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REGIONAL CHALLENGES IN THE PERSPECTIVE OF 2020

REGIONAL DESPARITIES AND FUTURE CHALLENGES

A report to the Directorate-General for Regional Policy
Unit Conception, forward studies, impact assessment

BACKGROUND PAPER ON:

DEMOGRAPHIC CHALLENGE

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SUMMARY

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SYNTHESIS

Population is a key factor in respect to several economic and social issues. The amount of population and its rate of change affects the GDP per capita. An adequate availability of labour supply, in quantity and quality, for the different needs of labour markets is a basic condition for the economic development and maintenance of any region and country. Population, through its distribution on the territory, presses on the environment as well as on local and global resources, and exerts a differential demand for housing and infrastructures. Its composition by age and household structure has considerable effects on markets of goods and services. The amount and share of social spending on education, health, elderly assistance, etc. largely depend on the prevailing or emerging demand coming from the structure and trends of population.

Several drivers compose the demographic challenge. Most of them are internal to the regional demographic systems. Others are external and depend on the comparisons of population structures and dynamics of the EU regions with the patterns and trends of the rest of the World. Most of those drivers benefit of strong inertia (population momentum) due to both the massive turnover of cohorts and the normally slow change in behaviours affecting population dynamics or its structure.

In this study, three main drivers of the current demographic challenge in the EU regions have been singled out and have been used in making up the sensitivity index through their main components :

- Total population change;
- Changes in labour-age population;
- Population ageing.

In a global frame of reference, Europe presents a peculiar demographic situation characterised by: i) very low or below-zero rate of population growth; ii) steady growth or initial decrease of the labour-age population; iii) ageing processes which involve the entire population as well as its significant parts, labour-age population in particular.

Four critical areas have been singled out in respect to the EU27 regions' sensitivity to the demographic challenge by 2020:

1) The former Eastern Germany, with some extensions westwards;
2) The North-western part of Spain;
3) North-western and Central Italy, with some extensions southwards;
4) All the Bulgarian regions.

On the opposite side, we find the least exposed regions to the "demographic risk": the entire Ireland, most of the regions of France, the Netherlands, the South-eastern part of Spain, many English regions, some regions at the Eastern boundary of Poland. These demographic developments, highlighted in the analysis, will increase regional disparities between winning and losing regions.

A couple of discriminating factors emerge from this pattern: past and present fertility and migrations, internal to the EU27 as well as with abroad. Both factors impact on population structure by increasing or relieving population ageing, either by swelling or depleting the cohorts in young labour age, and/or by producing the new-born cohorts in sufficient/insufficient number to approximately maintain the present population number and/or structure.

There is a great diversity of demographic dynamics across the globe. Europe witnesses the clash between its mostly aged demographic systems which are now at around zero-growth and are heading to future population decline, in front of the young, still fast growing populations of neighbouring countries. Such different trends are expected to raise opposite socio-economic problems behind and beyond the Mediterranean Sea.

The demographic challenge keeps substantial links with the other challenges pointed out by the Commission Staff Working Document [EU 2008]: energy, climate change, and globalisation, to which also a security challenge may be added. Population – its number, its growth and its structure – contributes to the regional energy risk and affects climate changes through the dimension and kind of consumptions of services and goods. The worldwide provenance of the latter ones connects the EU regions to several external markets, while labour migrations and people moves give body to the globalisation of labour markets. On the other side, trends in the number and structure of the EU population in most of its regions "... will be to reduce the potential [economic] growth rate of the EU from the present rate of 2–2.25% to around 1.25% by 2040. The cumulative impact of such a decline would be a GDP per head of some 20% lower than could otherwise be expected." [EUCE 2088, 3]. New social risks may be perceived in multiethnic societies when their conflicts are not managed properly or the native population, as well as the integrated former immigrants, feel or are induced to feel the new immigrants as a threat to their security or standard of living [Antonenko & alii 2008]. Also international tensions and conflicts may partially come from population growth pressures which cannot find relief in migrations abroad because of too rigorous admission policies put into practice by the immigration countries.

Some changes in the future population dynamics are almost independent from the future macro-economic prospects and the relevant scenarios. The cohort turnover by 2020 shall modify the demographic structure and trends. Future migrations, internal or external to the EU, may change only partially those turnovers, so that their impact can be foreseen with large confidence.

The two alternative scenarios – the pessimistic one, which foresee a severe and perdurable economic recession, vs. the optimistic one, which imagines a fast recovery driven by innovation – mainly affect only the migration components of the demographic challenge. In that, much will depend on the ways and territorial distribution of the economic recession/development. Also the involvement and response of the neighbouring countries in those processes will have important returns on the foreseeable future of the European population.

Results of both scenarios confirm that European regions in 2020 will continue facing ageing and immigration. In the pessimistic scenario, ageing is more diffused and this negatively affects population change. In particular: social risks and costs of demographic change increase in more sensitive regions, while the future growth potential is limited in less sensitive regions. In the optimistic scenario, demographic constraints are moderately less stringent. In this context, more sensitive regions may experience increasing internal disparities in population ageing and agglomeration; less sensitive regions may experience lighter constrictions in WAP and in the future population growth. Both scenarios would require supporting social and economic adaptation of the different territories to demographic change, stressing the relevance of cohesion policy.

List of open questions aimed at focusing the debate

The present paper is drafted on the basis of the Commission Staff Working Document "Regions 2020" [EC 2008a] and of the main literature strands, as well as main international agencies' reports (see references in the Annex). The insights of these works are merged to analyse the impacts of the challenge on regional disparities. Two scenarios have been built according to two sets of assumptions.

According to the Commission Staff Working Document "Regions 2020" [EC 2008a, 8][1], the two main dimensions of population challenge are:

- The internal one, which deals with population ageing in its different aspects: increase of the number and/or the proportion of the elderly and old population; increase of the number of retirees in face of a steady increase, or a prospective decrease, of working-age population and, probably, of the workforce; the ageing of the latter one; the "de-juvenation" [Latten & Sanders 1990] of population; the below-replacement-of-cohorts fertility; the region-wide and extending below-zero natural change; the current and perspective decrease of many regional populations; the regional differences in all those drivers and the possible consequent internal moves.

- The external one, which comes from both the different EU trends in population growth and structure when compared to the much more vital trends in most of the rest of the world (US included), and the present and future high pressure by part of the young-labour-age population to migrate from the less and least developed countries towards the neighbouring or farther rich countries.

Since also policy interventions – apart those on foreign migrations and, indirectly, on the internal population mobility – have reduced and deferred effects on demographic changes in the short- (1-5 years) and medium-term (5-15 years) perspectives, population is often considered prior to other more volatile factors. Substantial effects, however, follow in the long run, so that any policy intervention which may affect demographic trends and behaviour should foresee those effects

[1] "The EU-27 population is projected to become both smaller and older, mainly as a consequence of declining fertility rates and increasing life expectancy. By 2050, there may be 48 million fewer 15-64 year olds and 58 million more people over 65. From 2017 a shrinking workforce will also reduce overall employment and act as a brake on potential growth in the Union.
Population growth in the EU will slow down considerably compared to key competitors, in particular the United States, China and India, by 2020. The EU will face one of the largest increases in old-age dependency ratios in the world after Japan. At the same time, in Europe's immediate neighbourhood, the Middle East and North Africa region will be home to the world's second fastest growing population, after sub-Saharan Africa.
Over the past decades, there has been considerable growth in worldwide migration flows. Economic differences between – and demographic changes within – developed and developing countries, against a background of trade, political problems and instability in countries of origin, have all contributed to a steady increase in international workforce mobility. Economic migrants respond to expectations and opportunities in target regions. European and national regulations determine admission and eventual integration into the labour market."

in order to avoid unwanted changes in future times. Short-sighted policies concerning population matters may have counter- or no effect on the real cause of their trends since – as it happens in the case of policies favouring only temporary immigration – they can succeed in mending current problems, but let the underlying demographic mechanism unrepaired.

In the light of the aforesaid problems and looking to the results of the following analysis the most relevant open questions are the following:

- Is it worthwhile to put into action any specific population policy to tackle the demographic challenge (especially the one from the lowest-low fertility) internal to so many EU countries and regions?
- How regional population decline can be stopped or at least slowed down? Is immigration from abroad the sole solution?
- Is the regional diversity in population trends and structures only a problem or is diversity an incentive to unity and people integration?
- Should the EU investments follow the different patterns and trends of population or (partially) counteract them in order to try to redress them?
- How much the prospective shrinking and ageing of labour-age population can be counterbalanced by a more inclusive and lasting labour activity? In this regard, is a generalised long-lasting education the best way to foster innovation, increase productivity, and fulfil both quantitative and qualitative labour-market needs?
- Do the growing number of old people and their specific needs only cause problems to public spending or can they foster the development of a specific sector of the economy and stimulate innovation?
- Which can be the acceptable EU or governments' policies to drive the internal moves of young labour-age population and/or to reduce the EU internal moves of labour-age population not fully motivated by labour chances or family reunions?
- At what extent a steady population growth, or even its slow decline, is a real problem in international comparisons for the socio-economic development as well as for the global and local environmental risks?
- What are the best foreign immigration policies – free-market vs. selective flows and, in the latter case considering which characteristics of migrants? – in the view of the economic development of EU countries and regions?
- Would a common immigration policy better face the migratory pressure from neighbouring countries and, in case, of which kind: barriers, quotas, bilateral agreements, foreign economic investments, international cooperation, etc.?

1. Introduction

1.1 Goals of the analysis

The present paper provides a concise analysis of the potential impact of demographic change on regional disparities in Europe and of the neighbouring countries role in this process, in the perspective of 2020. The paper aims to stimulate a discussion, involving international institutions as well as independent experts, from which two opposite scenarios will be produced.

The analysis is part of a broader project of DG REGIO, which, together with the World Bank and the Bertelsmann Foundation, has established the Regional Future Initiative, a network of experts looking at the future of regional trends. The objective of the network is to analyse and build a consensus on the future impacts of key challenges (globalisation, climate change, demographic change and migration, energy risks and social polarisation) that regions will face in the perspective of 2020 and to elaborate and discuss possible responses. The output of the network should provide a basis for policy discussion and choices in the coming years.

Population is a key factor in respect to several economic and social issues[2]. The population is the consumer of goods and services and, at the same time, in large part it is their producer. Social services are provided to meet population needs according to its composition by age, ethnicity, education, work status, household and family structure, territorial distribution. Directly or indirectly, most of policy interventions deal with population, which is the main object of the decisions and interventions of policy and planning. In those interventions, population – with its dimension, socio-demographic structure and territorial distribution – puts often forth important constraints to the possible solutions. On the other hand, population is the protagonist in electing and controlling the policy-makers and local administrators, and it is, or should be, the main stakeholder in the governance processes.

Demographic change impacts

The challenges from population trends and structures are addressed in the view of their present and future impacts on the:

- Labour market;
- Welfare state;
- Markets of goods and services;
- People's well-being and their actual and perceived security;

[2] "The ageing and shrinking of the population has fundamental repercussions for health and social security systems, for the economy and the labour market, and for public finance. Ageing leads to increased demand for health and long-term care and rising health care expenditure. Demographic change is therefore of far-reaching importance for the economy and society, since demographic decline strongly influences almost all relevant areas of policy action" [EC 2008a, 9].

§ Environment.

An adequate availability of labour supply, in quantity and quality, for the different needs of its labour markets is a basic condition for the economic development and maintenance of any region and country. During expansion times, a highly-educated population in young labour age can fuel innovation through the task flexibility of young-workers, their high productivity (for their higher education and lower wages), and territorial mobility. However, in front of economic stagnation or insufficient development, an excess of population in working age may cause important problems of unemployment and labour inactivity, with different demo-socio-economic consequences by gender, age and household composition. In- and out-migration often come to solve labour shortages or supply excess.

The amount and share of social spending on education, health, elderly assistance, etc. largely depend on the prevailing or emerging demand coming from the structure and trends of population. From time to time, the welfare state of developed countries has to adapt its targets and goals according to the changing shape and dynamics of population. The now growing problem of social security systems in front of the increasing number of retirees shows only one aspect of the impact of population change and structure on the welfare state.

Since people change their preference schedule regarding consumptions according to their age and household stage, as well as their purchasing power (their "frozen assets" included) and spending propensity, the population structure of a region has considerable effects on its local market of goods and services. Also the rate of population change, with the new inflows by birth or immigration, nourishes and modifies the frame of local consumption markets.

GDP per capita notionally distributes the gross domestic product of a region among its population, whose amount and rate of change affects – respectively at the time point and dynamically – the wealth produced per person. Though only on average, GDP per capita measures the economic well-being of a persons, but it also throw lights on the whole standard of living of the relevant society.

A critical level of immigrants and/or too rapid immigration flows sometime produce social conflicts in the host population, especially if labour redundancies or security problems appear.

Population number, through its distribution on the territory, also presses on the environment as well as on local and global resources, and exerts a differential demand for housing and infrastructures[3].

[3] The well-known Ehrlich equation makes the environmental impact I linearly dependent from the amount of population P, its affluence A (as measured by GDP per capita), and a technology factor T: $I = P \cdot A \cdot T$ [Ehrlich & Ehrlich 1990]. In a previous version [Ehrlich & Holden 1971], the population number has the same role, while affluence is expressed in units of consumption of products and services per head of population (which, through appropriate scale of equivalence, should be able to consider the differences in consumption preferences according to gender, age

Drivers of demographic challenges

Several drivers compose the demographic challenge. Most of them are internal to the local (regional or area) demographic systems. Others are external and depend on the comparisons of population structures and dynamics of the EU regions with the patterns and trends of the rest of the World. In particular, the strong differences with most of the neighbouring countries (especially of the MENA region[4]) in population growth rate and in the number and share of young people in working age increase pressure for migration to EU. However, almost all the drivers are founded in the past – the cumulated history of the relevant population in cohorts' dimension, reproductive behaviour, mortality, migrations.

Most of the drivers of population challenge benefit of strong inertia in respect to the other challenges considered in the study. This inertia (population momentum) is due both to the massive turnover of cohorts and the normally slow change in behaviours affecting the population dynamics or its structure[5].

Following the suggestions of the Directorate General for Regional Policy [EC 2008b], three main drivers of the current demographic challenge in the EU regions have been singled out:

§ Total population change;
§ Changes in working-age population;
§ Population ageing.

In the demographic machinery, the three drivers are not mutually independent, since a declining or below-zero population change causes the ageing of population structure as a consequence, and it shall lead to the shrinking of labour-age population immediately, if the negative total population change comes from a negative migratory change, in the turn of a biological cohort (20-30 years) if it derives from below-replacement fertility.

In a global frame of reference Europe (EU and almost all the non-EU countries) presents a peculiar demographic situation characterised by: i) very low or below-zero rate of population growth; ii) steady growth or initial decrease of the labour-age population; iii) ageing processes which involve the entire population as well as its significant parts (e.g., working-age population).

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life cycle and household composition) and the technology factor is better explained by the environmental efficiency of the production, use and disposal of the consumption units.

[4] The WB MENA region includes Middle-East and North-Africa.

[5] "Most demographic phenomena evolve at the pace of a generational time span and, in modern culture, usually also change at a gradual pace. [...] The only demographic phenomenon that might evolve at a faster and more sudden pace is immigration, because this depends largely of policy decisions. But also this determinant of the demographics of 2020 is subject to the inertia of present political and social constellations and cannot, consequently, be supposed to undergo fundamental changes, e.g. in the direction of allowing massive, uncontrolled or non-selective immigration." [NIC 2020 project 2004, 2].

The situation is much diverse within the European Union[6]. Any NUTS level, however, can hardly describe those differences, since they would be better understood in a geographical or functional frame of reference (coastal vs. internal areas, plains vs. mountains, urban vs. rural areas, bordering vs. intermediate and inner areas, etc.) rather then in the administrative ones. This diversity, if managed appropriately, could enrich the picture of the area specificities and promote population mobility and, possibly, cohesion.

1.2 Literature review

Population growth is considered the natural course of things and the basis of economic growth. Over the last centuries and especially in the last decades the groundwork for a slowing or negative demographic growth, and causing an ageing of the populations concerned, were laid.

The long-term trends in demographic change are summarized in the model of the 1st demographic transition, which describes the passage from high levels of birth and death rates to a new equilibrium of low birth and death rates. After progress in health and nutrition lead to a decline in death rates, birth rates stayed at high levels leading to high population growth rates before a new equilibrium was reached at low levels. During the 2nd demographic transition a combination of factors lead to radical changes in the living arrangements and patterns of family formation and in most cases to low fertility and a shrinking population. D. van de Kaa and R. Lesthaege have contributed widely to the understanding of the underlying factors of the ensuing changes in behaviour. D. Coleman [Coleman 2006] and D. Myers put an emphasis on the process of immigration and describe current trends as a 3rd demographic transition: low fertility combined with high immigration lead to a rapid change in the composition of the population caused directly and indirectly through immigration. Whereas Coleman evaluates the consequences of this transition negatively, Myers emphasises the need for the integration of immigrants and for the expansion of educational opportunities toward them. This position supports the EC Communication on Immigration Policy [Com(2000) 757] seeing immigration as a potential for growth.

Whereas for the model of the 1st demographic transition a territorial diffusion process was observed, the outcome of the 2nd demographic transition is less uniform: regional specificities do persist. It is probable that the 3rd demographic transition is even less uniform. The phenomenon of immigration hinges at the regional economic and social development creating opportunities for immigrants. As a consequence, the diffusion process of the 2nd and 3rd demographic transition is more and more dependent on the socio-cultural and socio-economic

[6] See Table A.2.8 in the Statistical Annex, which reports the NUTS2 situation described in average values and variability for some regional demographic variables drawn or calculated from the EUROSTAT and ESPON databases. Some of the variables are also mapped in the Annex.

characteristics of the regions. In other words: not all European regions will experience heavy international immigration.

Reports on demographic change touch most often on the aspects of growth or decline of the population and changes in the age structure (population ageing). However, at the local or regional level changes in the structure of households (diminishing average household size) and the in increasing ethnic or cultural heterogeneity of the population are of great importance. Further, taking the example of the labour markets, the heterogeneity of the working-age population regarding demographic and educational or skill characteristics is important.

Several studies analysed in recent years the demographic structures and trends in Europe at the national and the regional level.

Studies on the demographic structures and trends at the national level in Europe

In the Commission Communication COM(2006) the ageing population in Europe was identified as the major demographic challenge for Europe. The ageing population has an impact on the labour market, on productivity and economic growth because the working-age population diminishes, whereas the higher numbers of elderly have an impact on social security and public finances.

Detailed information regarding the processes behind the demographic change (population ageing) and its economic and social impacts are presented in Commission of the European Communities [EC 2007]. The report discusses in detail the changes in fertility and mortality and their underlying processes. Some data on migration based on estimates prepared by the UN Population Division are reported: 39,593 thousand non-nationals are living (2005) in the countries of the European Union (EU27), which represents 8.3% of the total population. In the following countries the non-nationals represented more than 10 % of the total population: Luxembourg, Latvia, Estonia, Austria, Ireland, Germany, Sweden, Spain, France and Netherlands. The variation of the cohort size is also discussed. The report shows the effect of the cohort size taking the changes in the working-age population as an example. The working-age population is expected to increase over the next 5 to 10 years, so that the labour force will continue to increase depending on the economic activity rates. A key challenge will be to meet the demand according for educational and skill requirements. The report also discusses the impact of ageing for economic productivity and for public finances and intergenerational solidarity (pension system, healthcare and long-term care).

A Netherlands Interdisciplinary Demographic Institute (NIDI) report puts the demographic trends into the perspective of the life course structured by the behaviour of individuals, couples, families or households and the social context of this behaviour. Regarding population ageing, it states “All Member States are witnessing population ageing i.e. changes in the age-structure where the older age-groups take prominence over the younger and the mean age of the population is rising. The degree of population ageing however varies among

Member States, witnessing different demographic histories. [...] , low fertility and increasing life expectancy are the root causes of population ageing. These root causes are firmly embedded in the social, cultural, economical and medical developments of society and thus population ageing, in addition to being a natural outcome of ongoing and structural trends, basically is man-made." [van Nimwegen and Beets 2006, 7]. The report elaborates on the phase of working in the life course emphasising the declining labour force participation of the younger and elder persons, the ageing of the European labour force. Further the phase of retirement is analysed under the perspective of social protection, the pension system and the health care system.

At the European Population Conference 1999 population scenarios for the 21st century were presented [De Beer and van Wissen 1999, van de Kaa et al 1999]. The present demographic situation and its heterogeneity among the European nations are the result of historic processes [van de Kaa 1999]. Leridon [1999] summarizes the revolution that took place in recent decades in Europe regarding fertility and the various aspects (childlessness, desire for children and ideal number of children) of its steep decline. Gesano [1999] analyses the trends in economic activity and discusses the role of unemployment, a problem that saw its political relevance decline over the last years, but is threatening again. Okólski [1999] developed a rather liberal scenario regarding international migration flows towards Europe. In fact, and as already noted above, migration inflows reached an unprecedented level in several European countries in the first years of the 21st century.

Studies on the demographic structures and trends at the regional level

The concise demographic atlas of the European regions [ESPON 2008] gives an overview of the demographic trends over the last 10 years at the regional level (NUTS2 and NUTS3). It confirms the considerable diversity of demographic structures and trends across Europe. " The trend of population and development in Europe in the period 2001-2005 suggests an East-West polarisation between regions with population growth [...] and regions affected by population decline [...] Most of the regions with population growth are located in the Central-Western part of Europe, in the Southern part of the Nordic countries and Iceland. In addition, some regions with good amenities in Greece and Cyprus, as well the immediate surroundings of capital city regions in Eastern Europe reveal a positive population development." [ESPON 2008, 6]. The European regions with positive natural change and migration gain throughout the period 2001-2005 are the most frequent (34 % of the European regions), whereas regions with population decrease due negative natural change and negative net migration are less frequent. The latter are located in the periphery of Europe, especially Eastern Europe, including the Eastern regions of Germany. But also other regions in Northern and Southern were challenged by a process of depopulation in 2001-2005.

The demographic change in the European regions in recent years is determined by migratory movements. "This means to a large extent that in-migration regions

have a higher demographic potential for population growth. However, a consequence of high in-migration rates can be important challenges related to ethnic diversity and the patchwork of cultural groups." [ESPON 2008, 6]. The East-West polarisation of demographic change in recent years challenges the objective of territorial cohesion: the regions experiencing population decline are concentrated in the Eastern and Northern Europe. "A negative migration balance is mainly observed in many regions in Eastern Europe, in particular in Estonia, Latvia, Lithuania, Romania and Bulgaria. This situation is particularly visible in some isolated rural regions and former industrial areas in Poland (such as Silesia) and Romania. Regions with a positive migratory balance are the capital regions, Sophia, Warsaw, Vilnius, Riga and in addition the region of Varna." [ESPON 2008,10].

For what regards migrations, a more heterogeneous situation, compared to natural population changes, can be observed inside most European countries. The effects of interregional and international net migration combine to generate disparities in the regional migratory balances. The Eastern and Northern European regions with negative net migration are loosing population towards the national economic and political centres and other European regions. Whereas the European regions with a positive migration balance depend on inflows from other European regions and migration flows from Non-EU countries. In most cases, data do not allow the analysis of the demographic and socio-economic selection process behind net migration data. For example, young and well trained migrants (interregional and international) are attracted by the more prosperous and economically dynamic regions, whereas retirees and older migrants are attracted by regions with a relative favourable climate and well equipped with amenities.

Whereas recent demographic change in most regions defined as urban is positive (85%), the remote rural regions do not show a clear relationship with demographic change [ESPON 20008]. However, especially some cities in the Eastern part of Germany and in Eastern Europe are affected by the phenomenon of shrinking cities, often cities that lost their economic base.

A recent report from the Berlin-Institut [2008] classifies the European regions regarding their economic and demographic performance. The aspects of the demographic performance are population growth (Europe will not return to growth), fertility levels (policies to sustain accordance between work and family life), economy and labour (qualifications and skills as key variable for an fair economic growth), population ageing and social policy (solidarity between generations as best solution), migration and integration (immigration necessary for regional economic growth in an ageing society, integration through human capital formation), education (the formation of human capital as a growth potential). The report looks at metropolitan areas as the demographic and economic growth centres in Europe. Demographic policies – EU wide and national – are not interlinked with local, urban and regional policies. The regional consequences or impacts of demographic trends refer to specific policy fields. For example, the authors of the study "The Impact of Demographic Change on Local and regional Government [Holbach-Grömig & Trapp 2006] emphasis the variability of the demographic changes at the regional and local level and the importance

of the spatial context. However, the demographic changes influence labour and housing markets, social security system, infrastructure, urban and spatial planning, education, budgets and finances. The policy fields selected in the study were social services, spatial planning, employment and social inclusion, local community activities, which are presented in the form of examples for 4 countries.

2. Regional exposure to demographic challenges: population ageing, low natural change and migrations

2.1 Sensitivity ranking of European regions

In order to produce a sensitivity index of the demographic challenge in the European regions, the three previous drivers have been considered:

- Total population change;
- Changes in working-age population;
- Population ageing.

Though not mutually independent, the three drivers can be addressed separately with their peculiar components, each of which has its own present level and prospective trend. Specific macro and micro determinants back them, so that some direct and indirect policy interventions can partially modify their future trend.

The inertia of population drivers helps in grounding the analysis of present situation and the forecast of future trends on sound data and reasoning. Most of the components of trends from present time to 2020 are largely defined by the turnover of cohort already alive. Apart foreign and interregional migrations, future population dynamics shall derive from those turnovers and possible changes in reproductive behaviours and survival rate. Being likely limited the latter changes and, anyway, having limited effects on the whole population by 2020, we preferred to base our study on past data rather than using population projections, which necessarily incorporate the producer's hypotheses on migration, for instance. In fact, the following step of producing two alternative scenarios, one 'pessimistic' and the other 'optimistic', to sketch the possible future impacts of population on the EU regions makes those hypotheses on future migrations or other demographic components part or consequence of the scenarios, so that we will incorporate them in our exercise, at least in a qualitative way.

The sensitivity index summarises the indicators through which the components of the three drivers have been measured[7]. It measures the 'demographic risk' of each EU region in the next fifteen years as foreseeable from the 'current' situation. It represents both the level each component has registered in the recent past and the turnover that can be expected to affect, in the next fifteen years, the specific part of population mainly responsible for that component. It also incorporates the importance of the composing indicators in differentiating the EU regions regarding demography: the higher the regional variability of an indicator, the more important it was considered in making up the sensitivity index. As shown in the Appendix, our sensitivity index has been reduced to a 0 – 1 range, so taking an average value of 0.532 and standard deviation of 0.183 for the EU NUTS2 regions[8].

[7] See the Methodological Appendix for details and methodology.

[8] Because of their outlying values in the basic variables we excluded all the French overseas departments and the Spanish autonomous towns of Ceuta and Melilla. Therefore, the EU27 regions considered here are 265.

Because of the basic reference data and the way of calculating it, the sensitivity index is expected to vary in the EU regions especially according to:

- their demographic history as cumulated in the population structure, in which the cohort turnover shall maintain or change the population factors of their future demographic dynamics;
- their present demographic levels which, for the aforesaid inertia of most of the demographic variables, can be expected to change only slightly in a short- and medium-time projection or, anyway, to have small effects on the population foreseen by 2020 in the absence of further migrations.

The demographic history, in particular, has some original common traits especially marked by the past century great events like the Second World War, the Post-war reconstruction, the Oil-crises of the Seventies, the falls of the "Iron curtain" (the latter ones having had effects more on specific areas, distributed over a considerable time-lag), etc.. These events have affected the demographic behaviour in their times or afterwards. For instance, the relative dimension of the cohorts born in the relevant periods suffered their effects, in general. Never the less, the population of some regions was affected more and other less according to the demographic stage in which they were and their sensitivity to those specific transformations.

Adding to that, we have the effects of more specific regional events like natural or man-caused disasters, the opening or closing of big industrial plants, or large investments for regional development. Especially through population moves, those events may have changed part of the regional population considerably.

Migrations, both internal to each country and abroad, have interested the EU regions and their demographic cohorts in very different ways. Outflows from the regions which experienced late reductions in fertility – namely, Ireland and most of the Southern regions of the EU Mediterranean countries – have partially relieved the pressure of cohorts on their local labour markets and, at the same time, have mitigated possible shortcomings in the cohort turnover in the regions of immigration. Those internal moves have also produced some equating effects in regional birth rates both because of the redressing of reproductive cohorts and the diffusion of more reduced reproductive models also in still high fertility areas through the migrants' experience and model.

But internal migrants to the countries or the EU have moved and are still moving also from low-fertility areas. The massive East-West moves that in Germany followed the Fall of the "Berlin Wall" have deprived the population of large part of Eastern Germany of the young productive population and, demographically speaking, the reproductive cohorts which moved to Western German, especially into its Southern regions. In this case, like in other depopulating areas, migrations have aggravated the problems linked to the demographic structure and the cohort turnover in areas of emigration, while they may have contributed positively to the demography of areas of destination. In a more current view, many regions of the EU New Accession States are experiencing important outflows which cause population losses, especially in the cohorts in young working age.

The migration effects, however, cannot be seen only in the short period. The young cohorts who settle down in a region, probably rejuvenating its population directly and also indirectly by their offspring, will probably stay there, moving their impact in latter ages of population structure till when they shall enter elderly and old ages. If new immigrants do not refresh the influx continuously the eventual effect of former immigration is population ageing again. This is what is happening in some industrial regions that formerly experienced fast economic growth and, consequently, have been asking for immigrants, but that in recent time have lost their attractiveness and, therefore, their population is now ageing fast.

Also the interregional moves of retirees must be considered in the ageing process of some regions characterised by agreeable environment and mild climate. Though not very important in their number, their presence may have changed the economic environment of those areas and, consequently, their attractiveness both on their young population and young people from other regions or abroad.

2.2 Main patterns of sensitivity in the EU

The geographical pattern of EU regions' sensitivity in front of the demographic challenge is quite evident from Map 1. Four critical areas can be singled out:

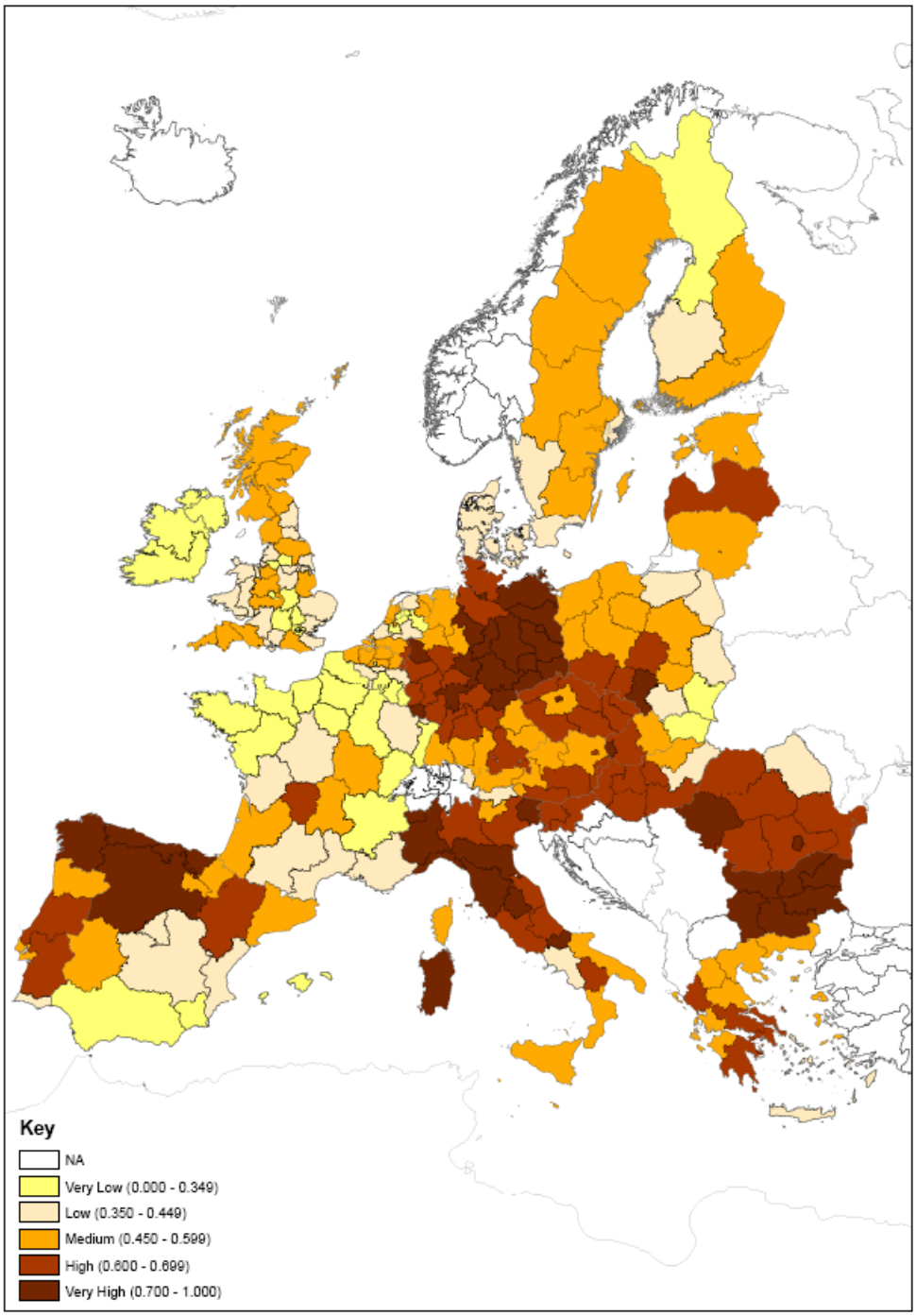
1) The former Eastern Germany, with extensions also in the central part of western Germany;
2) The north-western part of Spain;
3) North-western and Central Italy, with the extension to the Southern region of Molise and the Sardinian island;
4) All the Bulgarian regions.

On the opposite side, we find the least exposed regions to the "demographic risk": entire Ireland, most of the regions of France (central and South-western regions excluded), part of the Netherlands, some regions at the Eastern boundary of Poland, Slovakia and Romania, one in Finland, the south-eastern part of Spain, while also many English regions are less affected in Great Britain.

A couple of discriminating factors can be singled out from this pattern. The most evident factor deals with fertility, both for its current level (positively in Ireland, Northern European countries, Poland, Luxembourg and France; negatively in Spain, Italy, Greece, and most of Eastern and Balkan countries) and the structural effects of its past levels (positively: most of the same countries now at "higher" fertility, to which some specific regions of Southern Italy and Spain are added; negatively, Germany, especially Eastern regions, and Northern and Central Italy).

The second factor is migration, again both for its recent moves from East to West in the EU or from the non-EU countries to several EU regions and areas, and the cumulated effects of past migrations especially in the former colonialist countries and Germany. The effects of the specific moves of retirees or elderly people are also identifiable in some islands or regions facing the Mediterranean Sea.

Map1 - Regional sensitivity to demographic challenge



Both factors impact on the population structure by increasing or relieving population ageing either by swelling or depleting the cohorts in young working age, and/or by producing the new-born cohorts in sufficient or insufficient number to approximately maintain population structure. The different sustainability of the welfare system in the EU regions and equity problems in caring for elderly people are the socio-economic consequences of those demographic mechanisms.

Similar, more direct and more short-termed effects have those factor on the present and future dimension of working-age population and on its internal

demographic structure. Here the consequences may be important on the real possibility of developing or even maintaining the regional economic system. Moreover, significant shortage of flexible workforce may call for future immigration.

2.3 Challenge intensity: global and European recent trends and future developments by 2020

The demographic situation and future trends are described perfectly in the Commission Document Demographic Challenges for European Regions [2008, 5]:

- World population will continue to increase, in particular in developing countries, while in the developed regions it will remain largely unchanged[9];

- A growing number of countries are rapidly ageing as result of declining fertility and increasing longevity[10]; ageing affects not only Europe but also the U.S. and Japan, as well as China and India; however, the European old-age dependency ratio will be well above the others in 2020 (except for Japan);

- EU population growth will slow down considerably and start to decline after 2025[11];

The Tables A.2.1 – A.2.6 in our Statistical Annex describe the trends of main demographic variables in the EU27 as compared to the World context by development regions. A longer time span than 2005-2020 is used there in order to make the different trends evident.

The 'exhausted' demography of EU27 is proved in any variant of the UN projections. Also when they forecast a population increase (Table A.2.2, Medium and High variant), the EU27 population is sustained by the hypnotised immigrations, since its natural change shall be negative or around zero, at maximum (Table A.2.4). Even when fertility is supposed to increase (Table A.2.3), the population structure is such that the number of births shall decline because of the declining number of women in fertility age, while the number of deaths shall increase only because of the increasing number of the elderly and oldest-old population.

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[9] Global population growth is projected to reach 9.1 billion by 2050. Around 95% of the population growth will occur in the less developed world regions, in particular in the 50 least developed countries, whose population is set to double. The fastest population growth will take place in Africa. The population of the more developed regions is expected to remain largely unchanged at 1.2 billion, including the growing contribution of international migration. Net migration from developing to developed countries is expected to average 2.3 million persons a year after 2010.

[10] Between 2005 and 2050, half of the increase in the world population will be accounted for by a rise in the population aged 60 years or above, whereas the share of population under age 15 will decline from 28% in 2005 to 20% in 2050.

[11] By 2050, there will be 48 million fewer 15-64 year old people and 58 million more above 65. A shrinking labour force will potentially reduce overall employment and act as a break on growth. EU population will account for 6.4% of the world's population in 2020 and 5.2% in 2050 compared to 7.5% in 2005.

Also the other UN regions are supposed to converge towards a smoother demography, but the 'population momentum' of the less and least developed countries prevails in the next twenty years, so that their population in 2030 shall be 1.3-1.4 times the current one, notwithstanding the emigrations supposed in the exercise. Population ageing will appear also in those countries, surely causing important problems of sustainability there. However, their main problem from the population structure is, and in the next twenty years shall be, the amount and proportion of young people entering the working age 15-24 years: they will maintain a share from one third to one forth of the entire population, being from 1.5 to 2 billion. They will be searching for work and means of survival wherever possible: all those who cannot find satisfaction at home will be willing to migrate, unless appropriate interventions are organised internationally [Visco 2008].

2.4 Main features of demographic challenges in neighbouring countries

There is a great diversity of demographic dynamics across the globe. Europe, especially at its Southern boundaries, faces the line between the low and lowest-low fertility countries of the continent and the still high fertility countries on the Southern and Eastern rims of the Mediterranean Sea. Beyond them there are the highest-high fertility countries of Western Asia and Sub-Saharan Africa. The differences in mortality and length of life largely follow that same line, though also important internal differences exist in Europe, especially because of the higher mortality in the Balkan and former COMECON countries.

Because of the long-term differences in fertility and mortality, also the population pattern by age is notably different across that line. Though in quite all countries of the world population is now ageing as a consequence of fertility reductions, almost all the European countries and regions suffer for the over-presence of elderly and oldest-old people, while the MENA countries – as well as those in Western and Southern Asia and in Sub-Saharan Africa – have very young populations. This situation, when accompanied by fertility reduction and decrease in infant and young mortality, is greeted by the international Agencies as the "demographic window" during which the bulk of a population passes through working age. A strong opportunity for the country economic development should follow, but, in case that the internal labour market does not swell adequately, number of people in young working age will press to find work and way of survival in the rich countries.

In developed countries population is now ageing, mainly thanks to the medical improvements in mature and elderly survival, strongly aided by the arrival in old ages of healthier and more attentive cohorts. The consequence is not only an increasing number of people in post working age, but also, in many countries, the fast expansion of the oldest-old population (80 years and over), which asks for special health care and assistance. At the same time, and especially in the next

future, the small cohorts born in the last thirty years in many countries of Southern and Eastern Europe are entering the labour force, while the post Second-world-war baby-boomers are leaving it. The demographic shrinking of the internal labour supply may follow, unless the now "sleeping" labour force (not working women, young and mature people) is put into action and/or retirement age is postponed.

Europe consequently witnesses the clash between its mostly aged demographic systems, that are now at around zero-growth and are heading to future population decline in front of young, still fast growing, populations. Important migratory flows cross the line which, lying in the middle of the Mediterranean see, divide them. However, immigrants come to Europe from farer areas as well, following both traditional (mainly drawn on the former colonial routes) and innovative paths.

Besides the EFTA countries, EU boundary regions also face the former USSR and the Balkan countries not yet incorporated in the Union. The demographics of most of them may seem similar to the EU in population structure and fertility behaviour. Never the less, apart the EFTA countries, the higher mortality and intense out-migration from many of them make their population decrease or stagnate. Though still more abundant and younger than in most of EU27 countries, their working-age population is near to shrink and aae rapidly, so reducing the potential for further migrations to the rest of Europe, at least by young workers. Population ageing, on the contrary, is not expected to increase much there in medium times.

Table A.2.8 and Figures A.2.1 – A.2.3 in the Statistical Annex illustrate the different situation and trend in the EU27 as compared to its neighbouring countries: the rest of Europe countries and the MENA region[12]. The current situation is quite different between Europe and MENA for what regards fertility (1.5 vs. 3.1 children per woman, on average), the rate of population change (stagnation vs. a 2% growth a year), and population structure, with the trivial presence of elderly people in the MENA region (4% vs. 17% in the EU27 and 12% in the other European countries) and the impressive pressure there of young people 15-24 years old, who have just entered the working age: more than one third of the population in the MENA region, one forth in the rest of Europe, and only one fifth in the EU27.

From this very different situation stem fairly different trends as foreseen in any variant of the UN 2008 population projections [UN 2009]. Though total fertility rate is supposed to converge by 2050 in the three group of countries around the cohort-substitution level[13], the differences in the annual rate of natural change shall be maintained consistent by the current and future population structure (Figure A.2.2). In fact, the share of young population is expected to decrease in the MENA region

[12] For the MENA region the WB definition is used: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Tunisia, UAE, Yemen. Consequently, the 'Other European countries' are more inclusive than their usual definition: Albania, Armenia, Azerbaijan, Belarus, Bosnia, Herzegovina, Croatia, Georgia, Iceland, Moldova, Montenegro, Norway, Russia, Serbia, Switzerland, Macedonia, Turkey, Ukraine.

[13] TFR = 2.1 children per woman. Actually, the Low variant fixes TFR around 1.5, in 2050, and the High variant foresee TFR = 2.4 by the same date, but, in the case, also the MENA region has about the same targets, respectively.

only since now and to maintain over one forth of the population till 2020 while, especially in the EU27, the same share shall fall to one sixth (Figure A.2.3). The following differences in the quota of women in childbearing-age completely justify the high values of birth rate, which sustains the future natural change in the MENA region [WB 2009]. On the other side, the current impressive difference (13 percent points) between EU27 and MENA countries in the share of elderly population is destined to enlarge up to 15 percent points by 2020, while in the other European countries the elderly population is projected to temporary reduce its quota, for the passing of the small WW2 cohorts through old ages and, probably, for the effects of the current higher mortality in former COMECON countries, which is affecting the male population in mature ages, especially.

Such different trends are expected to raise opposite socio-economic problems behind and beyond the Mediterranean Sea. The decreasing number of working-age population in the EU27 countries shall be hardly able to sustain the financial (for pensions and healthcare) and social (for the assistance and housing of lonely old people) burden of the increasing number of their elderly people[14]. Budget constraints could reduce the standard of living of the latter ones in case of a prolonged economic recession, and reduce the level of healthcare offered, with unpredictable effects even on their long survival. At the same time, the shrinking of working-age population could make difficult to increase or even maintain the EU27 GDP. The labour force ageing could reduce innovation and productivity of the economic system, while the low-level workers might be lacking because of the employment expectations by part of the highly educated young people.

On the other side of the Mediterranean Sea, though the increasing ageing of the population shall create problems never experienced in societies with poor or no welfare state, the placing of their fast increasing workforce shall be the main problem to solve. Their GDP and labour markets should be able to face a working-age population growing at the pace of 2.5% a year (1.7 in the next decade). Migration flows abroad are easy to foresee. Their prevalent directions and success will depend on the trends of labour shortage in immigration areas – the EU27 being the most favoured destination – and the competition with migrants from other areas (e.g., for the EU27, from Ukraine and Byelorussia, Turkey or other farther areas) and with the internal moves of the immigration area (e.g., in the EU27, from the Eastern new accession countries)[15].

[14] In fact, Europe has recently witnessed important cutbacks in male life expectancy after the fall of the communist regimes in its Eastern countries [Philipov & Dorbritz 2003;Watson 1995].

[15] The demographic situation in EU27 neighbouring countries is described in Tables A.2.9 and A.2.10 in the Statistical Appendix. We preferred not to map the relevant values because of the far different range of MENA countries in respect to the values of European countries and regions.

3. Analysis of impacts of demographic challenges on regional trends, patterns and disparities

3.1 Main hypotheses for future scenarios

Some 'certainty' from demographic trends

Some changes in the future population dynamics are almost independent from the future macro-economic prospects and the relevant scenarios. The cohort turnover by 2020 shall modify the demographic structure and, consequently, the demographic changes which mainly come from specific population groups. Future migrations, internal or external to the EU, may change only partially those turnovers, so that their impact can be foreseen with large confidence.

Regarding natural change, the cohorts of women born in the late 80ies and early 90ies of the past century shall enter reproduction age. They are fast declining in their dimension in most the Southern and Eastern EU regions. Actually, all the EU regions but one (the Irish Border, Midlands and Western) shall suffer for insufficient turnover in reproductive age if new female immigrations do not feed them. Therefore, the number of births might decrease there just because of less women in the higher fertility ages. On the other side, the large cohorts born in the 30ies, followed by the small ones born during the Second World War (WW2) will arrive the ages of highest mortality: the relevant turnover shall largely depend on the different increase in the survival enjoyed by the corresponding cohorts (e.g., almost all the Italian regions, Cyprus and Malta shall suffer large increase in the number of population in high mortality ages). Natural change shall decline, especially where fertility is not sustained by specific policies and/or by the immigration of young families from countries where fertility is higher than in the EU.

In population ageing, the post-WW2 cohorts born in 1944-55 will pass their 65th birthday. They are large and/or increasing almost everywhere, unless depleted by former emigrations. The small WW2 cohorts will pass through the ages 66-80. The survivors of the large cohorts born in the 30ies will reach age 80 and over. The expected impact by 2020 are a temporary relief in the number of the population 65-79 years, and a fast increasing number of the population 80-and-over because of the dimension of relevant cohorts and their increasing survival rate till old ages: its turnover is larger than 2 in all the EU regions and reaches very high values where the current oldest-old population is still limited. An increasing pressure on the health and assistance systems should follow.

Working-age population (WAP) shall be interested by the entrance of the cohorts born in 1995-2004, while mainly the 90ies cohorts will enter the labour market. These cohorts are quite different in their dimension, following the regional differences in recent and past fertility levels and the number of women who have passed through reproductive age. The post-WW2 cohorts will leave WAP and the 50ies

cohorts will mainly retire from work. These cohorts are large and increasing, so that the cohort turnover of the now residing population in the EU regions shall lead to the shrinking of WAP in most of them (only 61 EU regions can expect a positive turnover of population in working age without further immigration), with some worrying trend in Germany, Italy, Spain, and Eastern countries. How this will impact on labour force depends on the supply/demand play in making up participation rates. Cohort turnover, however, will mainly affect the age composition of WAP, where the large 60ies and 70ies cohorts shall shift into mature ages replaced by the smaller 80ies and 90ies cohorts in the younger working ages.

Also the foreseeable demographic trends in the EU reference area must be considered as given constraints in future scenarios, following the trends sketched above. In particular:

- The three EFTA countries shall suffer similar trends in population ageing and WAP shrinking and ageing, though somewhat in a softer mode and deferred in times.

- Belarus, Ukraine and Moldova, instead, are already reducing their WAP because of insufficient turnover in young ages, while the share of their elderly population is not expected to increase significantly in the next fifteen years. Their natural change is foreseen to be below zero also in the UN high variant projection.

- Also in the Russian Federation the WAP shall shrink, especially in the next decade, because of an important decline in the entering cohorts. Its elderly population, instead, is expected to increase, but only late in the decade.

- The countries which formerly were part of the Yugoslav republic and are not still in the EU (Croatia, Serbia, Bosnia-Herzegovina, Montenegro, and Macedonia) shall have an almost steady but ageing WAP. Their elderly population is expected to increase fast, on the contrary.

- In the next fifteen years, Turkey, as well as Albania, will enjoy the last gap of the 'demographic window': their WAP shall be still increasing in number and their young WAP turnover shall be larger than 1 till 2020. Never the less, population ageing shall be fast in numbers and proportion.

- The Mediterranean countries of Middle-East (Syria, Lebanon, Jordan, Israel, and Palestine) for different reasons have still a vital demography which shall produce a fast increasing WAP, while the share of their elderly population is and shall maintain almost trivial.

- The coastal countries of North Africa, though already heading toward a late 1st demographic transition, show still the consequences of their recent high fertility and early mortality demography. Their WAP shall be increasing by 2020, even if the turnover of its younger part is already insufficient. Although the share of their elderly population shall maintain low, because of total population increases the number of 65-and-over-year-old population shall increase much.

Likely impacts of the global economic crisis on demographic factors

The present financial and economic crisis throws pessimistic lights on the worldwide future trends. Scenarios must be reconsidered on the decline. However, because of the aforesaid inertia, most of the population trends expected in about the next fifteen years are already given. Only migrations – internal and with abroad – could be seriously affected by the economic slump through the reducing labour demand and its possible changes in quality.

Actually, also the number of births and deaths might feel the effects of a severe and prolonged recession through, for births, the postponement of couples formation and reductions in reproduction, for deaths, the worsening of the healthcare and, for the poorest, the droop of their standard of living. Anyway, these changes should not be so large, and their effects should be limited in the medium-term trend of the demographic challenge.

Literature is still lacking in reflections about the possible effects of the current global crisis on population trends. Only some speculations are now appearing about the expected consequences on migrations [Martin 2009; Chamie 2009]. Past experience and some reasoning, however, can suggest some likely reactions of people in their demographically relevant behaviour. Anyway, we must bear in mind that much will depend on how long and severe the recession will be and that the demographic effects will not be independent from the policy measures the governments are adopting to tackle it.

In fact, population moves like a flywheel, whose velocity and direction can hardly be changed immediately by contingent forces, however strong they might be. Only if socio-economic problems last for enough time demographics shall suffer permanent consequences from them. Otherwise, most of their temporary effects on population dynamics should be recovered soon, especially in a cohort frame of reference.

In one year, the average EU27 unemployment rate jumped from the minimum of 6.8 in February 2008 to 7.9, with maximum increases in the three Baltic republics, in Ireland and Spain[16]. In the last two quarters of 2008 employed people has been reducing in EU27 at an increasing pace, with the same countries at the highest negative trends[17]. Uncertain work schedules and short-term contracts are supposed to spread, especially in hiring the young workforce. Early pensioning and dismissals of senior employees follow bankruptcies and are used in company restructuring.

Uncertainty, more than temporary economic and financial difficulties, is expected to 'froze' the decisions which may have any demographic relevance. Deferring them to more prospective times may seem the best practise to adopt in most of the decisions regarding family formation or dissolution and increasing offspring.

[16] Eurostat NewsRelease, Euroindicators 45/2009, 1st April 2009.
[17] Eurostat NewsRelease, Euroindicators 37/2009, 16 March 2009.

Decreasing revenues and the real or only supposed reduction in purchasing power lead to the worsening of people's standard of living and quality of food they eat. Also private spending for healthcare, prevention and medical treatments are likely to reduce, while the relevant public sector suffers restrictions due to budget restraints. Even if mortality is not affected sensibly the health status of a population is expected to worsen, with unpredictable effects on future trends.

However, the most immediate effect of economic swing is on migrations. But, while during the upward swings population mobility normally increases in the direction of the development poles, during the negative swings facts are more controversial. People out of work may either stay where they are, so minimising the expenses for moving, or move elsewhere; in this latter case, they can move either back to their area of provenance, in order to reduce their cost of life, or in search of new work opportunities. Senior internal migrants are more likely to return home if they have maintained properties and social network there and if their unemployment benefit is maintained. Young, more educated workers will probably move in search of adequate jobs, even if this may lead them abroad.

Foreign migrants are the most exposed to the consequences of economic recession. Following the national rules, they can loose the permit of stay in a country legally short after becoming unemployed. Their possibility of returning home is often prevented by travel costs and the worsening of labour market also there. Actually the global dimension of the current crisis is hitting less developed countries as well. For that, an increasing migratory pressure leads people from there to try illegal migration to richer countries. The likely overall consequence is the swelling of the undocumented immigrants here because of both the staying of former legal immigrants out of work and the arrival of new illegal flows.

For any demographic variable and behaviour, however, the consequences of the current global crisis in financial and economic matters shall depend on how long and severe it is. The following scenarios try to sketch two opposite developments of the present situation: the pessimistic one of a persistent recession involving all over the private and public economy; the optimistic one that foresee a fast recovery based on innovative economy of knowledge and new technologies. Intermediate solutions are possible, of course, especially as a consequence of governments' choices in aiding the different economic sectors and financing the welfare state.

Two geo-economic problems remain open in the exercise. How much the EU reference areas and, in general, the rest of the World shall be involved in the slump/recovery process? What will be the territorial distribution of recession or, especially, recovery in the EU regions and areas? At least part of the answers will come from the policies adopted by the EU bodies and national governments. The international relationships and cooperation with the African and Asian countries (those on the Mediterranean rims, in particular) may change much in the ways those countries shall suffer for the recession and make its consequence fall on the EU through an increasing migratory pressure. On the other side, the EU Regional policy, in connection with the EU policies on education, research, environment,

etc., should drive the economic and labour recovery so that a large part of region are involved in all the EU27 countries.

Because of the perspective view adopted in the scenario exercise we preferred to use a more specific sensitivity index, only depending on the cohort turnovers we used in the most comprehensive one. It better shows what demographic trends shall be until 2020 if further internal and foreign migrations do not occur.

Map 2 is almost similar to Map 1. Two territorial bands, however, are more evident in it:

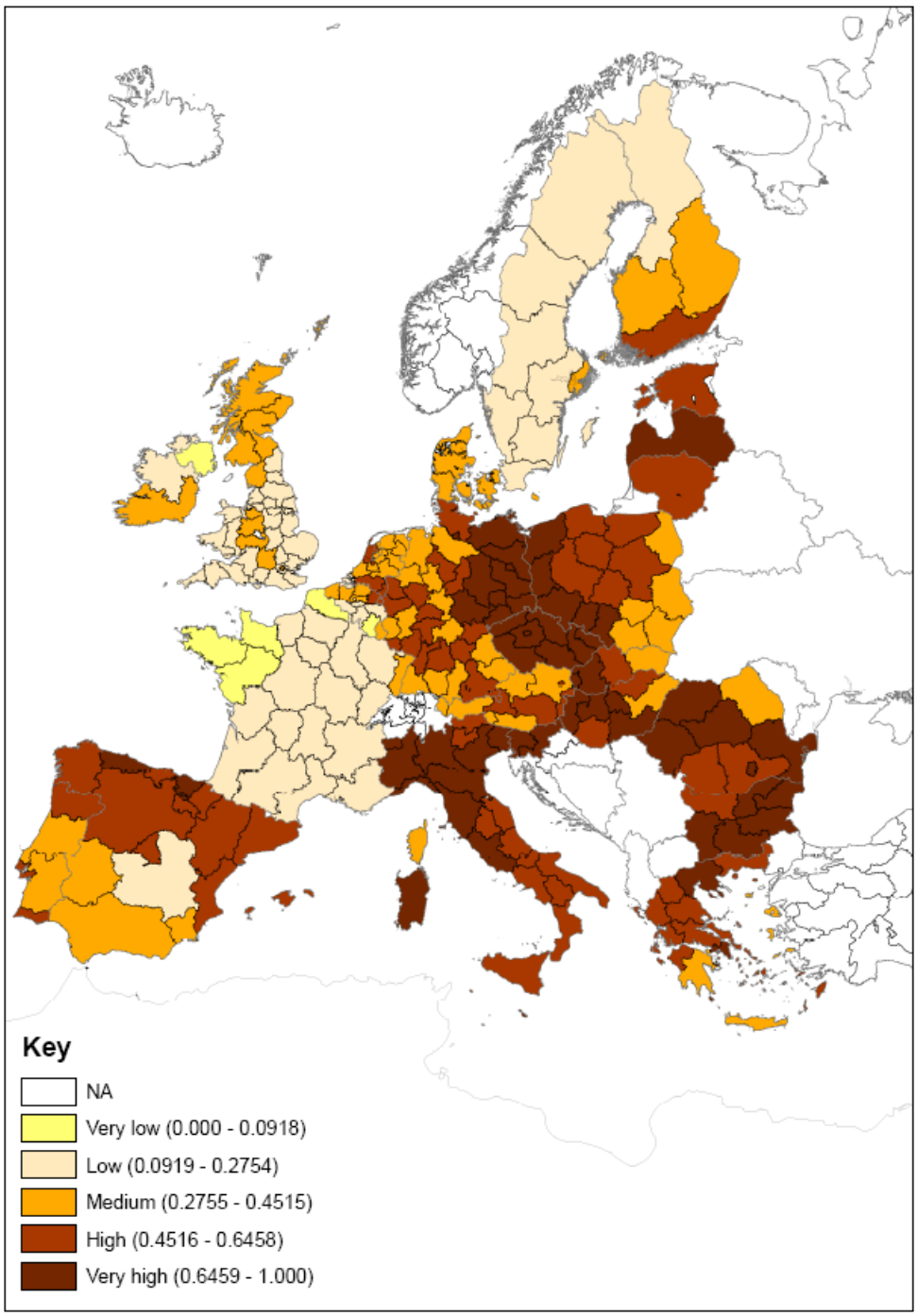
i) an Eastern and central band going from the Baltic republics to the North of Greece and passing through the regions of former Eastern Germany, of the Czech republic, Hungary, Romania and Bulgaria;
ii) an ideal band connecting the Northern region of Spain to the Italian island of Sardinia, the central and Northern regions of Italy, up to Slovenia.

Note that, though the two groups of regions are very similar in their demographic prospects, they are quite different from the socio-economic point of view. Most of the regions in the Eastern and central band suffer for economic backwardness, either in an EU frame of reference (Eastern countries) or in a national one (Eastern Germany). On the contrary, the Spanish and Italian regions that shall suffer the most for the challenges from their population structure are among the richest in their respective country, while also Slovenia enjoys a better economic condition in respect to the other countries which have been part of the former federal republic of Yugoslavia. Nevertheless, the industrial sector in both Northern Spain and North-western Italy is mainly 'traditional', so that profound restructurings are on the way there. In the rest of Northern and central Italy small- and middle-sized factories prevail, most of which are family-managed. They often have specific productions depending on the swings of larger manufacturing industries or on export.

The two groups differ also for past and recent migrations. In that, specific regional situations add too. The Russian population still settled in the Baltic republic is a mass which, under socio-economic stress, could migrate either eastward to the Russian Federation or westward to the other EU countries. The former COMECON countries which recently entered the EU have been experiencing westward migrations well before their access. At present, the free move of people within Union may have increased tentative migrations from them, though – on the other side – the accession benefits may have retained their population home in the hope of a fast economic development. Especially Poland and Romania have an important share of their population who migrated in Western Europe. Regions of the former Eastern Germany have suffered for important migration westward of young people and families just after the Fall of the Wall: they mostly settled in their new residence and are unlikely to move back even in case of important slump. Most of the regions in Northern and central Italy have received internal migrants since after WW2 or the 70ies, and in recent times they have been, and still they are, the target of almost all the foreign immigration in Italy. This latter population has begun to recover local

demography by its vitality, but its permanence there is deeply linked to the resilience of local economic system in front of the recession.

Map 2 - Regional sensitivity to structural demographic challenge (Index based on cohort turnovers)



3.2 Pessimistic scenario by 2020

The present financial and economic recession will be severe and long-lasting. It will involve large part of the economy of many EU countries, starting from their less competitive sectors, but progressively extending also to the core, more traditional productions (e.g., car industries). The financial market will prefer to invest in the new external economies, where the returns are higher and production costs are cheaper. Unemployment in the EU will hit both the workers of closing plants and the young cohorts now entering the labour market. The slow-down of the economy will reduce the tax raising, so reducing public spending for the welfare and investments: also reductions in the civil service may follow, at least as a slow-down in the employees turnover. A consistent part of population will be out of work, with small and uncertain incomes. Consumptions shall reduce, so involving in the recession the retailers, traders and import companies, as well as craftsmen and large distribution.

The socio-economic milieu should not favour neither the formation of new families, nor having children. However, as one's life might be limited to a narrower circle by the reducing of spending and cohabitation could be one of the searched solutions, a family revival could follow, as it happened after the 1929 Great Crash.

Internal migration should reduce in the EU27, while the still not settled immigrants could move back to their area of provenance, where life is cheaper and housing is often almost free. Never the less, need could cause intense and disordered moves of workers in search of any employment possibility, wherever it arises.

The consequences of the crisis on foreign workers in the EU might be similar, but the involvement of their countries of origin in the recession should also be considered, as well as the situation in their labour markets and the relevant demographic supply. Returns home might be difficult or impossible, as well as the settlement in the hosting country and family reunions.

Probably, new immigration flows would not be welcomed, especially if of low-level or inexperienced workers. However, the demographic pressure from the reference area (Eastern European, MENA and Sub-Saharan countries) could be hardly controlled, also because of the reductions in international investments there and in cooperation. Undocumented migrants might be wandering in search of work, exploited by the employers and further depressing the labour and wage market.

New migration routes could open in the World, mainly directed to the more resilient economies. Also young, high-educated people from the EU might be attracted if adequate jobs are not available at home.

<table>
<tr><th colspan="4">Pessimistic scenario by 2020</th></tr>
<tr><th colspan="2">Structural sensitivity</th><th>Intensity</th><th rowspan="2">Impacts
in the pessimistic scenario</th></tr>
<tr><th>Sensitivity ranking</th><th>Characteristics of regional sensitivity</th><th>Implications of qualitative assessment of intensity</th></tr>
<tr><td>Group 1

58 Regions characterised by very high sensitivity (SI" average value = 0.78; Very high sensitivity in Map 2))</td><td>In prevalence:
- Lower fertility levels and scarce turnover of women in fertility age.
- More intense turnover of pop. In high-mortality age.
- Migratory change around 0.
- 7 ins / 10 outs in WAP, where 50% is young; the latter ones shall have a turnover of 6 ins / 10 outs
- Turnover of 65+ yrs pop. = 1.2, and a lower presence of oldest-olds with a high prospective turnover.</td><td rowspan="3">Natural change (births and deaths):
Possible reduction and/or postponement of births, also due to smaller cohorts of potential mothers born in late ‘80s and early ‘90. The possible worsening of elderly mortality should be suffered mainly by the large late ‘30s cohorts, then by the small WW2 cohorts.

EU internal migrations and urbanisation:
Decreasing attraction of young labour-aged people into developed and urban areas. Possible urbanisation of poor middle-aged people. Steady stay of retired and elderly people in their former residence. General slowing down of people’s mobility. Possible return migration of retired or mature unemployed people into their EU regions of origin. Two alternative paths in front of severe socio-economic crises: a) slow-down of WAP mobility and steady stay in origin areas, with possible returns to them from previous immigration areas and cities; b) disordered moves of WAP to wherever any employment possibility arises.

Foreign migrations:
Declining demand for foreign workers and possible stricter boundary controls. In case of severe collapse, possible return flows to origin countries or move to extra-EU migratory areas and possible out-flows of young well-educated EU citizens to other developed areas of the world. Slow-down of turnover flows of foreign temporary workers.</td><td>Group 1

Population change may be negatively and severely affected. Possible decrease of mature and elderly survival in less developed regions. The short-term effect would reduce depending population (0-10 and 65+ pop.). Possible returns of former EU internal migrants now unemployed. A faster reducing pop. with a temporary increasing rate of WAP that can hardly be fully utilised. Depopulation of the poorest areas, with possible consequences on their environmental maintenance. Increasing risk of poverty and social exclusion of marginal pop.. Increasing risk of internal political tensions and extremism.</td></tr>
<tr><td>Group 2

136 Regions characterised by medium sensitivity (SI" average value = 0.46; High and Medium sensitivity in Map 2)</td><td>In prevalence:
- Medium fertility levels and medium turnover of women in fertility age.
- Migratory change positive.
- 9 ins / 10 outs in WAP, where 51% is young; the latter ones shall have a turnover of 7.4 ins / 10 outs.
- Turnover of 65+ yrs pop. = 1,1 and a medium presence of oldest-olds.</td><td>Group 2

General impoverishment of pop.. Probable decrease in welfare spending for health and elderly assistance. Likely reductions in the pace of population ageing because of possible halt in survival increments. Faster convergence of EU regions in pop. ageing. Possible divergence among the EU regions’ pop. trends according to their well-being differentials, followed by the possible dichotomisation of this group of EU regions: those with the younger and better educated pop. can hope to better resist the crises and faster recover after it.</td></tr>
<tr><td>Group 3

71 Regions characterised by low sensitivity (SI" average value = 0.18; Low and Very Low sensitivity in Map 2)</td><td>In prevalence:
- Higher fertility levels and faster turnover of women in fertility age.
- about 1 / 1 turnover of pop. In high-mortality age.
- Migratory change positive.
- 9.8 ins / 10 outs in WAP, where 51% is young; the latter ones shall have a turnover of 8.1 ins / 10 outs.
- Turnover of 65+ yrs pop. = 1,1 and a high presence of oldest-olds with slow turnover.</td><td>Group 3

Limited pop. turnover in central cities and residence areas, so favouring the ageing of their population. Increasing ageing in the immigration regions and central cities because of the diminishing rejuvenation effects of new immigrants or, even, the out-move of foreign and/or native young people with their children. Slow-down of the pop. flywheel with the possible fall in a spin. Reducing global attractiveness and competitiveness. Likely increasing tensions in social and political life, also based on ethnical or citizenship discriminations.</td></tr>
</table>

3.3 Optimistic scenario by 2020

The present financial and economic recession recovers in a couple of years, letting the EU27 productive system discharged from its less productive parts and more concentrated in new technologies, renewable energies and forefront research. Those sectors will ask for high-educated workers that, in case of insufficient home supply might be engaged trough selected migration from any offering country in the World. Immigration from abroad, however, shall be welcomed also for low-level works, just because of the ascending moves of the internal workforce in the professional ladder and the consequent more affluent milieu.

Internal migration in the EU will depend on the territorial distribution of the economic recovery. Also some marginalized areas could be involved in this development if adequately equipped with network and easy connections. Population mobility should increase also following the liveliness of innovations.

The spur from the economy and the fast absorbing labour market could help the fertility increase in the lowest-low fertility EU countries, while the medical research and adequate spending in healthcare of elderly people should continue the lengthening of their life. In that, the now rear EU27 countries of Eastern Europe and Balkans will make up the gap only if properly involved in the improvements.

If the recovery from the recession is worldwide also the EU reference area will benefit of it, so partially relieving the population pressure on its labour markets by the local employment of large part of the young supply. Emigrations may reduce or be better linked to the labour market needs all over the World.

<table>
<tr><th colspan="4">Optimistic scenario by 2020</th></tr>
<tr><th colspan="2">Structural sensitivity</th><th>Intensity</th><th rowspan="2">Impacts
in the optimistic scenario</th></tr>
<tr><th>Sensitivity ranking</th><th>Characteristics of regional sensitivity</th><th>Implications of qualitative assessment of intensity</th></tr>
<tr><td>Group 1

58 Regions characterised by very high sensitivity (SI" average value = 0.78; Very high sensitivity in Map 2))</td><td>In prevalence:
- Lower fertility levels and scarce turnover of women in fertility age.
- More intense turnover of pop. In high-mortality age.
- Migratory change around 0.
- 7 ins / 10 outs in WAP, where 50% is young; the latter ones shall have a turnover of 6 ins / 10 outs
- Turnover of 65+ yrs pop. = 1.2, and a lower presence of oldest-olds with a high prospective turnover.</td><td rowspan="3">Natural change (births and deaths):
Fertility slight increase in the EU strong regions and possible important increase in the EU new-immigration regions. Possible increase of births or, at least, slow-down of their decrease where the pop. in reproductive (and young working) age gathers, i.e. in developing areas. Mature, elderly and oldest-old mortality should continuously decrease in many EU regions according to investments and expenditure in health system and to the better standard of living of elderly population (positive cohort effects).

EU internal migrations and urbanisation:
Increasing inter-and-intra-EU regions mobility of young labour-aged people according to the differentials in development and area specialisation. Increasing displacement of affluent retired people toward agreeable and resort areas.

Foreign migrations:
Increasing demand for young foreign workers and better conditions for their settlement in the developed and urban areas. Increasing demand for households workers for children and elderly care. Larger turnover flows of foreign temporary workers.</td><td>Group 1

Positive impact on the survival and ageing of mature population in poorest EU regions and areas. Faster ageing in depopulating areas. The EU regions and areas excluded by the economic growth will suffer stronger WAP shrinking and ageing. If economic development is concentrated in few areas, internal migration will increase, so depleting WAP in departure areas. The poorest regions and areas risk to be sharply marginalized, so letting pop. fall into a spin.</td></tr>
<tr><td>Group 2

136 Regions characterised by medium sensitivity (SI" average value = 0.46; High and Medium sensitivity in Map 2)</td><td>In prevalence:
- Medium fertility levels and medium turnover of women in fertility age.
- Migratory change positive.
- 9 ins / 10 outs in WAP, where 51% is young; the latter ones shall have a turnover of 7.4 ins / 10 outs.
- Turnover of 65+ yrs pop. = 1,1 and a medium presence of oldest-olds.</td><td>Group 2

Slower convergence or even divergence of fertility in the EU regions according to the regional economic developments and the attraction of new migration flows. Slower convergence and even some divergence of population ageing in the EU regions. Divergence or convergence in pop. ageing depending on the territorial distribution of economic growth. Depending on the territorial distribution of development, WAP increase and rejuvenation will benefit the EU regions differently. Important positive effects on the WAP dimension and age-structure, which will benefit the EU regions differentially, according to their attractiveness in term of employment opportunities, pay, work conditions, and settlement facilities.</td></tr>
<tr><td>Group 3

71 Regions characterised by low sensitivity (SI" average value = 0.18; Low and Very Low sensitivity in Map 2)</td><td>In prevalence:
- Higher fertility levels and faster turnover of women in fertility age.
- about 1 / 1 turnover of pop. In high-mortality age.
- Migratory change positive.
- 9.8 ins / 10 outs in WAP, where 51% is young; the latter ones shall have a turnover of 8.1 ins / 10 outs.
- Turnover of 65+ yrs pop. = 1,1 and a high presence of oldest-olds with slow turnover.</td><td>Group 3

Slower ageing in fast developing areas and around central cities. Important selected ageing in agreeable and resort areas. Rejuvenation effect in the EU immigration regions and central cities because of new flows of young people and the likely high contribution of integrated immigrants to local births. Negative natural change should reduce in several EU regions. Their depending population would increase, so depressing the relevant dependent ratios.</td></tr>
</table>

Annex

A.1 Methodology

We measured the three drivers of the Demographic Challenge by several indices which give either the recent regional level of the component or its foreseeable change stemming from the cohort turnover of the most involved part of the current regional population. Table A.1.1 summarises our procedure.

Almost all the basic data were drawn from the EUROSTAT database (European Commission > Eurostat home page > Data navigation tree > Population and social condition > Population > Demography > Demography – Regional data). The most recent reliable data at regional level are available for the EU countries only around 2005. Wherever possible, we used the 2004-2006 average for the variables chosen to describe the drivers. In case of lack of the three-year data, a two-year average or the single year value was used. Only the five Danish and two Scottish regions for which no recent data was available have been equalised to the country or NUTS1 values for all the variables drawn from the database. This procedure has been applied also to the regions of Bulgaria, Portugal, Finland, Slovenia, and two regions of Germany for which no recent data on infant mortality was available. The 2000 infant mortality data for Cyprus and Malta have been drawn from the UN online database < http://esa.un.org/unpp/index.asp >. We also used the population change data from the ESPON database public files < http://www.espon.eu/mmp/online/website/content/tools/832/index_EN.html > for the average annual rate of migratory change, which is related to the 2001-2005 time span.

The choice about the direction of the impact of each index on the demographic challenge has not been an easy decision. While it is almost easy to state whether a component contributes positively or negatively to population growth (or to the labour-age population dimension and structure, or to population ageing), it is somewhat questionable whether an increasing total population, an enlarging and young labour-age population always represent a positive scenario for the relevant society and policy makers. A positive migration change, for instance, has positive effects on the population structure and dynamics: normally, young people immigrate, so making population ageing slow down immediately, while their often numerous offspring rejuvenates the population in the future. However, a too massive or rapid immigration may cause important problems to the hosting society, and asks for policy interventions to properly manage it. The same is for total population growth, especially in relation with the energy consumption and its environmental impact. Even population ageing, which is generally considered one of the most important demographic challenge for the developed countries, if wisely utilised may turn into a positive spur for their economy and social well-being. Much depends on the level attained by each factor, by the resilience of the society and the policy makers' ability.

Table A.1.1 – Synopsis of the Drivers, Components, and Indexes used in measuring the Demographic Challenge

Driver	Component and Index	Impact direction	Source	Time reference	Formula	EU Regions range
Population change	Births :					
	- Recent fertility rate	+	EUROSTAT	2004-2006 average	1000 · TP(0) / FP(15-49)	27.8 – 58.8
	- Prospective turnover of female population in reproductive age	+	EUROSTAT	2004-2006 average	FP(0-14) / FP(35-49)	0.4 – 1.0
	Deaths :					
	- Recent infant mortality (proxy)	–	EUROSTAT	1998-2001 average	D(0) / LB	2.1 – 22.4
	- Prospective turnover of population in high mortality age	–	EUROSTAT	2004-2006 average	TP(55-69) / TP(70+)	0.5 – 2.4
	Migrations :					
	- Recent migratory change rate	+	ESPON	2001-2005 average	1000 · MC / TP	-1.1 – 2.7
	- Prospective turnover of population in young labour age	+	EUROSTAT	2004-2006 average	TP(0-14) / TP(25-39)	0.4 – 1.1
Changes in lWarking age population (WAP)	Dimension and share :					
	- Recent share of WAP out of total population	+	EUROSTAT	2004-2006 average	100 · TP(15-64) / TP	62.0 – 74.4
	- Prospective turnover of WAP	+	EUROSTAT	2004-2006 average	TP(0-14) / TP(50-64)	0.5 – 1.5
	Age structure :					
	- Recent share of young WAP out total WAP	+	EUROSTAT	2004-2006 average	100 · TP(15-39) / TP(15-64)	42.8 – 66.1
Population ageing	Dimension and share :					
	- Recent share of elderly population out of total population	–	EUROSTAT	2004-2006 average	TP(65+) / TP	9.8 – 26.5
	- Prospective turnover of elderly population	–	EUROSTAT	2004-2006 average	TP(50-64) / TP(65+)	0.8 – 1.7
	Age structure :					
	- Recent share of oldest-olds out of total elderly population	–	EUROSTAT	2004-2006 average	100 · TP(80+) / TP(65+)	15.3 – 31.8
	- Prospective turnover of the oldest-olds	–	EUROSTAT	2004-2006 average	TP(65-79) / TP(80+)	2.2 – 8.1

Legend: P = Population; T = Total; F = Female; D = Deaths; LB = Live Births; MC = Migratory Change = Immigrations– Emigrations; numbers in parenthesis define age spans in completed years.

Although all those considerations, we let the demographic impact prevail: indexes were considered to contribute positively if they make population or labour-age population grow or if they reduce the ageing of total population or labour-age population. However, since indexes better work if their higher values signal the worse, more worrying conditions, for each original index V we calculated a normalised indicator Z by using the range of V in the following formulae:

Z = [MaxV - V] / [MaxV - MinV], in the case of positive components, and
Z = [V - MinV] / [MaxV - MinV], in the case of negative components.

After that, all the indicators vary from 0 to 1, being 0 the 'better' situation and 1 the 'worse' one in the EU regional panorama. In Table A.1.2 the average value and standard deviation are reported for each indicator. They give hints on the statistical distribution of the regional normalised indicators.

Table A.1.2 – Average value and standard deviation of the normalised indicators

Driver	Component and Index	Average value	Standard deviation
Population change	Births :		
	- Recent fertility rate	0.541	0.215
	- Prospective turnover of female population in reproductive age	0.495	0.198
	Deaths :		
	- Recent infant mortality (proxy)	0.191	0.152
	- Prospective turnover of population in high mortality age	0.300	0.198
	Migrations :		
	- Recent migratory change rate	0.617	0.152
	- Prospective turnover of population in young labour age	0.505	0.211
Changes in labour age population (WAP)	Dimension and share :		
	- Recent share of WAP out of total population	0.598	0.196
	- Prospective turnover of WAP	0.588	0.171
	Age structure :		
	- Recent share of young WAP out total WAP	0.654	0.139
Population ageing	Dimension and share :		
	- Recent share of elderly population out of total population	0.426	0.173
	- Prospective turnover of elderly population	0.381	0.202
	Age structure :		
	- Recent share of oldest-olds out of total elderly population	0.509	0.228
	- Prospective turnover of the oldest-olds	0.404	0.208

Standard deviation measures the dispersion of regional values around the average. Therefore it can be read as an index of regional diversity: e.g., in 2004-2006 the EU regions were much more diverse in the share of the oldest-olds (80 years and over) in relation to the total elderly population (65 years and over) than in the share of total elderly population out of total population.

Regional diversity is not per se a problem. On the contrary, the variety of demographic patterns and trends stimulates population mobility and enriches the

labour and goods markets by differentiating them. However, regional diversity represents an additional challenge to administrators and policy makers, who have to face and manage far different situations at the same time.

For this reason, we incorporated the standard deviation of indicators in the construction of the sensitivity index SI that summarise them. It has been calculated by summing up the thirteen indicators I_k multiplied by the corresponding standard deviation $SD(I_k)$: $SI = \bullet_k I_k \cdot SD(I_k)$. The sensitivity index was then reduced to a range 0 – 1 by the conversion formula $SI' = [SI - Min(SI)] / [Max(SI) - Min(SI)]$. The sensitivity index SI', calculated in this way for all the EU regions, has an average value of 0.532 and a standard deviation of 0.183. In Figure A1 its distribution is represented for the EU regions.

Following the approximately normal distribution and the emerging break-even points pointed out in the graph, we classified the 265 EU regions considered in the analysis in three classes of sensitivity to the demographic challenge:

§ Low sensitivity (Very Low in Figure A.1.1 and Map 1): 64 regions;
§ Medium sensitivity (Low, Medium, and High in Figure A.1.1 and Map 1): 158 regions;
§ High sensitivity (Very High in Figure A.1.1 and Map 1): 43 regions.

In the perspective exercise, however, we preferred to calculate another sensitivity index SI" by using only the cohort turnover variables of the first one. The distribution of SI" is less regular (Figure A.1.2) and the following classification we chose is:

- Low sensitivity (Very Low and Low in Figure A.1.2 and Map 2): 71 regions;
- Medium sensitivity (Medium and High in Figure A.1.2 and Map 2): 136 regions;
- High sensitivity (Very High in Figure A.1.2 and Map 2): 58 regions.

This latter classification has been used in the scenario exercise.

Figure A.1.1 – Distribution of the EU Regions by sensitivity index

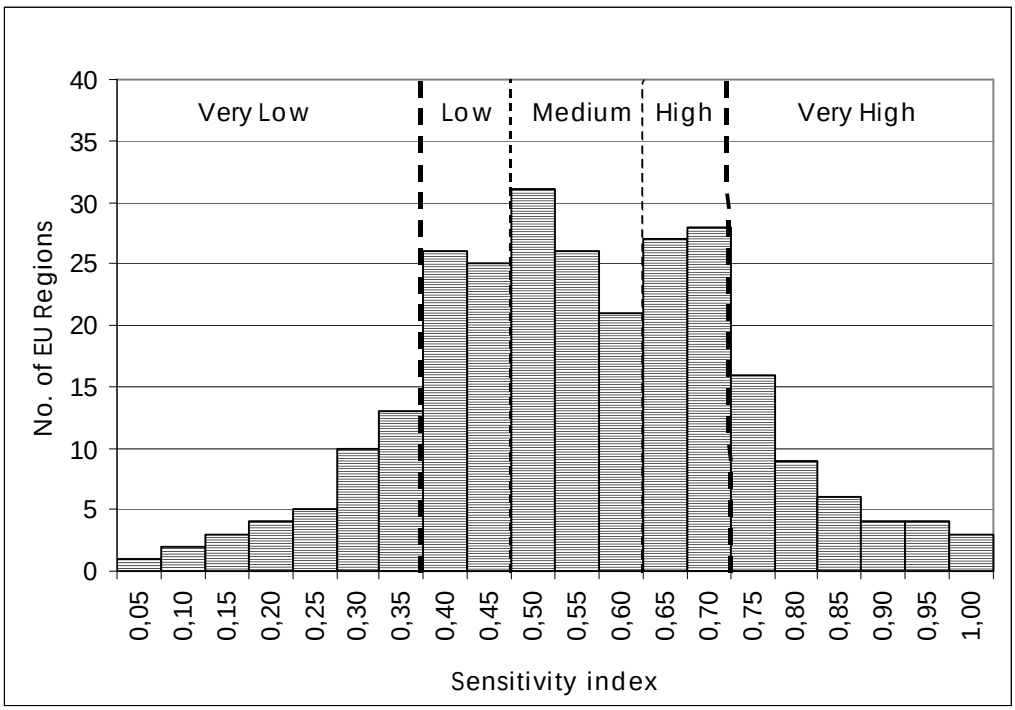
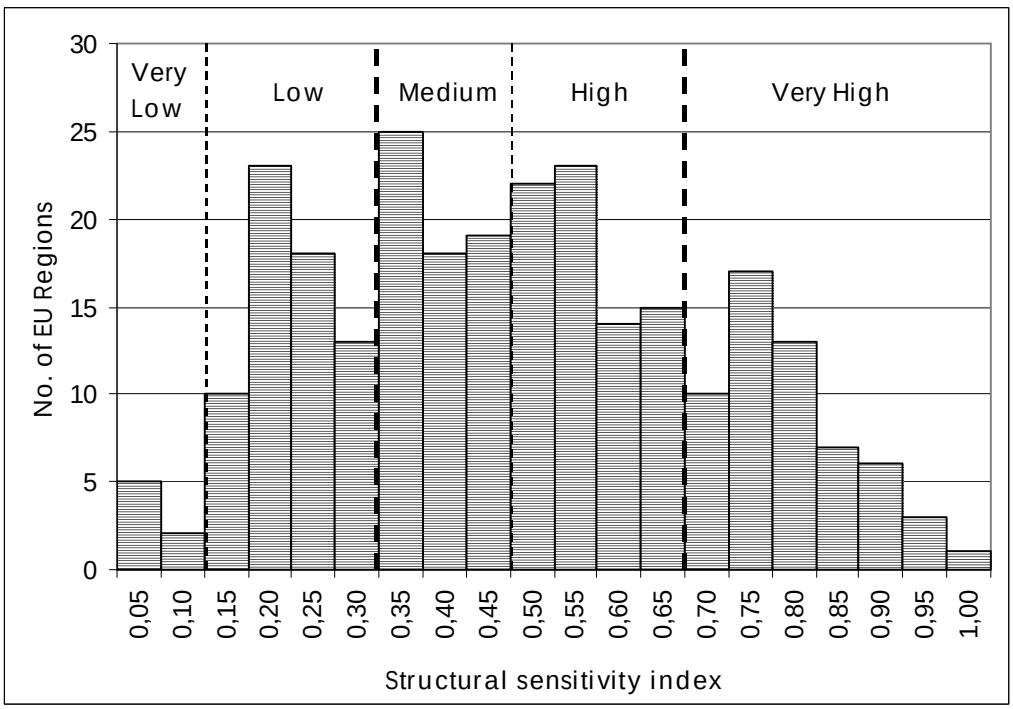


Figure A.1.2 – Distribution of the EU Regions by structural sensitivity index



A.2 Statistical Annex

Table A.2.1 – Total population in the EU27 and UN development regions (thousand)

Regions	Year	Projection variant		
		Medium	High	Low
EU27	2005	489,866	489,866	489,866
	2020	505,316	515,298	495,250
	2030	505,619	529,408	481,538
More developed countries	2005	1,216,550	1,216,550	1,216,550
	2020	1,268,343	1,294,280	1,242,195
	2030	1,281,628	1,343,902	1,218,619
Less developed countries	2005	5,295,726	5,295,726	5,295,726
	2020	6,406,489	6,556,370	6,256,626
	2030	7,027,267	7,418,272	6,637,156
Least developed countries	2005	761,846	761,846	761,846
	2020	1,059,484	1,082,675	1,036,296
	2030	1,271,634	1,338,741	1,204,697
World	2005	6,512,276	6,512,276	6,512,276
	2020	7,674,833	7,850,649	7,498,821
	2030	8,308,895	8,762,174	7,855,775

Source: UN, World population prospects. The 2008 revision.

Table A.2.2 – Population growth rate in the EU27 and UN development regions (average % a year)

Regions	Period	Projection variant		
		Medium	High	Low
EU27	2005-2010	+0.31	+0,31	+0,31
	2020-2025	+0.04	+0,31	–0,26
	2030-2035	–0.07	+0,20	–0,36
More developed countries	2005-2010	+0.34	+0,34	+0,34
	2020-2025	+0.14	+0,42	–0,16
	2030-2035	+0.02	+0,30	–0,28
Less developed countries	2005-2010	+1.37	+1,37	+1,37
	2020-2025	+1.00	+1,32	+0,66
	2030-2035	+0.73	+1,05	+0,38
Least developed countries	2005-2010	+2.30	+2,30	+2,30
	2020-2025	+1.91	+2,21	+1,58
	2030-2035	+1.59	+1,89	+1,26
World	2005-2010	+1.18	+1,18	+1,18
	2020-2025	+0.86	+1,17	+0,53
	2030-2035	+0.62	+0,94	+0,28

Source: UN, World population prospects. The 2008 revision.

Table A.2.3 – Total fertility rate in the EU27 and UN development regions (average number of children per woman)

Regions	Period	Projection variant		
		Medium	High	Low
EU27	2005-2010	1.5	1.5	1.5
	2020-2025	1.6	2.1	1.1
	2030-2035	1.7	2.2	1.2
More developed countries	2005-2010	1.6	1.6	1.6
	2020-2025	1.7	2.2	1.2
	2030-2035	1.7	2.2	1.2
Less developed countries	2005-2010	2.7	2.7	2.7
	2020-2025	2.4	2.9	1.9
	2030-2035	2.2	2.7	1.7
Least developed countries	2005-2010	4.4	4.4	4.4
	2020-2025	3.5	4.0	3.0
	2030-2035	3.0	3.5	2.5
World	2005-2010	2.6	2.6	2.6
	2020-2025	2.3	2.8	1.8
	2030-2035	2.2	2.6	1.7

Source: UN, World population prospects. The 2008 revision.

Table A.2.4 – Natural population change in the EU27 and UN development regions (average ‰ a year)

Regions	Period	Projection variant		
		Medium	High	Low
EU27	2005-2010	+0.5	+0.5	+0.5
	2020-2025	–1.4	+1.4	–4.3
	2030-2035	–2.4	+0.3	–5.5
More developed countries	2005-2010	+1.2	+1.2	+1.2
	2020-2025	–0.5	+2.4	–3.5
	2030-2035	–1.6	+1.3	–4.8
Less developed countries	2005-2010	+14.2	+14.2	+14.2
	2020-2025	+10.3	+13.5	+7.0
	2030-2035	+7.6	+10.8	+4.2
Least developed countries	2005-2010	+23.4	+23.4	+23.4
	2020-2025	+19.5	+22.5	+16.3
	2030-2035	+16.2	+19.3	+12.9
World	2005-2010	+11.8	+11.8	+11.8
	2020-2025	+8.6	+11.7	+5.2
	2030-2035	+6.2	+9.4	+2.8

Source: UN, World population prospects. The 2008 revision.

Table A.2.5 – Share of the population aged 65 years and over in the EU27 and UN development regions (%)

Regions	Year	Projection variant		
		Medium	High	Low
EU27	2005	16.7	16.7	16.7
	2020	20.3	19.9	20.7
	2030	23.9	22.8	25.0
More developed countries	2005	15.3	15.3	15.3
	2020	19.1	18.7	19.5
	2030	22.5	21.5	23.7
Less developed countries	2005	5.4	5.4	5.4
	2020	7.4	7.2	7.5
	2030	9.7	9.2	10.3
Least developed countries	2005	3.2	3.2	3.2
	2020	3.8	3.7	3.8
	2030	4.5	4.3	4.8
World	2005	7.3	7.3	7.3
	2020	9.3	9.1	9.5
	2030	11.7	11.1	12.3

Source: UN, World population prospects. The 2008 revision.

Table A.2.6 – Share of the population aged 15-24 years in the EU27 and UN development regions (%)

Regions	Year	Projection variant		
		Medium	High	Low
EU27	2005	18.9	18.9	18.9
	2020	16.3	16.3	16.3
	2030	17.2	18.2	16.1
More developed countries	2005	20.2	20.2	20.2
	2020	17.2	17.2	17.1
	2030	18.2	19.2	17.1
Less developed countries	2005	30.0	30.0	30.0
	2020	25.2	25.2	25.2
	2030	24.0	24.9	23.1
Least developed countries	2005	36.5	36.5	36.5
	2020	33.3	33.2	33.2
	2030	31.1	31.9	30.3
World	2005	28.1	28.1	28.1
	2020	23.9	24.0	24.0
	2030	23.1	24.0	22.2

Source: UN, World population prospects. The 2008 revision.

Table A.2.7 – Demographic situation in the European Union, reference areas and World

Geo-political areas	Total population 2005 (million)	Annual rate of population change 2000-10 (‰)	Annual rate of population change 2010-20 (‰)	Fertility rate 2005-10 (children x woman)	15-24 yrs population 2005 (%)	65+ yrs population 2005 (%)
EU 27	490	+0.3	+0.2	1.46	18.9	16.7
Other European countries	320	–0.4	+0.4	1.51	24.8	12.1
MENA countries	351	+1.9	+1.5	3.14	34.9	4.3
Total neighbouring countries	671	+0.8	+1.0	2.36	30.1	8.0
Sub-Saharan countries	764	+2.5	+2.3	5.08	20.3	3.0
Total reference area	1,435	+1.7	+1.7	3.81	24.9	5.3
More developed countries	1,217	+0.3	+0.5	1.58	20.2	15.3
Less developed countries	5,296	+1.4	+1.2	2.89	30.0	5.4
Least developed countries	762	+2.3	+2.1	4.78	36.5	3.2
World	6,512	+1.2	+1.0	2.67	28.1	7.3

Source: Elaborations on data from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision.

Table A.2.8 – Demographic situation in the European Union regions (NUTS2 level)

Demographic variable	Reference year(s)	Average value	Coefficient of variation	Minimum value	Maximum value
Total population (thousand)	2005	1,927	0.803	27	11,445
Annual rate of total change (‰)	2001-05	+0.33	0.72*	–2.1	+3.0
Annual rate of natural change (‰)	2001-05	+0.01	0.34*	–1.0	+1.0
Annual rate of migratory change (‰)	2001-05	+0.32	0.56*	–1.1	+2.7
Recent fertility rate [a] (‰)	2004-06	42.6	0.189	27.8	58.8
Infant mortality rate (‰)	2004-06	6.0	0.519	2.1	22.4
Labour age population [b] (%)	2004-06	66.9	0.035	62.0	74.4
Young labour age population [c] (%)	2004-06	51.0	0.067	42.8	66.1
Elderly population [d] (%)	2004-06	16.8	0.183	9.8	26.5
Oldest-old population [e] (%)	2004-06	23.6	0.158	15.3	31.8

Notes: a) TP(0)/FP(15-49); b) TP(15-64)/TP; c) TP(15-39)/TP(15-64); d) TP(65+)/TP; e) TP(80+)/TP(65+).
* standard deviation
Source: Elaboration on EUROSTAT and ESPON databases.

Table A.2.9 – Demographic situation in EU27, EFTA, Balkan and former USSR countries

Country	Total population 2005 (thousand)	Working-age pop. 15-64 yrs 2005 (%TP)	Young WAP 15-24 yrs 2005 (%WAP)	Young WAP turnover 2005 (5-14/15-24)	Elderly pop. 65+ yrs 2005 (%TP)	Oldest-old pop. 80+ yrs 2005 (%EP)	Annual rate of population change 2005-10 (‰)	Annual rate of natural change 2005-10 (‰)	Total fertility rate 2005-10 (children x woman)	Life expect-ancy 2005-10 years
EU27 average value	489,866	67.3	18.9	0.85	16.7	24.4	+3.1	+0.5	1.53	79.1
EU27 minimum value	403	65.1	15.6	0.66	12.2	15.6	–9.7	–5.0	1.26	71.7
Eu27 maximum value	82,409	71.5	23.2	1.16	19.6	31.4	+18.3	+9.2	1.92	81.2
EFTA cs.										
Iceland	296	66.2	22.1	1.03	11.7	25.6	+21.5	+8.6	2.10	81.8
Norway	4,635	65.8	18.7	1.10	14.5	31.7	+9.3	+3.6	1.89	80.6
Switzerland	7,441	67.9	17.5	0.94	16.0	28.1	+4.1	+1.4	1.45	81.8
Balkan cs. And Turkey										
Croatia	4,443	67.1	19.5	0.85	17.0	17.1	–1.5	–1.9	1.42	76.2
Serbia	9,856	66.9	22.1	0.84	14.7	16.3	0.0	0.0	1.62	74.0
Bosnia and Herzegov.	3,781	70.0	22.1	0.76	13.4	13.4	–1.2	–0.6	1.21	75.1
Macedonia	2,035	69.0	23.2	0.88	11.1	15.3	+0.8	+1.8	1.44	74.2
Montenegro	625	67.2	23.8	0.86	12.6	14.3	+0.3	+1.9	1.64	74.0
Turkey	71,169	65.8	28.6	1.03	5.7	10.5	+12.4	+12.4	2.13	71.8
Former USSR cs.										
Belarus	9,816	69.9	23.5	0.67	14.4	16.0	–4.7	–4.7	1.28	69.1
Ukraine	46.936	69.3	22.8	0.66	16.1	16.1	–6.5	–6.1	1.31	68.2
Republic of Moldova	3,759	69.9	26.9	0.74	11.1	14.4	–10.0	–0.6	1.50	68.4
Russian Federation	143,170	71.1	24.1	0.60	13.8	15.2	–4.0	–4.3	1.37	66.5
Armenia	3.065	66.1	29.7	0.77	12.0	13.3	+1.7	+6.5	1.74	73.7
Azerbaijan	8.453	66.6	30.5	0.92	6.8	10.3	+11.1	+12.2	2.16	70.2
Georgia	4.465	67.2	24.9	0.79	14.4	14.6	–11.3	+0.2	1.58	71.6

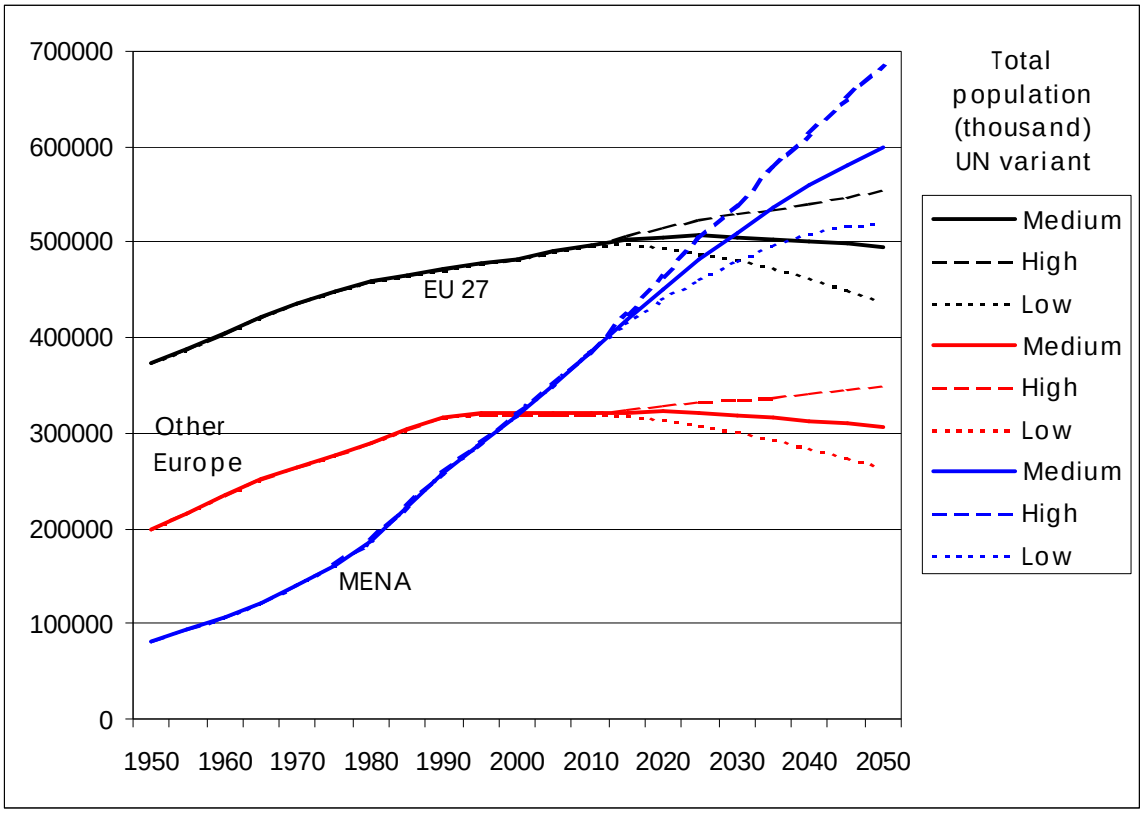
Source: Elaborations on data from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision.

Table A.2.10 – Demographic situation in EU27 and MENA countries

Country	Total population 2005 (thousand)	Working-age pop. 15-64 yrs 2005 (%TP)	Young WAP 15-24 yrs 2005 (%WAP)	Young WAP turnover 2005 (5-14/15-24)	Elderly pop. 65+ yrs 2005 (%TP)	Oldest-old pop. 80+ yrs 2005 (%EP)	Annual rate of population change 2005-10 (‰)	Annual rate of natural change 2005-10 (‰)	Total fertility rate 2005-10 (children x woman)	Life expect-ancy 2005-10 years
EU27 average value	489,866	67.3	18.9	0.85	16.7	24.4	+3.1	+0.5	1.53	79.1
EU27 minimum value	403	65.1	15.6	0.66	12.2	15.6	–9.7	–5.0	1.26	71.7
Eu27 maximum value	82,409	71.5	23.2	1.16	19.6	31.4	+18.3	+9.2	1.92	81.2
Northern Africa										
Morocco	30,495	64.5	32.7	0.98	5.2	11.5	+12.0	+14.7	2.38	71.2
Algeria	32,855	65.9	34.3	0.88	4.5	13.3	+15.1	+15.9	2.38	72.3
Tunisia	9,878	67.6	30.9	0.86	6.7	13.4	+9.8	+10.2	1.86	73.9
Libya	5,923	65.9	32.9	0.88	3.8	13.2	+20.0	+19.3	2.72	74.0
Egypt	77,154	62.1	35.4	0.98	4.5	11.1	+18.1	+18.9	2.89	70.0
Middle-East										
Syrian Arab Republic	19,121	60.0	38.5	1.01	3.1	12.9	+32.6	+24.8	3.29	74.1
Lebanon	4,082	65.4	28.3	1.04	7.1	14.1	+8.3	+8.9	1.86	72.0
Israel	6,692	61.9	26.0	1.11	10.1	24.8	+17.0	+14.5	2.81	80.7
Palestine	3,762	51.0	37.8	1.47	3.1	16.1	+31.8	+32.2	5.09	73.4
Jordan	5,566	59.3	36.3	1.14	3.5	17.1	+30.2	+21.8	3.13	72.5
Iraq	28,238	54.8	36.3	1.33	3.4	14.7	+21.7	+25.5	4.11	67.4
Iran (Islamic Republic)	70,765	68.6	37.9	0.69	5.0	16.0	+11.8	+13.2	1.83	71.3
Saudi Arabia	23,613	62.7	29.5	1.22	2.8	14.3	+21.2	+20.0	3.17	72.8
Qatar	885	80.8	22.8	0.61	1.3	15.4	+106.5	+10.2	2.43	75.5
Bahrain	728	69.9	24.5	1.06	2.6	15.4	+20.8	+15.6	2.29	75.7
Oman	2,618	63.5	32.0	1.12	2.6	11.5	+20.8	+19.4	3.09	75.6
United Arab Emirates	4,089	79.3	20.6	0.75	1.1	18.2	+28.2	+12.5	1.95	77.4
Yemen	21,024	52.1	41.5	1.35	2.3	13.0	+28.6	+29.7	5.30	62.7
Djibouti	805	58.6	36.0	1.19	3.0	10.0	+17.6	+17.6	3.95	55.3

Source: Elaborations on data from Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision.

Figure A.2.1 – Total population and population growth rate in the EU27, other European countries and the MENA region



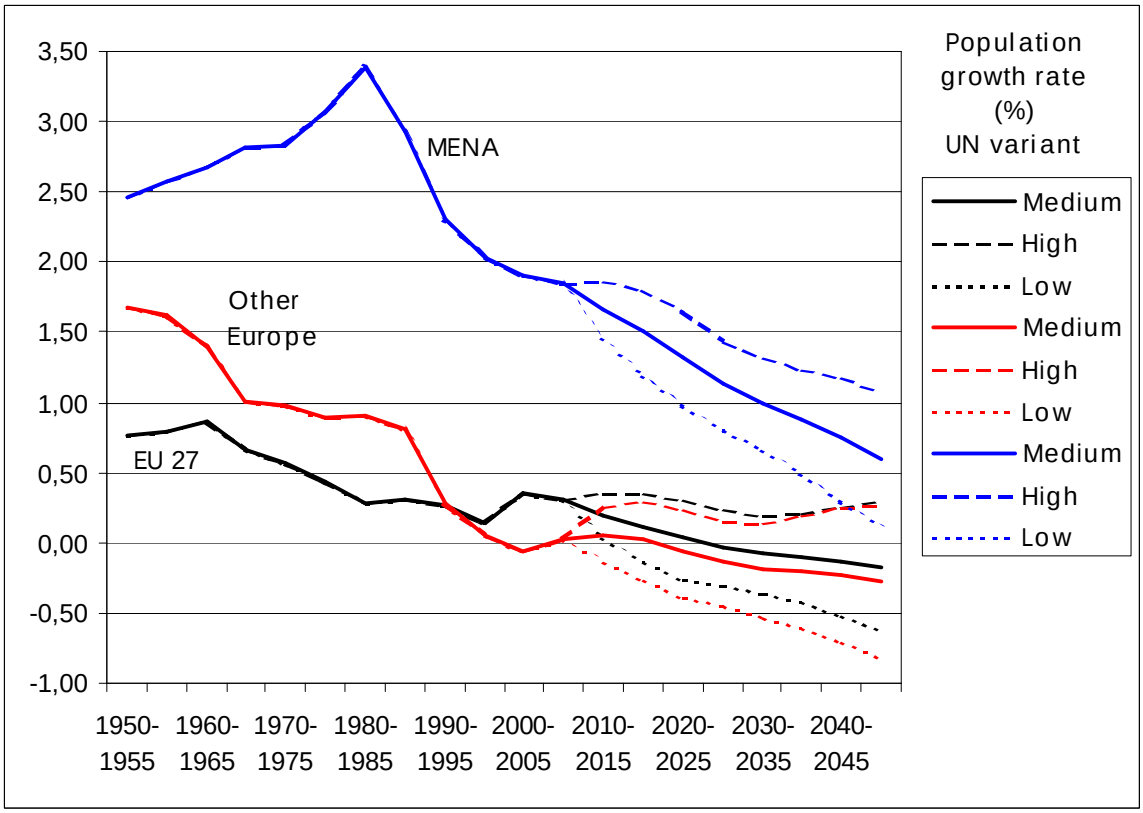
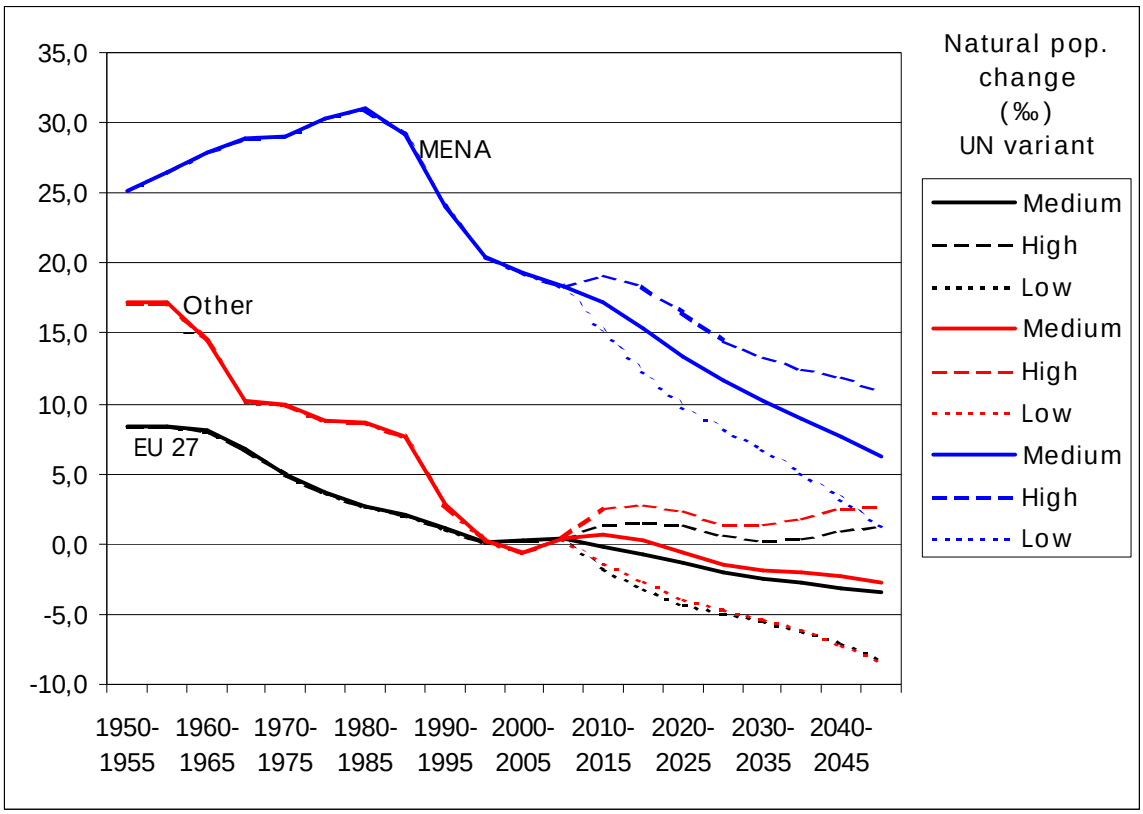


Figure A.2.2 – Natural change rate and total fertility rate in the EU27, other European countries and the MENA region



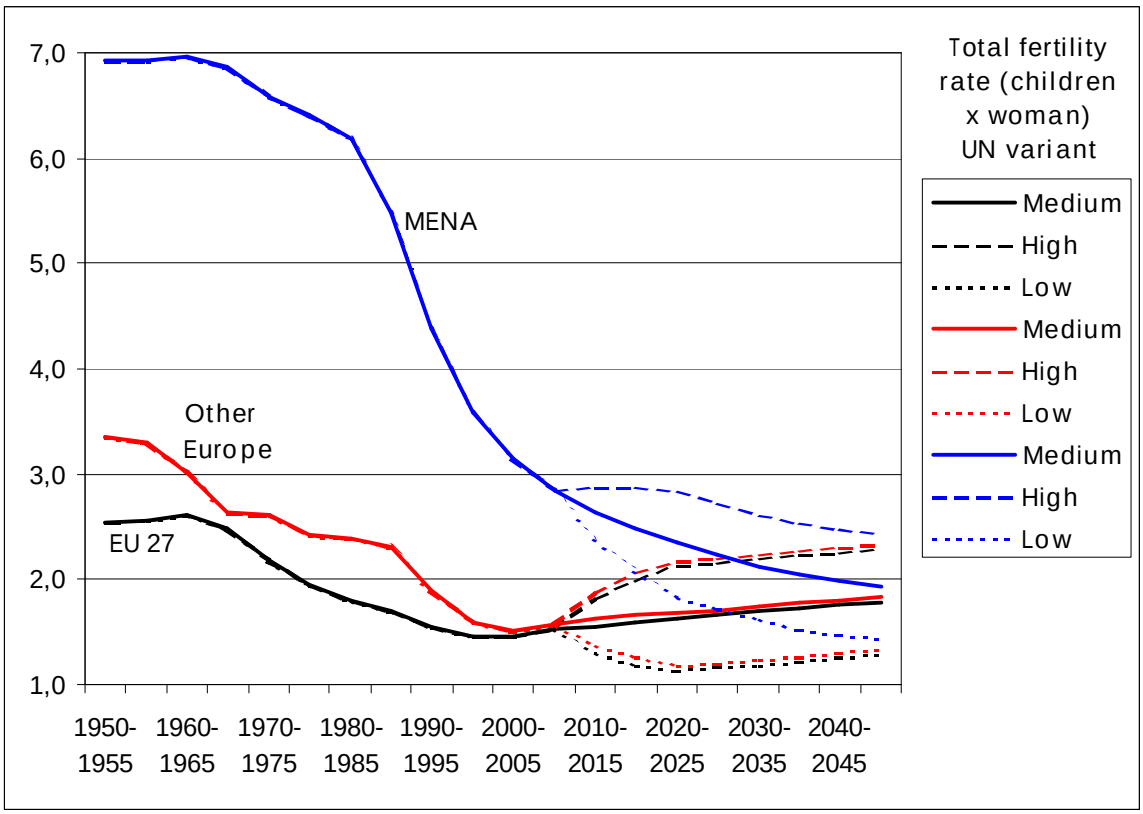
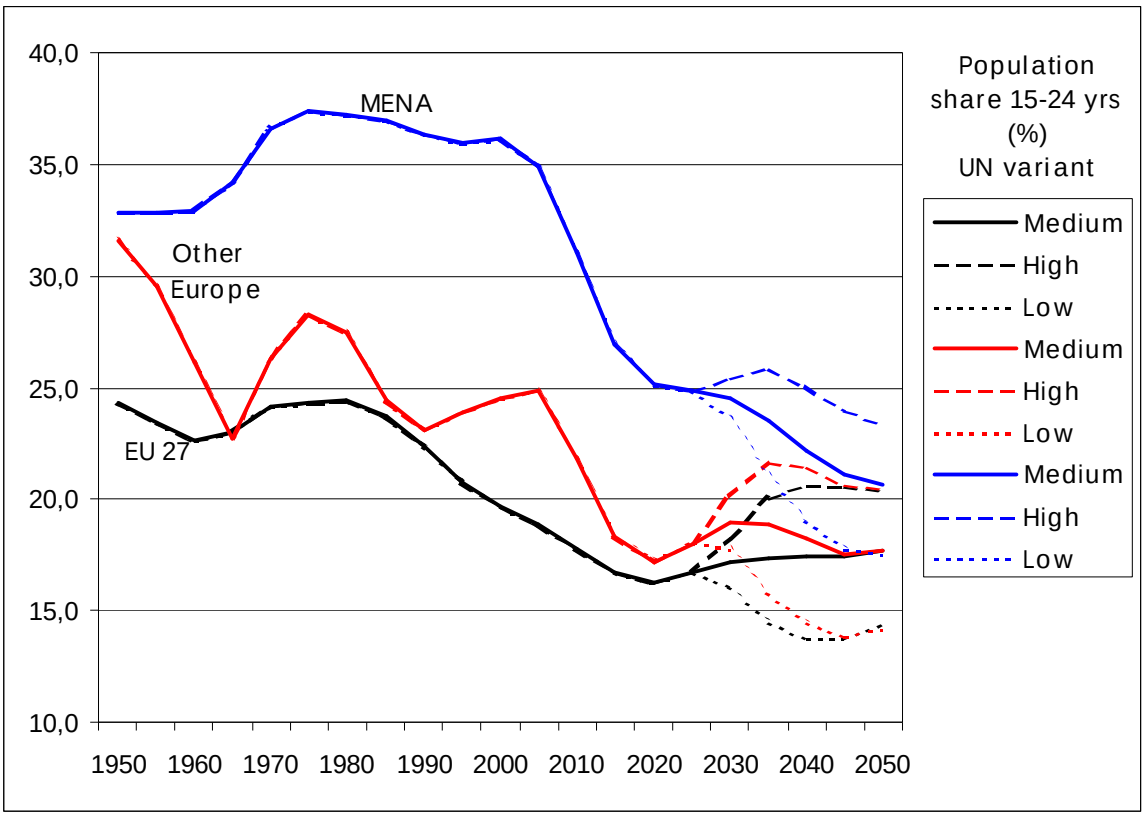
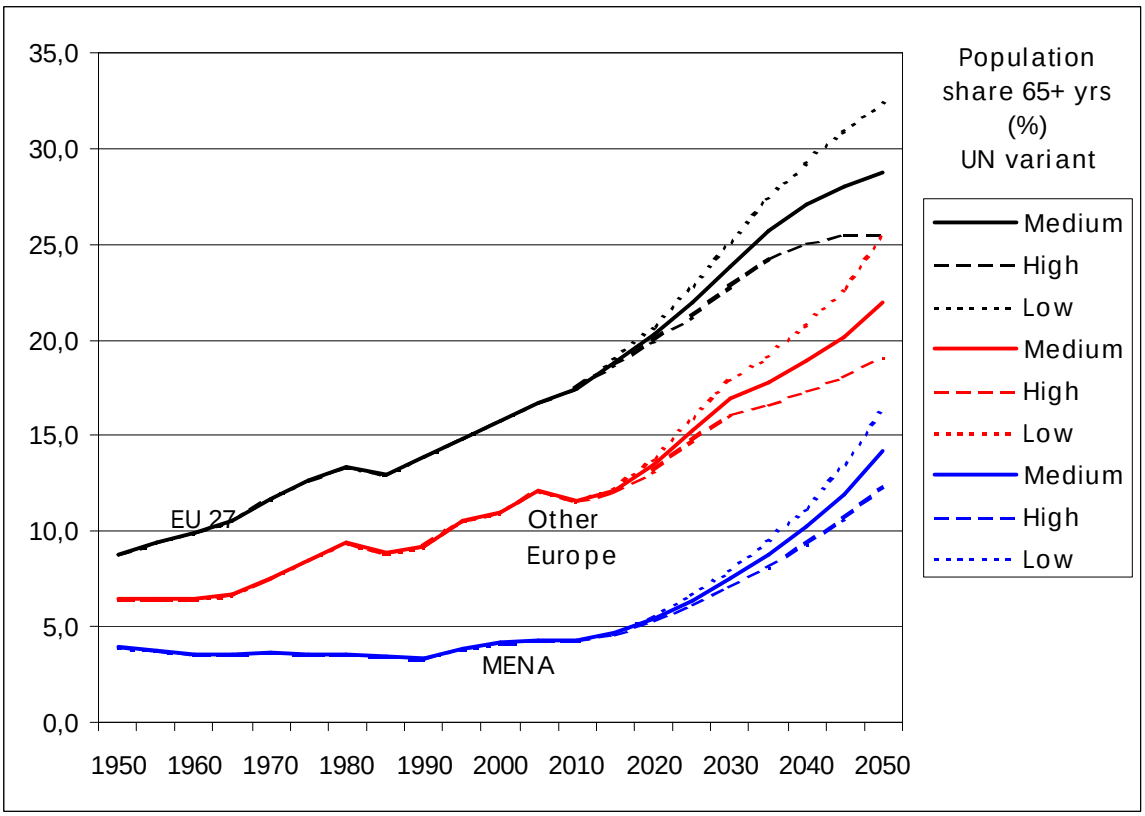
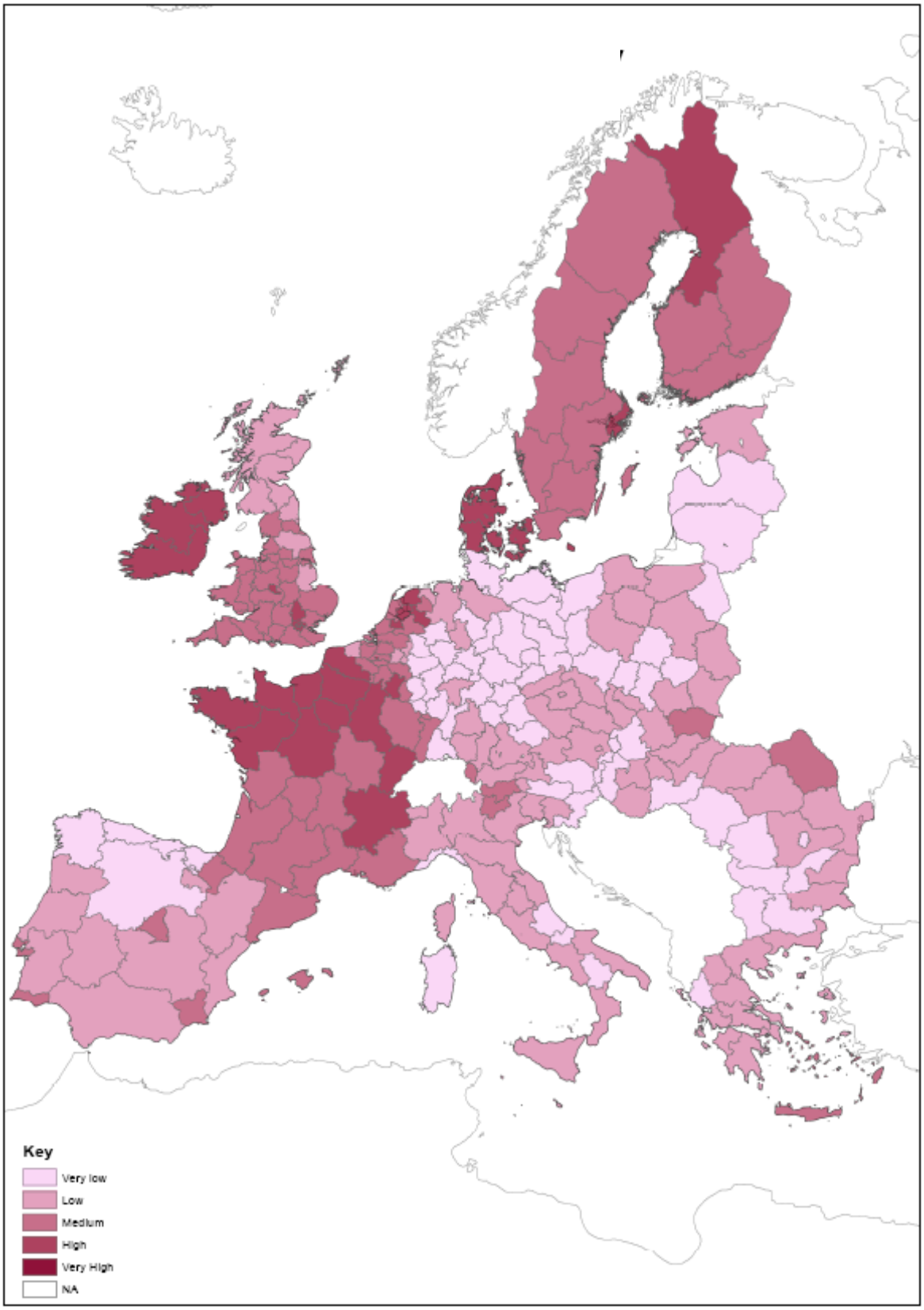


Figure A.2.3 – Population share in 15-24 and 65+ years of age in the EU27, other European countries and the MENA region

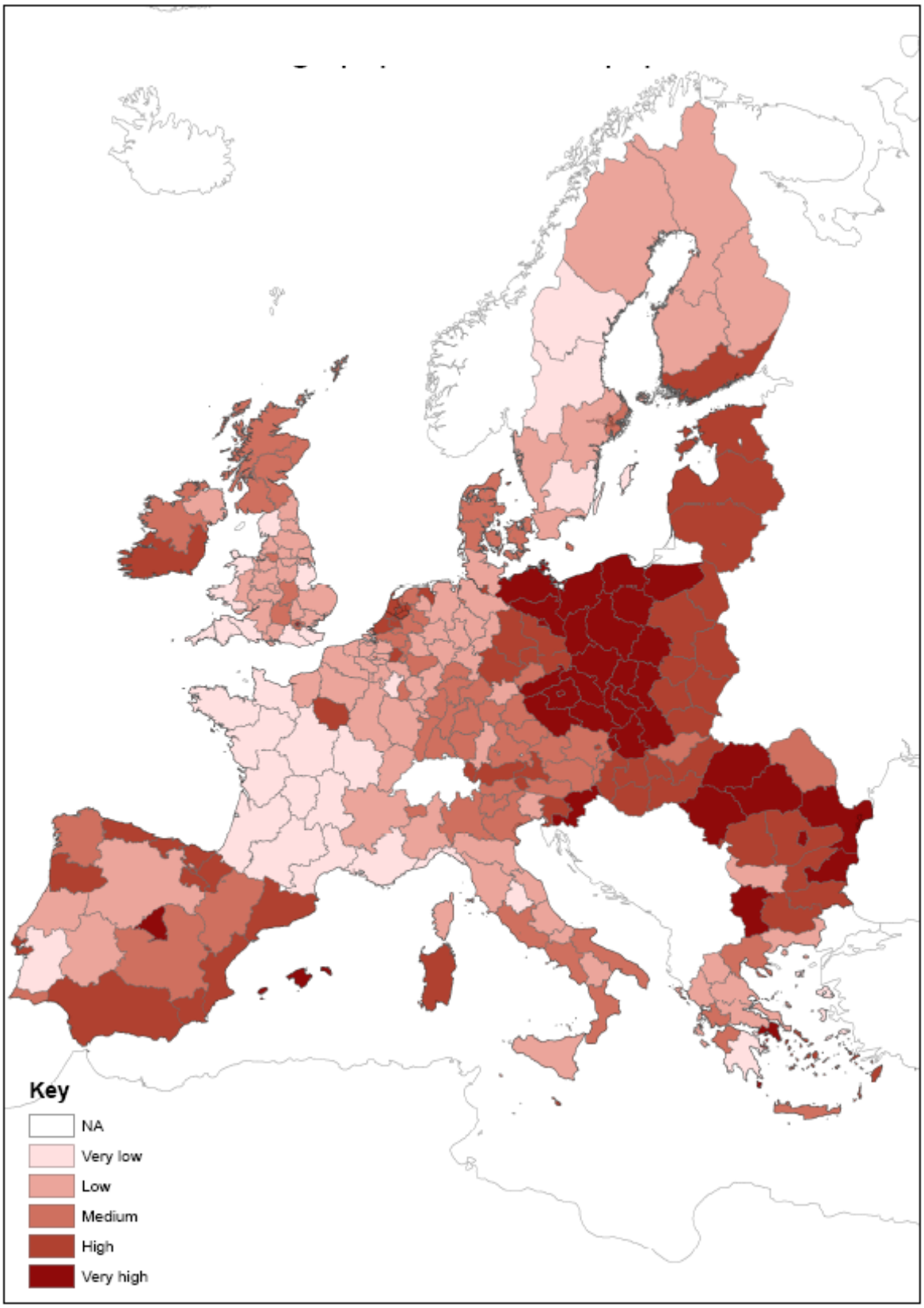




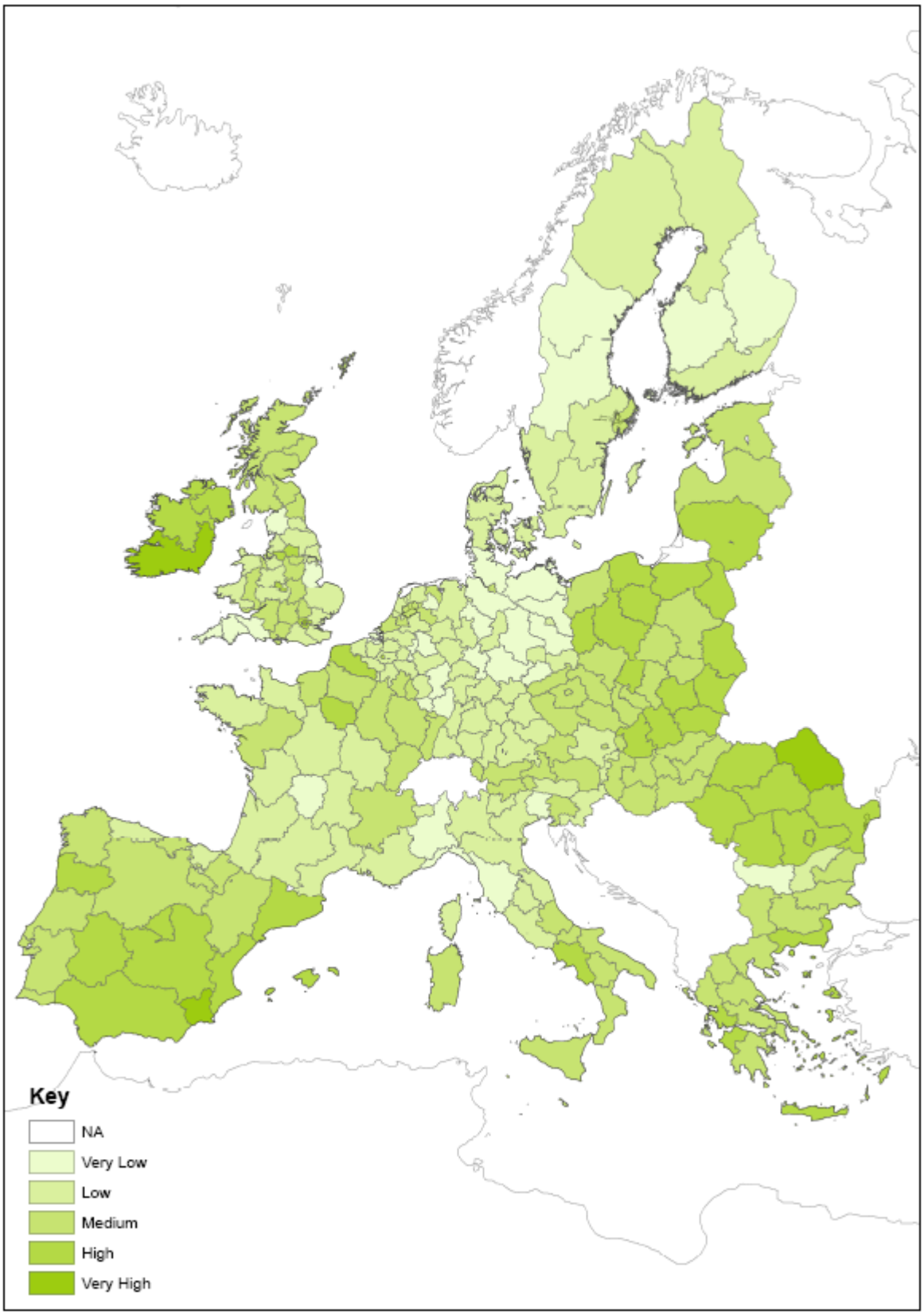
Map A.2.1 – Recent fertility in the EU27 Regions



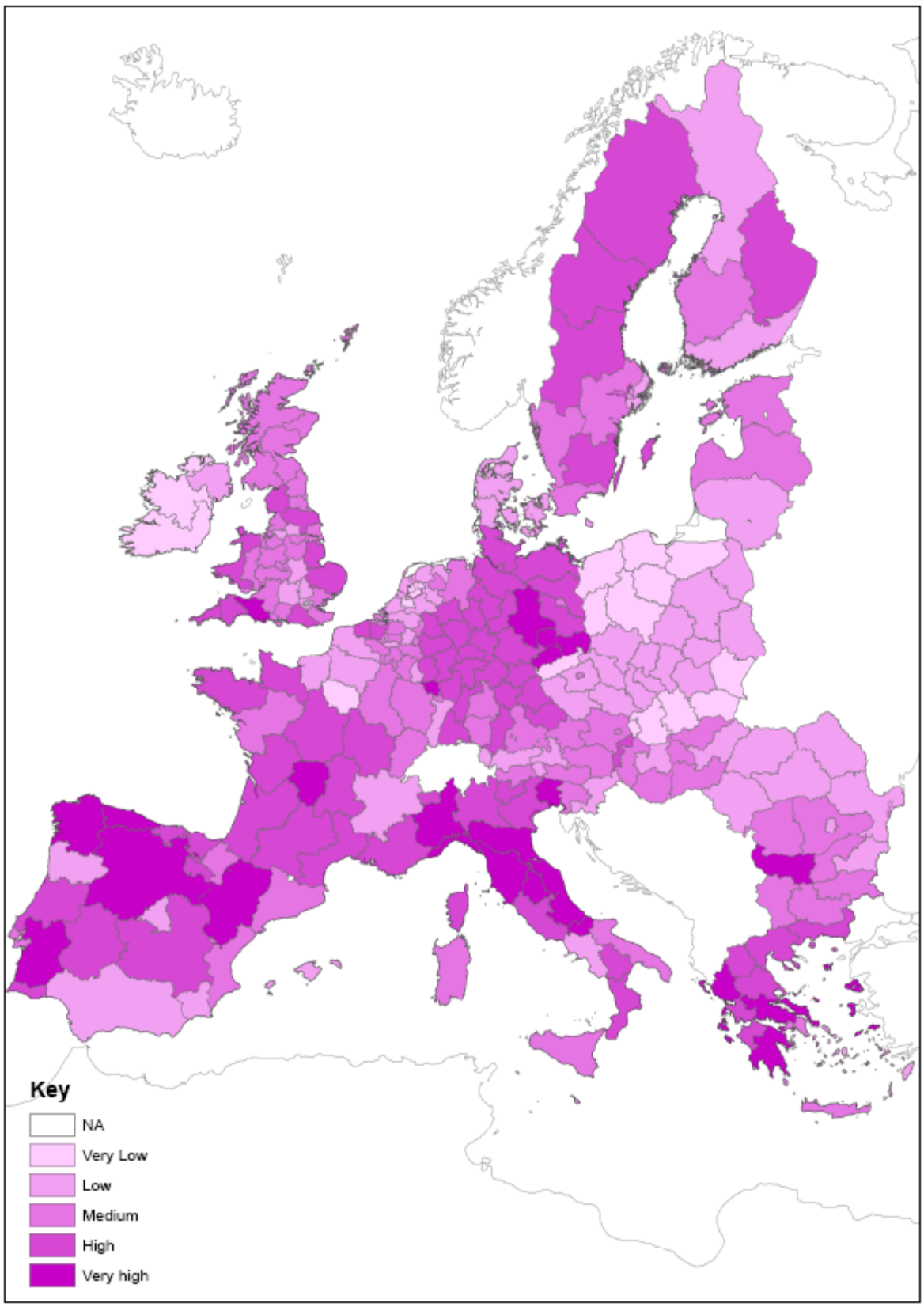
Map A.2.2 – Share of labour-age population (15-64 yrs) out of total population in the EU27 Regions



Map A.2.3 – Share of young labour-age population(15-39 yrs) out of total labour-age population (15-64 yrs) in the EU27 Regions



Map A.2.4 – Share of the elderly population (64 yrs and over) out of total population in the EU27 Regions



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