

Diaconu, Laura

Article

Ageing Population: Comparative Analysis Among European Union States

CES Working Papers

Provided in Cooperation with:

Centre for European Studies, Alexandru Ioan Cuza University

Suggested Citation: Diaconu, Laura (2015) : Ageing Population: Comparative Analysis Among European Union States, CES Working Papers, ISSN 2067-7693, Alexandru Ioan Cuza University of Iasi, Centre for European Studies, Iasi, Vol. 7, Iss. 1, pp. 50-59

This Version is available at:

<https://hdl.handle.net/10419/198361>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

AGEING POPULATION: COMPARATIVE ANALYSIS AMONG EUROPEAN UNION STATES

Laura DIACONU (MAXIM)*

Abstract: *The aging population is a global phenomenon, which has affected almost all the EU states. The consequences are very important since it affects the socio-economic environment usually on the long run. Some of them could consist in increasing the public expenditure on pensions, social security and health services, which will raise the overall burden on the working population. Sometimes, a significant reduction of the labour force will even diminish the growth rate of an economy. Considering these aspects, the present paper intends to analyse the demographic situation from the EU states, the factors that have generated it and to identify the possible future trends. To determine the evolution of the ageing population phenomenon, we have analysed some demographic indicators included in various statistical reports and databases, such as the fertility rate, the median age, the percentage of population over a certain age and the age dependency ratio.*

Keywords: ageing population, fertility rate, population pyramid, median age, age dependency ratio

JEL Classification: J11, J11

Introduction

Population ageing is considered to be by United Nations (2002) a “process by which older individuals become a proportionally larger share of the total population”. This process is a consequence of two main factors: low fertility rate and longer life expectancy.

Looking at the statistics, we can notice that nowadays the aging population phenomenon is a global one, some countries being more affected than others. It was considered that the ageing persons, born during the “baby-boom” period, and its consequences on the socio-economic systems will also become one of the major challenges for the European Union countries in the coming decades since the proportion of people of working age in the EU-28 is shrinking, while the relative number of those retired is expanding.

One of the most important side-effects of the ageing process would consist in increasing the public expenditure on pensions, social security and health services (Gavrilov and Heuveline, 2003). This will raise the overall burden on the working population, who will have to pay higher taxes. Moreover, the ageing population phenomenon is a great challenge for the health care systems, some analysts even raising the concern that the mankind may become a “global nursing home” (Eberstadt, 1997). Meanwhile, a decreasing percentage of working age persons will cause shrinkage of the labour force that will generate a reduction of the economies’ growth rates (Feldstein, 2006). Apart from all these consequences, in a 2002 report, the United Nations pointed out that the ageing population raises two other major risks: the intergenerational conflicts caused by the changes in the patterns of resource

*Assistant Professor, PhD, Al. I. Cuza University of Iasi, Romania, e-mail: dlaura_es@yahoo.com

distribution between the generations and the failure of repartition of the pay-as-you-go pension systems.

Looking for solutions to reduce the dimensions of this phenomenon, some analysts considered immigration a potential measure against the effects of ageing. For example, Pollard (1973) or Espenshade *et al.* (1982) noticed that, under certain conditions, immigration leads to a stationary population with a stable age structure. However, more recent studies have shown that, in order to maintain certain parameters of the population structure, the number of immigrants has to be very high (Feld, 2000; Saczuk, 2003). Moreover, Bermingham (2001) argued that aging will led to economic, social and cultural disruptions that can only partially be offset by immigration. Therefore, we may assume that the impact of migration flows on the age structure of the host population is very limited. However, some other factors, such as fertility rate, socio-economic environment, legislation etc., could positively influence the ageing process, especially in the long run.

To determine the evolution of the ageing population phenomenon we should analyse a number of indicators, such as the fertility rate and population pyramid, the median age, the percentage of population over a certain age and the age dependency ratio (especially the old age dependency ratio). In order to see the global EU trend, it is required a general approach. However, it is also very important to determine if some regions are more affected by the ageing population than the other; therefore, it is necessary to make a detailed analysis of these indicators on the member states.

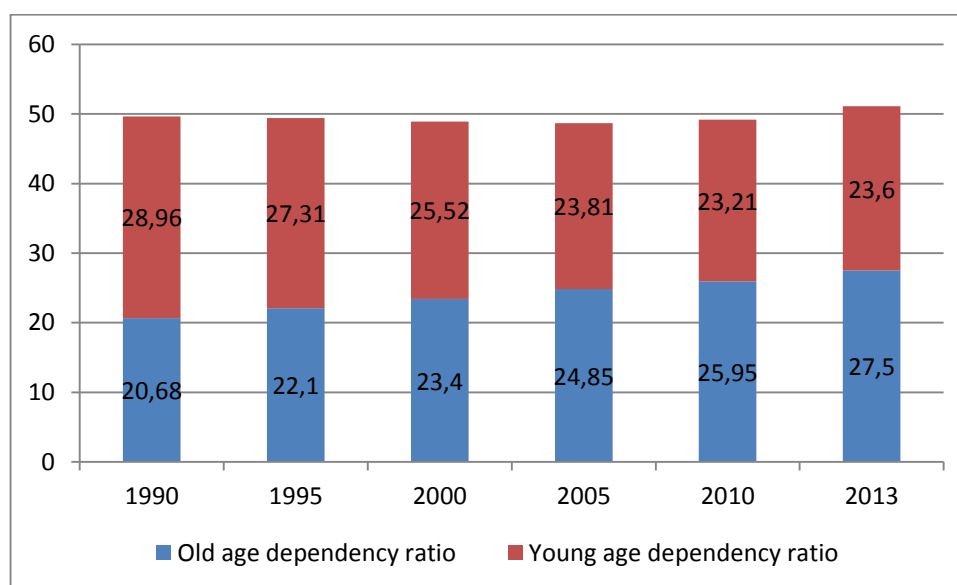
1. Demographic trends in EU – general approach

The data offered by Eurostat (2013) show that, in 2012, the young people, aged between 0 and 14 years old, represented 15.6% of the EU 28 population, the working-age persons (15-64 years old) – 66.5% and the senior citizens (65 years and over) totalled 17.9% of the population, with 0.4% more than in 2011. If we compare these values to those registered in 1960, we can notice that if in 1960 there were, on average, about three young persons aged between 0 and 14 years for every individual aged 65 or over (Lanzieri, 2011), this ratio became one to one in 2013. Considering the socio, financial and economic consequences of this evolution, it is very important to analyse the age dependency ratio.

According to the World Bank definition, the age dependency ratio is the ratio of dependents – people younger than 15 or older than 64 – to the working-age population (those between 15 and 64). If we analyse the total age dependency ratio (both the young and old-age dependency ratios) in EU, we find out that this percentage has risen during time, from 49.64% in 1990 to 51.1% in 2013. This

value indicates that, in 2013, there were approximately two working age persons that supported each dependent individual in the EU states. An interesting aspect regarding these values of the total age dependency ratio is that, if in 1990 the young age dependency ratio (28.96%) was much higher than the old age dependency ratio (20.68%), the situation has reversed in 2013: 23.6% compared to 27.5% (see Figure 1).

Figure 1 – Evolution of the dependency ratio (young, old and total age) between 1990 and 2013 in EU

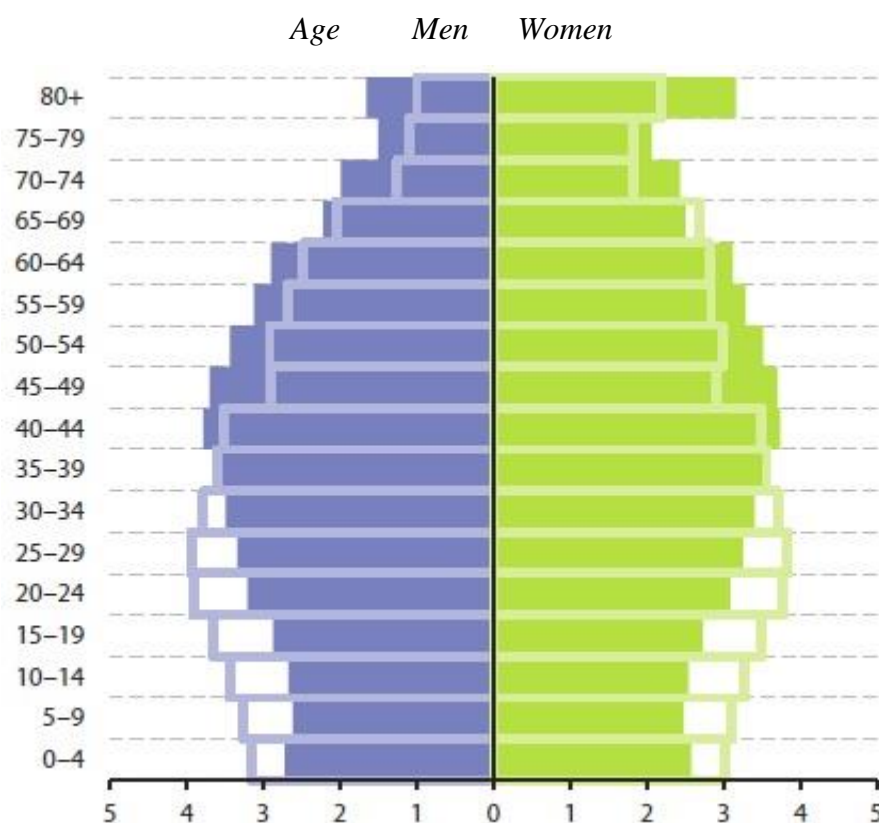


Source: Author's own compilation and adaptation based on Eurostat databases – various years

These changes in the dependency ratios underline the fact that during the last years the fertility rate had low levels in the EU states (Eurostat, 2014a), generating a so-called “ageing at the bottom” phenomenon, visible in the population pyramid through a reduction at the base. The decreasing number of those people aged between 0 and 34 years old and the increasing population over 40 years old during the last two decades can be seen in Figure 2.

Together with the EU low fertility rates, an explanation for the current demographic situation could be the high fertility rates from some European countries in the 1960s, known as the “baby-boom period”: if the 1960 the fertility rate of the nowadays EU 28 countries was 15.2%, in 2012 this percentage decreased up to 10.4% (Eurostat, 2014a). Moreover, it was mentioned that longer schooling, the changes in the role of women in households together with the early retirement schemes have also contributed to the ageing population phenomenon (Carone, 2005).

Figure 2 – Age pyramid of EU 27 population in 1991 and 2011



Solid colour: 1991; Bordered: 2011

Source: Adapted from Eurostat (2013) Chiffres clés de l'Europe - Résumé 2013 de l'annuaire en ligne d'Eurostat <http://ec.europa.eu/eurostat/documents/3930297/5969654/KS-EI-13-001-FR.PDF/f10eec2b-7028-48c8-aabc-657bed85d553?version=1.0>

Therefore, if there will be no changes in the social, demographic, institutional and economic factors, the analysts assume that this situation will worsen in the coming decades. Thus, in the context in which the share of people aged 65 years or over in the total population is projected to almost double until 2060 and the number of people aged 80 years or over to almost triple, the old age dependency ratio is expected to substantially increase up to 53.5% in 2060 (Giannakouris, 2008). If we consider that the young age dependency ratio in EU is estimated to be 25.0% in 2060, we may assume that the financial pressure on each working age person will almost double.

The future ageing population trend can also be shown by looking at the median age. It is expected that the value of this indicator to rise for the EU-28's population from 41.9 years on 1 January 2013 (Eurostat, 2014b) to 47.9 years on 1 January 2060 (Lanzieri, 2011). This means that, if in 2013 half of the analysed population was older than 41.9 years, in 2060 half of the population will be older than 47.9 years. The analysts have noticed that the trend of the median age of the EU-28 states, between 1960 and 2060, presents an S-shape (Lanzieri, 2011): it has almost constant values in

the first decades, after which these values substantially increase and then they stabilise at a high level. The most concerning aspect is that the high speed at which the median age increased leaves less time to make socio-economic adaptations to the demographic changes.

In order to see which part of the EU will be more affected by the ageing phenomenon, it is necessary to analyse the demographic situation from each member state.

2. Comparative situation of the ageing population among EU states

According to Kupiszewska and Kupiszewska (2005), in EU the ageing population trend started in the Central and Eastern countries – especially Austria, Hungary, Czech Republic, Romania, Poland and Baltic states – after which the phenomenon extended to the West. Looking at the statistics, we can see that nowadays there is no such a clear delimitation of the ageing population according to the geographic regions. For example, in 2013, the Southern EU states recorded the highest share of persons aged 80, Italy being the leading country with 6.3% (Eurostat, 2014b). Meanwhile, among the EU member states, in 2012 the highest share of young people in the total population was noticed in Ireland (21.6 %), while the lowest share was in Germany – 13.2 % (Eurostat, 2013). The fact that Ireland is one of the EU countries with the youngest population and Germany has a more ageing population is also proven by the share of persons aged 65 or older in the total population: while Germany, together with Italy, had the highest proportions in 2013 – 20.6% and, respectively, 20.8% –, Ireland had the lowest share – 11.9 % (Eurostat, 2014b).

Since the beginning of the 21st century, the median age augmented in all the EU member states, the highest increases being recorded in Romania, Lithuania, Germany, Portugal and Austria. The level of the median age has confirmed once again that Ireland has a relatively young population while Germany has a relatively old population: in 2013, the values of this indicator across the EU countries ranged between 35.5 years in Ireland and 45.3 years in Germany (Eurostat, 2014b).

The median age of population is closely related to the fertility rate. So, as expected, Ireland, together with France, have reported in 2012 the highest fertility rates, being the only EU states with approximately 2.0 live births per woman (Eurostat, 2014a). By contrast, the lowest fertility rates in 2012 were recorded in Portugal, Poland, Spain, Hungary, Slovakia and Greece (approximately 1.3 live births per woman). A possible explanation for this large difference in the fertility rates could be found in the different impact of the nowadays crisis on the living standards of the EU states.

Another interesting finding is that, according to the data offered by CIA and World Bank for various years, the top five countries with the highest population growth between 2010 and 2013 were

Luxembourg, Cyprus, Ireland, Sweden and UK, while the highest decreases were registered in Lithuania, Latvia, Bulgaria, Romania and Greece.

In 2012, among the EU states, the total age dependency ratio reached the highest levels (of more than 51%) in Belgium, Denmark, Germany, France, Italy, Portugal, Finland and UK (Eurostat, 2013). However, we should consider that in some of these cases the high percentage was significantly influenced by the values of the young age dependency ratio, as it was the case of Belgium, Denmark, France, Finland and UK. Actually, when looking at the statistics of the old age dependency ratio we can notice a concerning situation in Germany and Italy, where the values were above 30%. Meanwhile, the lowest old age dependency ratios can be found in Ireland (17.2%), followed by Slovakia (17.5%), Cyprus (18%) and Poland (18.9%), as it results from Table no. 1.

Table 1 – Indicators of the age structure of the population in EU 27 and Croatia, in 2012

Countries	Median age (in years)	Young age dependency ratio	Old age dependency ratio	Share of population aged 80 and over
EU 27	41.2	23.4	26.2	4.8
Belgium	40.9	25.8	26	5
Bulgaria	42.5	19.4	27	4
Czech Republic	39.8	20.8	22.3	3.7
Denmark	40.6	27.4	25.7	4.1
Germany	44.6	20,3	31,2	5.3
Estonia	39.7	22.7	25.2	4.3
Ireland	34.5	31.7	17.2	2.8
Greece	42.1	21.7	29	5
Spain	40.3	22.2	25.2	5
France	40	28.6	25.9	5.4
Italy	43.5	21.4	30.9	6
Cyprus	35.7	23.9	18	2.9
Latvia	41.4	21.1	27.2	4.3
Lithuania	41.1	22.1	26.6	4.4
Luxembourg	39	25.7	20.3	3.7
Hungary	40.1	21.3	24.4	4.1
Malta	39.5	22.1	22.4	3.4
Netherlands	41	26.1	23.3	4
Austria	42	21.7	26	4.9
Poland	38	21.3	18.9	3.4
Portugal	41.9	22.6	28.9	5.1
Romania	38.6	21.6	21.3	3.2
Slovenia	41.7	20.5	23.9	4.1
Slovakia	37.4	21.4	17.5	2.8

AGEING POPULATION: COMPARATIVE ANALYSIS AMONG EUROPEAN UNION STATES

Finland	42.1	25	26.5	4.8
Sweden	40.8	25.6	28.4	5.3
United Kingdom	39.7	26.5	25.3	4.7
Croatia	41.5	22.4	25.4	3.7

Source: Adapted from Eurostat (2013) Chiffres clés de l'Europe - Résumé 2013 de l'annuaire en ligne d'Eurostat, <http://ec.europa.eu/eurostat/documents/3930297/5969654/KS-EI-13-001-FR.PDF/f10eec2b-7028-48c8-aabc-657bed85d553?version=1.0>

As mentioned before, the estimations regarding the future evolution of the EU demographic situation are not so optimistic. However, some considerable differences can be noticed among countries. Thus, from all member states, Giannakouris (2008) considers that only fourteen countries from EU-28 will have a smaller population on 1st January 2060, the highest decreases being in Bulgaria, Latvia, Lithuania, Romania, Poland, Estonia and Hungary. Despite these predictions, it is considered that the median age of the total population is likely to increase in all EU countries until 2060. However, Latvia and Romania are projected to have the highest median ages (Lanzieri, 2011), evidencing the eastward shift of the ageing process. Meanwhile, most of the Nordic and Western Europe countries are expected to have the youngest populations in the European Union. In this context, a study published in 2011 show that, in 2060, the percentage of the persons aged 60 or older in the total population will have the lowest values in Ireland (22%), United Kingdom (24.5%), Belgium (25.5%) and Denmark (25.5%)(according to CDE, 2011). On contrary, the highest levels will be reached in Latvia (35.7%), Romania (34.8%), Poland (34.5%), Slovakia (33.5%) and Germany (32.8%).

The idea according to which the Central and Eastern European Union states will be characterised by a high level of advancement of the population ageing process can also be found at Kupiszewska and Kupiszewska (2005), who argue that these countries will confront with an increased number of the old persons but also with a high old age dependency ratio. The idea is developed by Giannakouris (2008) who estimated that in 2060 the highest levels of old age dependency ratio (over 60%) will be in Poland, Slovakia, Romania, Lithuania, Latvia and Bulgaria, closely followed by Slovenia and Czech Republic. However, it is assumed that all the EU-28 countries will experience a considerable increase in the old age dependency ratio (in many cases more than double) in 2060, but the difference between the lowest and the highest ratio is expected to be of almost 30 percentage points.

Conclusions

Analysing the demographic indicators for the EU-28 we can notice that the ageing population phenomenon represents a concern for almost all the member states. Among the causes that have led to this situation could be mentioned the low fertility rate from the last decades accompanied by the “baby-boom” period from the 1960s and the longer life expectancy. The low fertility rates may be a consequence of the longer schooling, the change in the role of women in households together with the downturn of the socio-economic environment.

In terms of the old age dependency ratio and the share of persons aged 65 or older in the total population, the situation of Germany and Italy is clearly the worst among the EU-28 states. Moreover, Germany is also the country with the lowest rate of young people from EU and Italy has the highest share of persons aged 80 and over. Ageing process and its negative labour market consequences are also fairly advanced in Romania, Lithuania, Germany, Portugal and Austria, if we take into consideration the fact that these countries have registered the highest increases in the median age after 2000.

On the other hand, a relatively good situation from the demographic point of view could be found in Ireland, which has the highest rate of young people in the total population, the lowest share of persons aged 65 or older and the highest fertility rate, together with France. Meanwhile, Ireland, next to Slovakia, Cyprus and Poland, has the lowest old age dependency ratio in the EU-28.

Even if some analysts consider that the Central and Eastern European Union will be more affected by the ageing population in the coming decades, the estimations show that, no matter what the demographic indicator is considered, no EU country is expected to have a lower value in 2060 than nowadays. These projected values reflect an unprecedented situation in the demographic history: the population age distributions have the shape of reversed pyramids, with the oldest age groups bigger than the youngest ones.

References

Bermingham, J.M. (2001), “Immigration: Not a Solution to Problems of Population Decline and Aging”, *Population and Environment*, vol. 2, no. 4, pp. 355-363.

- Carone, G. (2005), Long-term labour force projections for the 25 EU Member States: A set of data for assessing the economic impact of ageing, Economic Papers – European Commission, Directorate-General for Economic and Financial Affairs Publications.
- CDE (2011), “Le vieillissement de la population dans l'UE : projection à 50 ans, Cercle des Européens”, available at <http://www.ceuropeens.org/article/le-vieillissement-de-la-population-dans-lue-projection-50-ans-621> (accessed December 2014).
- CIA (2014), “The World Fact Book”, available at <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2002rank.html> (accessed January 2015).
- Eberstadt, N. (1997), “World population implosion?”, *Public Interest*, no. 129, pp. 3-22.
- Espenshade, T.J., Bouvier, L.F. and Arthur, W.B. (1982), “Immigration and the stable population model”, *Demography*, vol. 19, no. 1, pp. 125-133.
- Eurostat (2014a), “Fertility statistics”, available at http://ec.europa.eu/eurostat/statistics-explained/index.php/Fertility_statistics (accessed January 2015).
- Eurostat(2014b), “Population structure and ageing”, available at http://ec.europa.eu/eurostat/statistics-explained/index.php/Population_structure_and_ageing (accessed January 2015).
- Eurostat (2013), “Chiffres clés de l'Europe - Résumé 2013 de l'annuaire en ligne d'Eurostat”, available at <http://ec.europa.eu/eurostat/documents/3930297/5969654/KS-EI-13-001-FR.PDF/f10eec2b-7028-48c8-aabc-657bed85d553?version=1.0> (accessed October 2014).
- Feld, S. (2000), “Active Population Growth and Immigration Hypotheses in Western Europe”, *European Journal of Population*, vol. 16, no. 1, pp. 3-39.
- Feldstein, M.S. (2006), “The Effects of the Ageing European Population on Economic Growth and Budgets: Implications for Immigration and Other Policies”, NBER Working Paper No. 12736.
- Gavrilov, L.A. and Heuveline, P. (2003), “Aging of Population”, in Demeny, P., McNicoll, G. (Eds.), *The Encyclopedia of Population*, Macmillan, New York.
- Giannakouris, K. (2008), “Ageing characterises the demographic perspectives of the European societies”, *Eurostat – Statistics in Focus*, no. 72, pp. 1-12.
- Kupiszewska, D. and Kupiszewska, M. (2005), „A revision of the traditional multiregional model to better capture international migration: the multipoles model and its application”, CEFMR Working Paper no. 10, available at http://www.cefmr.pan.pl/docs/cefmr_wp_2005-10.pdf (accessed October 2014).
- Lanzieri, G. (2011), “The greying of the baby boomers. A century-long view of ageing in European populations”, *Eurostat – Statistics in Focus*, no. 23, pp. 1-12.

- Pollard, J.H. (1973), *Mathematical Models for the Growth of Human Populations*, Cambridge University Press, Cambridge.
- Saczuk, K. (2003), “Development and critique of the concept of replacement migration”, CEFMR working paper no. 4, available at http://www.cefmr.pan.pl/docs/cefmr_wp_2003-04.pdf (accessed October 2014).
- United Nations (2002), *World population ageing: 1950–2050*, United Nations Population Division, New York.
- World Bank (2014), “Population growth”, available at <http://data.worldbank.org/indicator/SP.POP.GROW/countries?display=default> (accessed January 2015).