Eastern border) exhibit the highest poverty rates. The remaining countries, (UK, FR, SE AT and NO) poverty rates are not strongly differentiated across the Dijkstra-Poelman typology.

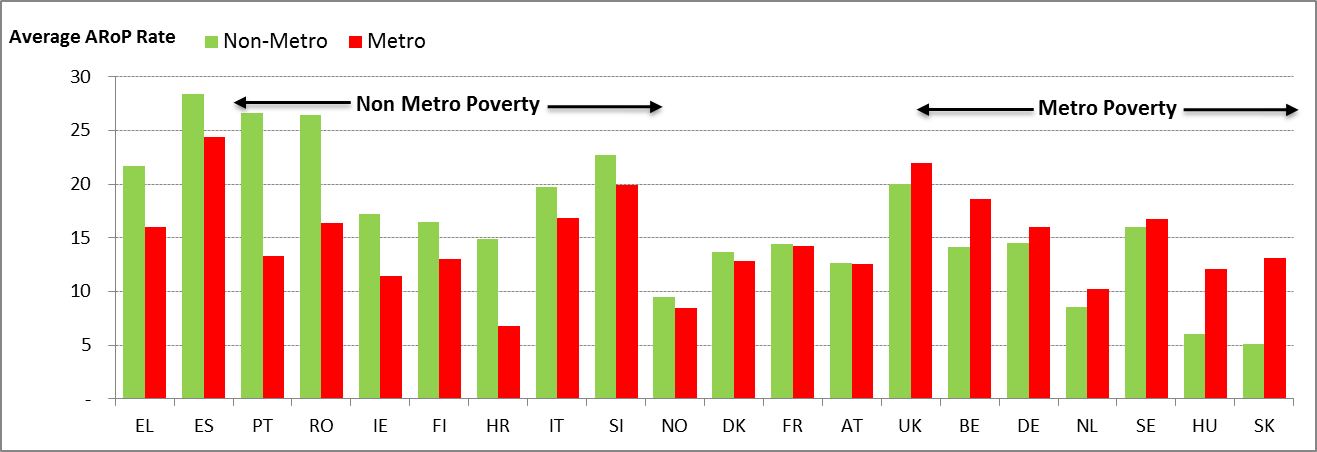


Figure 3: At Risk of Poverty Rate in Metropolitan and non-Metropolitan Regions

The second typology focuses on **metropolitan and non-metropolitan** regions[[3]](#footnote-3). A clear picture emerges which reinforces the impression gained from the previous typology, that (at the NUTS 3 level) poverty is less often associated with cities than with rural areas. Thus in 12 of the 20 countries for which data is available, poverty rates are higher in non-metropolitan regions. This group contains all the Mediterranean countries, three Nordic countries (SE, NO and DK) three former socialist states (HR, RO, SI), together with a single NW European country (IE). In a further seven countries poverty rates are higher in metropolitan regions. The majority of these are Central or NW European states (UK, BE, DE, NL, SE), whilst two (HU, SK) are former socialist countries. In the remaining two countries, (FR and AT) metropolitan and non-metropolitan rates are very similar.

Figure 4 provides more detail on poverty rates in different kinds of rural region, using a typology of economic structure developed by the ESPON EDORA project. In five countries (IT, PT, SI, UK and FR) rural regions whose economy is dominated by the primary sector have the highest rates of poverty. At the other extreme four countries (IE, BE, DE, and SE) show particularly high rates in diversified rural regions with an emphasis upon market services. In the remaining nine countries for which we have data poverty rates are similar across the EDORA types. It is perhaps worth noting that in no country do consumption countryside regions, characterised by strong tourism activity and economically important environmental public goods, have significantly higher rates than the other structural types.

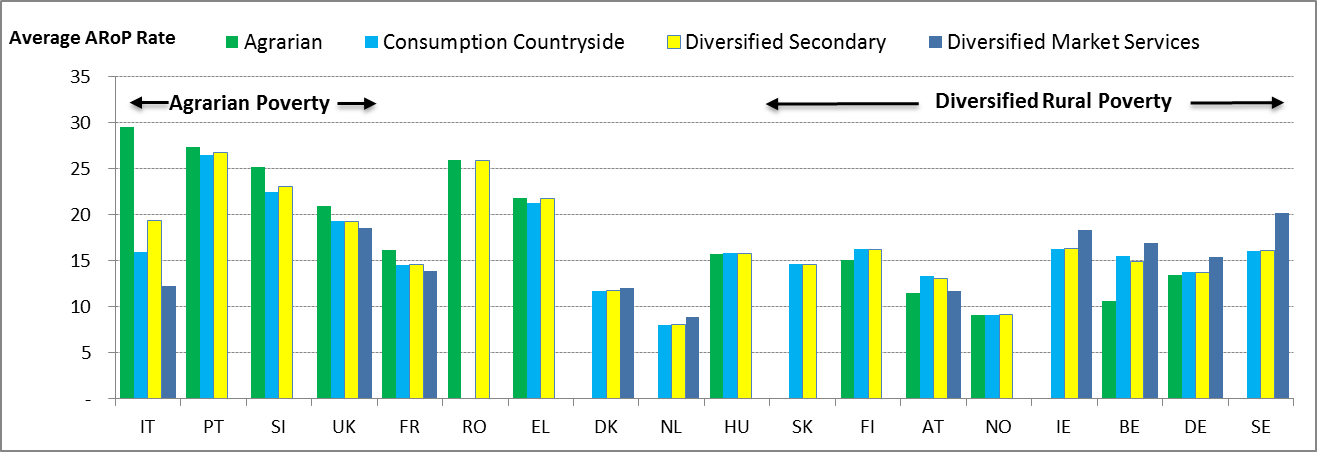


Figure 4: At risk of poverty rates in different types of rural region

The fourth typology distinguishes **border regions** (Figure 5) from internal regions. Border regions are defined as “regions participating in the core areas of cross-border cooperation programmes in the programming period 2007-2013”. Eleven countries show higher ARoP rates in border regions, whilst seven have higher rates of poverty in “internal” regions. One country (NL) has no difference in poverty rates between regions included in border cooperation programmes and those which are not. In two countries, (DK and SK) all regions are involved in border cooperation programmes. These results are difficult to interpret. Presumably a great deal depends upon the socio-economic profile of the border regions, and the nature of the region(s) on the other side of the border.

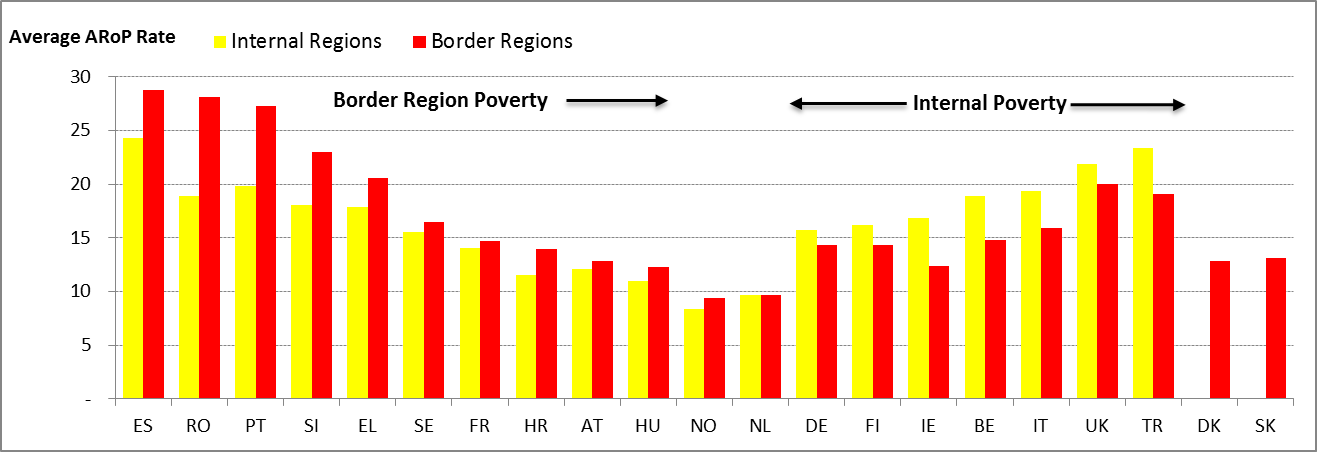


Figure 5: At Risk of Poverty Rate, Border and Internal Regions

In some national contexts NUTS 3 is too large a scale to pick up the role of insularity. Most islands are subsumed within larger regions which are predominantly “mainland”. Nevertheless in Italy, Spain, Greece and France (Figure 6) island regions have significantly higher poverty rates. In Sweden, UK and Denmark island and mainland rates are almost identical. The remaining two countries, Portugal and Finland can be seen as special cases, due to the relatively low rates in Madeira (the only Portuguese island region for which there is data), and in Finnish Åland.

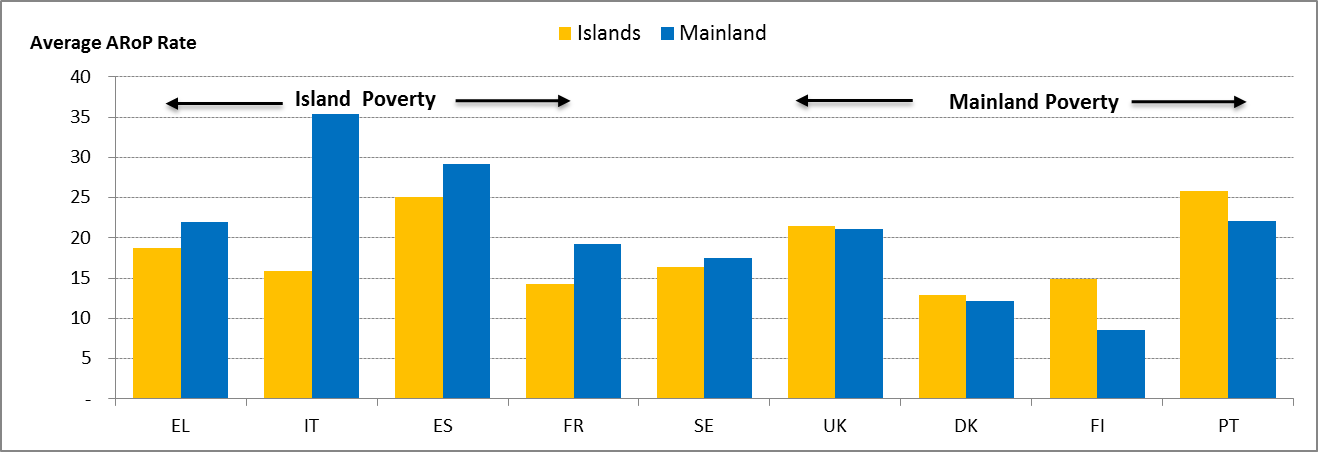


Figure 6: At Risk of Poverty Rate, Island and Mainland Regions

In six countries (NO, AT, IT, BE, UK and PT) **mountain regions** are associated with significantly greater rates of income poverty (Figure 7). In four countries (RO, EL, SK and FR) the presence of mountains seems to make little difference. In four countries (ES, SI, DE and HR) lowland rates are significantly higher than those in mountain regions.

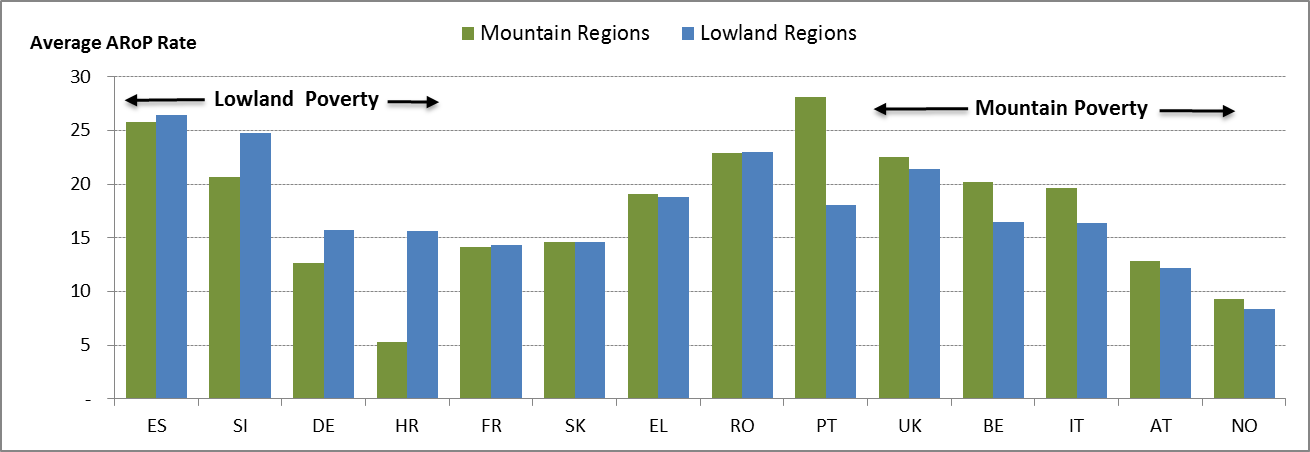


Figure 7: At Risk of Poverty Rate, Mountain and Lowland Regions

Similarly the effect of being a **coastal region** (Figure 8) seems to be mixed. Seven countries (NO, FI, BE, EL, UK, IE, and PT) had higher rates in inland regions, whilst six (ES, RO, IT, DE, NL and FR) had higher rates in coastal regions. In Sweden rates for coastal and inland regions were very similar, whilst Denmark has no “inland” regions.

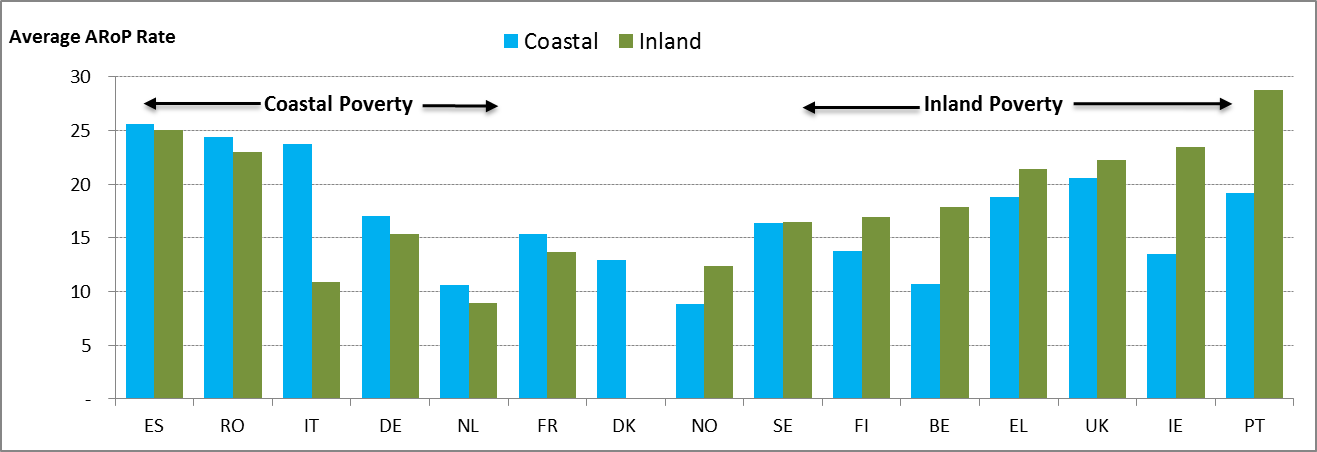


Figure 8: At Risk of Poverty Rate, Coastal and Inland Regions

The classification of regions as industrial or non-industrial (Figure 9) shows no clear relationship with poverty rates, ten countries having higher rates in each category, and one (Norway), showing no difference. There is no clear geographic pattern associated with the two groups of countries.

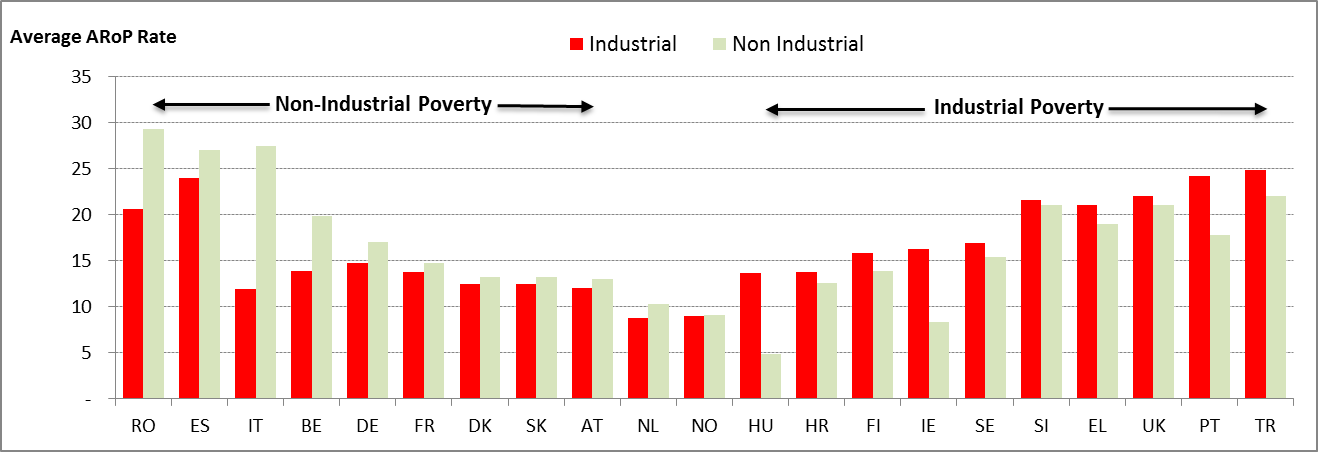


Figure 9: At Risk of Poverty Rate, Industrial and Non-Industrial Regions

The main conclusion from the above review of poverty rates by different types of region is that (viewed at NUTS 3 at least), outside the European core, poverty is more often associated with rural areas, than with urban or metropolitan ones. There is some weak evidence of higher rates in island, mountain and border regions, and with agrarian rural economies.

However it is important to be cautious in interpreting the graphs above, since NUTS 3 regions are rather larger than most concentrations of poverty. Furthermore the ESPON typologies are based upon physical geographic features, whereas it is reasonable to assume that patterns of poverty are more likely to be determined by socio-economic characteristics. In the next section this assumption will be tested through correlation analysis.

# Statistical Relationships between the ARoP rates and other Socio-economic Indicators

The majority of the ESPON typologies relate to geographical features, rather than socio-economic characteristics. The latter may be explored through correlation analysis with a selection of key indicators from the Eurostat Regio database, and from the Population Census variables collected by the TiPSE project as part of the efforts to map aspects of social exclusion (Annex 6 and Annex 8). In choosing indicators the underlying aim is to identify socio-economic characteristics which seem likely to be associated with spatial variations in poverty rates. The selection of indicators will necessarily be constrained by data availability at NUTS 3. It is of course acknowledged that correlations are not evidence of causality, but they may nevertheless provide valuable pointers to policy approaches and targeting.

The selected indicators fall into five broad groups, according to assumptions about the way in which they may be associated with regional variations in the incidence of poverty:

1. **Agglomeration** - The first group of indicators represent the assumption that low rates of poverty may be associated with agglomerative advantages. Access to larger centres of economic activity may increase earning potential, while peripherality may increase vulnerability to poverty.
2. **Productivity** - The second category of indicator is derived from the assumption that higher productivity in a region may be associated with lower poverty rates.
3. **Labour market** – Poverty rates are often associated with labour market characteristics, high levels of inactivity or unemployment are assumed to be lead to a higher incidence of poverty.
4. **Sectoral structure –** Poverty can be caused by lags in adjustment of the economy to a changing economic environment or the impact of globalisation. It is reasonable to assume that regions with a high incidence of poverty may have particular structural characteristics.
5. **Human capital –** In addition to sectoral characteristics, it is conceivable that high rates of poverty may be associated with social characteristics, such as education and skills, age, household/family structures, ethnicity or citizenship.

Table 1 describes the 32 indicators included in the correlation analysis which follows. It shows that the majority are available at NUTS 3 level, but that six NUTS 2 indicators (derived from the Labour Force Survey (LFS), are also included. Most of the indicators relate to the year 2011, though in a few cases recourse has to earlier data has been necessary. For some indicators gaps in the NUTS 3 data availability have been filled with data for NUTS 2, and in a small number of cases NUTS 1 or NUTS 0. As a result data is available for at least 1,100 NUTS 3 for each of the indicators. At best the number of regions rises to almost 1,500.

Table 1: The indicators used in the Correlation Analysis

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Theme** | **Indicator Name** | **Description** | **Source** | **Year** | **NUTS Level** | **n** |
| **Agglomeration** | Density | Population Density | Eurostat database table demo\_r\_d3dens | 2011 | 3 | 1,422 |
| Access MM | Multimodal accessibility Index | ESPON Territorial Observation No. 2 | 2009 | 3 | 1,331 |
| Access RD | Road accessibility index | ESPON Territorial Observation No. 2 | 2009 | 3 | 1,123 |
| **Productivity** | GDP PPS HAB | GDP per capita | Eurostat database table nama\_r\_e3gdp | 2011 | 3 | 1,436 |
| **Labour Market** | Unemp(Reg) | Unemployment rate | Eurostat database table lfst\_r\_lfu3rt | 2009 | 3/2 | 1,430 |
| Unemp(Cen) | Unemployment rate | 2011 Census (TiPSE database) | 2011 | 3 | 1,355 |
| Yunemp(Reg) | Youth unemployment rate | Eurostat database table lfst\_r\_lfu3rt | 2009 | 3/2 | 1,433 |
| Yunemp(Cen) | Youth unemployment rate | 2011 Census (TiPSE database) | 2011 | 3 | 1,355 |
| LTUnemp(Reg) | Long-term unemployment rate | Eurostat database table lfst\_r\_lfu2ltu | 2011 | 2 | 1,429 |
| EARate | Economic activity rate | Eurostat database table lfst\_r\_lfp2actrt | 2011 | 2 | 1,436 |
| Inact | Economic inactivity rate | 2011 Census (TiPSE database) | 2011 | 3 | 1,355 |
| EmpRate | Employment rate | Eurostat database table lfst\_r\_lfe2emprt | 2011 | 2 | 1,436 |
| **Sectoral Structure** | A | Percent employed in NACE sector A | Eurostat database table nama\_r\_e3em95r2 | 2010 | 3 | 1,311 |
| B-E | Percent employed in NACE sectors B-E | ditto | ditto | ditto | 1,327 |
| C | Percent employed in NACE sector C | ditto | ditto | ditto | 1,231 |
| F | Percent employed in NACE sector F | ditto | ditto | ditto | 1,327 |
| G-J | Percent employed in NACE sectors G-J | ditto | ditto | ditto | 1,231 |
| K-N | Percent employed in NACE sectors K-N | ditto | ditto | ditto | 1,231 |
| O-U | Percent employed in NACE sectors O-U | ditto | ditto | ditto | 1,327 |
| ElemOcc | Percent employed in Elementary Occupations | 2011 Census (TiPSE database) | 2011 | 3 | 1,327 |
| **Human**  **Capital** | LowEd(Reg) | Percent of persons with low educational attainment | Eurostat database table edat\_lfse\_09 | 2011 | 2 | 1,420 |
| LowED(Cen | Percent of persons with low educational attainment | 2011 Census (TiPSE database) | 2011 | 3 | 1,367 |
| HiEd(Reg) | Percent of persons with high educational attainment | Eurostat database table edat\_lfse\_13 | 2011 | 2 | 1,420 |
| HiEd(Cen) | Percent of persons without high educational attainment | 2011 Census (TiPSE database) | 2011 | 3 | 1,367 |
| HRST | Percent of population with tertiary education and/or employed in science and technology | Eurostat database table hrst\_st\_rcat | 2011 | 2 | 1,422 |
| CDR(Reg) | Child dependency rate | Eurostat database table demo\_r\_pjanaggr3 | 2011 | 3 | 1,436 |
| CDR(Cen) | Child dependency rate | 2011 Census (TiPSE database) | 2011 | 3 | 1,448 |
| OADR(Reg) | Old age dependency rate | Eurostat database table demo\_r\_pjanaggr3 | 2011 | 3 | 1,422 |
| OADR(Cen | Old age dependency rate | 2011 Census (TiPSE database) | 2011 | 3 | 1,448 |
| LoneP(Cen) | Lone parent households as a percentage of all households | 2011 Census (TiPSE database) | 2011 | 3 | 1,366 |
| Foreign(Cen) | Percent of population born abroad | 2011 Census (TiPSE database) | 2011 | 3 | 1,367 |
| NonCit(Cen) | Percent of population who are not citizens of the country | 2011 Census (TiPSE database) | 2011 | 3 | 1,367 |

The methodology used to explore relationships between ARoP rates and the indicators listed in Table 1 was simple. Pearson product moment correlation coefficients were calculated between the ARoP rate and each of the 31 indicators, first for the full set of regions within the ESPON space for which data was available, and then for various sub-sets of regions, EU15 and EU12, the welfare regimes proposed in Annex 1, and the Clusters of countries which are presented in Annex 9[[4]](#footnote-4). The results of these analyses are presented in Tables 2-4 below. In each case coefficients which are not significant at the 0.01 level are identified by grey shading, whilst those in excess of +/-0.5 are highlighted in bold.

The “ESPON space” column of Table 2 is based upon the full database of up to 1,448 regions. At first sight this may lead us to expect the strongest associations. However this is not the case, since it is clear from the EU15 and EU12 columns, and from Tables 3 and 4, that different relationships pertain in different parts of Europe. This perhaps explains the fact that only four indicators have coefficients in excess of +/-0.5. The strongest association, which is sustained across the ESPON space is between poverty rates and unemployment rates (both those derived from the LFS and the Census). Employment rates are also closely related to poverty rates. Youth unemployment rates and long term unemployment rates are close behind.

Although none of the broad NACE employment sectors is has a coefficient above 4 (the primary sector reaches 0.39) employment in elementary occupations shows a relatively strong association with ARoP rates, (+0.51). The other three broad groups of indicators, (agglomeration, productivity, and human capital) all have coefficients of less than 0.5, suggesting that if there are relationships with the incidence of poverty they are not consistent across the ESPON space. The closest association from these three broad groups is with educational attainment.

We begin to see different relationships in different parts of the ESPON space as soon as we separate the EU15, from the New Member States (NMS) of the EU12[[5]](#footnote-5) The difference may be summed up as follows: In the EU15 countries poverty is strongly associated with labour market characteristics, and employment in elementary occupations. By contrast, in the NMS accessibility, primary sector employment, education and skills, and productivity are all much more important than labour market characteristics.

Table 2: Pearson Correlation Coefficients between ARoP rates (unadjusted) and selected socio-economic indicators, ESPON space, EU15, and EU12.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Theme** | **Indicator** | **ESPON Space** | **EU15** | **EU12** |
| **Agglomeration** | Density | 0.029 | 0.107 | -0.285 |
| Access MM | -0.386 | -0.396 | **-0.580** |
| Access RD | -0.384 | -0.474 | **-0.706** |
| **Productivity** | GDP PPS HAB | -0.385 | -0.300 | **-0.561** |
| **Labour Market** | Unemp(Reg) | **0.542** | **0.667** | 0.099 |
| Unemp(Cen) | **0.551** | **0.618** | 0.111 |
| Yunemp(Reg) | 0.471 | **0.603** | 0.150 |
| Yunemp(Cen) | 0.493 | **0.526** | 0.375 |
| LTUnemp(Reg) | 0.408 | **0.631** | 0.195 |
| EARate | -0.397 | -0.312 | -0.247 |
| Inactivity | 0.275 | 0.243 | 0.315 |
| EmpRate | **-0.503** | **-0.522** | -0.260 |
| **Sectoral Structure**  **(Employment)** | A | 0.387 | 0.279 | **0.714** |
| B-E | -0.261 | -0.336 | -0.301 |
| C | -0.298 | -0.369 | -0.288 |
| F | 0.096 | 0.205 | -0.430 |
| G-J | -0.103 | 0.054 | **-0.582** |
| K-N | -0.231 | -0.185 | -0.496 |
| O-U | 0.007 | 0.180 | -0.372 |
| ElemOcc | **0.509** | **0.569** | 0.415 |
| **Human Capital** | LowEd(Reg) | 0.476 | 0.437 | **0.646** |
| LowED(Cen | 0.212 | 0.143 | **0.659** |
| HiEd(Reg) | -0.476 | -0.437 | **-0.642** |
| HiEd(Cen) | 0.163 | 0.116 | 0.269 |
| HRST | -0.448 | -0.341 | **-0.517** |
| CDR(Reg) | 0.358 | -0.063 | 0.238 |
| CDR(Cen) | 0.351 | -0.045 | 0.361 |
| OADR(Reg) | -0.176 | -0.009 | 0.301 |
| OADR(Cen | -0.159 | -0.002 | 0.357 |
| LoneP(Cen) | 0.276 | 0.401 | -0.193 |
| Foreign(Cen) | -0.126 | -0.071 | -0.204 |
| NonCit(Cen) | -0.050 | 0.009 | -0.111 |

**Notes:**

1. Grey shaded cells in the table indicate coefficients which are not significant at 0.01.
2. SIC Classification:

A - Agriculture, forestry and fishing

B-E - Industry (except construction)

C – Manufacturing

F – Construction

G-J - Wholesale and retail trade; transport; accommodation and food service activities; information and communication

K-N - Financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities.

O-U - Public administration and defence; compulsory social security; education; human health and social work activities; arts, entertainment and recreation, repair of household goods and other services.

The fact that GDP per capita is strongly (negatively) associated with poverty rates in the NMS suggests that here overall performance of regional economies plays a key role, whereas in the EU15 the low correlation coefficient suggests that regional performance is less influential than distributional effects.

Disaggregation according to Welfare Regime (Table 3) suggests some further interesting relationships between ARoP rates and the economic and social characteristics of the constituent regions.

Of the five welfare regime groups the strongest and clearest relationship with labour market characteristics is in the Nordic countries, where coefficients rise to >0.8 for unemployment and youth unemployment. Old age dependency rates are also strongly (positively) correlated with poverty rates in the Nordic states. Child dependency rates have an ambiguous relationship with poverty here, the LFS and Census indicators pointing in opposite directions.

In the liberal welfare regime group (UK and IE) the number of regions is smaller, and it may be that this explains the relatively small number of strong associations. The presence of lone parents, and persons in elementary occupations, are both associated with elevated poverty rates. Population density is also positively associated with poverty, reinforcing the findings presented above, where the UK was one of the few countries in which metropolitan poverty rates were higher than those for non-metropolitan regions.

In the countries with “State-based” welfare regimes labour market characteristics were again strongly associated with poverty, though youth unemployment was less closely correlated than in the Nordic countries. Here, also unlike the Nordic countries age related dependency does not seem to play such a strong role. Regional productivity and accessibility/agglomeration are only very weakly associated with poverty here.

Turning to the “Family-based” welfare regimes (the Mediterranean countries and Turkey), accessibility and child dependency rates have distinctive associations with poverty. Overall regional performance (GDP per capita) is also important here. Labour market indicators exhibit less strong associations than in the Nordic countries[[6]](#footnote-6), whilst employment in elementary occupations is associated as strongly with poverty as it is in the Liberal welfare regime countries.

Table 3: Pearson Correlation Coefficients between ARoP rates (unadjusted) and selected socio-economic indicators – by welfare regime classification

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Welfare Regimes** | |  |  |  |
| **Theme** | **Indicator** | **Nordic** | **Liberal** | **State-based** | **Family-based** | **Post-Socialist** |
| **Agglomeration** | Density | 0.122 | **0.517** | 0.146 | -0.105 | -0.244 |
| Access MM | 0.128 | 0.221 | -0.067 | **-0.559** | **-0.581** |
| Access RD | 0.288 | 0.244 | 0.027 | **-0.664** | **-0.716** |
| **Productivity** | GDP PPS HAB | -0.288 | -0.108 | -0.086 | **-0.612** | **-0.522** |
| **Labour Market** | Unemp(Reg) | **0.869** | 0.477 | **0.646** | 0.474 | 0.112 |
| Unemp(Cen) | **0.837** | 0.104 | **0.530** | **0.638** | 0.072 |
| Yunemp(Reg) | **0.807** | 0.277 | 0.356 | 0.288 | 0.148 |
| Yunemp(Cen) | **0.802** | -0.069 | 0.321 | 0.410 | 0.243 |
| LTUnemp(Reg) | **0.629** | -0.022 | **0.608** | 0.205 | 0.081 |
| EARate | -0.399 | -0.257 | -0.271 | -0.331 | -0.009 |
| Inactivity | 0.115 | 0.374 | 0.392 | 0.060 | 0.192 |
| EmpRate | **-0.538** | -0.253 | -0.389 | **-0.511** | -0.036 |
| **Sectoral Structure** | A | 0.231 | -0.253 | -0.162 | 0.275 | **0.687** |
| B-E | 0.238 | 0.040 | -0.181 | -0.442 | -0.224 |
| C | 0.311 | 0.057 | -0.204 | -0.445 | -0.200 |
| F | 0.001 | -0.081 | -0.055 | 0.269 | -0.421 |
| G-J | -0.464 | 0.063 | -0.052 | -0.065 | **-0.588** |
| K-N | 0.161 | -0.176 | 0.129 | -0.284 | -0.479 |
| O-U | -0.068 | 0.290 | 0.298 | 0.295 | -0.400 |
| ElemOcc | 0.010 | **0.506** | 0.165 | **0.511** | 0.427 |
| **Human Capital** | LowEd(Reg) | -0.180 | 0.269 | -0.141 | 0.465 | **0.610** |
| LowED(Cen | -0.155 | 0.270 | -0.111 | -0.003 | 0.472 |
| HiEd(2) | 0.180 | -0.269 | 0.141 | -0.465 | **-0.607** |
| HiEd(Cen) | 0.166 | -0.010 | 0.081 | -0.028 | 0.231 |
| HRST | -0.287 | -0.264 | -0.116 | -0.384 | -0.466 |
| CDR(Reg) | **-0.745** | -0.011 | -0.254 | **0.565** | 0.218 |
| CDR(Cen) | -0.482 | 0.044 | -0.219 | **0.558** | 0.272 |
| OADR(Reg) | **0.526** | -0.143 | 0.317 | -0.352 | 0.217 |
| OADR(Cen | **0.572** | -0.162 | 0.329 | -0.369 | 0.237 |
| LoneP(Cen) | 0.469 | **0.529** | 0.295 | 0.090 | -0.163 |
| Foreign(Cen) | -0.205 | 0.254 | 0.112 | -0.253 | -0.272 |
| NonCit(Cen) | -0.400 | 0.132 | 0.055 | -0.263 | -0.083 |

**Notes:**

1. Grey shaded cells in the table indicate coefficients which are not significant at 0.01.
2. SIC Classification:

A - Agriculture, forestry and fishing

B-E - Industry (except construction)

C – Manufacturing

F – Construction

G-J - Wholesale and retail trade; transport; accommodation and food service activities; information and communication

K-N - Financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities.

O-U - Public administration and defence; compulsory social security; education; human health and social work activities; arts, entertainment and recreation, repair of household goods and other services.

Finally, the post-socialist countries share certain key characteristics with the previous group, notably the fact that poverty is strongly associated with overall regional economic performance, and with accessibility. However, here education and training, and employment in the primary sector, are also strongly associated with variations in poverty.

The TiPSE clusters of Table 4 have some similarities to the Welfare regimes of Table 3. For example, the Mediterrannean Crisis cluster is similar to the Family-based welfare regime, though Turkey is excluded from the former. The “Disparate East” comprises many of the countries of the Post Socialist welfare regime group. However there are also substantial differences. The Competitive North-West incorporates countries from the Nordic, Liberal and State-based welfare regime groups. The full listing of cluster membership is as follows:

**Inclusive Centre**: Austria, Cyprus, Czech Republic, Germany, Luxembourg, Malta, Slovenia, Switzerland

**Competitive North-West**: Belgium, Denmark, Finland, France, Iceland, Ireland, Netherlands, Norway, Sweden, United Kingdom

**Disparate East:** Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Romania

**Mediterranean Crisis:** Greece, Italy, Portugal, Spain

For full details of the way in which the clusters were specified, see Annex 9. For the purposes of this analysis Romania has been included in the “Disparate East” Cluster.

There are some similarities between the profiles of the first two clusters. Neither show strong associations between poverty and agglomeration/accessibility, or productivity, whilst the links with sectoral structure and human capital indicators are with a few exceptions relatively weak. In both the key associations are in the labour market theme. The main differences are the closer association between poverty and long term employment in the Inclusive Centre cluster, and the strong associations with elementary occupations and lone parent households in the Competitive North-West.

The Disparate East and the Mediterranean Crisis cluster are clearly differentiated from the first two clusters in terms of the strong associations between poverty and overall regional economic productivity, accessibility and education and skills. In the Mediterranean cluster labour market issues are closely associated with poverty, whilst for the Disparate East sectoral structure is a more important issue.

Table 4: Pearson Correlation Coefficients between ARoP rates (unadjusted) and selected socio-economic indicators – by TiPSE Cluster

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Theme** | **Indicator** | **Clusters** |  |  |  |
| **Inclusive Centre** | **Competitive NW** | **Disparate E.** | **Med. Crisis** |
| **Agglom-eration** | **Density** | 0.226 | 0.294 | -0.297 | -0.065 |
| **Access MM** | -0.078 | 0.056 | **-0.613** | **-0.562** |
| **Access RD** | 0.062 | -0.121 | **-0.704** | **-0.671** |
| **Productivity** | **GDP PPS HAB** | -0.111 | -0.190 | **-0.578** | **-0.637** |
| **Labour Market** | **Unemp(Reg)** | **0.593** | **0.587** | 0.051 | **0.637** |
| **Unemp(Cen)** | **0.624** | 0.223 | 0.043 | **0.638** |
| **Yunemp(Reg)** | 0.462 | 0.500 | 0.075 | **0.590** |
| **Yunemp(Cen)** | 0.435 | 0.320 | 0.323 | 0.409 |
| **LTUnemp(Reg)** | **0.613** | 0.373 | 0.109 | **0.597** |
| **EARate** | -0.290 | -0.136 | -0.202 | -0.146 |
| **Inactivity** | 0.411 | -0.031 | 0.241 | 0.057 |
| **EmpRate** | -0.464 | -0.252 | -0.187 | **-0.504** |
| **Sectoral Structure** | **A** | -0.058 | -0.263 | **0.725** | 0.274 |
| **B-E** | -0.226 | -0.167 | -0.317 | -0.445 |
| **C** | -0.258 | -0.170 | -0.284 | -0.448 |
| **F** | -0.033 | -0.011 | -0.406 | 0.270 |
| **G-J** | -0.085 | 0.118 | **-0.583** | -0.061 |
| **K-N** | 0.196 | -0.097 | **-0.535** | -0.283 |
| **O-U** | 0.254 | 0.351 | -0.406 | 0.297 |
| **ElemOcc** | 0.165 | **0.647** | 0.315 | **0.510** |
| **Human Capital** | **LowEd(Reg)** | -0.173 | 0.052 | **0.616** | **0.521** |
| **LowED(Cen** | -0.151 | 0.363 | **0.626** | -0.007 |
| **HiEd(2)** | 0.173 | -0.052 | **-0.613** | **-0.521** |
| **HiEd(Cen)** | -0.012 | 0.077 | 0.355 | -0.039 |
| **HRST** | -0.083 | -0.028 | **-0.572** | -0.316 |
| **CDR(Reg)** | -0.404 | -0.063 | 0.271 | 0.196 |
| **CDR(Cen)** | -0.260 | 0.010 | 0.383 | 0.165 |
| **OADR(Reg)** | 0.342 | -0.039 | 0.318 | -0.275 |
| **OADR(Cen** | 0.358 | -0.048 | 0.371 | -0.308 |
| **LoneP(Cen)** | 0.169 | **0.613** | -0.262 | 0.084 |
| **Foreign(Cen)** | -0.026 | 0.274 | -0.183 | -0.249 |
| **NonCit(Cen)** | -0.091 | 0.300 | -0.070 | -0.259 |

**Notes:**

1. Grey shaded cells in the table indicate coefficients which are not significant at 0.01.
2. SIC Classification:

A - Agriculture, forestry and fishing

B-E - Industry (except construction)

C – Manufacturing

F – Construction

G-J - Wholesale and retail trade; transport; accommodation and food service activities; information and communication

K-N - Financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities.

O-U - Public administration and defence; compulsory social security; education; human health and social work activities; arts, entertainment and recreation, repair of household goods and other services.

# Discussion and Conclusions

*Patterns of Income Poverty*

The income poverty maps assembled in this annex suggests the following observations about the geography of income poverty:

* At a macro-scale the highest rates of poverty tend to be in the former socials NMS, the Mediterranean countries and Turkey; the lowest in the Northern and Western countries.
* The relationship between capital cities, and secondary cities, and ARoP rates is complex. In the majority of ESPON countries higher rates of poverty are a rural/non metropolitan phenomena. However, in countries close to the core, and in the NW the higher rates of poverty are found in urban areas.
* Accessible rural areas, especially those close to larger cities and capitals, tend to have relatively low rates of income poverty.
* Remote rural regions often exhibit relatively high ARoP rates.
* Island regions tend to have higher ARoP rates than mainland regions.
* The relationship between mountain regions, border regions and industrial regions and poverty rates is variable, depending upon national and macro-region context.
* Exploratory correlation analysis has shown that labour market indicators are strongly associated with poverty rates in most parts of the ESPON space. Accessibility, sectoral structure, and human capital characteristics (especially education and skills) are more closely associated in the former socialist NMS and in the Mediterranean countries. Overall regional economic productivity is also more strongly associated with variations in poverty rates in the East and South of Europe. This is probably due to greater regional differentiation in performance.

*Further Reflections on the adequacy of the ARoP Rate as a Poverty Indicator*

It is important to recognise the fact that measures related to disposable income may not identify all individuals and groups who are experiencing poverty in a narrow financial sense. In our Interim Report we noted a suggestion to adjust ARoP rates by excluding housing costs (rent and mortgage interest) from disposable income. The rationale for this change was that housing costs are the most significant component of regional differences in the cost of living within countries, and that excluding them is a way to “level the playing field” between the regions. Analysis by the Commission suggested that this adjustment would (on average) increase the ARoP rate (from 16% to 22% for the EU27), affecting some Member States more than others, and reducing the difference between urban and rural areas.

In fact, because of the variety of estimation methods adopted in different countries, it has only proved possible to calculate “after housing cost” ARoP rates for three countries (AT, GR, UK).

However recent research in the UK[[7]](#footnote-7) suggests that housing costs are not the only form of expenditure which varies substantially between regions. A broad range of consumer goods, food and fuels all tend to be higher in remote rural or island areas. In addition sparsity and climate may impact upon the average expenditure profile of families in these areas, increasing the travel cost of daily life, and the cost of heating the home.

Of course it would not be realistic to call for detailed regional living cost indicators, and for the present this issue can best be noted in the form of a caveat to the basic (before housing cost) ARoP rate. However to adjust for housing cost but to ignore the very significant cost increases associated with insularity and peripherality would appear to introduce an unintentional urban bias in the indicator.

*Some Reflections on Policy Implications*

* The design of interventions to alleviate poverty should reflect an awareness that differentiation exists at a range of spatial scales, from macro-regional, to local. These patterns are driven by distinct economic and social processes, and require different “intervention logics”. This points to the coherent application of sectoral, regional and local interventions.
* Elevated poverty rates are still associated with overall economic and social performance, as measured by GDP per capita, in the CEECs and parts of the Mediterranean countries. Within this context, targeting of policy resources on regions with a lower GDP per capita, and interventions designed to lift overall regional performance continue to seem appropriate. However, in the Centre and NW of Europe the incidence of poverty is closely not associated with overall economic performance, and poverty alleviation should instead focus upon distributional issues.
* Building upon this observation the above analysis has highlighted the fact that the causes of poverty vary considerably between different parts of the ESPON space. A “one size fits all” policy will fail. It is important to tailor interventions based upon an understanding of the peculiar process by which poverty becomes established in each different geographical context.
* The labour market has rightly been recognised as a key to alleviating poverty, especially in the countries of the Centre and NW of Europe. Tackling unemployment, youth unemployment, and long-term unemployment, undoubtedly has a role to play in strategies to alleviate poverty.
* Education and training is an especially important issue in connection with poverty reduction throughout the ESPON space, but especially in the CEECs and in parts of the Mediterranean countries.
* Age structure issues are important, both in the Nordic countries and in the Mediterranean countries, but for different reasons. In the former the issue relates to pensioner poverty, whilst in the latter young families with several children are particularly vulnerable.

**APPENDIX 1**

**Pearson Correlation Coefficients between ARoP rates (unadjusted) and selected socio-economic indicators – by Macro Region**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Theme** | **Indicator** | **Macro Regions** |  |  |  |
| **Atlantic-Central** | **Nordic-Baltic** | **Mediterranean** | **CEECs** |
| **Agglom-eration** | **Density** | 0.269 | 0.009 | -0.105 | -0.238 |
| **Access MM** | -0.104 | -0.210 | **-0.559** | **-0.607** |
| **Access RD** | -0.237 | **0.601** | **-0.664** | **-0.641** |
| **Productivity** | **GDP PPS HAB** | -0.155 | **-0.586** | **-0.612** | **-0.528** |
| **Labour Market** | **Unemp(Reg)** | **0.594** | **0.825** | 0.474 | 0.111 |
| **Unemp(Cen)** | 0.412 | **0.811** | **0.638** | 0.055 |
| **Yunemp(Reg)** | 0.464 | **0.842** | 0.288 | 0.139 |
| **Yunemp(Cen)** | 0.357 | **0.782** | 0.410 | 0.244 |
| **LTUnemp(Reg)** | 0.489 | **0.644** | 0.205 | 0.077 |
| **EARate** | -0.145 | **-0.550** | -0.331 | -0.014 |
| **Inactivity** | 0.098 | 0.386 | 0.060 | 0.201 |
| **EmpRate** | -0.318 | **-0.682** | **-0.511** | -0.035 |
| **Sectoral Structure** | **A** | -0.229 | 0.489 | 0.275 | **0.700** |
| **B-E** | -0.277 | 0.334 | -0.442 | -0.232 |
| **C** | -0.320 | 0.360 | -0.445 | -0.202 |
| **F** | -0.006 | -0.067 | 0.269 | -0.445 |
| **G-J** | 0.053 | -0.203 | -0.065 | **-0.617** |
| **K-N** | 0.056 | -0.096 | -0.284 | -0.499 |
| **O-U** | 0.407 | -0.471 | 0.295 | -0.431 |
| **ElemOcc** | 0.401 | 0.069 | **0.511** | 0.479 |
| **Human Capital** | **LowEd(Reg)** | 0.053 | **-0.529** | 0.465 | **0.649** |
| **LowED(Cen** | -0.029 | -0.191 | -0.003 | 0.485 |
| **HiEd(2)** | -0.053 | **0.523** | -0.465 | **-0.649** |
| **HiEd(Cen)** | -0.068 | 0.254 | -0.028 | 0.264 |
| **HRST** | 0.014 | -0.360 | -0.384 | **-0.530** |
| **CDR(Reg)** | 0.009 | **-0.775** | **0.565** | 0.228 |
| **CDR(Cen)** | 0.006 | -0.466 | **0.558** | 0.283 |
| **OADR(Reg)** | 0.072 | 0.369 | -0.352 | 0.219 |
| **OADR(Cen** | 0.065 | **0.540** | -0.369 | 0.262 |
| **LoneP(Cen)** | 0.499 | 0.464 | 0.090 | -0.224 |
| **Foreign(Cen)** | 0.064 | -0.114 | -0.253 | -0.325 |
| **NonCit(Cen)** | 0.063 | -0.063 | -0.263 | -0.235 |

**Macro Region definitions:**

Atlantic-Central: AT, DE, BE, FR, IE, LU, NL, UK, CH, LI, NO

Nordic-Baltic: DK, EE, FI, LT, LV, SE, IS, NO

Mediterranean: CY, EL, ES, IT, MT, PT, TR

CEECs: BG, CZ, HR, HU, PL, RO, SI, SK, AL, BA, ME, MK, RS

1. These are all available in a spreadsheet which may be downloaded from the ESPON website <http://www.espon.eu/main/Menu_ToolsandMaps/ESPONTypologies/> [accessed 1st April 2014] [↑](#footnote-ref-1)
2. Dijkstra, L., and Poelman, H. (2011) Regional Typologies: A Compilation, Regional Focus No1, DG Regio, European Commission. <http://ec.europa.eu/regional_policy/sources/docgener/focus/2011_01_typologies.pdf> [Accessed on 21st November 2013] [↑](#footnote-ref-2)
3. The typology distinguishes capitals and smaller cities, these are combined in the interest of clarity. [↑](#footnote-ref-3)
4. Analysis was also carried out on the basis of the macro-regions featured in the social exclusion mapping task (Annex 6 and Annex 8). However since these groups of countries were mainly defined on instrumental grounds (reflecting the location and knowledge of partners) rather than on a theoretical basis, these results are presented as Appendix 1. [↑](#footnote-ref-4)
5. Croatia is not included here, due to the substantial proportion of missing data. [↑](#footnote-ref-5)
6. This seems to be related to data gaps in Turkey, since in Table 4 the Mediterranean countries (without Turkey) exhibit strong associations between poverty rates and labour market indicators. [↑](#footnote-ref-6)
7. Hirsch, D. Bryan, A. Davis, A. and Smith, N. ( 2013) *Minimum Income Standard for Remote and Rural Scotland*. Report for Highlands and Islands Enterprise, Inverness. Available at: <http://www.hie.co.uk/regional-information/economic-reports-and-research/archive/a-minimum-income-standard-for-remote-rural-scotland.html> [Accessed on 10th April 2014] [↑](#footnote-ref-7)