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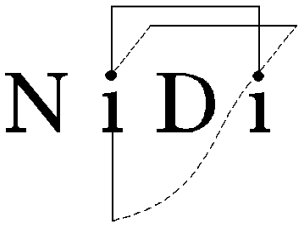

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ABSTRACT

In 2010 Eurostat developed an urban-rural typology for NUTS 3 regions. However, EU regional policies are often founded on statistics and population projections at NUTS 2 level. Based on the Eurostat typology this paper develops an urban-rural classification of NUTS 2 regions. We use the new classification to examine differences in population change between urban and rural regions in all EU countries during the last twenty years and in the next twenty years. Half of the EU population is living in urban NUTS 2 regions. In the next two decades population ageing will lead to a slowing down in population growth in European countries, but urban regions will maintain a considerable growth rate.

Keywords: urban; rural; classification; NUTS 2 regions; Europe

INTRODUCTION

Though the strongest urbanisation in Europe took place in the 1950s and 1960s, the proportion of the population living in urban areas has continued to grow. According to the United Nations (2012) the percentage increased from 51 to 63 between 1950 and 1970. The proportion has increased further to 73 per cent in 2011. The rate of urbanisation has decreased from 1.0 between 1950 and 1970 to 0.4 between 1970 and 2011 (United Nations 2012). The UN estimates of the urban population are based on national classifications. Various European countries have different ways of classifying urban and rural areas. As a consequence these classifications are specific to the countries concerned and therefore not strictly comparable across countries. In the 1990s the OECD developed a classification based on the same criterion for all OECD countries. In addition to urban and rural regions, the OECD distinguished intermediate regions. The OECD typology is based on population density and size of urban centres within regions. To cover all countries of the European Union, Eurostat developed a rural-urban typology for NUTS 3 regions based on the OECD regional typology (Eurostat, 2010). According to the Eurostat classification 41 per cent of the EU population lives in urban regions and 24 per cent in rural regions. Thus there is a considerable discrepancy between the Eurostat and the UN estimates of the size of urban populations in Europe. One main cause of the difference is that the UN uses an urban-rural dichotomy, whereas OECD and Eurostat distinguish an intermediate category as well.

Eurostat does not publish an urban-rural typology at NUTS 2 level. However, there is need of data at NUTS 2 level. Regional policy instruments such as the Structural Funds and the Cohesion Funds aim to reduce regional disparities in terms of income, wealth and opportunities at NUTS 2 rather than NUTS 3 level. Moreover, it is difficult to assess future changes in the size and distribution of the population living in urban and rural regions, since internationally consistent population projections are available at the NUTS 2 level only. In order to make it possible to provide this kind of information, this paper develops an urban-rural typology for NUTS 2 regions. The distribution of the population over different types of NUTS 3 regions is used as criterion for classifying NUTS 2 regions. We use the typology to analyse NUTS 2 settlement patterns in the member states of the European Union during the last two decades and to assess future changes in the population of urban and rural regions in the next two decades.

URBAN-RURAL CLASSIFICATIONS

Cities are focal points of economic growth, innovation and paid employment (Bettencourt et al., 2007; Brezzi et al., 2011). On average, urban residents have better access to education, health care and transportation than rural populations. The concentration of population in a region and economies of scale contribute to higher GDP per capita. However, cross-country comparisons of urban and rural regions are hampered by the use of different criteria for urban-rural classifications (Hugo et al., 2003). Some countries use administrative units and other built-up areas; some countries focus on population size or density, others on land use.

Due to suburbanisation and urban sprawl and due to transport and information technology the distinction between urban and rural areas has become less clear-cut. Bengs and Schmidt-Thomé (2006) note that the “clear-cut visual divide is simply gone”. More people divide lives between urban and rural areas, as commuting has increased greatly (Hugo et al., 2003). As a consequence, urban-rural differences have tended to narrow. However, there are still big differences, e.g. in GDP per capita and ethnicity. Thus urban-rural differences are still relevant. Hugo et al.(2003) state that an urban-rural dichotomy is overly simplistic. Urban and rural can be considered as two opposite ends of an urban-rural continuum. As a reaction to the blurring of the difference between urban and rural areas, more detailed classifications were proposed. Butler and Beale (1994) classified US regions into ten categories on the basis of population size and proximity to metropolitan areas. Cromantle and Swanson (1996)

classified regions into five categories based on population size, population density, commuting patterns and adjacency. Coombes and Raybould (2001) and Coombes (2004) suggest that three dimensions of human settlement should be taken into account: settlement size, concentration and accessibility (e.g. access to goods and services). Hugo et al. (2003) also emphasize that the urban-rural difference is multidimensional. In addition to demographic differences, they mention differences in the economic structure (agriculture vs. industry and services), educational opportunities, access to services, and ethnicity. Bengs and Schmidt-Thomé (2006) distinguish six types of regions based on two dimensions. The first dimension is urban influence, measured by population density and status of the leading urban centre. The second dimension is human intervention and is measured by type of land cover. Two classes of the first dimension (high and low) and three classes of the second dimension (high, medium, and low) lead to six types of regions. A region is considered to have high urban influence if the population density exceeds the European average and the leading urban centre of the NUTS 3 area has been labelled Metropolitan European growth Area (MEGA). This is based on a typology of functional urban areas developed for ESPON. A region has high human intervention if the share of artificial surface is above the European average. Such detailed classifications take into account that other aspects than population density and population size are relevant as well. However, such detailed classifications make it more difficult to obtain internationally consistent classifications than distinguishing two or three categories based on simple criteria.

In the 1990s the OECD developed a classification using the same criteria for all OECD countries based on population density and the size of the urban centres located within a region (OECD, 2010). The OECD distinguishes three types of regions: “Predominantly Urban”, “Intermediate” and “Predominantly Rural” areas. Brezzi et al. (2011) extend the OECD definition by distinguishing two types of rural areas, viz. remote rural areas and rural areas that are close to a city. They find that remote rural areas have a stronger decline in population and faster ageing than rural areas close to a city. The remoteness is a significant factor explaining outflow of working age population. Rural areas that are close to large urban centres can benefit from access to services, educational opportunities and logistics for firms (Dijkstra and Poelman, 2008). The OECD uses low level administrative units for the classification of rural areas (OECD, 2010). The effect of suburbanisation and the enlargement of the size of local units by merging municipalities has made the division in town and country in many regions blurred (Champion, 2007). For that reason Bengs and Schmidt-Thomé (2006) argue that urban-rural differences should not be examined in terms of very small regional

zones. The population of small rural areas close to cities should be considered as urban population, while people living in scattered, small towns in a rural region should be regarded as rural population. Bengs and Schmidt-Thomé propose to classify NUTS 3 regions. Another reason for classifying NUTS 3 regions rather than regions at the so-called Territorial 3 level distinguished by the OECD is that the surface of the latter regions tends to vary strongly.

In 2010 Eurostat published an urban-rural typology for NUTS 3 regions (Eurostat, 2010), following a similar approach as OECD (2010). Thus regions are classified by the share of the population living in urban and rural areas rather than on the basis of territorial characteristics, such as land use. The Eurostat classification is made in three steps (Dijkstra and Poelman, 2011). First, the rural area population is identified on the basis of population density in grid cells of 1 km^2 and population size of adjacent areas. Secondly, NUTS 3 regions are classified based on the percentage of the population living in rural areas. Thirdly, the classification is adjusted based on the presence of cities. A NUTS 3 region is classified as predominantly urban if the share of the population living in rural areas is below 20. A region is classified as intermediate if the share of population living in rural areas is between 20% and 50% and as predominantly rural if the share of population living in rural areas is higher than 50%. One additional criterion is the size of urban centres. A region classified as predominantly rural becomes intermediate if it contains an urban centre of more than 200,000 inhabitants representing at least 25% of the population of the region and a region classified as intermediate becomes predominantly urban if it contains an urban centre of more than 500,000 inhabitants representing at least 25% of the population of the region.

According to the Eurostat classification 41 per cent of the EU population lives in urban regions. This is considerably lower than the 74 per cent estimated by the UN. One cause of the difference is that the UN uses an urban-rural dichotomy. In the national definitions of many European countries used by the UN people living in a town with 2,000 inhabitants or more are classified as urban. This implies that many small areas are classified as urban, and this leads to a high estimate of the total size of the urban population.

A NEW URBAN-RURAL TYPOLOGY OF NUTS 2 REGIONS

Eurostat does not publish an urban-rural typology at the NUTS 2 level. Eurostat (2010) argues that this would hide significant differences at a low regional level. Application of the Eurostat method at NUTS 2 level would lead to a considerably lower share of the population living in rural regions, since there are relatively few NUTS 2 regions where more than half of the

population lives in a rural area. Nevertheless an urban-rural typology of NUTS 2 regions would be useful since for many EU countries considerably less data on demographic flows are available at the NUTS 3 than at the NUTS 2 level. Eurostat (2010) acknowledges that "some" indicators are only available at aggregated geographical level and suggests that small area estimation techniques can be used to estimate NUTS 3 values based on NUTS 2 data. However, for certain indicators these estimation techniques are not immediately available (Eurostat, 2010). For that reason we follow an alternative approach. By developing an urban-rural typology for NUTS 2 regions we make it possible to use all data that are available at NUTS 2 level for analysing urban-rural differences.

Our method is based on the Eurostat typology for NUTS 3 regions and comes down to labelling a NUTS 2 region as predominantly urban if that region includes considerably more people living in urban NUTS 3 regions than in rural NUTS 3 regions, and we define rural NUTS 2 regions in a similar way. Similarly to the Eurostat classification the focus of our typology is on population size, i.e. we make a classification of the population in different types of regions rather than classifying the regions on the basis of territorial characteristics. If a region includes a big city where most inhabitants of the region live surrounded by a large rural area where only few people live, a large share of the surface of the region may include agriculture land or natural landscapes, while most residents live in an urban environment. We classify such a region as urban. For example, more than 70 per cent of the population of the NUTS 2 region Catalonia lives in the NUTS 3 region Barcelona, whereas the latter region occupies less than 25 per cent of the surface of Catalonia. We classify Catalonia as a predominantly urban region since the majority of the population lives in an urban environment. For analyses of the size and growth rate of the population, numbers of people living in urban and rural areas are relevant rather than the surface of urban and rural areas. Note that the difference between the share of the population living in rural areas and the share of the surface which is rural applies to the NUTS 3 classification as well. Whereas according to the Eurostat classification a quarter of the population lives in a rural region, more than half of the area of the EU is rural (Eurostat, 2010).

We classify a NUTS 2 region as predominantly urban if the difference between the percentages of the population living in urban and rural NUTS 3 regions that are part of that NUTS 2 region exceeds a certain threshold value. Similarly a NUTS 2 region is classified as predominantly rural if the differences between the percentages of the population living in rural and urban NUTS 3 regions exceeds another threshold value. We determine both threshold values in such a way that in each country the percentages of the population living in

urban and rural regions at NUTS 2 level are as close as possible to those at the NUTS 3 level. The threshold value for predominantly urban regions turns out to equal 40 percentage points. Thus if in a given NUTS 2 region 60 per cent of the population is living in urban NUTS 3 regions, whereas 10 per cent is living in rural NUTS 3 regions, the NUTS 2 region is considered as predominantly urban. In contrast, if 30 per cent is living in rural NUTS 3 regions, the NUTS 2 region is considered as intermediate. The threshold value for rural regions equals 33 percentage points. Thus if in a NUTS 2 region, 50 per cent of the population is living in rural NUTS 3 regions and 10 per cent in urban regions, the region is considered as predominantly rural, whereas if 20 percent is living in urban regions, the region is considered as intermediate.

Based on this classification 42 per cent of the population of EU countries on 1 January 2010 lives in a predominantly urban region compared with 41 per cent according to the NUTS 3 typology. For rural regions the percentages based on both classifications are the same: 24 per cent of the population lives in predominantly rural regions. For the large countries the distributions of the population based on the classification at NUTS 3 and NUTS 2 levels are close. For example, for Germany 43 per cent of the population is living in a predominantly urban region according to the NUTS 3 classification and 41 per cent according to the NUTS 2 classification. For France the percentages are 35 and 33 respectively. For some smaller countries there are big differences. This has to do with the small number of NUTS 2 regions in those countries. For Ireland one may question whether the absence of an urban NUTS 2 region is satisfactory. The reason is that Ireland has only two NUTS 2 regions which are relatively large. Thus for analysing regional differences in Ireland, the NUTS 2 classification has severe limitations.

Correspondence of the percentages of people living in urban and rural regions at the NUTS 2 and NUTS 3 levels is not sufficient to decide whether our NUTS 2 classification is reasonable compared with the Eurostat classification. If the NUTS 2 classification would imply that a large proportion of the population living in predominantly rural NUTS 3 regions would be classified as living in predominantly urban NUTS 2 regions or vice versa, the NUTS 2 classification would not be satisfactory. Even though it is inevitable that a part of the population will be classified in another category at the NUTS 3 level than at the NUTS 2 level, this part should not be too large. It turns out that two thirds of the population living in a rural NUTS 3 region lives in a rural NUTS 2 region, whereas 30 per cent lives in an intermediate NUTS 2 region. Less than 5 per cent lives in an urban NUTS 2 region. From the urban NUTS 3 population less than 1 per cent is classified as rural based on the NUTS 2

typology. Thus we can conclude that the classification of only very few people changes from rural to urban, or vice versa when we move from the NUTS 3 to the NUTS 2 classification. The main differences apply to intermediate regions.

Two types of intermediate NUTS 2 regions can be distinguished. First, regions where a large share of the population lives in intermediate NUTS 3 regions. In three quarters of all intermediate regions at the NUTS 2 level the majority of the population lives in an intermediate region at the NUTS 3 level. For these regions it is obvious that they should be classified as intermediate at the NUTS 2 level. The remaining intermediate NUTS 2 regions include a mix of predominantly urban and predominantly rural NUTS 3 regions. In these regions 44 per cent of the population lives in a predominantly urban NUTS 3 region and 36 per cent in a predominantly rural NUTS 3 region. Thus a considerable share of the population in these intermediate NUTS 2 regions lives in an urban NUTS 3 region, and that share exceeds the share living in rural regions. One may question whether part of these intermediate regions should be classified as urban rather than intermediate, particularly intermediate NUTS 2 regions including big cities. People living in a big city can be considered to live in an urban region, especially if they outnumber the people living in a rural area in the same NUTS 2 region. The access to services, education opportunities and the labour market for inhabitants of intermediate regions who live close to big cities can be considered to be comparable to that of people living in urban areas (Brezzi et al., 2011). Hugo et al. (2003) note that areas adjoining cities include large numbers of residents who have much in common with residents of the central city although they do not live in a central-city landscape. Brezzi et al. (2011) include the distance to a city as a criterion for distinguishing between two types of intermediate and rural regions at the NUTS 3 level, viz. remote regions and regions that are close to a city. Thus it seems justified to label intermediate NUTS 2 regions with a big city as urban, since people living in rural NUTS 3 regions within these NUTS 2 regions can be regarded as comparable to people living in an urban NUTS 2 region.

Therefore we add a criterion for the classification of urban and intermediate regions. We consider an intermediate NUTS 2 region as predominantly urban if it includes a city with more than 500,000 inhabitants and if the proportion of the population living in urban NUTS 3 regions exceeds that of living in rural NUTS 3 regions. Note that this additional criterion is similar to the criterion considering urban centres in the Eurostat typology. This additional criterion implies that 11 NUTS 2 regions that were originally classified as intermediate were re-classified as predominantly urban. Among these regions are three German regions (the

NUTS 2 regions containing the cities Munich, Nürnberg and Hannover), two French regions (including Bordeaux and Lyon) and two Polish regions (including Warsaw and Krakow).

Based on the new classification of NUTS 2 regions, 51 percent of the EU population lives in an urban region. The proportion of the population living in urban regions increases by 9 percentage points by adding the presence of big cities as additional criterion at the cost of intermediate regions. Thus the share of the population living in urban regions at the NUTS 2 level exceeds that at the NUTS 3 level. This is caused by the fact that a number of people living in intermediate NUTS 3 regions in the neighbourhood of big cities are considered to live in an urban environment at the NUTS 2 region. Note that this does not affect the share of the population living in rural regions.

We conclude that it is possible to develop an urban-rural classification at the NUTS 2 level without changing the classification of a substantial share of the population from rural at the NUTS 3 level to urban at the NUTS 2 level, or the other way around. One way of assessing the validity of our classification is to examine whether the types of regions classified on the basis of demographic criteria, differ in other respects as well. An appropriate classification should show economic differences between urban and rural regions. The concentration of population in a region spurs economic agglomerations and economies of scale which is a plausible explanation why urban centres have a higher GDP per capita than rural regions (Brezzi et al., 2011). Table 1 shows that based on our urban-rural classification of NUTS 2 regions, in most countries the GDP per capita turns out to be higher in urban NUTS 2 regions than in other regions. Italy is an exception: intermediate regions have a somewhat higher GDP per capita. One explanation is the sharp north-south divide. Most intermediate regions in Italy are in the Northern part of the country and have a relatively high GDP per capita, whereas the South of Italy includes two urban regions with a relatively low GDP per capita. Thus even though our classification is based on larger regions than the Eurostat classification, it shows differentiation between urban and rural regions.

SETTLEMENT PATTERNS SINCE 1990

While on average in the European Union 51 per cent of the population is living in urban NUTS 2 regions, and 24 per cent in rural regions, there are large differences between countries. Based on the UN definition Champion (2011) points at the differences among the four regions of Europe, with high percentages of urban populations in Northern and Western Europe (around 80 per cent) and relatively low percentages in Eastern and Southern Europe

(around 60 per cent). Table 2 shows low percentages of the urban population in Eastern European countries, but not a clear pattern from North to South. Disregarding the countries for which the NUTS 2 level coincides with the country level, the most urban countries are the Netherlands, Belgium and the United Kingdom, with about 80 to 90 per cent of their population living in predominantly urban NUTS 2 regions. In Spain and Italy the percentages are higher than the European average, but in Northern Europe they are lower. Ireland does not have an urban region. Even the NUTS 2 region Southern and Eastern Ireland which includes Dublin is not an urban region, since two thirds of the population of that region lives in rural NUTS 3 regions. Again disregarding the countries including only one NUTS 2 region, six countries have a small rural population: four in Western Europe (Netherlands, Belgium, UK, and Germany) and two in Southern Europe (Italy and Spain). Eastern European countries have large rural populations. Romania and Slovakia are the most rural countries in the EU with almost 90 per cent of its population living in rural NUTS 2 regions.

During the last two decades the distribution of the total population over the three types of regions has changed slightly. There has only been moderate urbanisation in most countries. The percentage of the population living in urban regions increased from 49.8 per cent in 1990 to 51.0 per cent in 2010. However, there have been changes in the age pattern. Two causes of change in the age distribution of the adult population can be distinguished: cohort effects and changes due to migration and mortality. Cohort effects result from differences in the size of successive generations. In closed populations where no people enter or leave, or move between different types of regions, we can estimate the cohort effects on the age pattern in a region between 1990 and 2010 by shifting the age pattern of 1990 twenty years forward. Figure 1 shows the shares of the population in urban, intermediate and rural regions in the European Union in 2010. The solid lines show the observed age patterns in 2010. The dotted lines show the age pattern that would have occurred if no people entered or left a region (in other words there was no migration and no death) or if there were changes but no regional differences in the period 1990-2010. Thus differences between the solid and dotted lines indicate that there have been regional differences in migration and/or death. For middle ages the effects of migration are considerably larger than of death.

From Figure 1 we learn that due to migration the share of young people aged 20 to 40 has increased in urban regions at the expense of rural regions. At the same time, the share of people aged 40 and over has increased in both the intermediate and rural regions at the expense of urban regions. We can distinguish three types of settlement patterns (Champion, 2011; Piorr et al., 2010; Lambert, 2011; Mitchell, 2004; UN, 2012, Kontuly and Geyer,

2003): urbanisation, i.e. a higher percentage of the population in urban areas at the expense of the percentages in rural areas; peri-urbanisation, i.e. increasing percentages of the population in intermediate regions, coming both from urban and rural regions; and counter-urbanisation, i.e. a declining percentage in urban regions and increasing percentages in rural regions.

The most common pattern is urbanisation of the young together with peri- or counter-urbanisation of the higher age groups. This pattern is found for Austria, France, Germany, Ireland, the Netherlands, Portugal, Romania, Sweden and the United Kingdom. The second most common pattern is that of urbanisation of the young and middle age groups (different age ranges for different countries), with more or less unchanged settlement patterns in the other age groups. This pattern is visible in several central and eastern European countries (Bulgaria, the Czech Republic, Hungary, Poland, Slovakia and Slovenia), as well as in Finland (see Figure 2) and Greece. Peri-urbanisation in all age groups is only visible in Italy (Figure 3). As a result of these migration flows rural regions tend to be more aged than urban regions.

FUTURE DIFFERENCES IN POPULATION GROWTH BETWEEN URBAN AND RURAL REGIONS

Since in many countries urbanisation is mainly a trend among young people, one question is whether future population ageing, which is expected across Europe, will lead to a slowing down of the increase in the urban population. In order to assess future changes in urbanisation we use the latest regional population scenarios published by Eurostat (Giannakouris, 2010). These scenarios are based on the population observed in the year 2008. The regional scenarios are consistent with the national population scenario EUROPOP2008 (Giannakouris, 2008). One main assumption underlying the national scenario is convergence, i.e. it is assumed that socio-economic and cultural differences between the member states of the European Union will fade out in the long run and that this will bring a convergence of drivers of demographic change and thus of fertility and mortality. In addition the national scenario assumes that immigration will increase if the size of the working age population decreases. The regional scenarios are based on the assumption that within each country the regional differences in the levels of fertility, mortality and international migration at the NUTS 2 level will have declined by a quarter in 2030. For internal migration Eurostat assumes that the origin-destination patterns within each country will not change in the future. The latest available

regional scenarios project the population for the member states of the EU at NUTS 2 level for the period 2008-2030. Because the Eurostat scenarios refer to NUTS 2 regions we can use our urban-rural typology of NUTS 2 regions to assess future changes in the urban and rural population.

Table 3 shows that the rate of population growth of the EU will decrease. During the last two decades population has grown by 6.1 per cent, whereas in the next 20 years population will grow by 4.2 per cent. In urban regions population has grown faster than in other regions: by 8.7 per cent since 1990. According to the Eurostat scenarios in the next two decades the urban population will grow by 6.8 per cent. In contrast, the size of the rural population will decline, by 1.0 per cent in the coming two decades. Thus whereas population ageing will lead to a slowing down of population growth in the European Union, urban regions will be affected only moderately. Despite a slight slowing down of population growth, in the next twenty years urban populations will maintain a considerable growth rate that is even higher than the growth rate of the total EU population in the last two decades.

The main causes of the decline in population growth across Europe are population ageing and low fertility levels. Both will have a downward effect on natural population growth (the balance of the annual numbers of births and deaths). Table 4 shows that according to the Eurostat population scenario between 2010 and 2030 natural population growth in the EU will be negative and migration will be the only cause of population growth. In urban regions, natural growth will slow down, but will not become negative. The main explanation is that urban populations are relatively young, due to the inflow of young migrants both from other regions and from other countries, and the outflow of older migrants. In the next decades in rural regions negative natural growth will be the cause of population decline. Even though in these regions net migration will be smaller than in urban regions, its effect on population growth will remain positive.

Because on average urban populations will grow more strongly than the population in other regions, the percentage of the population living in urban regions will continue to increase. According to the Eurostat scenario the increase in the urban population in the next twenty years will be almost the same as in the last twenty years, *viz*. an increase by 1.3 percentage points. However, table 2 shows that there are considerable differences across countries. In seven countries the degree of urbanisation in the next two decades will exceed that in the last two decades, whereas in seven other countries the opposite is true. The expected future increase in the share of the urban population tends to be higher in countries with a relatively small percentage of urban populations. In the six countries where the share of

the urban population in 2010 is between 20 and 30 per cent, the percentage will increase by 1.8 percentage points on average, whereas in the four countries where the share of the urban population exceeds 70 percent, the average increase is 0.1 percentage points only. Note that the Eurostat scenario is based on the assumption that the pattern of migration flows within countries will remain the same as they have been in the recent past. Thus Eurostat does not assume a change in the flow of migrants from rural to urban regions. The scenarios suggest that the maximum percentage of urbanisation lies somewhere around 80 per cent. Future increases in urbanisation in Europe can mainly be expected in countries that are not yet very urbanised.

Since 2000 the population size of one quarter of NUTS 2 regions has decreased (see Table 5). Most of these regions are rural. Almost one half of predominantly rural NUTS 2 regions have experienced population decline. As a consequence of population ageing and the resulting decline in the growth rate of the population, the number of regions experiencing population decline is expected to increase in the next two decades. In the period 2020-2030 43 per cent of NUTS 2 regions will be confronted with population decline. The number of rural regions experiencing population decline will increase to 56 per cent, but despite the urbanisation trend the percentage of declining urban regions will increase as well, and double from 14 to 29 per cent.

CONCLUSION AND DISCUSSION

According to the United Nations (2012) almost three quarters of the European population live in urban regions. Even though the urbanisation rate has decreased since the 1970s, the share of the population living in urban regions has continued to increase. There are two problems with the UN estimate of the size of urban populations. First, the UN uses national definitions, which vary across countries. Second, the UN assumes a dichotomy between urban and rural regions, disregarding that many regions have a mixed character. Based on an internationally consistent typology developed by OECD, Eurostat published a classification of all NUTS 3 regions. The classification uses the same criterion for all countries and distinguishes three types of regions: predominantly urban, predominantly rural and intermediate regions.

EU regional policy instruments aim to reduce regional disparities at NUTS 2 rather than NUTS 3 level. For many countries there are considerably less statistical data for NUTS 3 regions than for NUTS 2 regions. For example, the internationally consistent regional population scenarios published by Eurostat refer to the NUTS 2 level. Thus cross-country

analyses of differences in current trends and future prospects between urban and rural regions are severely hampered by the lack of data at the NUTS 3 level. For that reason this paper presents a new urban-rural typology for NUTS 2 regions. We assume that if in a NUTS 2 region considerably more people live in urban NUTS 3 regions than in rural NUTS 3 regions, the NUTS 2 region can be considered as predominantly urban. Even though our classification of NUTS 2 regions does not include all details of the NUTS 3 level, the NUTS 2 typology seems to give an adequate description of the way the European population is distributed over rural, intermediate and urban regions. According to our classification one half of the EU population lives in urban NUTS 2 regions, one quarter in rural regions, and one quarter in intermediate regions.

Due to population ageing and low fertility population growth in Europe will slow down. However, urban regions will maintain a considerable growth rate. Whereas population size of urban NUTS 2 regions has increased by 8.7 per cent during the last twenty years, the increase will be 6.7 per cent during the next twenty years. Despite the urbanisation trend, there has been a slight growth of the total population living in rural regions, by 0.7 per cent since 1990. During the next twenty years population size of rural regions will decline by 0.9 per cent. However, this does not imply that all rural regions will experience population decline: 44 per cent of rural regions will continue to grow up to 2030. The share of the population living in urban regions will continue to increase during the next two decades, but only slightly.

The use of a NUTS 2 classification has limitations for analyses of changes in urban areas. It does not allow detailed analyses of suburbanisation and re-urbanisation to the extent that they involve movements of population between the core and the ring of urban systems, as these people move within one NUTS 2 region. Similarly, the movement of people to ‘accessible’ rural areas, i.e. areas within commuting distance from cities, may not be observed. Since NUTS 2 regions are relatively large, our classification is useful for changes over longer distances only. Hugo et al. (2003) note that giving greater attention to the classification of people rather than place raises the question as to the adequacy of criteria based solely on place of current residence. With increasing levels of mobility, people can spend significant amounts of time away from their usual residence as a result of commuting. One benefit of using NUTS 2 rather than NUTS 3 regions is that one may expect that the NUTS 2 classification is less strongly affected by this.

Our classification makes it possible to analyse not only demographic differences between urban and rural regions, but to examine urban-rural differences in many areas

covered by the Eurostat database, such as incomes, education, health, labour market, poverty, and land use.

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Table 1. GDP per capita by type of NUTS 2 region, 2009 (1000 euros)

	Total	Predominantly urban	Intermediate	Predominantly rural
European Union	23.5	27.5	22.1	16.4
Austria	32.9	41.3	29.3	30.6
Belgium	31.7	33.4	25.9	22.1
Bulgaria	4.6	7.9	3.8	3.1
Cyprus	21.1	n.a.	21.1	n.a.
Czech Republic	13.5	20.6	11.5	11.1
Denmark	40.6	49.3	n.a.	35.4
Estonia	10.3	n.a.	n.a.	10.3
Finland	32.4	37.3	n.a.	27.5
France	29.7	33.9	24.8	23.6
Germany	29.0	32.6	24.4	26.7
Greece	20.6	27.0	17.0	16.8
Hungary	9.1	15.4	n.a.	6.5
Ireland	36.1	n.a.	40.1	25.1
Italy	25.4	25.7	26.6	21.2
Latvia	8.2	8.2	n.a.	n.a.
Lithuania	7.9	n.a.	7.9	n.a.
Luxembourg	75.8	n.a.	75.8	n.a.
Malta	14.1	14.1	n.a.	n.a.
Netherlands	34.6	34.5	33.0	n.a.
Poland	8.1	9.8	7.3	6.6
Portugal	15.9	22.2	12.7	13.8
Romania	5.5	13.0	n.a.	4.6
Slovakia	11.6	28.6	n.a.	9.4
Slovenia	17.4	20.9	n.a.	14.3
Spain	22.9	23.7	21.8	17.7
Sweden	31.5	45.6	27.9	27.2
United Kingdom	25.4	26.2	20.2	19.3

Table 2. Population by type of NUTS 2 region, 1990, 2010 and 2030 (%)

	Predominantly urban			Intermediate			Predominantly rural		
	1990	2010	2030	1990	2010	2030	1990	2010	2030
European Union	49.8	51.0	52.3	24.4	24.5	24.4	25.8	24.5	23.3
Austria	23.8	24.7	26.6	27.1	27.6	28.2	49.1	47.7	45.2
Belgium	80.2	79.8	79.0	13.2	13.4	13.8	6.6	6.8	7.2
Bulgaria	25.3	27.9	30.8	27.2	27.8	27.9	47.6	44.2	41.3
Cyprus	n.a	n.a	n.a	100.0	100.0	100.0	n.a	n.a	n.a
Czech Republic	22.5	23.8	25.8	39.5	38.6	37.2	38.0	37.6	36.9
Denmark	30.3	30.4	30.2	n.a	n.a	n.a	69.7	69.6	69.8
Estonia	n.a	n.a	n.a	n.a	n.a	n.a	100.0	100.0	100.0
Finland	47.0	49.9	51.3	n.a	n.a	n.a	53.0	50.1	48.7
France	47.7	48.1	48.9	19.7	19.9	19.8	32.6	32.0	31.3
Germany	50.0	50.8	52.5	32.5	32.2	31.3	17.5	17.0	16.1
Greece	34.9	36.4	36.4	21.9	22.7	23.8	43.2	40.9	39.8
Hungary	28.6	29.5	32.2	n.a	n.a	n.a	71.4	70.5	67.8
Ireland	n.a	n.a	n.a	73.4	73.0	71.8	26.6	27.0	28.2
Italy	53.9	53.8	53.7	32.4	33.0	33.5	13.7	13.3	12.8
Latvia	100.0	100.0	100.0	n.a	n.a	n.a	n.a	n.a	n.a
Lithuania	n.a	n.a	n.a	100.0	100.0	100.0	n.a	n.a	n.a
Luxembourg	n.a	n.a	n.a	100.0	100.0	100.0	n.a	n.a	n.a
Malta	100.0	100.0	100.0	n.a	n.a	n.a	n.a	n.a	n.a
Netherlands	86.9	87.4	87.7	13.1	12.6	12.3	n.a	n.a	n.a
Poland	42.1	42.0	42.4	25.0	25.0	24.9	32.9	33.0	32.7
Portugal	28.3	28.9	28.7	37.8	37.5	36.8	33.9	33.5	34.5
Romania	10.0	10.5	10.7	n.a	n.a	n.a	90.0	89.5	89.3
Slovakia	11.5	11.5	11.7	n.a	n.a	n.a	88.5	88.5	88.3
Slovenia	45.0	47.0	47.8	n.a	n.a	n.a	55.0	53.0	52.2
Spain	68.6	70.7	72.1	24.4	22.5	20.9	7.0	6.8	7.0
Sweden	19.1	21.6	22.9	50.8	51.5	52.1	30.0	26.9	24.9
United Kingdom	79.8	79.3	78.9	19.5	19.9	20.5	0.7	0.7	0.7

Table 3. Population in urban, intermediate and rural NUTS 2 regions, 1990-2030

	Population (millions)			Growth (%)	
	1990	2010	2030	1990-2010	2010-2030
European Union	470.4	499.2	519.9	6.1	4.2
Predominantly urban	234.4	254.8	272.1	8.7	6.8
Intermediate	114.7	122.3	127.0	6.6	3.8
Predominantly rural	121.3	122.1	120.9	0.7	-1.0

Table 4. Percentage population growth

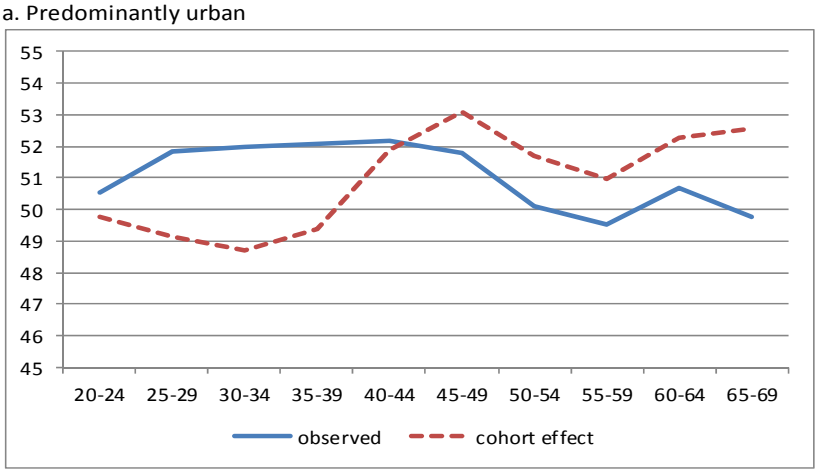
	Total change	Natural growth	Net migration
European Union			
1990-2010	6.1	1.6	4.6
2010-2030	4.1	-1.1	5.2
Predominantly urban			
1990-2010	8.7	3.2	5.5
2010-2030	6.7	1.4	5.3
Intermediate			
1990-2010	6.6	0.3	6.2
2010-2030	3.7	-3.0	6.7
Predominantly rural			
1990-2010	0.7	-0.5	1.2
2010-2030	-0.9	-4.2	3.3

Table 5. Number of regions experiencing population increase or decline

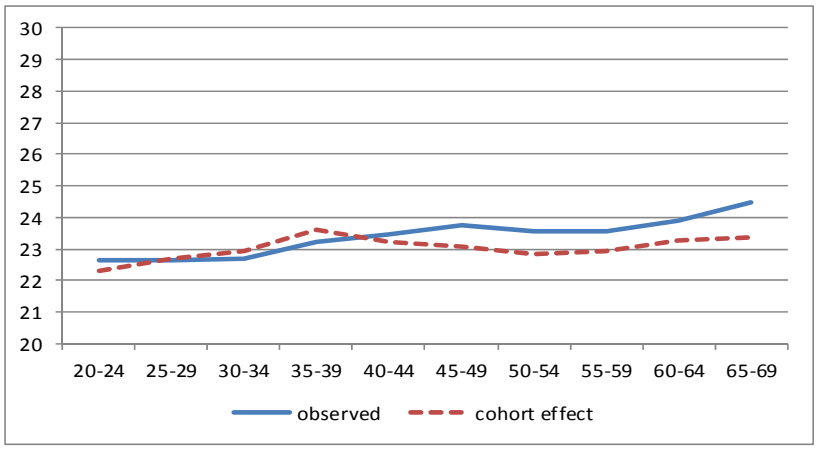
	2000-2010	2020-2030
Regions with population increase		
European Union	194	153
Predominantly urban	83	68
Intermediate	59	43
Predominantly rural	52	42
Regions with population decline		
European Union	73	114
Predominantly urban	13	28
Intermediate	16	32
Predominantly rural	44	54

Figure 1. Percentage of the population living in urban, intermediate and rural NUTS 2 regions, EU, 2010

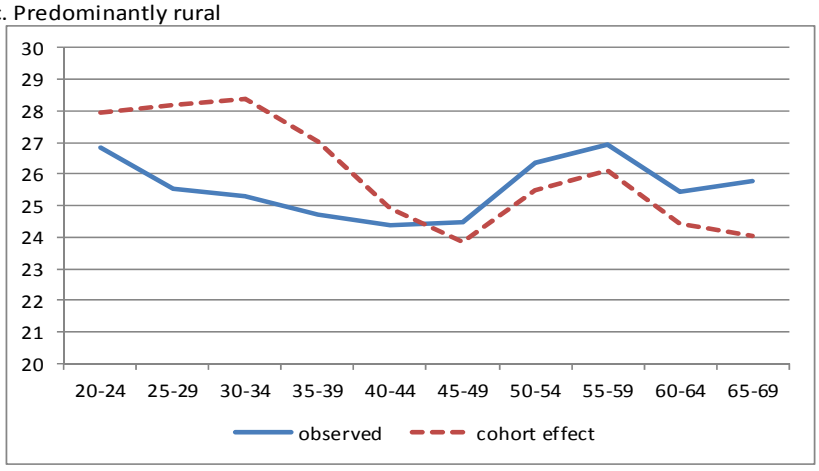
a. Predominantly urban



b. Intermediate



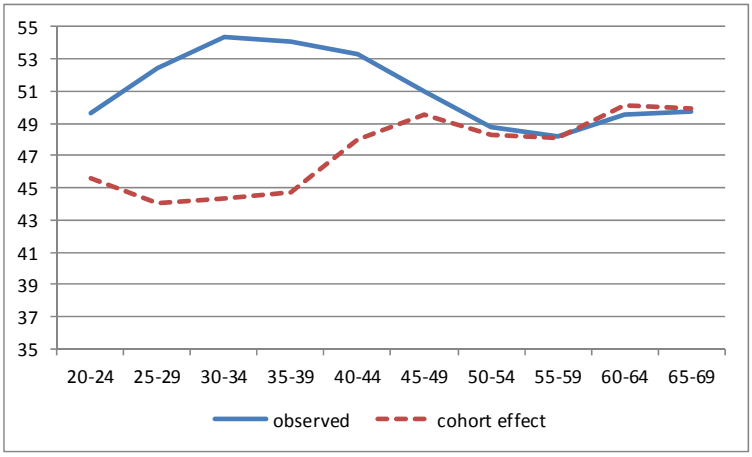
c. Predominantly rural



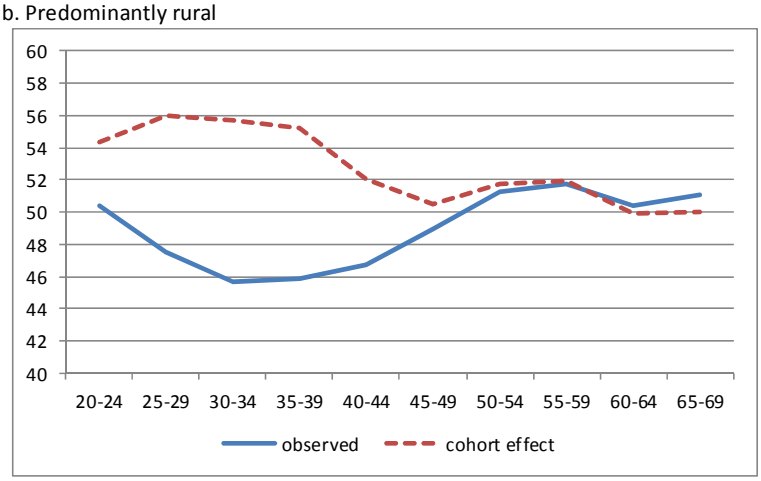
Note. Cohort effect shows the age pattern that would have occurred if there would not have been regional differences in migration and mortality between 1990 and 2010.

Figure 2. Percentage of the population living in urban, intermediate and rural NUTS 2 regions, Finland, 2010

a. Predominantly urban



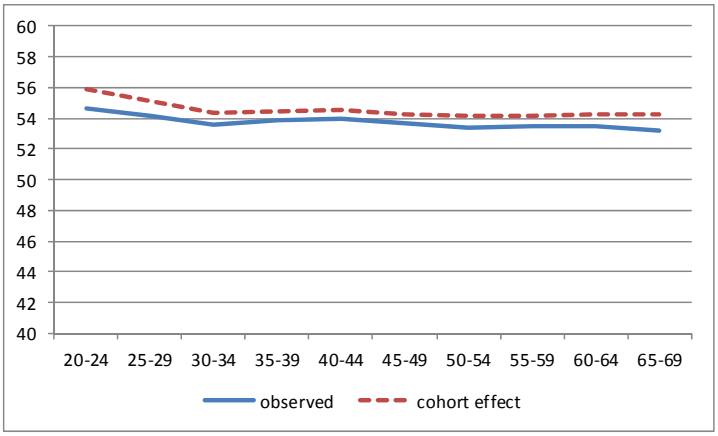
b. Predominantly rural



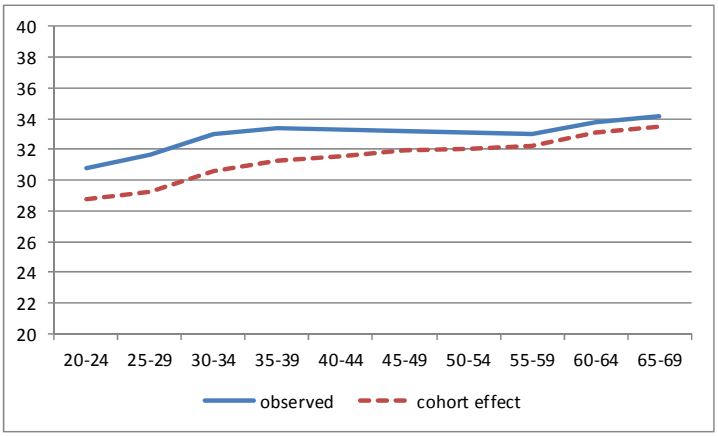
Note. Cohort effect shows the age pattern that would have occurred if there would not have been regional differences in migration and mortality between 1990 and 2010.

Figure 3. Percentage of the population living in urban, intermediate and rural NUTS 2 regions, Italy, 2010

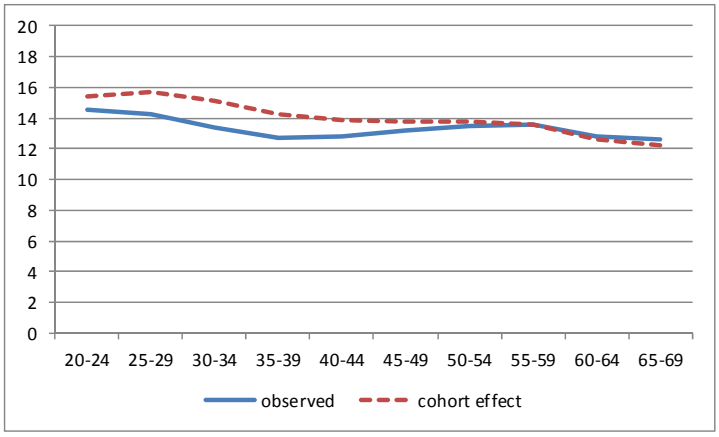
a. Predominantly urban



b. Intermediate



c. Predominantly rural



Note. Cohort effect shows the age pattern that would have occurred if there would not have been regional differences in migration and mortality between 1990 and 2010.

In 2010 Eurostat developed an urban-rural typology for NUTS 3 regions. However, EU regional policies are often founded on statistics and population projections at NUTS 2 level. Based on the Eurostat typology this paper develops an urban-rural classification of NUTS 2 regions. We use the new classification to examine differences in population change between urban and rural regions in all EU countries during the last twenty years and in the next twenty years. Half of the EU population is living in urban NUTS 2 regions. In the next two decades population ageing will lead to a slowing down in population growth in European countries, but urban regions will maintain a considerable growth rate.

The Netherlands Interdisciplinary Demographic Institute (NIDI) is an institute for the scientific study of population. NIDI research aims to contribute to the description, analysis and explanation of demographic trends in the past, present and future, both on a national and an international scale. The determants and social consequences of these trends are also studied.

NIDI is a research institute of the Royal Academy of Arts and Sciences (KNAW).