

## **Current Demographic Trends – A New Challenge for the Labour Market**

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**Abstract.** *Europe faces faster trends of aging and reduction of population. These demographic trends raise questions about the ability to adapt quickly to the new requirements of the labour market, requirements imposed by globalization with rapid spread of knowledge that this implies. The paper highlights, in this context, the challenges facing the labour market and the additional pressure on policymakers to identify and use effective ways to deal with them successfully. The aim of this study is to evaluate the impact of aging on old-age-dependency ratio by maintaining constant life expectancy at age 65 from 2015 until 2050.*

**Keywords:** aging, old-age-dependency ratio, nominal age, real age, life expectancy.

**JEL Classification:** J08, J01.

## 1. Introduction

The aging population, as process of increasing share of older in total population, occurs in almost all countries since mid-last century. The intensity, depth and timing of this phenomenon varies significantly between countries, depending on their level of development. Unlike developing countries, developed ones already have an aging population (United Nations, 2013). Ageing population implies new economic and social requirements. Societies must be involved to ensure active aging, health and safety of the population.

The labour market is directly affected by demographic phenomena, both through action on labour supply due to changes in volume and structure of labour force and on labour demand, as effect of changes in aggregate demand - certain industries and services develops over others. These involve changes in the structure of employment and productivity. The assessment that productivity follows an inverted U-shaped curve during the active life on the labour market is contradicted by several studies that link labour productivity to the labour specialization. In addition, as population ages, both companies and workers will adapt (World Bank, 2007). First will have to be willing to hire older workers, while the latter, as the labour market will show they are wanted, will be willing to invest in human capital. However, ageing will adversely affect the economic growth processes that are based on high rates of employment (labour force participation) and increases in labour productivity (COMM, 2015).

The evolution and the age structure of the population depends on fertility and mortality rates and on the evolution of migration. These are determined by previous choices and investments. Therefore, processes have different intensities in rich and poor countries. There is a negative relationship between fertility rates and income levels. Some authors explained this by a higher opportunity cost of time. And the children 'cost' time. Even if this argument is contradicted by the fact that riche parents can buy more for their children, including quality care services, the authors address the question as a compromise between time invested in children as qualitative side and their number, as quantitative side (Börsch-Supan and Ludwig, 2010).

Some authors (Feyrer, 2005) consider that the attention to the demographic aging is directed excessively on old-age dependency rates and not on the demographic composition of the workforce. The latter can explain age differences between rich and poor countries. Thus labour productivity was diverging between developed countries characterized by aging workforce after 80's and poor countries characterized by maintaining the age structure. In this context it is considered that people aged 40-49 years have the highest productivity.

Source of growth and source of government revenue, labour force participation rates become more important during the current economic crisis, in the general context of aging that increases the burden on social protection systems (Doll et al., 2014). Prettner and Prskawetz (2010) highlight the relationship between population aging and economic growth, explaining the role of saving and investment in research and development to

support economic growth. Beaudry et al. (2005) believe that the growth rates of labour force are the main factor of speed adjustment to technological change which characterizes countries. Börsch et al. (2014) show that the decrease of the workforce determined by aging will be partly substituted by additional capital due to increase wages and to reduce interest rates.

The European Union is facing a new challenge, which is to cope with the reduction of the population of working age (from 15/24 to 65 years) as increasing elderly population (65 years). This trend is only partially offset by migration processes and increase the longevity on the labour market as a result of raising the retirement age and active aging programs.

The time during which a person receives a pension is about one third of adult life. Many people are receiving a higher pension as a result of various regulations on early retirement. This is illustrated by the low employment rates of population near the exit age from the labour market (55-64 years) than total employment rates on the labour market, with significant gender differences. These issues are reflected by the economic dependency ratio, which shows direct effect on the sustainability of social protection systems because it is calculated as the ratio of the number of pensioners and unemployed against employed persons.

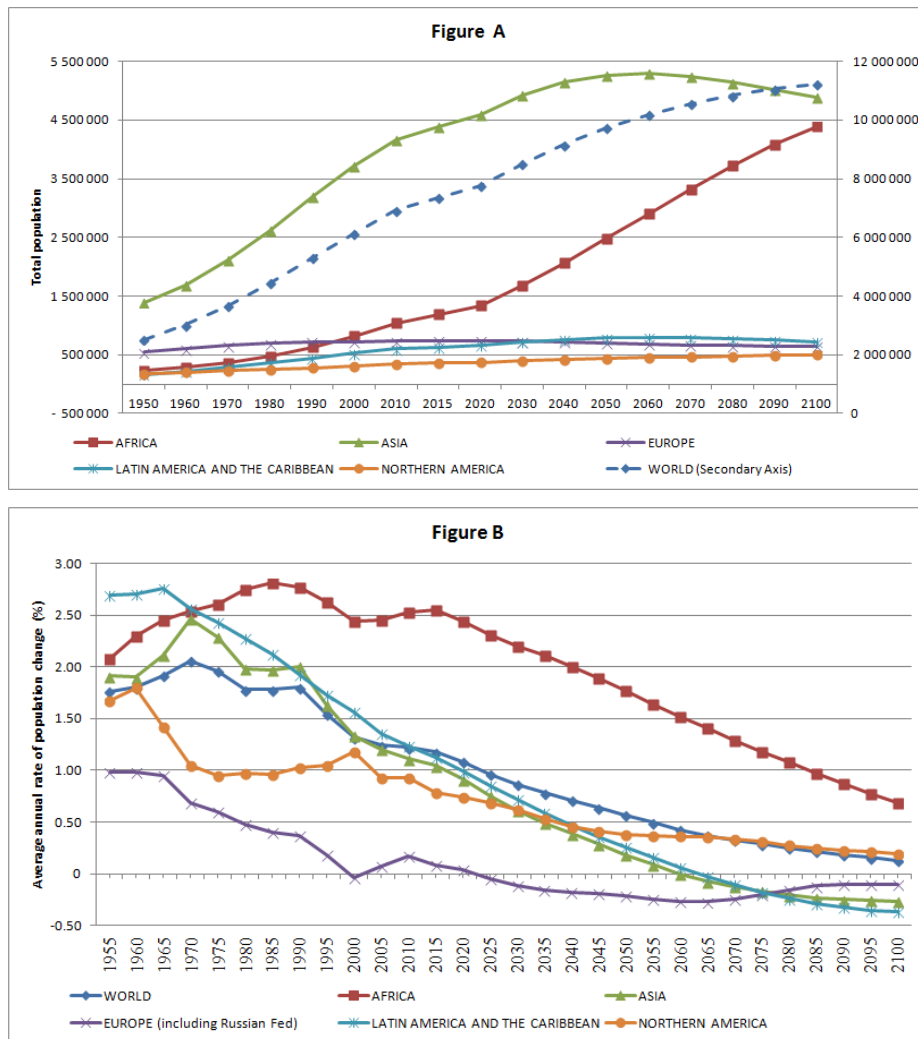
The most often used indicator to highlight the strictly impact of demographic phenomena is old-age-dependency ratio, i.e. the ratio of the population aged 65 and over and the population aged 15-64. At EU level, this rate is projected to double in the next 50 years.

## **2. Demographic trends in the world**

The demographic trends have changed in the 21st century comparing to the 20th century. From the extraordinary population growth in the last century, this century is projected to be one characterized by a significant slowdown in global population growth, one of global aging, phenomenon that will increase in the coming decades, as shown by projections of international organizations. The trend is different at global level, with fast growing population regions (Africa or Arab countries) and others that record decreases (EU) (Figure 1-A).

Population growth rates were the lowest in Europe (including European Union) compared to other regions of the world during 1950-2015. In the near future this region will record the fast reduction of the population as shown in Figure 1-B.

**Figure 1.** Total population by major area (Part A); Average annual rate of population change by major area (Part B)

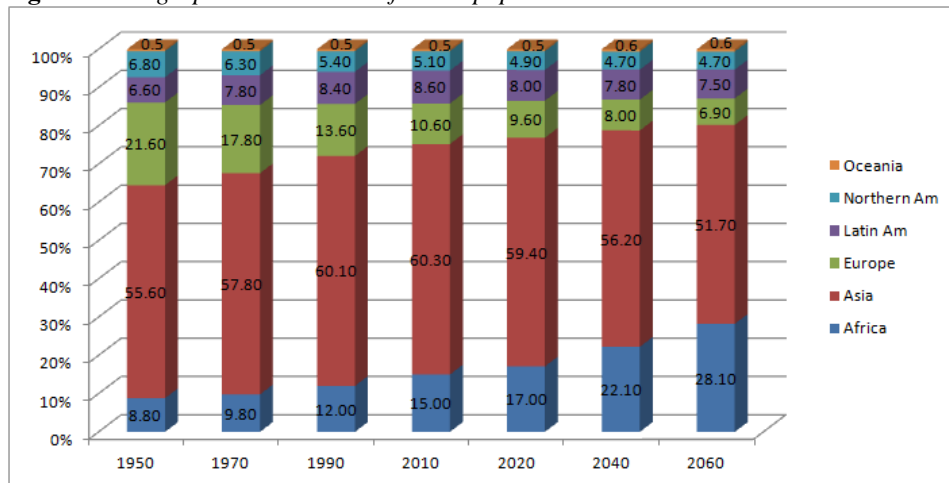


Source: UN, World Population Prospects: The 2015 Revision.

As result, the share of population of regions in the total world population has changed significantly from 1950 to 2015 and will continue to do so until 2060 (Figure 2). As result of high rates of population growth compared to all other regions, Africa will continue to increase its share in total world population, recording an increase from 8.8% in 1950 to 15% in 2010 and to a forecast of 28.10% until 2050. The most significant reduction records in Europe, which has already halved the share in the total world population between 1950 and 2010 (from 21.6% in 1950 to 10.6% in 2010). It is estimated that the current trend of population aging in Europe is a consequence of the demographic

transition from premodernism, with mortality and high fertility, to post-modernism, where both fertility and mortality are low (World Bank, 2007)

**Figure 2.** *Geographic distribution of world population*



**Source:** United Nations, The 2012 UN revision.

Statistical data on population trends confirms that rapid population aging is associated with developed countries. The share of population aged 60 and over in the total population (2013) was 22.9% in Europe and 19.9% in North America, compared to 11.7% for the whole world (United Nations, 2013). The country situation shows that from the top 20 countries with the highest percentage of population over 60, 19 are of the Europe and 18 of the EU (first place is held by a non-European country, Japan with a share of 32% and the 20th place is held by a country outside the EU - Switzerland with 23.2%).

### 3. Implication of demographic trends on labour market in European Union

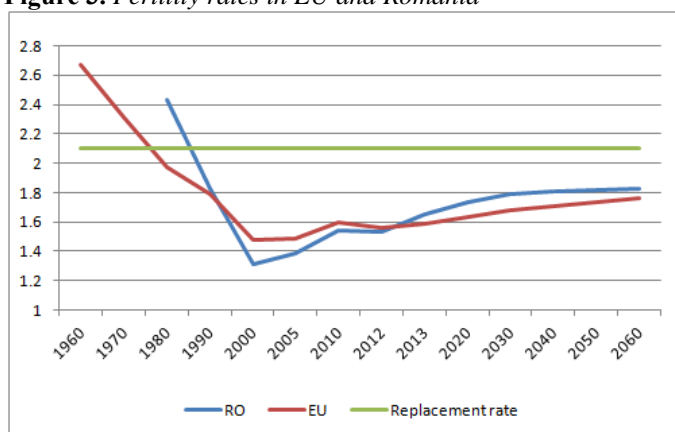
The determinants of demographic aging process in the European Union are unfavorable trends in fertility rates and increasing life expectancy of the population (with implications to the mortality rates).

Fertility rates are in all EU countries below the replacing rate considered to be around 2.1 (Figure 3). Between 1960 and 2000, they were significant decreases in fertility rates without exception in all EU countries. After 2000 they began to rise slightly until 2013 in most EU countries, a trend that will preserve until 2060 (exception Ireland, France and Sweden - countries that have fertility rates above the EU average). According to the recorded and projected data, the lowest fertility rate in the EU in 2012 registered in Portugal (1.28) and the lowest fertility rate is forecasted for the same country in 2060 (1.52).

Increases in fertility rates over the next 50 years are explained by advances in medicine, the trend in ideal family size, prevailing the desire to have children compared with other

goals in life, government policies, family and partnership stability etc. (COMM, 2012). The effects of government policies on fertility rates were evident in Romania in 2008-2009, when as a result of income growth and increase in child leave periods for mothers, fertility rates rose from 1.45% in 2007 to 1.66% in 2009. Growth rates were not maintained in the next years. From 2010 they started to decrease again as a result of the relative tightening of conditions just relaxed two years before.

**Figure 3.** Fertility rates in EU and Romania

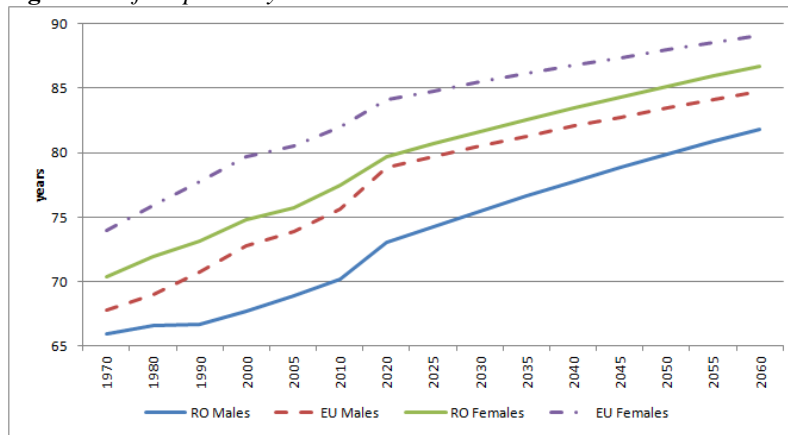


**Source:** Aging Report 2015, European Commission.

Life expectancy has increased in all countries in the European Union since 1960, for both women and men. This is a remarkable progress but also a great challenge. For developed countries the increase was higher (for countries in the Euro Zone growth was 3 months per year) (COMM, 2015). Increased life expectancy was higher for women compared to men until 1990, then the differences began to diminish together with the general slowdown of growth (Figure 4).

Future changes in life expectancy are result of factors that influence in different directions: progress in medicine, public health programs, decreasing behaviors with negative effects on health (smoking), on the one hand and biological limits of longevity, prevalence of obesity or increasing behavior with negative effects on health such as drug use, on the other hand. These developments increase government expenditure in at least two major directions: pensions and healthcare. If the first category of expenditure is linked exclusively to the old population, first targets the entire population. For healthcare spending it is important how these costs are distributed by age groups, in order to see if aging population puts pressure on budgets. Statistics have shown that they tend to increase with age, following a J-shaped curve, because they decrease unexpectedly for the 'oldest' old (World Bank, 2015). Although they registered growth rate higher than GDP, it is assumed that they have an upper limit to which governments can 'take' from young to support the old (Hagist and Kotlikoff, 2005). Number of years the elderly will be dependent on government expenditure will increase until the increase of life expectancy at age 65 will equalize the increase of labour market participation after this age (Fuchs, 1999).

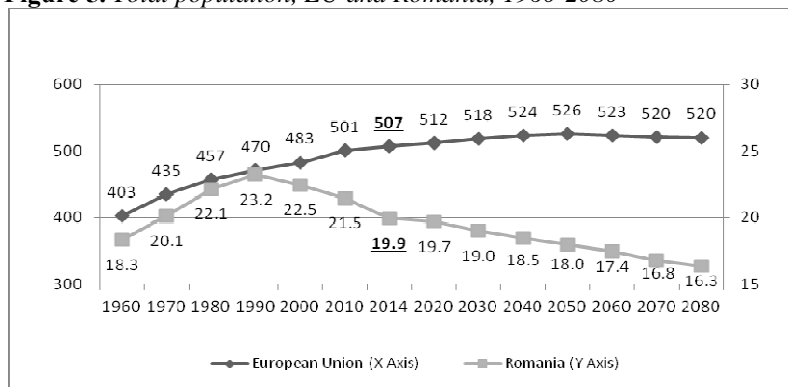
**Figure 4.** Life expectancy at birth



Source: Eurostat Statistics.

According to projections of international organizations (United Nations, 2015) Romania and Bulgaria are the countries that will register the largest population decrease until 2050. The decrease will be of 22.1% in Romania compared to 2015 (Figure 5). Among the top 20 states with the most significant decrease of population, 14 are EU member or candidate states. In Romania, the population declined dramatically after 1989 as a result of legalize abortion, only in 1990 the number of abortions was around one million.

**Figure 5.** Total population, EU and Romania, 1960-2080



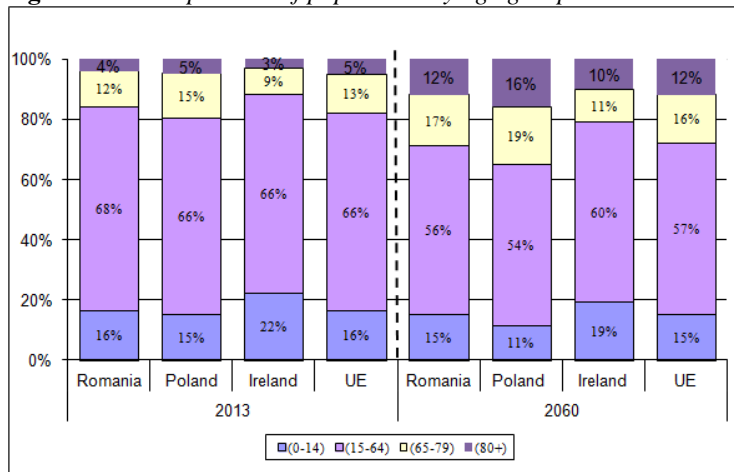
Source: Eurostat Statistics.

The generation born after the Second World War, 'baby boomers', reach retirement age gradually. They are also those who have a longer life expectancy compared to few decades ago. These, together, put pressure on social protection systems, on public finances in general.

Age composition of the population is a very important issue for economic policy-makers. Decreasing fertility rates and increasing life expectancy determine the "graying" population. Share of population aged over 65 will rise in the EU from 18% in 2013 to 28% in 2060 with significant differences between countries. The same period, growth will be in Romania of 13pp (from 16% to 27%) in Poland 15pp (from 20% to 35%) and

9pp in Ireland, the country with the youngest population in the European Union (from 12% to 21%).

**Figure 6.** *Decomposition of population by age groups*



**Source:** Eurostat Statistics.

This process move attention to the expenditure on pensions, on the one hand and to the opportunities of extending working life, on the other hand. Assessment of pension expenditure as percentage of GDP shows that countries have different approaches to the same problem of aging population. Both, redistributive pension schemes and capitalised systems are affected. The first one are affected as a result of lower contributions due to the decrease in employment rates and the second one is affected as a result of decreasing the value and the return on assets. European economic integration determines effects of public pension reforms across national borders. Better opportunities to stay in employment requires fostering lifelong learning processes, adapting the work to workers age, balance the family and working life, reducing age and gender discrimination (COM, 2012).

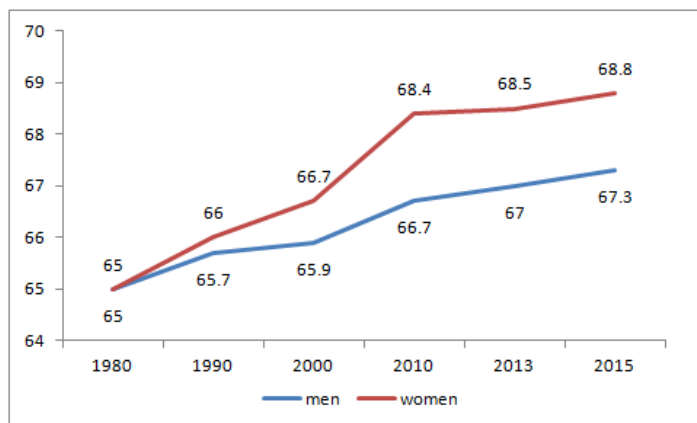
Concerns are now linked to the question whether or not the working age population that decrease will be able to support old population. The financial implications of this relationship are analyzed first using the old-age-dependency ratio. This does not take into account people who continue to work beyond the age of 65 and are not a burden for social security systems. These people are those who conceptualize active aging, term proposed by the World Health Organisation with regard to the optimization of security opportunities, labour market participation and security in order to ensure quality of life as aging. Active aging is a must in the EU recognized in the White Paper - An Agenda for Adequate, Safe and Sustainable Pensions (COMM, 2012). This concept refers not only to keep people in work, adapted to their capabilities and preferences but also to keep them active in the economic, social, cultural life etc. Such concerns may help avoid or delay diseases that would make them fully dependent on social protection systems (United Nations, 2002).



Shoven (2008) shows that people of the same age, at every few decades, does not have basically the same age and suggests ways of passing from nominal age (number of years from birth) to real age. These adjustments are based on life expectancy at a given age, the risk of mortality, the percentage of life expectancy achieved up to a certain point, percentage of life expectancy at 20 years. It is estimated that is recorded for ages an inflation process like that recorded for prices.

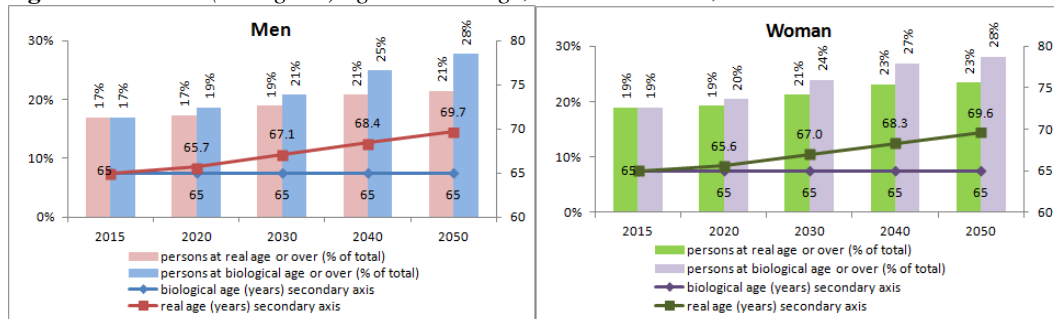
We consider nominal (biological) age the number of years from birth and real age that which equalizes the number of remaining years of life with the reference year. Figure 7 shows for the period 1980 to 2015 changes in real age taking as reference year 1980. Thus a man of 67.3 years in 2015 in Romania has the same life expectancy as one of 65 in 1980. A women of 68.8 years in 2015 has the same life expectancy as a woman of 65 in 1980. The large differences between the real ages for women and men are explained by the faster growth of life expectancy at 65 years for women compared to men, a trend that reverses after 2015, as projections shows.

**Figure 7.** Differences in real and nominal age in Romania, 1980-2015



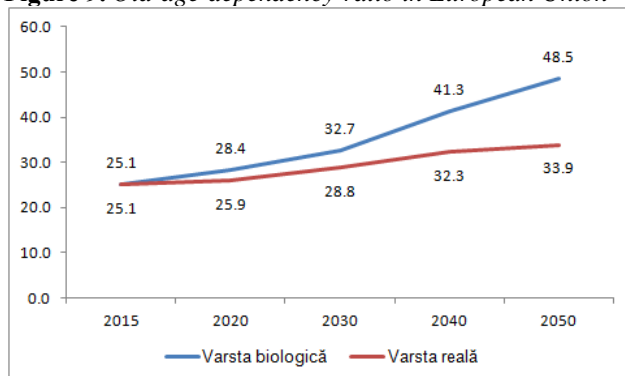
**Source:** Computation based on Aging Report 2015.

We have compared the changes in share of population over 65 in total population, between 2015-2050, based on biological age and real age (reference year for the real age was 2015). Results show that life expectancy at age 69.7 for a man in 2050 is the same with life expectancy of a man of 65 years in 2015. Therefore, we can consider that the equivalent age of 65 for men in 2015 is 69.7 years in 2060 due to changing living conditions. We have estimated the share of population aged 65 and over in total population, using both biological age and real age. The results show significant differences (Figure 8). The weights obtained based on real age show a much slower growth of share of the older population both for men and women. Thus, for women the share in total population increase by 4pp if consider the real age and by 11pp if consider biological age. For men the increase is the same in the first case and 9pp in the second.

**Figure 8.** Nominal (biological) age and real age, men and woman, Romania

Source: Eurostat Statistics.

In an imaginary model, we might consider that if the retirement age were calculated based on the real age, the social security systems will not be so burdened by the aging population projected for the next decades. Without considering that it could be a solution, assessments based on real age come to support the European Commission's recommendations to increase the retirement age, explained by the fact that such growth is not a diminishing of period people will benefit from the pension, but only a compensation of life expectancy increase compared to previous years.

**Figure 9.** Old-age-dependency-ratio in European Union

Source: Eurostat Statistics.

The projection on old-age-dependency ratio indicates for European Union an increase from 25.1% in 2015 to 48.5% by 2050 based on nominal age (biological). The rates based on the real age, as defined in this study, increase from 25.1% in 2015 to only 33.9% in 2050 (Figure 9). These results are supported by healthy life expectancy at age 65 that increased between 2005-2013 faster than life expectancy at age 65 (according to Eurostat, tsdph220). As a result, older people will have the physical ability to perform activities on the labour market, which supports reducing dependency of old age people of other age groups, as shown above.

#### 4. Conclusions

The process of aging is accompanied by changes in family and employment structure, in migration, residence location choice, the participation of women on the labour market. These processes move the attention of policy-makers toward ways to increase labour market participation rates for both men and women, to reform pension systems and to support processes of lifelong learning.

The old-age-dependency ratio is the most often used indicator to highlight the potential effects of the current demographic processes on the labour market. This indicator takes into account the age 65, as exit age from the labour market. Pension reforms show that almost all EU countries take measures to increase the retirement age in the future. Therefore we consider that the burden resulted from the current statistics on old-age-dependency ratio are over valued. One way of assessing the real growth of these rates would take into account raising the retirement age. Since it is difficult to assess EU retirement age in the coming years as average retirement age of all EU Member States, we have estimated the old-age-dependency ratio through a process of updating the age of 65 depending on life expectancy at age 65. We maintained unchanged for the period 2015-2050 the life expectancy from 2015 at age 65. These analysis showed that the real age corresponding to the nominal (biological) age of 65 in 2015 is 69.7 years for men and 69.6 years for women in 2050. Thus, the share of population older than real age of 65 decrease in total population, which directly influences the old-age-dependency ratio that decreases with 14.6pp compared to official projection for 2050.

The dependence of older population of the other age groups decreases as participation age on labour market increases, reducing the gap between the exit age from the labour market and life expectancy. Considering the policies of increasing the retirement age in most EU countries, we argue that old-age-dependency ratio will grow at a slower pace over the next decades compared to projections of the international organizations. However, their growth requires efficient measures to reduce spending burden with older population on national budgets.

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