

TiPSE

The **T**erritorial **D**imension of **P**overty and **S**ocial **E**xclusion in Europe

Applied Research 2013/1/24

Draft Final Report

Working Paper 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.

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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	KO	Kosovo
AT	Austria	LI	Liechtenstein
BE	Belgium	LT	Lithuania
BG	Bulgaria	LU	Luxemburg
CH	Switzerland	LV	Latvia
CR	Croatia	MO	Montenegro
CY	Cyprus	MT	Malta
CZ	Czech Republic	NO	Norway
DE	Germany	NL	Netherlands
DK	Denmark	PL	Poland
EE	Estonia	PT	Portugal
ES	Spain	RO	Romania
FI	Finland	SB	Serbia
FR	France	SE	Sweden
FY	FYROM	SI	Slovenia
EL	Greece	SK	Slovakia
HU	Hungary	TR	Turkey
IE	Ireland	UK	United Kingdom
IS	Iceland		
IT	Italy		

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1 Introduction and Background

This Working Paper continues the description of research relating to spatial patterns of at-risk-of-poverty (ARoP) rates which was begun in Working Paper 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 Working Paper 5, together with full details of the several kinds of data source and estimation methods.

In this working 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.

2 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 geogra-

phy 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.

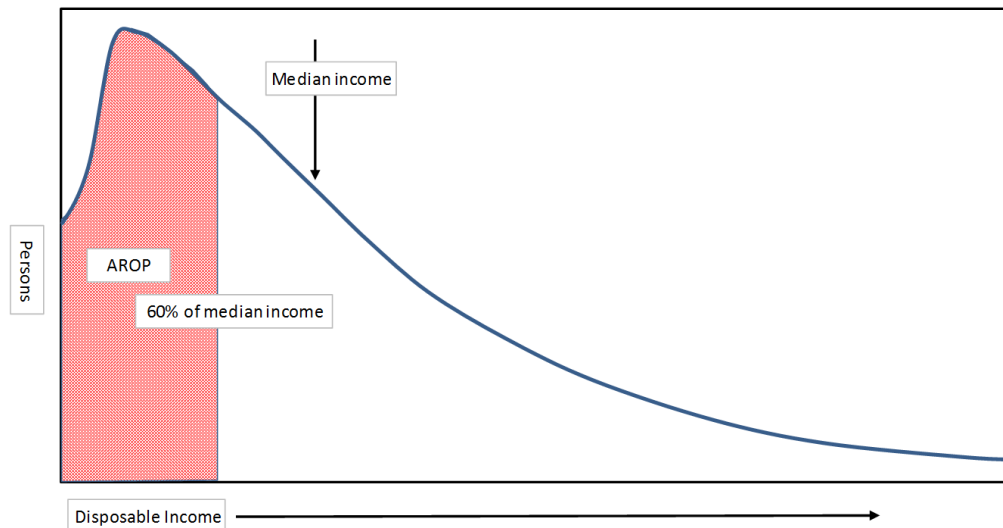


Figure 1: The ARoP Rate

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.

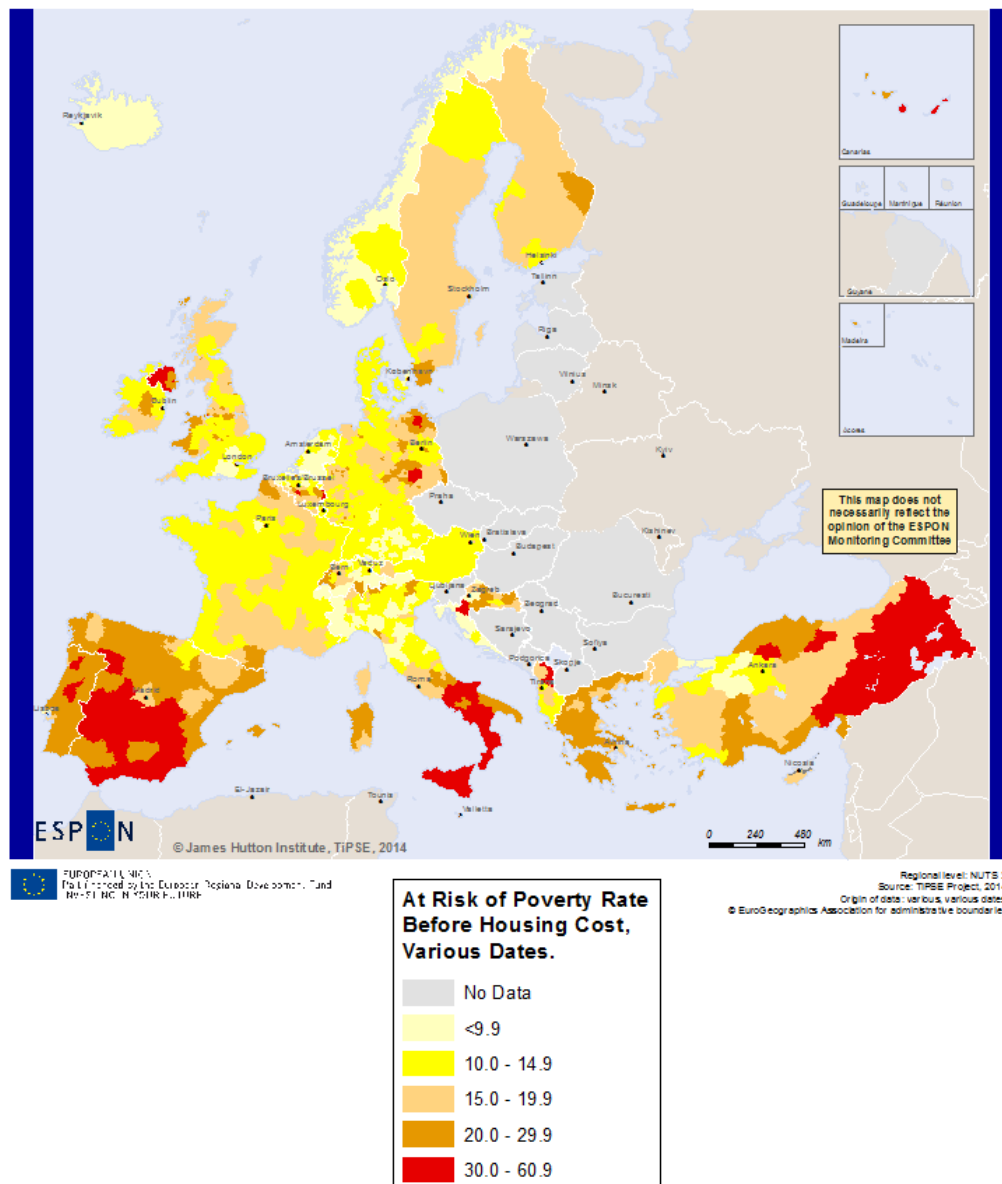
3 Merging the Individual Poverty Maps

Map 1 shows all the NUTS 3 ARoP rates estimated or collected by the TiPSE research team. 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, and Greece, whilst the lowest rates are generally found in Northern Italy, Austria, Southern Germany, Netherlands the South of England, Norway, Southern Sweden and Iceland.

At Risk of Poverty Rate Composite of TIPSE Maps



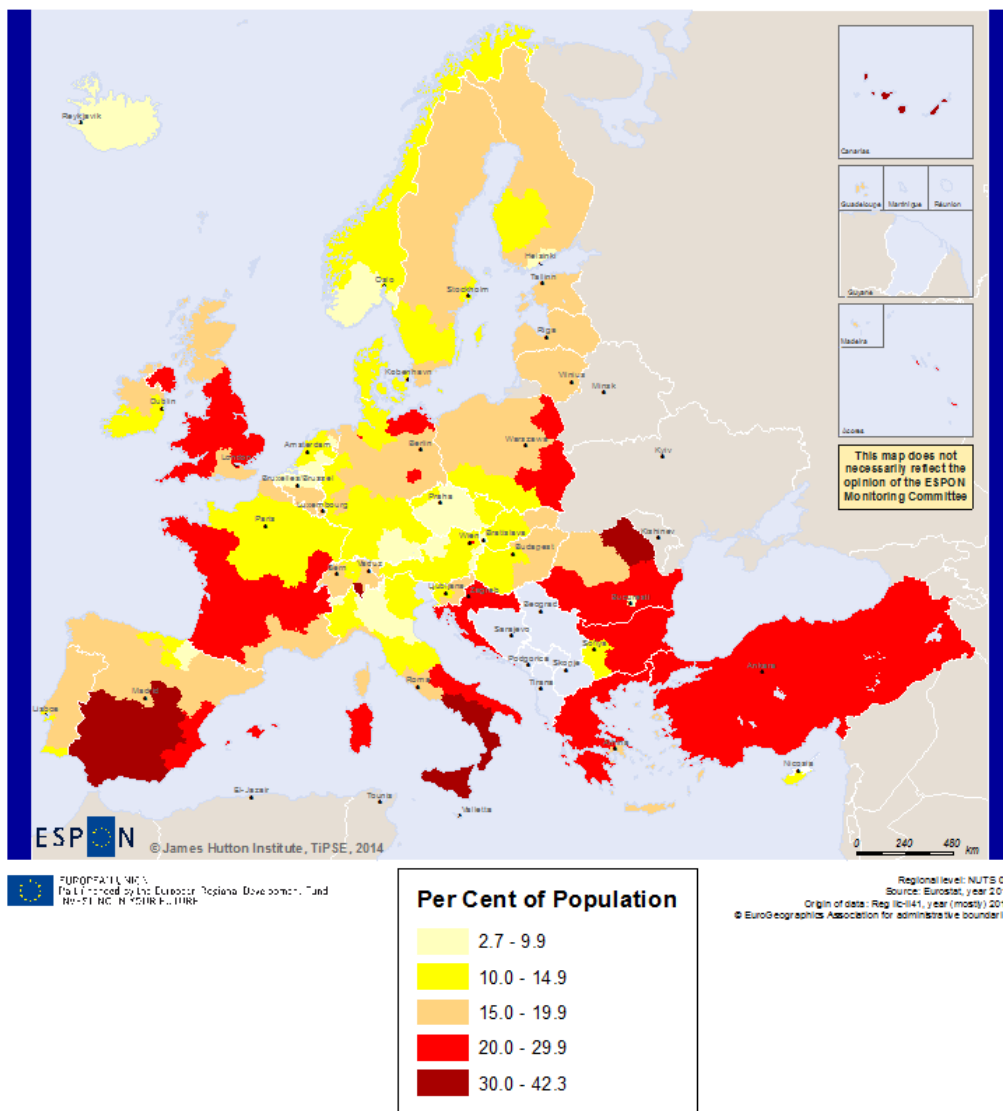
- Notes:
1. Estimates for the regions of the Central and Eastern European New Member States are to be estimated by the World Bank
 2. The dates of the estimates vary, but are mostly from 2009-11. The main exceptions are UK (2005), Austria (2001), Croatia (2004), and Greece (2001). It is intended to update these countries for the Final Report.

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 both France and Italy. There are also substantial differences in the UK – which may perhaps be accounted for by differences in date (Map 1 2005, Map 2 2012).

At Risk of Poverty Rate (Most recent data in each country)



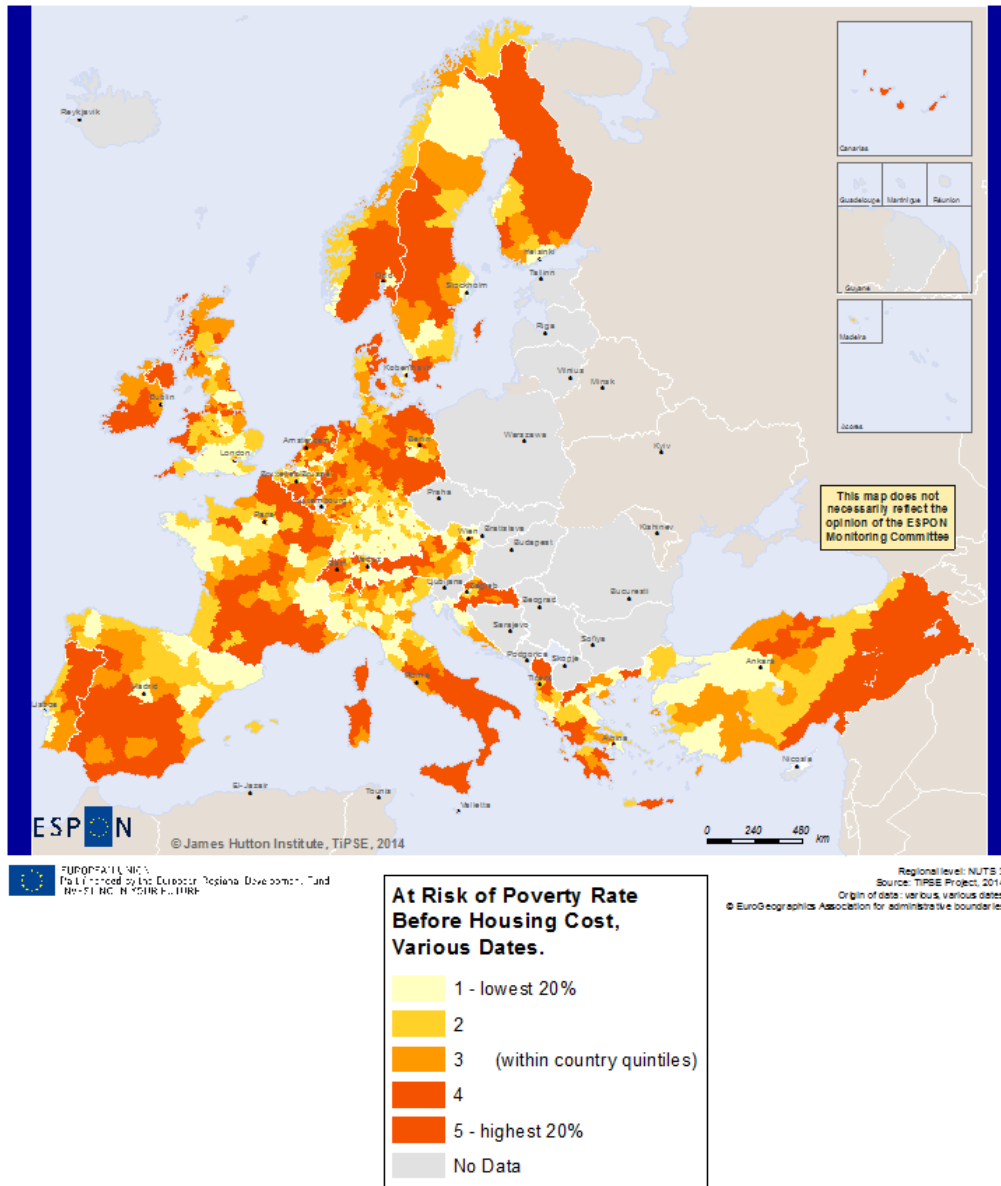
Map 2: Eurostat ARoP Rates (NUTS 2/1/0)

4 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 this 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.

At Risk of Poverty Rate Composite of TIPSE Maps



Notes:

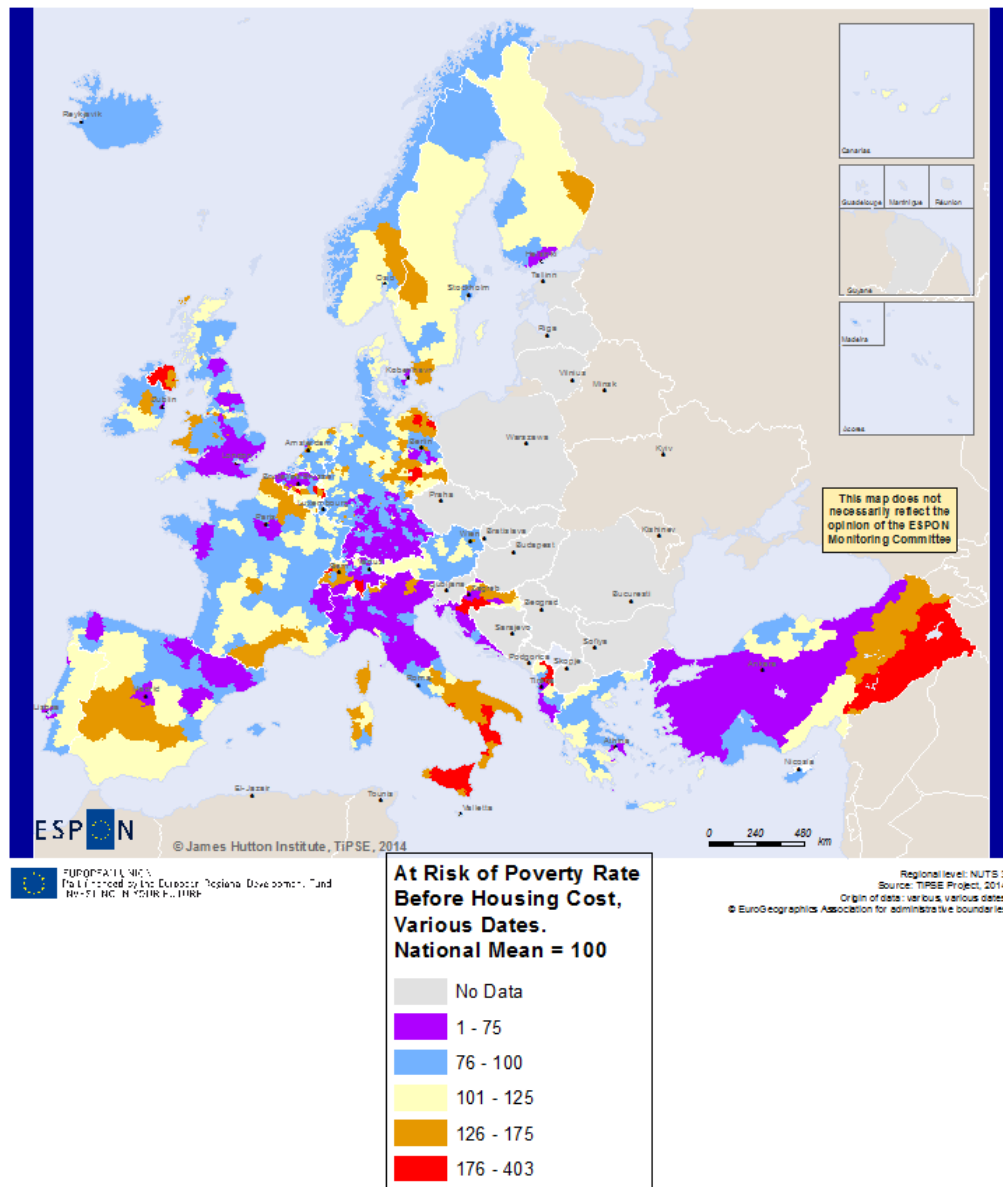
1. Estimates for the regions of the Central and Eastern European New Member States are to be estimated by the World Bank
2. It is not possible to calculate quintiles for Member States with less than five NUTS 3 regions, hence these countries are shown as having no data.
3. The dates of the estimates vary, but are mostly from 2009-11. The main exceptions are UK (2005), Austria (2001), Croatia (2004), and Greece (2001). It is intended to update these countries for the Final Report.

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.

At Risk of Poverty Rate Composite of TiPSE Maps



Notes:
 1. Estimates for the regions of the Central and Eastern European New Member States are to be estimated by the World Bank
 2. The dates of the estimates vary, but are mostly from 2009-11. The main exceptions are UK (2005), Austria (2001), Croatia (2004), and Greece (2001). It is intended to update these countries for the Final Report.

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

5 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 transition¹. 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.

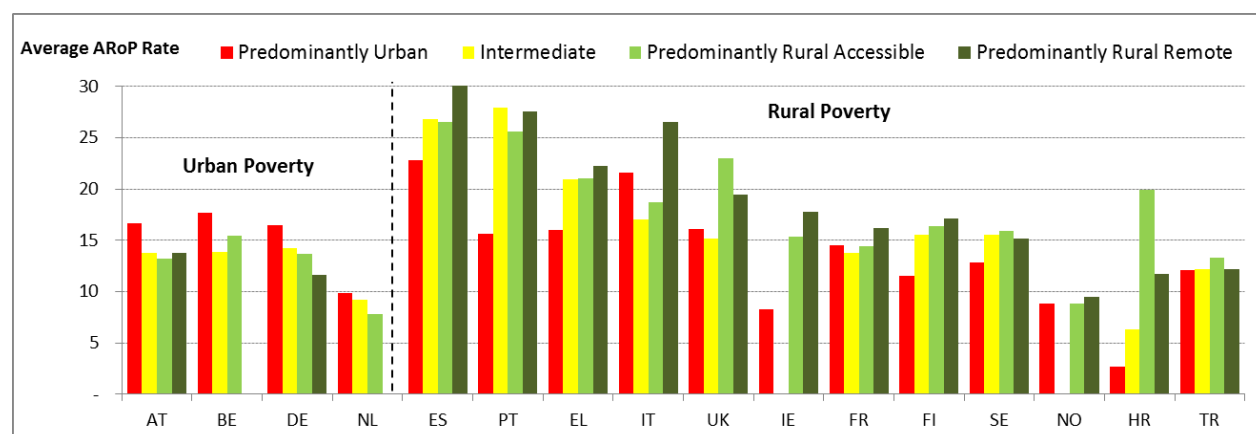


Figure 2: At Risk of Poverty by Urban-Rural Type, Selected Countries

The first typology (Figure 2) is the classification of NUTS 3 regions by **rurality and accessibility**². The five categories are predominantly urban, intermediate close to a city, intermediate remote, predominantly rural close to a city, and predominantly rural

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]

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]

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 (Austria, Belgium, Germany and Netherlands) income poverty rates are higher in urban areas than in intermediate or rural areas. In the other twelve countries for which we have data, 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). Interestingly rurality seems to be least influential in three very different national contexts, France, Norway and Turkey.

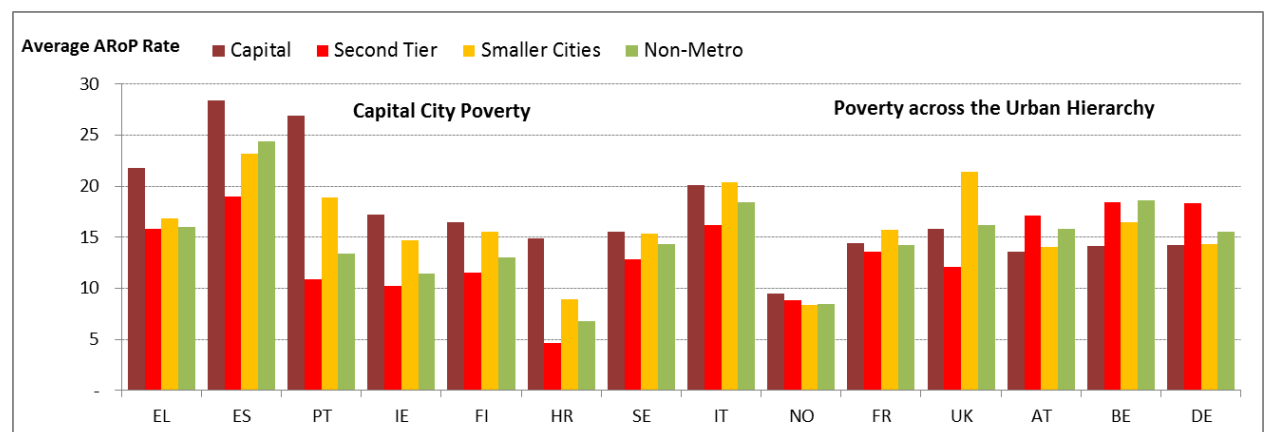


Figure 3: At Risk of Poverty Rate by Metropolitan Region Type, Selected Countries

The second typology focuses on **capitals and other cities**. The pattern is rather complex. Several countries, including Greece, Spain, Portugal, Ireland, Finland and Croatia have their highest rates of poverty in their capital cities. At the other extreme, the UK and Italy have higher rates in smaller cities, and a number (including Austria, Belgium and Germany), have higher rates in “second tier” cities.

At first sight the fact that Greece, Spain and Portugal show substantially higher poverty rates in their capital cities than in other urban (and rural) regions seems to contradict the finding from the previous typology, that these countries had high levels of poverty in remote rural areas. However it is important to note that “non-metropolitan” regions in Figure 4 are a combination of (smaller) urban, intermediate, and rural regions, and that the predominantly urban category in Figure 3 combines capital cities with a range of smaller urban areas. The likely interpretation of these apparently contradictory patterns is that both remote rural and metropolitan areas (even within the same countries) are characterised by high rates of income poverty, with a “U” shaped distribution across more prosperous intermediate regions.

The third typology distinguishes **border regions** (Figure 4) 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”. No very clear pat-

tern emerges. Seven countries show higher ARoP rates in border regions, whilst eight have higher rates of poverty in “internal” regions. Clearly a great deal depends upon other characteristics of the border regions, and the nature of the the region on the other side of the border.

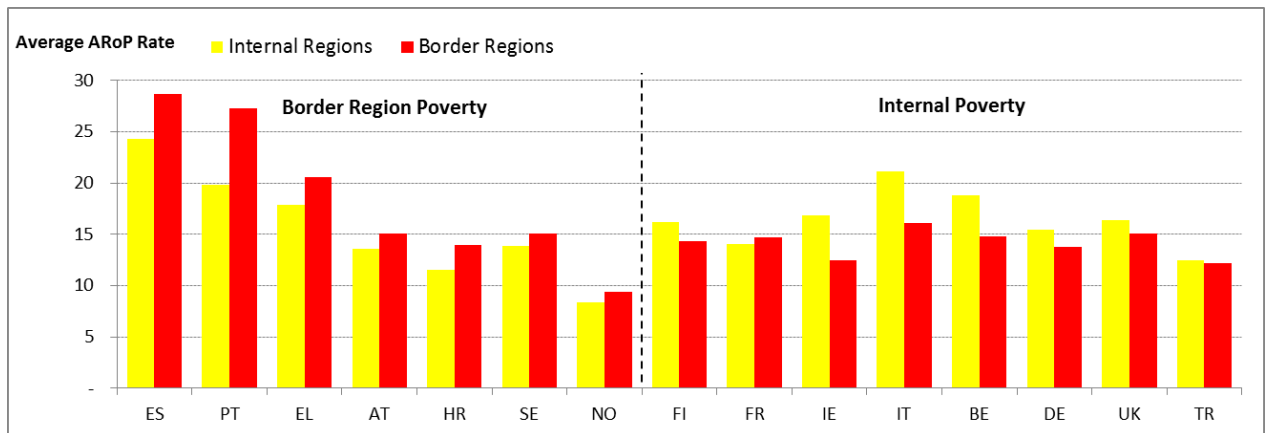


Figure 4: At Risk of Poverty Rate, Border and Internal Regions

In the majority of countries for which we have data **island regions** exhibited higher rates of poverty than mainland regions (Figure 5) In the UK and Italy the contrast was extreme, due to the inclusion of Sicily and Northern Ireland in the island category. Ireland is entirely defined as an island. 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. In Sweden the risk of poverty seems to be not significantly higher in island regions.

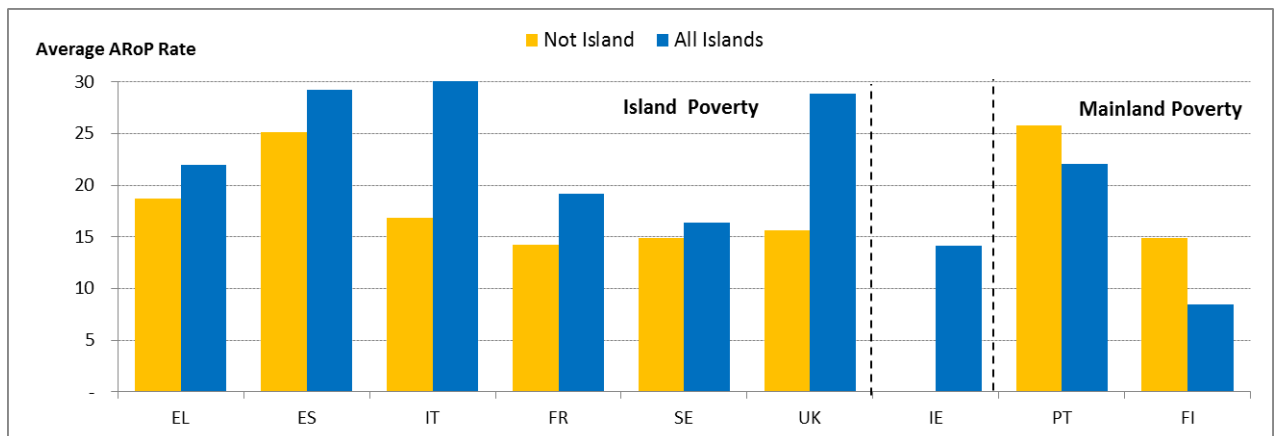


Figure 5: At Risk of Poverty Rate, Island and Mainland Regions

In only four countries (Belgium, Italy, Portugal and the UK) could it be said that **mountain regions** are associated with significantly greater rates of income poverty (Figure 6). In Belgium, Greece and Norway the presence of mountains seems to make little difference, whilst in Croatia ARoP rates are substantially higher in lowland regions.

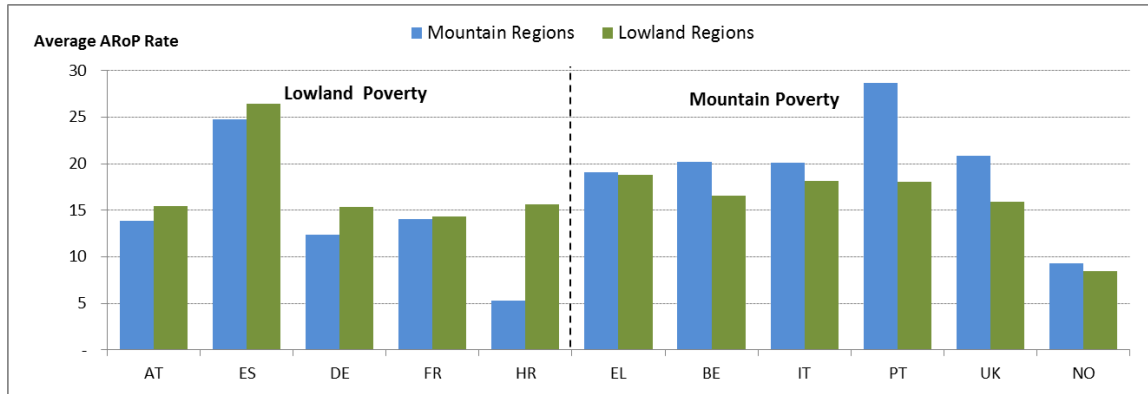


Figure 6: At Risk of Poverty Rate, Mountain and Lowland Regions

Similarly the effect of being a **coastal region** (Figure 7) seems to be relatively small. Substantial differences in poverty rates were evident only in Ireland, Portugal and Belgium, where in each case the inland regions had a higher proportion of people below the poverty line.

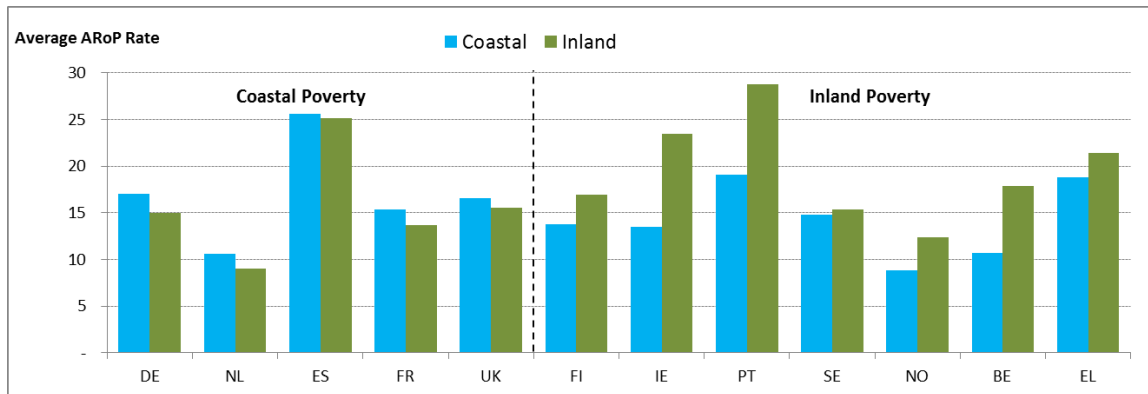


Figure 7: At Risk of Poverty Rate, Coastal and Inland Regions

In some European countries **industrial regions** have higher poverty rates. The UK, Ireland and Portugal are notable in this respect (Figure 8). In others, notably Italy, Belgium and Germany, the highest AROp rates are in non-industrial regions. In Norway, France, Croatia, Sweden and Turkey industrial structure seems to make no difference.

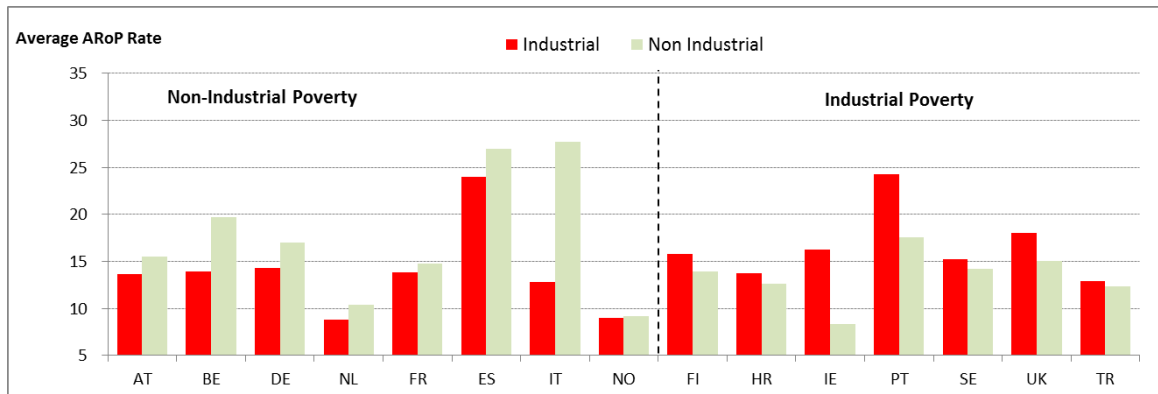


Figure 8: At Risk of Poverty Rate, Industrial and Non-Industrial Regions

6 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, such as:

- Productivity – GDP per Capita
- Labour market participation – Unemployment rates
- Industrial structure.
- Accessibility.

The results shown in Table 1 are provisional, the analysis will be updated and extended in the Final Report (August 2014). This will allow incorporation of 2011 Census data. It is also hoped that access will be given to the ARoP rates for the countries for which the World Bank project is responsible, allowing a more complete analysis. However the preliminary results already begin to provide information on the relationship between the incidence of income poverty and socio-economic characteristics.

The first column shows correlations with the unadjusted ARoP rate, whilst in the second column both the ARoP rate and the co-variables are expressed as indices (National average = 100).

GDP per capita appears to be a relatively poor correlate with income poverty, perhaps because it does not reflect the distributional effects which are captured by the ARoP rate.

Perhaps unsurprisingly the closest correlation with the ARoP rate is for the unemployment rate, reminding us of the close relationship between income poverty and labour market conditions.

Public sector service employment is surprisingly closely related to the risk of poverty, perhaps because a high share of public services is associated with a relatively low share of other sectors which contribute more to a region's economic output and income potential. Conversely it is surprising that a high share of employment in the primary sector seems to be less closely associated with income poverty than most of the secondary and private service sectors. This finding is likely to be reversed once the ARoP data for the Central and Eastern European countries is incorporated.

The ESPON multi-modal accessibility index is not as closely related to the ARoP rate than Map 1 might lead us to expect. Some of the least accessible regions are in the Nordic countries, where ARoP rates are relatively low. Again the relationship may be expected to strengthen once the Central and Eastern European countries are incorporated in the analysis.

Table 1: Pearson Correlation Coefficients between ARoP rates (unadjusted and indexed) and selected socio-economic indicators.

Indicator	ARoP (Unadjusted)	ARoP (Index)
GDP per Capita (PPS)	0.49	0.61
Unemployment	0.85	0.81
Share of Employment in SIC A	0.47	0.44
Share of Employment in SIC B-E	0.77	0.61
Share of Employment in SIC C	0.43	0.56
Share of Employment in SIC F	0.73	0.72
Share of Employment in SIC G-J	0.74	0.78
Share of Employment in SIC K-N	0.57	0.71
Share of Employment in SIC O-U	0.74	0.84
Multi-modal accessibility	0.49	

Notes:

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

Sources:

Eurostat database tables, nama_r_e3gdp, lfst_r_lfu3rt, nama_r_e3em95r2.

ESPON Territorial Observation No 2 (2009) Territorial Dynamics in Europe: Trends in Accessibility

http://www.espon.eu/main/Menu_Publications/Menu_TerritorialObservations/trendsinaccessibility.html

[accessed 23rd April 2014]

7 Discussion and Conclusions

Patterns of Income Poverty

The income poverty maps assembled in this chapter suggests the following observations about the geography of income poverty within that part of the ESPON space for which the TiPSE project is responsible (EU15 + Cyprus, Malta, Norway, Switzerland and Turkey):

- At a macro-scale the highest rates of poverty tend to be in 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. Broadly speaking large cities in the North and West of Europe often contain areas with high rates of income poverty, whilst in the South and East cities tend to have relatively lower rates.
- 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 unemployment rates are closely correlated with income poverty. GDP per capita is a poor indicator of the distributional aspect of the ARoP rate.
- Further progress with correlation analysis is dependent upon gaining access to ARoP rates for the Central and Eastern European countries, and 2011 census data. This will be reported in the Final Report (August 2014).

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 UK³ 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.

³ 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]