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IMPACT OF DEMOGRAPHIC CHANGE IN EUROPE: BETWEEN MAINTAINING THE FINANCIAL SUSTAINABILITY OF PENSION SYSTEM AND ENSURING ADEQUATE INCOME FOR RETIREES

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Abstract: *The Covid-19 pandemic has shown that there is a direct link between the demographic structures and the economic structures of the states. The impact of demographic ageing on the labor market estimates a decrease of up to 18% in the period 2019-2070. Which will definitely influence the size of employability, skills and productivity. And not the last, the size of public spending related to age. Which, if in 2019 they were around 25.2% of GDP, they will have to grow regularly until 2070 in UE-27. The ageing process of European society warns us that there is a need for a change in the needs of society, a change in the services to be provided and to which all persons over the age of 65 have access. On 27 January 2021, the European Commission published "The Green Paper on Ageing", launching a complex public debate on the aging process, focusing on the social and economic impact of current trends in demographic change. All these initiatives will be analyzed together with all stakeholders and will take shape as a result of the lessons learned from the Covid-19 pandemic. (ec.europa.eu)*

Keywords: *ageing process, demographic ageing, demographic change, demographic structures, dependent ratio, employability, labor market, median age, median income, productivity, total age dependency ratio, working age population*

JEL Classification: *A11, H55, J10, L38, Z10*

1. General context

According to data provided by the UN Population Division, the world's population have reached a threshold of 7.8 billion at the middle of 2020. Scientific simulations predict a population of 9.7 billion by 2050, and no less than 11.2 billion by 2100 (an average annual increase of about 43.8 million people). Even though China currently occupies the first position (1.439 billion inhabitants), the demographic analysis projects an interesting change at the end of 2027: India will overtake China and become the most populated country in the world.

It should be underlined that by 2050 seven African countries will be among of the most world populated countries with the most inhabitants (www.un.org). At the beginning of 2020, the estimated population of the EU-27 was about 447.7 million inhabitants (as a result of net migration, demographic changes were positive in 2019, registering an increase of 0.9 million inhabitants).

On the one hand according to Eurostat data, in 18 of the 27 European countries the population has increased in 2019, the highest values being recorded in Malta (41.7 ‰), Luxembourg (19.7 ‰), Cyprus (13.7 ‰), Ireland (12.1 ‰) and Sweden (9.5 ‰).

On the other hand, the other 9 European states have been for a long time in the epicenter of a real demographic storm (massive decline), the most significant decreases among the population being recorded in Bulgaria (-7 ‰), Latvia (-6,4 ‰), Romania (-5 ‰), Croatia (-4.4 ‰) and Italy (-1.9 ‰).

By analyzing only in mathematical terms, it could say that since 1961 there has been a continuous increase of population in the EU-27. But nevertheless, this trend was slightly slowed down after 1980 as a result of the massive decline in the birth rate, which has been associated in recent years with an increase in life expectancy of birth.

The presence of these demographic changes is already noticed in the structure of demographic pyramid: increasing the number of older persons simultaneously with a declining share of working-age persons. (ec.europa.eu)

2. The impact of demographic change in Europe

The current demographic changes will affect the whole European population and will have a huge impact. The echo will most likely perceived by increasing the pressure on working age population, that will have to cover the growing expenditure on social services associated with the aging population (labor force participation). Beyond the fact that the number of people aged 65 years or over is projected to increase, currently the cohort of those borned as a result of the post-war population explosion has already reached retirement age.

The aging population in Europe will have a huge importance in the next years (demographic change can influence the underlying growth rate of the economy, productivity growth, living standards, consumption, investment; unemployment rate). All these consequences of demographic change will probably be the most important challenge for the Brussels administration.

Recent analyzes of the European population structure already describe the consolidation of declining trend of the young (0-14 years) and working age population (15-64 years) and the increase in the share of people aged 65 and over (see Table no. 1).

Table 1. Population age structure by major age groups, 2009 – 2019, EU

EU / ROMANIA			
	0-14 years old	15-64 years old	65 years old or over
2009	15,4% / 15,8%	67% / 68,1%	17,4% / 16,1%
2019	15,2% / 15,7%	64,6% / 65,8%	20,3% / 18,5%

Source: <https://ec.europa.eu/eurostat/statistics-explained>

According to the European Commission's Demography Report, Europe is already undergoing a complex process of demographic and societal transformation. This process puts a huge pressure on the Brussels administration for optimizing the EU equipping process with the best tools providing new solutions and support to the people who need to adapt to these changes.

According to the Report, the main demographic trends that shaping the EU-27 society are following:

- **Life expectancy at birth is constantly increasing** - was estimated at 78.2 years for men and 83.7 years for women (2018);
 - Life expectancy at birth is expected to increase by 2070 at 86 years for males and at 90 years for women;
- **Fertility rates steadily declined from the mid-1960s;**
 - **The average fertility rate is constantly declining** (1.55 children per woman in 2018, ranging from 1.23 in Malta to 1.88 in France);
 - **The average age of a women having her first child was 29.3 years in 2018**, (ranging from 26.2 in Bulgaria to 31.2 in Italy);
- **By 2070, 30.3% of the population is projected to be aged 65 years or older** (20.3% in 2019), while 13.2% will be aged 80 years or older (5.8% in 2019);
- **Families are changing:**
 - The marriage rates down and the divorce rates up;

- There are an increasing number of children growing up in sole-parent or reconstituted families;
- The composition of the family goes through a profound process of transformation: two parents with children, people living alone, single parents or families without children. (www.oecd.org)
- Part of the population prefers moving or living abroad (but the size of these flows is fluctuant, it can change quickly);
- The EU-27's population will be steadily declining (with estimates showing that by 2070 it will be below 4% of the world's population). (ec.europa.eu)

3. European populations: current trends, future pathways

An overview of the current structure of Europe's population, provided by Eurostat, draws our attention to the following issues:

- **The median age in the EU-27 increased by 2.7 years** (on average, by 0.3 years per annum) between 2009 and 2019, rising from 41.0 years to 43.7 years (excepting Sweden where the median age decreased from 40.7 years to 40.5 years);
- **Currently half of the EU-27's population is older than 43.7 years;**
 - The median age ranged between 37.7 years in Ireland and Cyprus and 46.7 years in Italy;
 - The median age was rising by 4.0 or more years in Spain, Portugal, Lithuania, Greece, Ireland and Slovakia
 - Albania experienced the highest increase of the median age over the past 10 years: this increased by 5.6 years, from 31.1 years in 2009 to 36.7 in 2019;
 - In Romania in 2019, the median age was 41.6 years (**half of Romania's population was older than 41.7 years in 2019**).
- **The old-age dependency ratio** for the EU-27 was **31.4 %** on 1 January 2019 (for every person aged 65 and over there were approximately 3 people of working age);
 - There was been a 5.4% increase in this ratio in the last decade, from 26% in 2009 to 31.4% in 2019;
 - The old-age dependency ratio ranged from 20.7% in Luxembourg and 21.6% in Ireland to 35.7% in Italy, 35, 1% in Finland or 34.6% in Greece;
 - **The old-age dependency ratio for Romania was 28,2% on January 1, 2019** (almost 4 people of working age for a person aged 65 or over).

- **The total dependency ratio** (the ratio between dependents, young and old and the population considered to be of working age, between 15 and 64 years old) was **54.9%**, in the EU-27, in 2019;
 - This means that there were fewer than two persons of working age for two persons dependents;
 - There was a 5.9% increase in this ratio in the last ten years, from 49.0% in 2009 to 54.9% in 2019;
 - Luxembourg registered in 2019 the lowest total dependency ratio (43.8%), the highest value being registered in France (61.5%);
 - **In Romania, the total dependency ratio was 53.0% in 2020** (between 2011-2020 increased 6%).
- The aging process of the EU-27 population began several decades ago and will continue in the future. Its visibility will be a consequence of its vitaminizing by the annual changes of the ratio between the elderly population (growing) and the working age population (decreasing):
 - The „baby-boom” generation (obtained by increasing the fertility rate in several European countries after post World War II) has slowly advanced to the top of the demographic pyramid, increasing the number of elderly people age;
 - The consequence of this process is reversing of trending at the base demographic pyramid (decreasing of the share of the working age population);
 - Everything into in the context of the background of gradual decreasing of the share of the population under the age of 15 (0.2% in the last ten years);
 - The relative increase of the share of the elderly population could be explained by increasing of longevity („aging the top of the demographic pyramid”), but also by reducing the level of fertility (fewer and fewer births in recent years), process called „aging of the base of the demographic pyramid”;
 - Current trends build a scenario that the EU-27 population will reach 449.3 million by 2026, after that it will decline to 416.1 million by 2100. During this entire period, the EU-27 population would continue to age;
 - The same scenario highlights, for 2019-2100 period, a two-and-a-half times increase in the share of population ages 80 and above, from 5.8% in 2019 to 14.6% in 2100;
 - All against the background of constant decreasing of share the people working age, but also the increasing of the dependency ratio (from 31.4% to 57.1%) or of the total dependency ratio (from 54.9% to 82.6%) by 2100;

- It is also projected that the median age of the EU-27 population is likely to increase from 43.7 years in 2019 to 48.8 years in 2100, which means that half of the EU-27's population will be older than 49 years (see Table 2). (ec.europa.eu)

Table 2. Population structure by major age groups, EU-27, 2019-2100
(% of total population)

	0-14 years	15-65years	65-79 years	80+ years
2019	15,2%	64,6%	14,4%	5,8%
2030	14%	61,8%	17%	7,2%
2040	13,6%	58,9%	18,3%	9,2%
2050	13,7%	56,8%	18,2%	11,3%
2060	13,6%	56,1%	17,8%	12,5%
2070	13,6%	56,1%	17,1%	13,2%
2080	13,9%	55,3%	17,4%	13,4%
2090	13,9%	54,9%	17,3%	13,9%
2100	13,9%	54,8%	16,7%	14,6%

Source: Source: <https://ec.europa.eu/eurostat/statistics-explained>

4. Adequacy and sustainability of pension

For the EU-27's retired population, which currently accounts more than 20% of the entire population, the main source of income is the pension, generally obtained through the public pension system.

Against the background of current trends, the public pension systems are currently under a double pressure: maintaining systemic financial sustainability and ensuring adequate incomes for retirees. Both requirements directly affect the labor supply. Offer which, as the data show, decreases year to year.

The debate is a complex one. Whether setting the main objectives of public policies on pensions supposes a natural challenge the challenge to reach them is a major one.

This is because there's a need of building a complex range of public policies that would guaranteed „**income adequacy in old age**”, would optimize the process of „**sustainability of public pension system**” or would identify „**employment solutions**”.

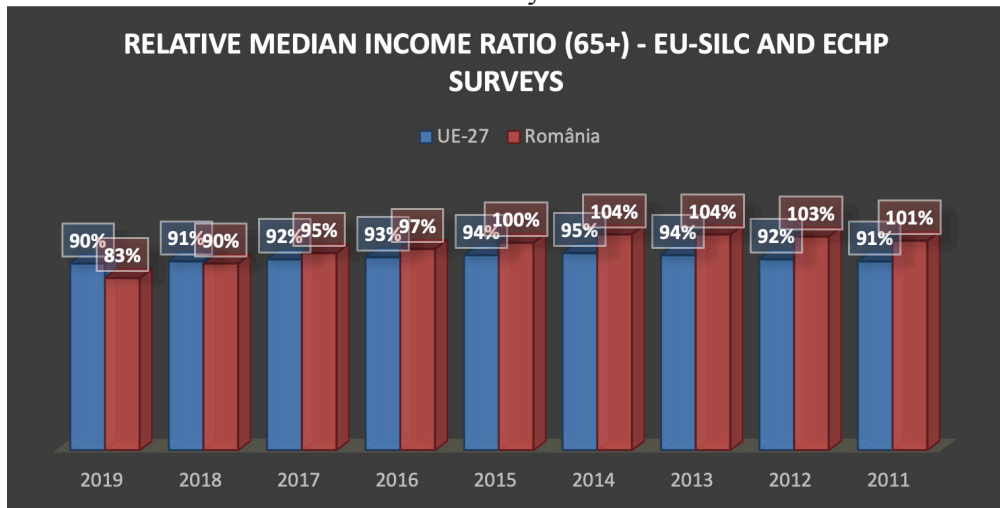
The pension adequacy process incorporates three measurable dimension: **the ability to prevent poverty, capacity to replace the income from professional activities and duration of pension**. The distribution of income and the inequalities play a fundamental role in public policies. We can't

develop public policies for combating poverty and social exclusion without closely knowing the inequalities into society whatever their nature (economic or social):

- The 20 % of the population with the highest disposable income in the **EU-27 in 2019** received **4.99** times as much income as the 20 % with the lowest disposable income:
 - The states with the highest inequality index within the EU-27: Bulgaria (8.10%), **Romania (7.08%)**, Latvia (6.54%), Lithuania (6.44%) and Italy (6.01%);
 - At the opposite pole there are Finland (3.69%), Belgium (3.61%), Slovenia (3.39%), Slovakia (3.34%) and the Czech Republic (3.34%);
- According to Eurostat data, in 2019 people aged 65 and over had a median income of **91% of the median income** of the population under the age of 65 in EU-27;
 - In Luxembourg, France, Greece and Italy the median income of the population aged 65 or over was higher than the median income of the population under aged of 65;
 - In Hungary, Spain, Austria, Portugal, **Romania** and Slovakia, the median income of the population aged 65 or over was between **90% -100% of the median income** of the population under the age of 65;
 - The lowest rates were for the populations of the Baltic states (Lithuania - 65%, Latvia - 58%, Estonia - 57%);
- **The median income of the persons at risk of poverty in the EU-27 was 24.5 % below the poverty line in 2018;**
 - From this perspective, Romania was on top of the EU-27's member states with the largest gap between the median income of people at risk of poverty and the poverty line - **35.2%**; (ec.europe.eu)
 - According to INS data, in 2019 approximately 33.9% of the population aged 65 or over in **Romania** was at risk of poverty and social exclusion (a return to the values of 2016 when the risk rate at poverty and social exclusion was **34%**); (Innse.ro (2020b))
 - Moreover, in the same year, the severe material deprivation rate for people aged 65 or over was 15.9% in Romania; (Innse.ro (2020c))
- The lowest poverty risk gap in the EU-27 was measured in Finland (14.2%), Czech Republic (15%) and Ireland (15.2%);
- The median income ratio of the population aged 65 or over in the EU was in 2019 about 90% of the median income of the population under the age of 65 (**83% in Romania**);

- If for the first years after retirement the income of pensions is more than half of the last salary (approximately 58% in the EU), over the years it decreases;
- The replacement rate for people with higher average earnings tends to be lower due to the redistributive nature of most public pension systems.

Table 3. Relative median income ratio (65+) - EU-SILC and ECHP surveys

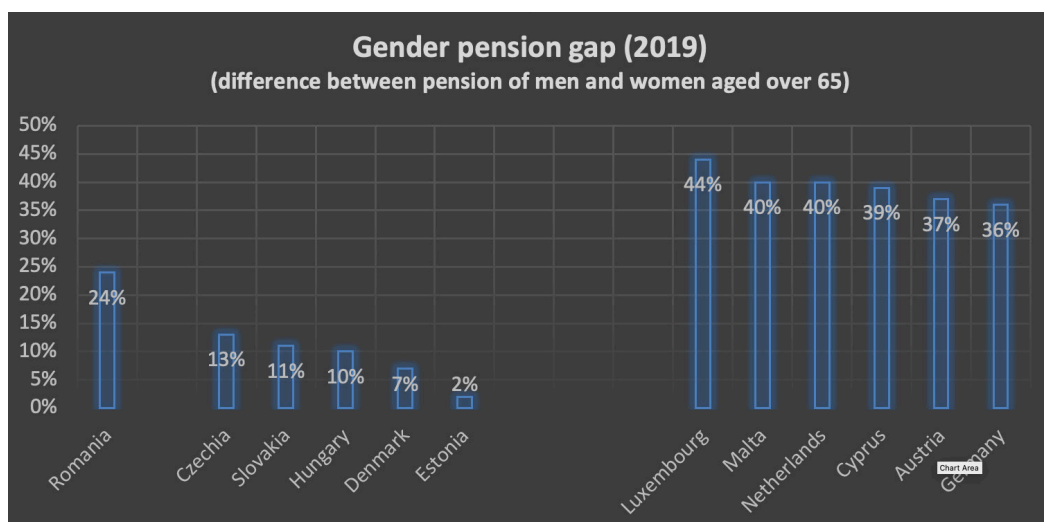


Source: Eurostat - Data Explorer (europa.eu)

- According to the Eurostat data, **in 2019, the proportion of pensioners aged over 65 at risk of poverty in the EU was at 15.1%**;
- Compared with the gender pension gap, at-risk-of-poverty rate for pensioners has been rising gradually since 2014, when it stood at 12.3%;
- Between 2010-2019 in the whole of EU-27 the proportion of female pensioners aged over 65 who were at risk of poverty was with 3% - 4% higher than the rate for male pensioners;
- The proportion of pensioners aged over 65 who were at risk of poverty in 2019 was between 10% and 30% across of the EU Member States;
- The highest rate at-risk-of-poverty were in 2019 in Latvia (54%), Estonia (51%), Bulgaria (36%) and Lithuania (35%);
- At the opposite pole, the lowest rates in 2019 were noticed in Luxembourg (7%), Slovakia, France, Denmark (all 9%) and Greece (10%);
- In **Romania**, in 2019, the proportion of pensioners aged over 65 who are deemed to be at risk of poverty was **23,5%**; (ec.europe.eu)

- In virtually all European countries, **women receive a lower pension than that the men**;
- In 2019, women aged over 65 received a pension that was on average 29% lower than that of men;
- According to Eurostat data, the gender pension gap has been decreasing and is now almost 5 percentage points (pp) lower compared with 2010 (34%);
 - The largest difference was noticed in Luxembourg (44%), Malta and the Netherlands (both 40%), Cyprus (39%), Austria (37%) and Germany (36%);
 - The smallest difference in pension income between women and men was noticed in Estonia (2%), Denmark (7%), Hungary (10%), Slovakia (11%) and Czechia (13%);
- In Romania the difference was in 2019 24%;

Table 4. Gender pension gap by age group (EU-27)



Source: Eurostat - Data Explorer (europa.eu)

- **Between 2010-2019, the gender pension gap has decreased in the almost of EU Member States**;
- The largest decreases were in Greece (from 37% to 24%), Denmark (from 18,1% to 7,4%), Slovenia (from 27,5% to 16,4%) and Bulgaria (from 32,5% to 22,8%);
- At the opposite pole, between 2010-2019, the gender pension gap increased in 6 EU Member States since 2010. The largest increase was noticed in Malta (from 22% to 40%), Latvia (from 9,2% to 14,8%), Lithuania (from

15,4% to 18,7%), Slovakia (from 8,2% to 10,8%), Croatia (from 26% to 27,6%) and Italy (from 31,1% to 33,2%).

- In **Romania**, between 2010-2019, the gender pension gap has decreased **from 29,8% to 24%**;
- Regarding the average **duration of pension period**, according to Eurostat data it generally varies between 16.5 and 24.5 years;
 - It is very important to measure the ratio between working life and the length of the retirement period, which at the beginning of 2018 had an average of about 50% (varying as limits between 37% in Latvia and 61% in Iceland);
 - **Expected duration of working life for the EU-28 adult population** (of at least 15 years) **was 36.4 years in 2019** (increased by 3.5 years compared to 2000);
 - The EU-27 Member States with the longest expected working life are the follower: Sweden - 42.1 years, the Netherlands - 41 years; Denmark - 40 years old, Germany - 39.1 years old, Estonia - 39 years old, Finland - 38.9 years old;
 - At the opposite pole were: Italy - 32 years, Croatia - 32.5 years, Greece - 33.2 years, Poland - 33.6 years, Belgium - 33.6 years, **Romania - 33.8 years**;
 - **Romania is the only EU-27's member state in which expected duration of working life has decreased in recent years** (from 36 years in 2000 to 33.8 years in 2019);
 - For the same period (2000-2019) the greatest progress was made by Malta (7.6 years), Hungary (6.9 years) and Estonia (5.6 years);
 - Although the gender gap was reduced, the Eurostat data showed that men have worked more than women in 2019 (38.3 years versus 33.4 years). (ec.europe.eu)

Conclusions:

- The impact of demographic change has a wide range of facets. The management in this area is focused of adapting policies in specific fields of public finances, public health or public life, but also of some aspects that aim at access to vital services;
- The decline of the working age population will involve finding solutions for economic growth by increasing productivity or greater involvement of citizens in the labor market;
- The aging of European society will put pressure on the health and care system, that will need to adapt;

- Public financing spending in the field will be more expensive as we age;
- The main question is **how could the public pension system to balance adequacy and sustainability objectives**;
- Generally every government knows that the pension promises „are subject to a large of risk and uncertainties” (d’Addio, 2014);
- What we notice is that currently the increase in life expectancy and the decline of birth rate have resulted in population aging and growing cost of paying for pension;
- Even though the EU projects to implement a lot of reforms of the public pension system it will not be easy to put into practice mechanisms of growing the capacity of pensions to replace the income of work;
 - EU expects that for a person with an average income and a standard seniority the Theoretical Replacement Rate (RIT) should be in 2053 between 40.1% and 92.5% of previous income (ec.europa.eu);
 - Despite this, the pension income available in the future for a person who earns little and who have a short employment seniority will continue of remaining well below the poverty line;
- Demographic change will also have an impact on Europe’s position in the world - its share of the population and global GDP will be much lower;
- Probably **the main challenge** that countries European Economies will face is **how to increase the effective retirement age**.

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