Economic Policy Committee - Ageing Working Group

2024 Ageing Report

Romania - Country Fiche

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Ioana Andrada Gavril – economic analyst

ioana.gavril@mfinante.gov.ro

Tamara Nae – economic analyst

tamara.nae@mfinante.gov.ro

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Introduction

The present country fiche for Romania is part of the 2024 Ageing Report, which provides long-term projections of the economic and budgetary impact of population ageing at unchanged policy. The 2024 update is the eighth edition and covers the period up to 2070.

This fiche was prepared by the Ministry of Finance, General Directorate for Policy, Analysis and Research in the Field of Public Finance. The pension projections presented in this fiche incorporate the macroeconomic assumptions and methodologies agreed within the *Ageing Working Group* of the *Economic Policy Committee*. The projections have been peer reviewed by the other Member States and the European Commission within the *Ageing Working Group*. The projections were finalised at the end of 2023 and represent the situation of the pension system on 15/12/2023.

Section 1 provides a general overview of the pension system in Romania. Section 2 describes the demographic and labour market assumptions underlying the pension expenditure projections presented in Section 3, which also discusses the sensitivity scenarios around the baseline. Finally, Section 4 gives an overview of the model used to produce the pension projections, with complementary data provided in the methodological annex.

1. Overview of the pension system[1]

1.1. Description of the pension system

For the last decade, the Romanian general pension system has been governed by Law no. 263/2010, which was meant to be replaced as of September 1, 2021 by Law no. 127/2019. However, this law has suffered several prorogations over time and never got to enter into force entirely. During the last period, as part of the National Recovery and Resilience Plan, the Romanian pension system has been subject to a thorough reform, both regarding the general system (first pillar) and the special pensions. As a result, a new law for the general pension system was enacted in December 2023, while the new law governing the special pensions was adopted in October 2023. The main reforms envisaged by the new pension laws are detailed in Section 1.2.

The national pension system of Romania consists of three pillars:

- **Pillar I** is the **mandatory public pension scheme** administered by the state, a PAYG scheme, governed by the following principles: uniqueness, mandatory contributiveness, equal rights, redistribution, and social intergenerational solidarity. This scheme includes *old age* pension, *early retirement* pension, *disability* pension and *survivor* pension. Alongside these categories, the *social allowance for pensioners* represents a threshold for the minimum pension. When an individual's old age, disability or survivor pension is below the level of the social allowance for pensioners, a top-up to reach this threshold will be granted from the state budget.

  In 2022, the average number of state social insurance pensioners was 4607 thousand (including old age and early, disability and survivors), with a total volume of expenditures of 20,8 billion euro (102,7 billion RON – including the social allowance for pensioners), while the monthly average number of social security contributors was 5849 thousand and the total amount of contributions was about 17 billion euro.

- **Pillar II**, the **mandatory private pension scheme,** was introduced in 2007. It is a defined contribution scheme, with a minimum investment guarantee, based on individual accounts (part of the individual contribution from the public pension system is accumulated in such

[1] For an exhaustive description of pension schemes, please consult the PENSREF database.

individual accounts). The contribution rate to Pillar II (deducted out of the total employee's social insurance rate, 25%) will be increased by 1pp, to 4.75%, as of January, 1st, 2024. The scheme is compulsory for all eligible persons aged up to 35 and voluntary for age group 35-45 (compulsory for persons born after 1973, voluntary for the ones born between 1963 and 1973). At the end of August 2023, the total number of participants to Pillar II was around 8 million people, out of which about half were active contributors[2], while the value of the total assets amounted to 23.2 billion euro.

- **Pillar III,** the **voluntary private pension scheme,** was also introduced in 2007 and is a defined contribution scheme with voluntary participation, based on individual accounts. Investment guarantees are permitted by the law, but not mandatory. The participants can contribute cumulatively to more than one voluntary pension fund, but the cumulated contributions to the funds are limited to 15% of the gross monthly cumulated income. In order to be eligible for a pension under the voluntary scheme, each participant must exceed 90 months of contributions, achieve the age of 60 and a minimum cumulated amount. The amount representing the contributions to voluntary pension fund is tax deductible for both participant and employer up to the amount of 400 EUR per fiscal year. As of August 2023, the total number of Pillar 3 contributors was around 680 thousand persons and the net assets amounted to 865 million euro.

In the following sub-sections, we discuss details on contributory pensions categories, as well as Special/Other pensions.

A) <u>The old age pensions</u>

The old age pension is granted to the insured that cumulatively fulfil the conditions of the standard retirement age and the minimum contribution period. The retirement age for men has been set to 65 since 2015, while the retirement age for women is currently on an ascending path (62 years in 2023, set to get to 63 years in 2030, according to the old Law 263/2010 and to 65 years in 2035, according to the new Law 360/2023). After 2035, the standard retirement (and the corresponding minimum and full contribution period) will be increased in relation to the evolution of the life expectancy in Romania (Law 360/2023).

[2] Inactive contributors are the ones that have contributed for at least for 1 month to Pillar II and do not contribute at present due to several reasons: unemployment, migration, exceptions for employees in construction, agriculture and food industry

The minimum contribution period is set to 15 years[3], while the full contribution period is 35 years[2] for men and will gradually increases up to 35 years for women (in 2030), in accordance with the retirement age increase. Law 360/2023 has brought an important change regarding the assimilated periods that can be taken into account when calculating the minimum and the full contribution period: starting 2024 only the periods of maternal or paternal leave will be taken into account.

The standard retirement age for women in November 2023 was 62 years and one month, with full contribution period of 32 years and 4 months.

In the public pension system are considered as **assimilated periods[4]** the time intervals in which the insured:

a) has attended university courses, graduated with a diploma
b) completed military service, was held in concentration camps, mobilized or held in captivity;
c) benefited, between April 1, 2001 and January 1, 2006, of social insurance allowances, granted according to the law;
d) benefited of temporary incapacity leave as a result of work accidents or occupational diseases (starting January 1, 2005);
e) benefited of maternal or paternal leave (starting January 1, 2006).

Reductions of the standard retirement age

According to Law 360/2023, the following categories can benefit from a reduction of the standard retirement age:

a) Employees working under special or unusual conditions

Law 360/2023 brought some changes regarding the pensioners that have worked under special[5] or unusual[6] working conditions, making such cases less favourable than stipulated in the former legislation. For instance, the retirement age is diminished by 6 months for every

[3] excluding assimilated periods except for maternal or paternal leave

[4] even though contributions have not been paid during these time intervals

[5] Including activities/personnel such as: mining, exploitation in nuclear sector, civil aviation, activities with explosive materials or radiological risk, underground activities, traffic safety personnel, seafaring personnel from maritime and river transport units, the activity of drilling oil and gas wells, production of steel and welding electrodes, multiple activities within the chemical industry, arms industry, or certain artistic activity

[6] Jobs such as researcher in pathological anatomy, researcher in cellular biology, forensic pathologist (coroner)

year worked under special conditions (maximum reduction of 10 years[7], compared to a maximum reduction of 13 years in previous legislation) and by 4 months for every year worked under unusual working conditions (maximum reduction of 7 years, compared to a maximum reduction of 10 years in previous legislation). Moreover, as per the new legislation, workers under special or unusual conditions will be granted an additional number of fixed points (0.25 points/0.50 points for each month under such conditions), compared to granting an increase of 25% or 50% for each monthly score of the person who worked in special/unusual conditions, under the old law. This change is meant to ensure equity among people working under such conditions, as the additional points are granted depending on the number of years worked under special/unusual conditions and not on the income earned within that period). Moreover, the number of the entities known to have activities under special conditions has been reduced by approximately 2/3, to 48 eligible entities, and also, the number of the eligible jobs for special conditions has been reduced. All these changes have been enacted in order to strengthen the principle of contribution and to reduce the possibilities for early retirement.

b) Mothers with at least one child

According to Law 360/2023, for every child born and raised up to the age of 16 (or adopted and raised for a period of at least 14 years), the standard retirement age is diminished by 6 months (e.g. 6 months reduction for 1 child, 1 year reduction for 2 children…3 years reduction for 6 children and 3 years and 6 months reduction for 7 or more children).

c) Disabled employees

Persons that have accomplished a certain contributory period as disabled can benefit from the reduction of the standard retirement age:

- with 15 years for persons with severe disability that have accomplished (as disabled) at least 1/3 of the full contributory period
- with 10 years for persons with accentuated disability that have accomplished (as disabled) at least 2/3 of the full contributory period
- with 10 years for persons with medium disability that have accomplished (as disabled) the full contributory period

d) Persons with severe visual impairment

[7] With some exceptions (for instance, miners and people that have worked under radiations can benefit from a reduction of 20 years compared to the standard retirement age, conditioned by a certain contributory period)

Persons with severe visual impairment can benefit from old-age pension, regardless of their age, if they have accomplished under this condition, at least 1/3 of the full contributory period. Law 360/2023 has eliminated the provision according to which persons that lived for at least 30 years in areas affected by residual pollution (due to mining or various chemical activities) benefit from reducing the standard retirement age by 2 years. The list of towns that benefit from this had been considerably expanded (to almost 100) in 2022.

In the general pension system, the *full pension benefits* can be granted if:

a) The person accomplished the minimum contributory period and reached the statutory retirement age, or
b) The person`s length of service is longer than the full contribution period (35 years) by at least 5 years.

Early retirement

Law 360/2023 also made some changes regarding the early retirement, which can be granted at most 5 years earlier than the standard retirement age, for persons that completed the full contributory period required by the law (35 contributory years except assimilated periods with the exception of maternal and paternal leave) or exceeded it with at most 5 years (reduced from 8 years in the old legislation). If the full contributory period is exceeded with less than five years, some penalties apply, as follows:

Penalties for partial early retirement					
Number of contribution years fulfilled, exceeding the full contributory period	<1	1-2	2-3	3-4	4-5
Penalty for each month of early retirement	0.40%	0.35%	0.30%	0.25%	0.20%

Numeric example (Table 1): The penalty is associated with early retirement, i.e. contributory period exceeding the statutory full contributory period with less than 5 years. Thus, considering the penalty in case of "earliest retirement age", it means that the person retires 5 years (=60 months) before the statutory retirement age. Until September 2024, when specific articles of the new law will effectively enter into force, a person who exceeded the statutory contribution period (35 years) could obtain a full pension if he/she exceeded it by more than 8 years, or otherwise he/she would have been penalized by 0,5% for each month

of the period below the 8 years. Starting September 2024, according to Law 360/2023, a person at the earliest retirement age, who exceeded the statutory contribution period by less than 1 year, will be penalized by 60 x 0.40% = 24%, while someone (still at the earliest retirement age) who exceeded the statutory contribution period by 4-5 years will be penalized by 60 x 0.20% = 12%. The penalty lasts until the person reaches the statutory retirement age.

Table 1: Qualifying condition for retiring

			2022	2030	2040	2050	2060	2070
Qualifying condition for retiring ***with*** a full pension	Statutory retirement age - men		65	65	65	65	65	65
	Statutory retirement age - women		61.8	63	65	65	65	65
	Minimum requirements	Contributory period - men	35	35	35	35	35	35
		Retirement age - men	65	65	65	65	65	65
		Contributory period - women	31.8	35	35	35	35	35
		Retirement age - women	61.8	63	65	65	65	65
Qualifying condition for retirement ***without*** a full pension	Early retirement age - men		60	60	60	60	60	60
	Early retirement age - women		56.8	58	60	60	60	60
	Penalty in case of earliest retirement age							
	Penalty in case of earliest retirement age AND shortest acceptable contributory period		30%	24%	24%	24%	24%	24%
	Penalty in case of earliest retirement age AND longest contributory period below requirements		30%	12%	12%	12%	12%	12%
	Bonus in case of late retirement		n.a.	0.50 points for each year achieved over 25 years				
				0.75 points for each year achieved over 30 years				
				1 point for each year achieved over 35 years.				
	Minimum contributory period - men		35	35	35	35	35	35
	Minimum contributory period - women		31.8	35	35	35	35	35
	Minimum residence period - men		-	-	-	-	-	-
	Minimum residence period - women		-	-	-	-	-	-

Calculation of new old-age pensions

New pensions are computed according to a point formula, which has just been modified in the context of the recent reform. The new formula is simpler than the old one and eliminates the correction index which has been a source of inequities among pensioners. The calculation of the pension will take into account both the income subject to contributions to the social security system, as well as the length of service completed in Romania. The new formula, which will be applied both for new and existing pensioners (pension recalculation), has been set as follows:

BENEFIT = RPV x TOTAL NUMBER OF POINTS

where,

RPV (reference point value) = PENSION POINT VALUE : 25[8]

TOTAL NUMBER OF POINTS = Contributory points + Stability points + Assimilated points during non-contributory periods + Points granted for special/unusual working conditions + Points granted for working periods in disability

- **Contributory points** represent the number of points accumulated by every person during the working life, in accordance with the income level for which contributions have been paid.
- **Stability points** represent incentives for longer working lives and will be awarded for each year over the 25-year contribution period (that do not overlap with pension years), as follows:
    - 0,50 points/year for the years 26-30;
    - 0,75 points/year for the years 31-35;
    - 1 point/year for contributory periods longer than 36 years.

Assimilated points represent a number of points accounted for during non- contributory periods, such as intervals for university studies, graduated with a diploma, periods in which a person has completed military service, has been concentrated, mobilized or held in

[8] The 25-year contribution period represents the average contribution period envisaged by previous legislation (Law 127/2019) and will only be used for the RPV calculation, and not in the calculation of the pension benefit.

captivity, or periods when she/he benefited of maternal/ paternal leave (starting January 1, 2006). For each month in the above mentioned periods, the person is granted 0,25 points.

- **Points granted for special/unusual working conditions -** workers under special or unusual conditions will be granted an additional number of fixed points (0.5 points/0.25 points for each month under such conditions), compared an increase of 50% or 25% for each monthly score of the person who worked in special/unusual conditions, under the old law.
- **Points granted for working periods in disability –** According to the new law enacted in 2023, persons working under severe or accentuated disability will receive an increase by a fixed number of points: 0.5 points or 0.25 points for each year carried out under such conditions.

Examples of pension calculation[9]		
Gender	**Male**	**Female**
Length of Service	37	33
Number of contributory points	48.75 points	42.25 points
Number of stability points	5*0,5+5*0,75+2*1 = 8.25 points	5*0,5+3*0,75 = 4.75 points
Number of assimilated points		
For university studies	n.a.	(48 months*0.25)/12=1
For military service	(12 months*0.25)/12 = 0.25	n.a.
Total number of points	57.25	48
RPV (RON)	81	81
Benefit (RON)	4637	3888

Old-age pensions` indexation

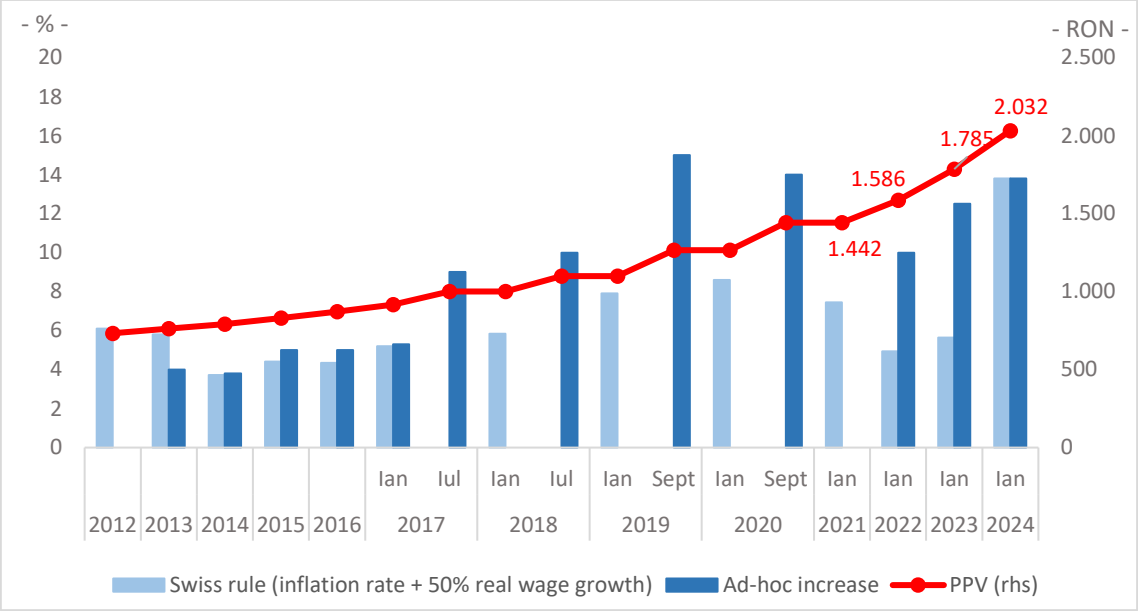
According to the old legislation (Law 263/2010), starting with the January, 1st, 2013, the pension point value (PPV) was set to be annually indexed with 100% of inflation rate plus 50% of the real average gross wage growth (Swiss rule). However, this provision has not been fully respected and in some years the indexation of the pension point value has been established ad-hoc, by derogation from the law.

The new law enacted in 2023 provides the same indexation formula (100% of inflation rate plus 50% of the real average gross wage growth in the previous year). If one of the above

[9] Calculations are computed based on the new formula in Law 360/2023, for 2024 (minimum contributory period of 35 years for men and 32.7 years for women)

mentioned indicators is to be negative, only the positive value will be considered (this provision is unchanged compared to the former legislation). However, the indexation rate is capped by the rate of social insurance revenue growth.

Respecting this indexation rule is rather important for the sustainability of the pension system. However, in the past, it has often been disregarded. While until 2016, the indexation of the PPV has largely respected the Swiss rule, in the years that followed, ad-hoc indexations have persistently exceeded the increase calculated by the rule, except for the indexation that will follow in 2024 (see graph below).



Alongside the economic crisis, between 2010 and 2012, the pension point value has been maintained constant, given the austerity measures needed to mitigate the crisis` effects and the fact that Romania had to open an assistance programme of 20 billion euro with IMF, WB and European Commission in order to avoid a default. During 2013-2016, when RO was still under Post-programme surveillance, the PPV increased by less than 4% yearly. Starting 2017, after almost a decade of low pension indexation that had led to one of the lowest pensions level in the EU, a series of ad-hoc increases were enacted. Thus, the first ad-hoc increase of the pension point took place in July 2017 with 9%, on top of the increase in January 2017 of 5%. Between 2017 and 2023, the PPV increased by 78,5%.

Regarding pension indexation, it has to be mentioned that the ah-hoc increases of the PPV provisioned by Law 127/2019 did not enter into force as planned, resulting in a lower indexation. The differences between the assumed indexation in Ageing Report 2021 and the one that has actually been applied are detailed in the table below:

Pension point indexation – assumed AR21 vs. actual				
	September 2019	**September 2020**	**September 1 2021**	**January 1 2022**
PPV assumed in AR 2021 (RON)	1265	1442	1875	1967
% change		14%	30%	9%
Actual PPV	1265	1442	1442	1586
% change		14%	0%	10%

Box 1.1 - Shortcomings of the old legislation

Law 127/2019 planned to change significantly the number of points to be considered in the calculation of the pension. Under Law 263/2010, the total number of points accumulated by a person throughout his/her career was divided by the statutory contribution period corresponding to the year of his retirement. Then, this number was adjusted with (multiplied by) the correction index. Under Law 127/2019 the correction index was eliminated, and minimum pension was meant to be linked to the minimum wage value (60% of the minimum wage). The cumulative effect would over time lead to over 80% of retirees below the minimum pension threshold, thus also resulting in significant acceleration of the expenditure growth due to more favourable indexation, with peak expenditures reaching about 14.8% GDP, as projected by AR21.

The value of the correction index, which was applied only once, at retirement, was calculated as 43.3% * the average economy-wide gross wage / current point value / (1+average inflation rate year 2011, respectively 5.79%). In practice, the value of the correction index has been set ad-hoc, but very close to the formula-calculated value. It was 1.14 for persons who applied for retirement as of January 1st, 2017, 1.15 for those who retired in 2018, and 1.20 for those who retired in 2019. Due to the 2018 shift of contributions burden, the average economy-wide wage increased by 20%, hence the correction index for 2020 is 1.41 (very high, maintained until 2023 inclusively). According Law 263/2010, if the calculated new correction index was lower than the prior one, the latter would have been considered for pension calculation. The growth of the correction index in the future was unbound.

Given all the above, the correction index has represented a source of inequities among pensioners (as persons with the same LOS and the same number of points could have benefitted of different pension amounts, depending on the value of the correction index in the year they retired). *Therefore, the new legislation voted in 2023 abolished the correction index* (similar to Law 127/2019). The pension calculation formula stated by Law 263/2010 was the following:

Pension benefit = PPV_Y *N*CI_Y / T_Y

Where: N = the applicant's number of points at retirement, T_Y = contributory period of new pensioners, CI_Y = Correction index in year Y, PPV = pension point value

As regards the indexation rule, Law 263/2010, has initially set that the weight of the real average gross wage growth would have been gradually reduced by 5 p.p. each year, starting with 2021. Hence, starting with 2030, the pension point value was set to be indexed annually only by 100% inflation rate. This adjustment was not implemented in practice. The new pension law keeps constant the indexation rule (100% inflation plus 50% of the real wage growth rate), subject to a cap at the rate of growth of social insurance revenues.

B) The social allowance for pensioners

In order to improve the adequacy of small pensions, *the social allowance for pensioners* was introduced by the pension Law no. 263/2010 and addressed the public system pensioners, resident in Romania, regardless of the retirement application date, if their monthly pension amount was below a certain ceiling, which was set by the law and modified on an annual basis.

The social allowance tops up the old age, early and partial retirement pensions, as well as the disability and survivor ones. It is included in the projections as minimum pensions.

Before its introduction, there was no supplement for the pension benefits. Those who didn't comply with the minimum contribution period requirement (15 years) used to benefit from the minimum guaranteed income (of 32 euro per month in 2017), which was replaced, as of April 1st 2018, by the minimum inclusion income (up to the ceiling of 400 RON, equivalent of about 80 euro per month in 2023). The minimum inclusion income is not covered by the projections.

Details regarding the social allowance for pensioners are shown in the table below:

Social allowance for pensioners – beneficiaries and average monthly benefit									
	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Number of beneficiaries (thou)	370.6	478.2	459.4	660.2	765.8	849.6	800.7	793.1	1025.4
Average level of monthly allowance (euro)	23.20	28.80	31.18	38.50	44.70	49.84	56.4	61.6	75.5

Source: National Pension House

The social allowance is covered from the government's budget and over the last years has represented a fixed amount set by ad-hoc Government decisions. During 2022, the level of the social allowance for pensioners was 1000 RON (202,7 euro), and in 2023 it increased to RON1150.

Although the Law 127/2019 intended to replace the social allowance for pensioners with a minimum pension related to the minimum wage, this legal provision did not enter into force and the idea was dropped alongside the recent reform, due to the fact that it was very costly. Under the Law 127/2019, the minimum pension was meant to be set as percentage of the minimum gross economy-wide wage, as follows: 45% for the 15 year minimum contribution period, plus 1% for each year of contribution exceeding 15, the maximum percentage being 75%. The minimum pension was meant to represent a ceiling up to which the computed pension amount was to be raised, for those complying with the 15 year contribution period criterion. Pensioners who accomplished 10-15 years of contribution were also meant to qualify, but for a ceiling of only 40% of the minimum gross economy-wide wage, plus 1% for each year between 11 and 14. The minimum pension for the survivors was intended to be set at 35% of the minimum gross economy-wide wage for each beneficiary. For

pensioners who completed less than 10 years of contribution, such as disabled or blind, the level of pension would be 40% of the minimum gross economy-wide wage.

C) Disability pension

The disability pension is granted to persons who lost their working capacity, totally or partially (at least half). As from 2012, the eligibility for the disability pension is no longer conditioned by the contribution period fulfilled, but only by the degree of disability. The amount of the disability pension is the result of the reference point value multiplied by the sum of the number of points accumulated during the contributory period and the number of "potential" points, i.e. the total points to be accumulated during the potential stage, defined as the difference between the full contribution period and the stage already achieved at the date when the disability appears. According Law 360/2023, the monthly number of potential points equals 0.25/0.2/0.1 of the PPV, depending on the degrees of disability, which have been redefined according to the functional individual deficiency (I - serious, II - accentuated or III - medium). The number of points granted is lower as compared to the previous legislation (0.70 / 0.55 / 0.35 points according to the degree of disability). Another change provided by the new pension law refers to redefining the caretaker indemnity for the first-degree disabled: 50% of the minimum gross wage (as compared to 80% of the pension point value, according to Law 263/2010). When a disabled person reaches the standard retirement age, its disability pension is substituted by an old-age pension.

D) Survivor pension

The survivor pension is granted to children up to the age of 16 (or until they complete their studies, but no later than the age of 26) and to the surviving spouse (when they reach the standard retirement age). The amount of the survivor pension (percentage of the deceased's old age pension): 50% for a single survivor, 75% for two survivors, 100% for at least 3 survivors. The full survivor pension for the spouse is granted provided that the marriage lasted at least 15 years. If the marriage lasted less than 15 years, but more than 10, the amount of the survivor pension diminishes by 0.5% per month, respectively by 6% for each year of the marriage less than 15. If the surviving spouse is also entitled to their own pension, they can choose the more advantageous of the two.

E) Special/Other pension schemes

Apart from the general pension system (1st pillar) and the 2nd and 3rd Pillars, the pension system also encompasses some Special/Other pensions, representing an equivalent of the AWG-defined "Special pensions", as they are not entirely (or not at all in some cases) based on the contributory principle. The "Other"/ "Special" pensions are the following: military pensions, civil special pensions, farmers` pensions and special allowances (specifically for merit and deprived).

- **Security and defence pensions (Military pensions)** include pensions for army, police, intelligence and penitentiary administration staff. In 2022, the military pension system included circa 195 thou. pensioners (3.9% of total pensioners), with a total amount of paid pensions (old age, disability, survivor) of almost 10.2 billion RON (0.72% of GDP). The contributions paid by the military employees are collected directly to the State's Budget and amounted to 4,24 billion RON in 2022 (0.3% of GDP in 2022). Section 1.2.2 presents the main changes following the recent reform regarding special pensions.

- **Civil special pensions** are granted to certain civil professions: magistrates, auxiliary Court personnel, aeronautic personnel, Court of Accounts staff, Diplomacy and members of the Parliament. In 2022, such pensions were granted to about 9,8 thou. persons (0.2% of total number of pensioners), and the total amount of the related expenditures got to 266,5 million euro (0.09 % of GDP).

- **Farmer pensions** represent a closed scheme granted to persons that used to work in agriculture in the period of the former communist regime. Therefore, the number of pensioners is on a decreasing path. In 2022, the total number of pensioners in this scheme decreased to 193.7 thou. (3,8% of the total number of pensioners), while the expenditures amounted to 417,5 million euro (0,15% GDP).

- **Special indemnities** (merit and deprived according to AR questionnaire) refer to lifelong indemnities granted to invalids, veterans and war widows, persons that have been politically persecuted, heroes, martyrs and active participants in the

Romania Revolution in 1989, artists and members of creative unions, etc. While the majority of these schemes were considered closed, the expenditures for these types of allowances have increased in recent years, in accordance to recent legislation (enacted December 2020[10], June 2021[11] and December 2022[12]), which enacted increases both in the number of beneficiaries (in some cases) and in the level of the allowances. While some of these allowances are lump sums increased by ad-hoc decisions from time to time (such as the ones in 2020 and 2022 mentioned above), others have been linked to the gross average wage (50% of the gross average wage for invalids, veterans, and war widows since mid-2021). As a result, the overall expenditures have increased to 783 million euro in 2022 (0,27% GDP), while the number of beneficiaries got to 404 thou, after decreasing in the previous 2 years. Special allowances are covered by the projections in this round, but the estimates have been done outside the model (as in AR21).

Pension expenditure (% of GDP)						
Year	**Special pension expenditure**				**Public pension expenditure**	**Total pension expenditure**
	Security and defence	Difficult conditions	Other	Total special pensions		
2019	0.76%		0.53%	1.28%	6.80%	8.08%
2020	0.84%		0.55%	1.38%	7.87%	9.25%
2021	0.83%		0.51%	1.34%	7.78%	9.12%
2022	0.72%		0.51%	1.23%	7.29%	8.52%

[10] Law 118/1990 regarding the granting of rights to persons persecuted for political reasons by the dictatorship established on March 6, 1945, as well as to those deported abroad or made prisoners was republished in Dec. 10, 2020. the values for the allowances granted to deprived persons were raised to RON 700/ RON 350(from RON 200/ RON 100 before) for every year of detention, depending on the gravity of the deprivation. The allowances for the living spouses of the deprived persons that died during or after those certain incidents were increased to the same values mentioned above. Moreover, allowances have been legislated to be granted also to the children of deprived persons (RON 500/month or the entire allowance that would have been granted to the dead parent, or half of it, in other cases).

[11] GEO 47/2021 stating that Starting June 2021, war invalids, veterans, and war widows are granted a monthly non-taxable gratitude allowance equal to 50% of the gross average wage11, cumulative to other special allowances already in payment

12 GEO 168/2022, stating that, as of January, 2023, war invalids, war veterans and war widows are granted an allowance as follows: a) war invalids: – 1,950 lei per month, for the maimed and those classified in the first degree of disability; – 1,300 lei per month, for those in the II degree of disability; – 1,170 lei per month, for those in the III degree of disability; b) war veterans: – 780 lei per month; c) war widows, if they have not remarried: – 780 lei monthly.

Special pensions (% of pensioners covered)				
Year	Security and defence	Difficult conditions	Other	Total special pensions
2019	3.4%		14.1%	17.5%
2020	3.6%		12.8%	16.4%
2021	3.8%		11.9%	15.7%
2019	3.9%		12.2%	16.1%

Pension taxation

As regards **pension taxation** in the general pension system (contributory pensions), there are no significant changes as compared to AR21. While pensions up to RON 2000 are exempted, for pensions above this threshold, the PIT rate is 10%[13].

However, in the case of special pensions (non-contributory), the new legislation brought an important change, imposing a progressive tax rate for pensions higher than the non-taxable monthly income ceiling of RON 2000, as follows:

(i) 10%, for the part lower than the average net salary or equal to it;

(ii) 15%, for the part between the level of average net salary and the level of average gross salary (used as a base for the state social insurance budget) or equal to it;

(iii) 20%, for the part that exceeds the level the average gross salary.

The overall implicit tax rate for pensions is about 2% in the base year (2022) and is projected to remain constant over the long run.

1.2. Recent reforms of the pension system included in the projections

The pension system in Romania was subject to a thorough reform in 2023, both regarding the general pension system and special pensions. Both reforms were part of the National Recovery and Resilience Plan and resulted in new legislation: Law 360 regarding the general pension system was enacted in December 2023 and Law 282 regarding the changes of the special pensions was enacted October 2023. Both reforms have been implemented with technical assistance from The World Bank.

[13] Also, pensioners do not pay health insurance.

1.2.1 General system reform

The reform of the general pension system aimed at ensuring the fiscal sustainability of the pension system, as well as equity, strengthening the principle of contribution, the adequacy of small/minimum/social pensions. The objective was to replace the provisions of Law no. 127/2019 (including those related to the 25-year fixed contribution period). The new pension law introduces a new calculation formula for new and existing pensions, while eliminating the correction index that has been a source of inequities between pensioners. In addition, a clear indexation mechanism has been legislated that will not allow for ad hoc increases of pensions. Moreover, another important provision refers to equalizing the legal retirement age for men and women at 65 by 2035. Also, the new law reduces the possibilities of early retirement, introduces incentives to extend working life and also increases the statutory retirement age, in line with the increase in life expectancy[14]. It also aims at fostering pension adequacy of low/minimum pensions. Another provision of the pension reform regraded the financial viability of the second Pillar of the pension system, by increasing the corresponding contributions with 1pp, to 4,75% starting January 2024.

The new law is based on four main principles:

- Equality - non-discriminatory treatment as regards the rights and obligations laid down by law.
- Contribution - conditioning the minimum and complete length of service to the actual seniority.
- Stability - the contribution period completed over 25 years will be rewarded with a number of points for seniority.
- Solidarity –pension system insurers assume each other's obligations.

The main changes envisaged by the new pension law are detailed in the table below:

[14] This legislated link of the retirement age to changes in life expectancy is not considered in the projections in the absence, at this stage, of clear methodological implementation rules in the legislation.

New provisions regarding the general pension system		
Elements	**Provisions of the new law**	**Descriptions/Arguments/Specifications**
BENEFIT FORMULA	BENEFIT = RPV x TOTAL NUMBER OF POINTS RPV (reference point value) = PENSION POINT VALUE:25 TOTAL NUMBER OF POINTS = contributory points + stability points + assimilated points during non-contributory periods	The calculation of the pension will take into account both the income subject to contributions to the social security system, as well as the length of service completed in Romania. When calculating the total number of points, a number of stability points will be added for each year over the 25-year contribution period, as follows: • 0,50 points/year for the years 26-30; • 0,75 points/year for the years 31-35; • 1 point/year for LOS longer than 36years. These points will only be awarded for contributory years that do not overlap with pension years, representing incentives for longer working lives. The 25-year contribution period (average contribution period envisaged by previous legislation) will only be used for the VPR calculation, and not in the calculation of the pension benefit.
PENSION INDEXATION MECHANISM	The average annual inflation rate plus 50 % of the real increase in the gross average wage, definitive indicators, known in the current year for the previous calendar year, communicated by the National Institute of Statistics (Swiss rule)	Pensions will be increased annually, in January, by a percentage established by the law of the state social insurance budget. The indexation rate cannot be higher than the annual growth rate of social security contribution income to the social insurance budget, or lower than the inflation rate.
REDEFINING THE CONDITIONS FOR THE CONTRIBUTORY PERIOD	Minimum and full contribution period to be based on effective contribution (excluding assimilated periods)	A minimum contributory period of 15 years will be required to qualify for an old-age pension, excluding the assimilated periods (such as faculty, army, unemployment prior to 1 April 2001, or periods when a person has been a political prisoners). The same condition (contributory length of service) will also apply to persons who opt for an early pension. These provisions are expected to strengthen the contributory principle, also reducing the possibility of early retirement).
RECOVERY OF NON-PERMANENT BONUSES	Capitalization of the premiums granted during activity	Pension recalculation will be capitalizing on all gross income earned, for which social security contributions have been paid, including one-off income types, such as: global agreement, hourly payment, thirteenth salary, prizes, etc. The recalculation of the pension in this respect will be finished within 6 months after the date the law enters into force.
EQUALISATION OF THE RETIREMENT FOR WOMEN AND MEN	The standard retirement age for women will progressively increase to 65, by 2035.	The retirement age for women in on an ascending path (set to 63 by 2030 by the old Law) and will continue to increase to 65 until 2035. Moreover, after 2035, the retirement age is set to be increased by half of the life expectancy growth every three years.
REDUCTION OF THE STANDARD RETIREMENT AGE FOR MOTHERS	Women who have given birth and raised at least one child up to the age of 16 can benefit from lowering the standard retirement age.	For every child born and raised up to the age of 16 (or adopted and raised for a period of at least 14 years), the standard retirement age is diminished by 6 months (e.g. 6 months reduction for 1 child, 1 year reduction for 2 children…3 years reduction for 6 children and 3 years and 6 months reduction for 7 or more children).

PURCHASE OF SENIORITY	Purchase of seniority for any 6 years of the non-contributory period, based on a voluntary insurance contract.	Valorisation of the period of service, purchased under the insurance contract, only at the opening of the old-age pension right. Payment in instalments and partial payment is taken into account.
INCREASE IN THE MINIMUM CONTRIBUTORY PERIOD FOR OLD-AGE PENSIONS	Granting an old-age pension will be subject to a minimum contributory period of 15 years	The minimum contributory period of 15 years will require active contributions and will exclude assimilated periods and non-contributory period, with the exception of the maternity/paternity period, which will be taken into account when calculating the length of service required for the opening of the right to an old-age pension.
DISABILITY PENSION	The scores granted for the potential LOS have been diminished compared to the previous legislation	The monthly number of potential points granted for the potential LOS are reviewed to 0.25/0.2/0.1 (as compared to 0.7/0.55/0.35 in the previous legislation), depending on the degree of disability, which is redefined according to the functional individual deficiency (serious, accentuated or medium). Depending on the grades of disability and also taking into consideration the type of employment, the working capacity may be considered as retained for certain professional activities (strengthening the contributory principle).
OLD AGE EARLY RETIREMENT	Access to the early pension is subject to completion of a minimum period of 35 years of contribution. Early retirement may be achieved with a maximum reduction of 5 years from the statutory standard retirement age.	Law 360/2023 enacted the possibility of early retirement for a maximum period of 5 years (decreased from 8 years according to old law) earlier than the retirement age for persons who have exceeded the full contribution period (of 35 years) with at most 5 years. The maximum penalty for the early retirement has been reduced to a maximum of 24%, compared to a maximum of 30% provided by the old legislation. It must be noted that according to Law 360/2023, non-contributory periods (such as faculty, army, unemployment prior to 1 April 2001, or periods when a person has been a political prisoners) shall not be considered when calculating the full contribution period of 35 years.
SURVIVOR'S PENSION	The provisions of the old legislation are maintained.	
REVIEW OF SPECIAL AND UNUSUAL WORKING CONDITIONS	People working under special or unusual working conditions will face less favorable pension terms, regarding the early retirement and the extra benefits.	According to Law 360/2023, people that have worked under special or unusual working conditions, the retirement age is diminished by 6 months for every year worked under special conditions (maximum reduction of 10 years, compared to a maximum reduction of 13 years in previous legislation) and by 4 months for every year worked under unusual working conditions (maximum reduction of 7 years, compared to a maximum reduction of 10 years in the previous legislation). Moreover, workers under special or unusual conditions will be granted an additional number of fixed points (0.25 points/0.50 points), compared to granting an increase of 25% or 50% for each monthly score made by the person who worked in special/unusual conditions, under the old Law. This change is meant to ensure equity among people working under such conditions, as the additional points are granted depending on the number of years worked under special/unusual conditions and not on the income earned within that period). Also, the number of the entities known to have activities under special conditions has been reduced by approximately 2/3, to 48 eligible entities, and also, the number of the eligible jobs for special conditions has been reduced.

MINIMUM SOCIAL ALLOWANCE (MINIMUM PENSION)	Swiss rule indexation for the minimum pension	The amount of the social allowance for pensioners will be increased annually by the same mechanism as for indexing public pensions. The use of an identical increase mechanism will result in a fair and equitable increase in the minimum social allowance relative to the general indexation of the pension system.
EMPLOYEES WITH CERTAIN DISABILITIES	Additional points granted for people with disabilities	Persons working under severe or accentuated disability will receive an increase by a fixed number of points: 0.5 points or 0.25 points for each year carried out under such conditions.

1.2.2 Special pensions reform

The special pensions` reform aimed at getting special pensions in line with the contributory principle. The final form of the new law on special pensions (Law no. 282) was voted by the Parliament on 19 October 2023 and modified several normative acts regrading special pensions. Initially, this law was voted by the Parliament in June 2023, but afterwards it was contested at the Constitutional Court by the High Court of Cassation and Justice, in order to preserve some advantages for magistrates. Romania's Constitutional Court decided, at the beginning of August 2023, that several articles of the law amending the special pensions were unconstitutional and sent the Law back to the Parliament. The law was modified accordingly and then got the final vote from the Parliament in October. The main objectives of the reform were the following:

- Calculation of special pensions based on the length of service in the specific professions and the readjustment of the percentage related to the income obtained. The minimum contribution period will be similar to the one applied in the general pension system.
- No special pension can exceed the income earned during the active life and no new special pension categories will be created.
- Only magistrates` pensions may be subject to the protection of the Constitutional Court decisions.

The main changes envisaged by the new Law are in line with the proposed objectives and mainly refer to increases in the retirement age and length of service in specific professions and changes regarding the benefit calculation at retirement, as shown in the table below:

New provisions regarding special pensions			
	Retirement age and LOS	**Benefit calculation**	**Details**
Prosecutors and judges	Retirement age will increase from 47 years and 4 months to 60 (but gradually with 4 months/year until 2062). Minimum LOS: 25 years in profession.	Benefit at retirement = 80% of the average monthly gross employment allowances (including certain bonuses) in the last 48 months of activity. The amount of the net pension cannot be higher than the net income in the last month of activity. Starting Jan 2024, indexation will be done in accordance with the inflation rate, but only for new employees in the system after January 2024[15]	For a period of 20-25 years in profession – 80% minus 1pp per each year under 25 years LOS (e.g. 75% for 20 years). For every year above 25, the net amount of service pension is increased by 1pp (e.g. 82% for LOS=27 years).
Auxiliary Court	Progressive increase of the retirement age to 65 years until 2035, with 25 years in profession. Until 2026 the standard retirement age remains 60. In 2027 it increases to 61 and afterwards, it will increase with 6 months per year (to 65 in 2035).	Benefit at retirement = 80% of the average gross monthly basic salaries (including bonuses), in the last 48 months of activity.	80% of the calculation base with 20-25 years; reduce 1% per year with less
Military	The retirement age will gradually increase, with 1 year per year starting 2030, to 65 years in 2035. The minimum LOS increases from 15 to 25 years in that specific profession.	Benefit at retirement= average of the gross monthly salaries (excluding bonuses and monthly expenses that are not permanent) earned in the basic position in the last consecutive months of activity (this period is set to increase over time, up to 25 years in 2043)[16], updated with the monthly consumer price index	In the old legislation, for Military pensions, the basis period for benefit calculation at retirement regarded 6 consecutive months of the last 5 years (which most probably would have been chosen to be the most advantageous).
Diplomats	Increase of the retirement age from 60 to standard retirement age. Increase of the minimum required LOS in profession from at least 12 to 25 years.	Benefit at retirement = 65% of the average gross income achieved in the last months before the retirement date (this period is set to increase over time, up to 25 years in 2043)[13]	According to previous legislation, the standard LOS was 15 years, but persons with at least 12 years of activity also received benefits, diminished by 1pp for every year missing up to 15

[15] for the existing retirees as well as for existing employees, the indexation is/will be linked with the actual income for actives in profession

[16] The basis for pension calculation will be the average of the last 12 months of work between January 2024 and June 2024, and afterwards it will increase with one month for every six months passed, until January 2029, when it will get to 22 months. From January 2029 the basis will be raised by one month every month passed, so that in January 2043 it will get to 300 months (25 years).

Civil aviation personnel	Retirement age increased to 52 years (from 50).	Benefit at retirement = 65% of the average gross income achieved in the last months before the retirement date (this period is set to increase over time, up to 25 years in 2043)[13]	The standard LOS is 20 years, but persons with at least 10 years of activity also received benefits, diminished by 2pp for every year missing up to 20 (unchanged).
Court of Accounts	Retirement age is maintained equal with the standard retirement age in the public system (e.g. 65 years for men). LOS increased to 25 years in profession, from a standard LOS of 14 years before the reform.	Benefit at retirement = 65% of the average gross income achieved in the last months before the retirement date (this period is set to increase over time, from 12 months in 2024, up to 25 years in 2043)[13]	According to previous legislation, the standard LOS was 14 years, but persons with at least 4 years of activity also received benefits, diminished by 1pp for every year missing up to 14
Parliamentary Staff	Standard retirement age, increased from 60 years. Standard LOS increased to 25 years of contributions in the structures of the Parliament. For LOS of less than 25, but higher than 20, the benefit is reduced by 0.1pp of the calculation base for each month missing to the standard retirement age.	Benefit at retirement = 65% of the average gross income achieved in the last months before the retirement date (this period is set to increase over time, up to 25 years in 2043)[1]	Previously, Parliamentary Staff with a total LOS of 30 years, out of which 14 years in the structures of the Parliament, were entitled to a pension of 80% of the average monthly gross income in the last year of activity in the structures of the Parliament.

2. Overview of the demographic and labour force projections[17]

2.1. Demographic projections

According to Eurostat's demographic projections, Romania's population is expected to decrease further, from 19.04 million in 2022 to 15.02 million in 2070.

The old-age dependency ratio, which is the share of older people (aged 65 and above) relative to the working-age population (aged 20 to 64) is projected to increase from 33.5% in 2022 to 55.8% in 2070 with a peak in 2056 due to the increased life expectancy, but also as a result of baby-boomer cohorts that will reach the retirement age in the following decade. Over the projected period, life expectancy at birth will increase by 12.4 years for men, from 70.9 years (in 2022) to 83.3 (in 2070) and 9.9 years for women, from 78.6 years (in 2022) to 88.5 (in 2070), almost in line with previous projections.

TABLE 2 – MAIN DEMOGRAPHIC VARIABLES

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Population (thousand)	19,036	18,158	17,191	16,401	15,652	15,015	19,036	2022	-4,021
Population growth rate	-0.4%	-0.7%	-0.5%	-0.5%	-0.5%	-0.3%	-0.3%	2023	0.1%
Old-age dependency ratio (pop 65+ / pop 20-64)	33.5	36.0	46.5	55.4	59.1	55.8	60.0	2056	22.3
Old-age dependency ratio (pop 75+ / pop 20-74)	10.9	14.6	17.1	23.4	27.9	28.9	29.8	2065	18.0
Ageing of the aged (pop 80+ / pop 65+)	22.7	25.1	30.0	32.5	39.7	45.0	45.0	2070	22.3
Men - Life expectancy at birth	70.9	73.7	76.4	79.0	81.3	83.3	83.3	2070	12.4
Women - Life expectancy at birth	78.6	80.9	83.0	85.0	86.8	88.5	88.5	2070	9.9
Men - Life expectancy at 65	14.2	16.0	17.6	19.2	20.6	22.0	22.0	2070	7.8
Women - Life expectancy at 65	18.1	19.7	21.3	22.7	24.1	25.4	25.4	2070	7.3
Men - Survivor rate at 65+	69.9	74.9	79.8	83.8	87.0	89.6	89.6	2070	19.7
Women - Survivor rate at 65+	86.3	88.9	90.9	92.6	94.0	95.0	95.0	2070	8.8
Men - Survivor rate at 80+	30.4	39.4	47.8	55.7	62.8	69.0	69.0	2070	38.6
Women - Survivor rate at 80+	55.0	62.8	69.1	74.6	79.2	83.0	83.0	2070	28.0
Net migration (thousand)	78.7	-37.5	-4.8	5.7	13.1	28.2	78.7	2022	-50.6
Net migration (% population previous year)	0.4%	-0.2%	0.0%	0.0%	0.1%	0.2%	0.4%	2022	-0.2%

Source: Eurostat, European Commission.

Life expectancy at 65 is projected to continuously increase over the 2022-2070 period, from 14.2 to 22 years for men and from 18.1 to 25.4 years for women, which would represent an increase of +7.8 years and +7.3 respectively. Population survival rates improve over time for both males and females and net migration outflow is expected to decrease until around 2040, after which it will switch to net inflows, on an ascending trend until 2070 (when it will reach an inflow of 28.2 thousand persons).

[17] For more details, see European Commission and EPC (2023), *'The 2024 Ageing Report: Underlying assumptions and projection methodologies'*, European Economy, Institutional Paper 257.

FIGURE 1 – INCREASE IN LIFE EXPECTANCY AT BIRTH FOR MEN AND WOMEN: 2022 VS. 2070

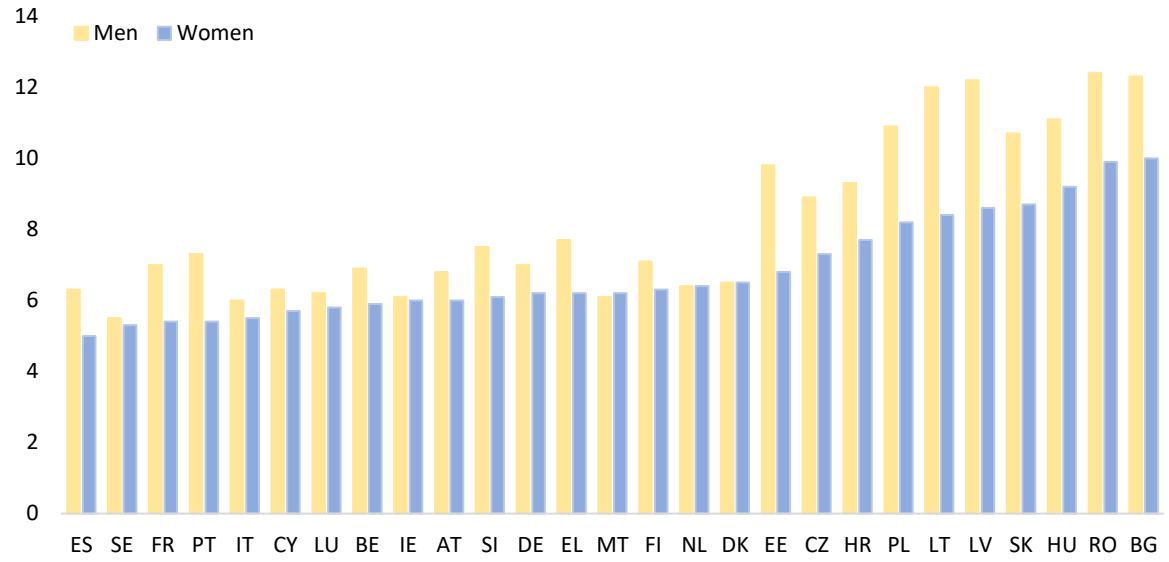
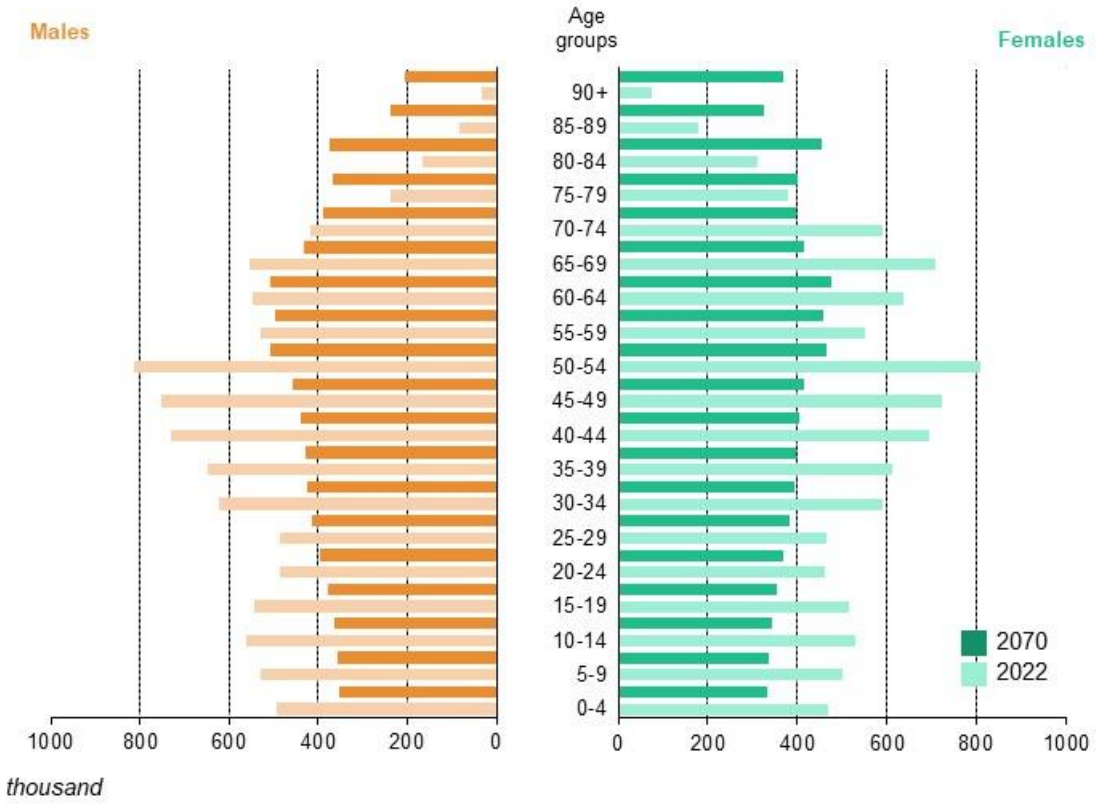


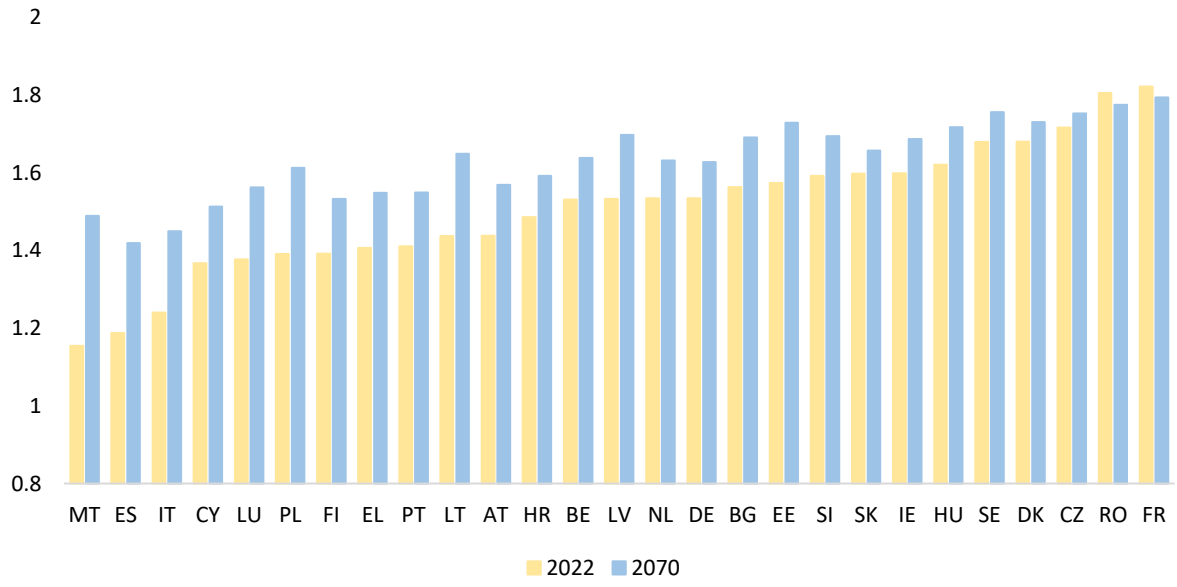
Figure 2 shows the same trend as registered in the other EU Member States regarding ageing population: a growing number of older people and fewer younger people. Therefore, it can be seen that the age structure of Romania's population will change significantly and the demographic evolution will not look like a pyramid anymore, but will turn into a tube, which means that the employed population will have to support a growing number of people at retirement age. This will add pressure on the pension system and the whole social protection system since fewer people will be working relative to the dependent ones. However, as a result of the measures aimed to prolong careers (increase in the retirement age) and capped indexation, constant growth of pension expenditures was largely avoided. A declining trend of the expenditure-to-GDP ratio will start after 2040, when the volume of new pension system entries will have been stabilized. The Pension System will be balanced also due to the exit from the life cycle of the baby-boom generation. These cohorts will enter the pension system around 2030 and will begin to exit as from 2040.

FIGURE 2 – AGE STRUCTURE: 2022



Source: Eurostat, European Commission.

FIGURE 3 – FERTILITY RATES PROJECTIONS FOR EU COUNTRIES IN 2022 AND 2070



One of the main causes in terms of population aging in Romania is low fertility. In 2022, the fertility rate was 1.8 children per woman and is estimated by Eurostat to slightly decrease to 1.77 by 2070.

2.2. Labour force projections

The labour force is projected by the Commission on the basis of the demographic projections by ESTAT described in the previous section and the participation rates as projected by means of the Cohort Simulation Model. Key variables are shown in Table 3 and Table 4.

The employment rate is set to increase over the projection horizon, especially for the 55-64, and 65-74 age groups. Also, there is a notable increase in labour force participation of the 55-64 age group which will increase by about 12.4 pp by 2070, while labour force participation 65 – 74 will also increase by 7.6pp, in line with the increase in the retirement age for women.

TABLE 3 – PARTICIPATION RATE, EMPLOYMENT RATE AND SHARE OF WORKERS

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Labour force participation rate 20-64	72.1	71.8	72.4	72.8	73.7	73.1	73.7	2058	1.0
Employment rate of workers aged 20-64	68.3	67.9	68.2	68.6	69.4	68.8	69.5	2025	0.5
Share of workers aged 20-64 in the labour force 20-64	94.8	94.7	94.2	94.2	94.2	94.2	95.3	2024	-0.6
Labour force participation rate 20-74	60.5	61.5	59.9	59.9	61.1	62.4	62.6	2067	1.9
Employment rate of workers aged 20-74	57.3	58.3	56.5	56.6	57.7	58.8	59.1	2066	1.5
Share of workers aged 20-74 in the labour force 20-74	94.8	94.7	94.3	94.4	94.4	94.3	95.3	2024	-0.5
Labour force participation rate 55-64	48.6	56.8	60.8	59.5	61.4	61.0	62.1	2065	12.4
Employment rate of workers aged 55-64	46.8	54.8	58.5	57.3	59.1	58.7	59.7	2065	11.8
Share of workers aged 55-64 in the labour force 55-64	96.4	96.4	96.3	96.3	96.2	96.2	96.7	2024	-0.2
Labour force participation rate 65-74	3.4	6.8	10.0	10.4	9.9	11.0	11.1	2055	7.6
Employment rate of workers aged 65-74	3.4	6.7	9.8	10.2	9.7	10.7	10.8	2055	7.4
Share of workers aged 65-74 in the labour force 65-74	97.7	97.8	97.5	97.7	97.8	97.6	97.9	2059	-0.1
Median age of the labour force	42.0	43.0	43.0	42.0	42.0	43.0	44.0	2032	1.0

Source: European Commission.

Table 3 summarises the estimated development of career duration, the average labour market exit that correspond with the participation rate projections, and the years spent in retirement for men and women.

Increasing life expectancy for females and males leads to a longer period of life spent at retirement, so, in the absence of an increase in pensionable age, it would add further pressure on the pension system. The private pensions system (Pillar II) has been implemented in order to reduce this potential burden over the public system and to ensure more adequate benefits for the pensioners.

In line with the effects indicated in the interpretation of Table 3, the average labour market exit age rises from 61.5 years in 2022 to 64 years in 2040 and then remains at this level (Table 4).

Furthermore, the contributory period increases from 35.4 years in 2022 to 39.0 years in 2070, in line with the increase of the retirement age for women and also given the incentives for longer working lives brought by the new reform. At the same time, the duration of retirement increases from 18.3 years in 2022 to 24.6 years in 2070.

Finally, in line with the above, the duration of retirement/contributory period and the percentage of adult life spent in retirement also increase steadily; from 52% and 30% in 2022 to 63% and 36% in 2070, respectively.

TABLE 4 – LABOUR MARKET EXIT BEHAVIOUR

TOTAL	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	61.5	61.3	63.7	63.8	63.5	63.3	63.9	2053	1.7
Average labour market exit age (CSM)**	62.8	63.2	64.0	64.0	64.0	64.0	64.0	2040	1.2
Contributory period	35.4	37.7	38.8	38.8	38.9	39.0	39.0	2070	3.6
Duration of retirement***	18.3	19.4	20.2	21.8	23.2	24.6	24.6	2070	6.3
Duration of retirement/contributory period	52%	51%	52%	56%	60%	63%	63%	2070	11%
Percentage of adult life spent in retirement****	30%	31%	31%	33%	35%	36%	36%	2070	6%
Early/late exit*****	1.9	2.2	1.0	0.9	0.8	0.7	2.3	2029	-1.2

MEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	61.6								
Average labour market exit age (CSM)**	63.2	63.4	63.6	63.6	63.6	63.6	63.6	2045	0.5
Contributory period	36.5	38.3	39.0	39.1	39.2	39.3	39.3	2070	2.8
Duration of retirement***	15.8	17.3	18.3	19.9	21.4	22.8	22.8	2070	7.0
Duration of retirement/contributory period	43%	45%	47%	51%	55%	58%	58%	2070	15%
Percentage of adult life spent in retirement****	27%	29%	30%	31%	33%	34%	34%	2070	8%
Early/late exit*****	2.7	2.5	1.4	1.3	1.1	1.1	2.7	2023	-1.7

WOMEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	61.5								
Average labour market exit age (CSM)**	62.5	63.0	64.4	64.4	64.4	64.4	64.4	2040	2.0
Contributory period	34.2	37.0	38.4	38.4	38.5	38.6	38.6	2070	4.4
Duration of retirement***	20.8	21.4	22.1	23.6	25.0	26.3	26.3	2070	5.5
Duration of retirement/contributory period	61%	58%	58%	61%	65%	68%	68%	2070	7%
Percentage of adult life spent in retirement****	33%	33%	33%	35%	36%	37%	37%	2070	4%
Early/late exit*****	1.1	1.9	0.5	0.4	0.4	0.4	2.1	2029	-0.7

** The 'average effective retirement age' is the age at which people start receiving a pension benefit (old-age, early or disability). It is calculated on the basis of the administrative data on new pensioners for 2022, showing projected data for the other years for the total. ** 'Average labour market exit age (Cohort Simulation Model)' refers to 2023 instead of 2022. *** 'Duration of retirement' is the remaining life expectancy at the average labour market exit age. **** The 'percentage of adult life spent in retirement' is calculated as the ratio between the duration of retirement and the life expectancy minus 20 years. ***** 'Early/late exit' is the ratio between those who exit the labour market before reaching the statutory retirement age and those who exit at or beyond the statutory retirement age. For 2022, the value refers to 2023.*

3. Pension projection results

Faced with the challenge of an accelerating aging population, Romania has been reforming its pension system since the early 2000s with the goal of achieving adequate and fair pension benefits that are consistent with the long-term fiscal sustainability of the pension budget. A major pension reform took place in 2007, when mandatory private scheme (pillar II) and non-mandatory private scheme (pillar III) were introduced. Another important reform was meant to be implemented in 2019, by Law 127, but this legislation never got to enter into force. In 2023, the pension system was subject to another major reform. *The projections presented in this country fiche encompass the legislative changes brought by this latter reform (Law 360/2023 regarding the general system and Law 282/2023 regarding the changes of special pensions).* ***However, it has to be noted that the legislative provision regarding the increase in the retirement age linked to life expectancy has not been considered, in the absence of further clarification of the mechanism in the legislation at the time of the cut-off date of the projections****.*

3.1 Coverage of the pension projections

Pension projections for the general pensions system have been accomplished using the World Bank's Pension Reform Options Simulation Toolkit (PROST). The model covers all mandatory public pension schemes (Pillar I), including old age and early, disability and survivor pensions, as well as the mandatory private pensions (Pillar II). The other pensions (military and civil special pensions, as well as farmers and merit and deprived pensions) and non-mandatory private pension scheme (pillar III) are projected outside the model. There is no change in the coverage of the projections as compared to the previous exercise. However, there has been a change in the methodology for projecting Pillar II (now projected as lump sums, instead of instalments, due to the observed practice of withdrawals[18]).

Table 5 below shows the pension expenditure in % of GDP between 2013 and 2021, according to Eurostat's ESSPROS database and the data provided by Romania to the Ageing Working Group. During the period 2015-2021 differences with ESPROSS data are related to the

[18] In Romania, the pensioners who have contributed to Pillar II may opt for getting at retirement the account value as a lump sum or as instalments over a period of five years. In recent years, the majority have chosen lump sums. Given the fact that such an approach reflects better the reality, in this round of projections the pension benefits from Pillar II have been projected as lump sums.

inclusion in the AR of some further categories of expenditures: the farmers' social pensions, the civil special pensions (6 professional categories) and the special indemnity (details in the Special Pensions chapter).

TABLE 5 – ESSPROS AND AWG DEFINITION OF PENSION EXPENDITURE (%GDP)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	change 2013- last available year
Eurostat total pension expenditure	8.4	8.2	8.1	8.1	8.1	7.9	7.8	8.9		0.5
Eurostat public pension expenditure (A)	8.4	8.2	8.1	8.1	8.1	7.9	7.8	8.9		0.5
Public pension expenditure (AWG: outcome) (B)	8.3	8.2	8.3	8.4	8.4	8.2	8.1	9.3	9.1	0.8
Difference Eurostat/AWG: (A)-(B)	0.1	0.0	-0.2	-0.3	-0.3	-0.3	-0.3	-0.4		-0.4

Source: Eurostat, European Commission.

3.2 Overview of projection results

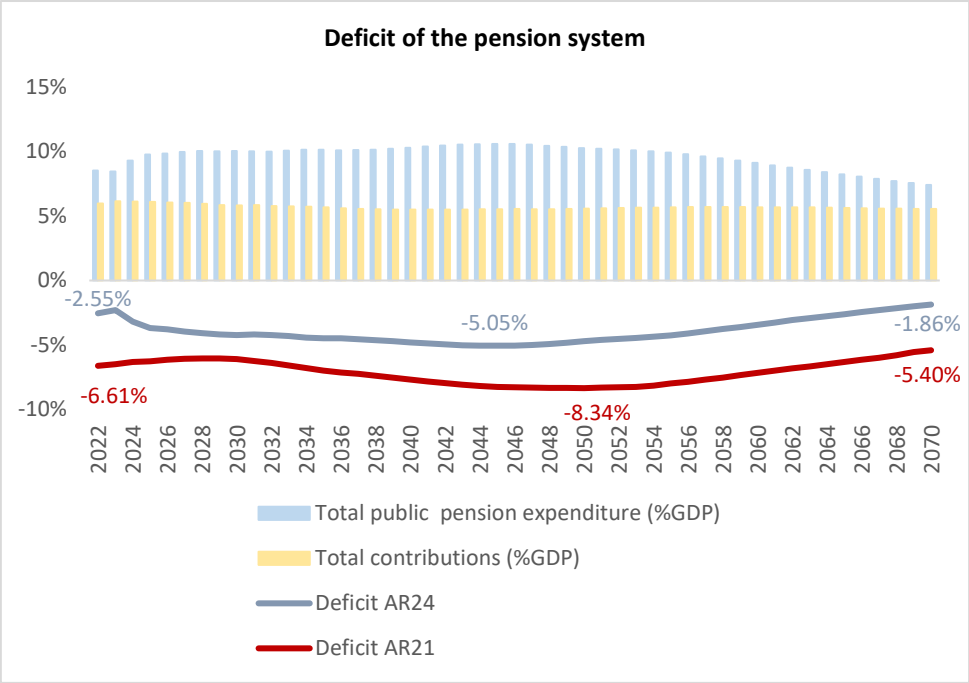
Overall, the gross public pension expenditure is projected to increase slightly above 10% of GDP in 2028 – 2054, due to demographic developments. At the same time, public pensions contributions are projected to slightly decrease to 5.5% GDP around 2040 and remain at this level until the end of the projection horizon, given the demographic and labour market developments.

TABLE 6 – PROJECTED GROSS AND NET PENSION SPENDING AND CONTRIBUTIONS (%GDP)

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Expenditure									
Gross public pension expenditure	**8.5**	**10.4**	**10.3**	**10.5**	**9.6**	**7.6**	**10.6**	**2046**	**-0.9**
Private occupational pensions									
Private individual mandatory pensions	0.0	0.5	0.6	0.8	0.7	0.9	0.9	2070	0.9
Private individual non-mandatory pensions	0.00	0.01	0.03	0.04	0.04	0.04	0.04	2054	0.04
Gross total pension expenditure	8.6	10.9	11.0	11.4	10.3	8.6	11.4	2052	0.0
Net public pension expenditure*	8.3	10.2	10.1	10.3	9.4	7.5	10.4	2046	-0.9
Net total pension expenditure*	8.4	10.7	10.7	11.1	10.2	8.4	11.2	2052	0.0
Contributions									
Public pension contributions	6.0	5.5	5.2	5.2	5.3	5.2	6.0	2023	-0.7
Total pension contributions	6.8	6.6	6.4	6.4	6.5	6.4	6.8	2023	-0.3
Balance of the public pension system (%GDP)**	-2.6%	-5.0%	-5.1%	-5.3%	-4.3%	-2.4%	-5.4%	2047	0.1%

**Net pension expenditure excludes taxes on pensions and compulsory social security contributions paid by beneficiaries. **Public pension contributions - gross public pension expenditure (peak value/year shows most negative value).*

Source: European Commission, EPC.



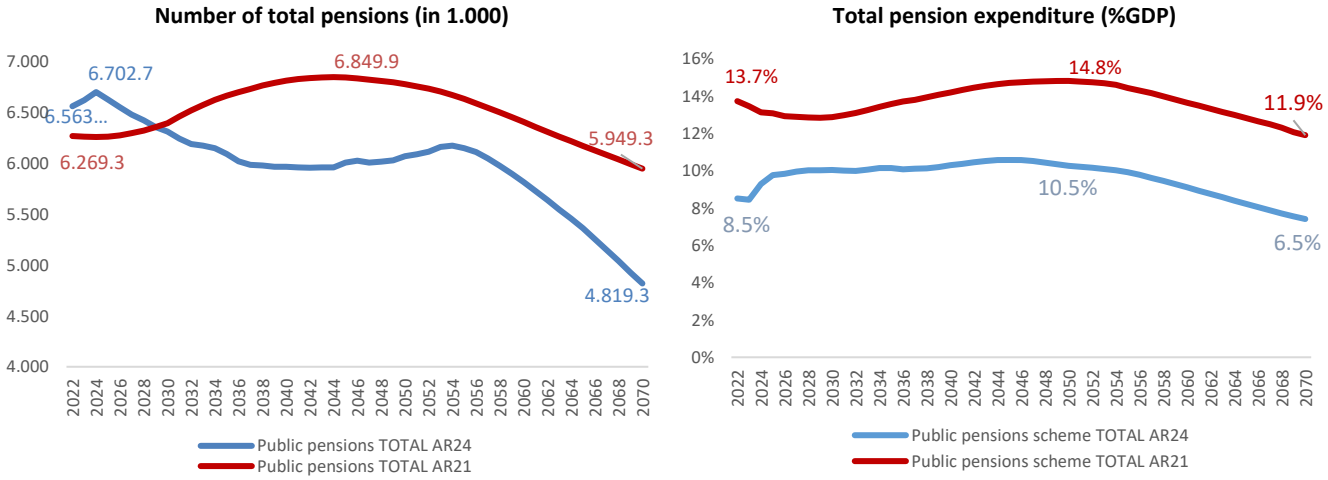
As compared to the former projections of AR21, the balance of the pension system is projected to improve significantly over the long run, mainly on the backdrop of lower pension expenditure than previously projected (see details below). Actually, improving the sustainability of the public pension system has been one of the aims of the general pension system reform in 2023. In 2022, the deficit stood at 2,5% GDP, projected to worsen to a maximum of 5.05% GDP in 2044, given the above-mentioned development of the pension expenditures and contributions. However, the provisions of the reform regarding the increase in the retirement age and the incentives for longer working lives are expected to lead, alongside demographic changes (that will lead to the reduction of the number of pensioners towards the end of the projection period) to an important improvement of the public pension system balance, towards the end of the projection period, when the deficit is projected at 1,86% GDP.

Gross public pension expenditure dynamics, mainly influenced by the old age and early expenditure, is projected far below the former AR21 projections, which have been done according to Law 127/2019. Its main provisions affecting the total public expenditure, the benefit ratio, as well as the replacement rate, regarded the increase in the PPV19 and the

[19] The initial provisions of Law 127/2019 envisaged the increase of the PPV by 40% starting September 1st, 2020, and by another 5,6% starting September 1st, 2021. However, at the time when projections for AR21 were done, the law was modified, and those projections included an increase in the PPV by 14% as of September 1st, 2020 and an additional increase of 30% as of September, 1st, 2021.

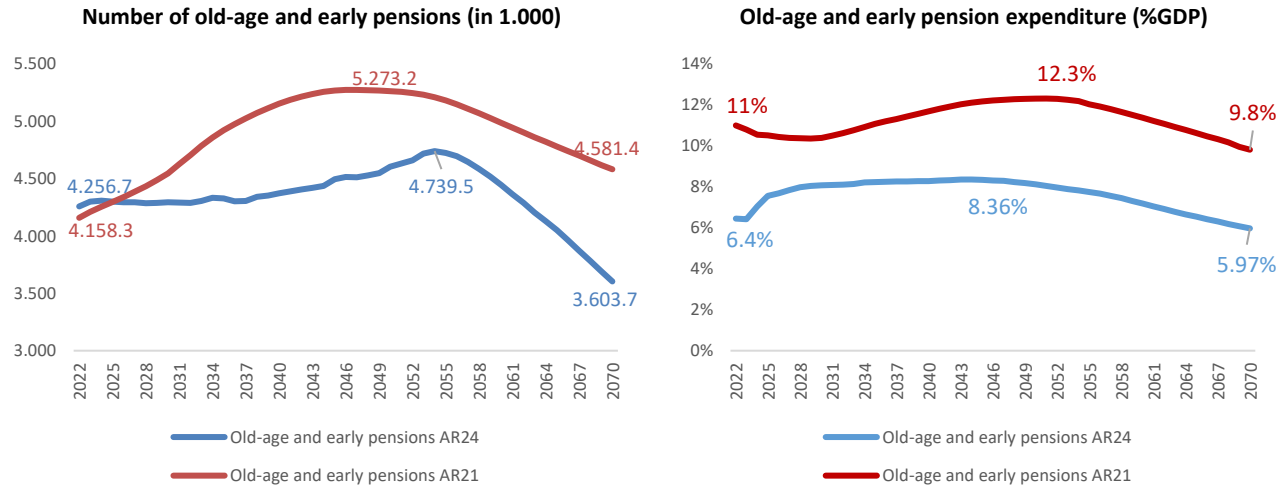
minimum pension indexation (in accordance with the evolution of the minimum gross economy-wide wage), that never entered into force as initially planned (details regarding the difference between the assumed PPV in AR21 and the actual values that effectively entered into force are explained in Section 1 - Old-age pensions` indexation). Therefore, under the current baseline, which also encompasses the effects of the recent reform, total pension expenditures are projected to reach a lower peak of about 10.5% GDP around 2045.

Public pensions - Total



As regards the projections of the pension expenditure according to the Law 360/2023, the steep increase in 2024 and 2025 is due to the change in the formula (extra stability points granted for careers longer than 25 years) and the corresponding recalculation of all pensions starting September 2024. Going forward, the “hump” in expenditures that existed in the former projections has been eliminated with the help of measures aimed to prolong the working careers (further increase of retirement age for women to 65 on par with men, reducing maximum number of years for early retirement for workers in special and particular conditions, as well as the incentives for working longer, e.g. additional points). Indexation rules with floor and cap also result in capping of the expenditures growth strengthening the sustainability of the system over time.

Old age pensions

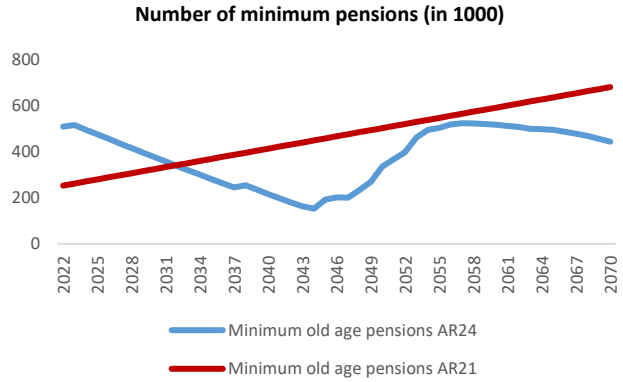


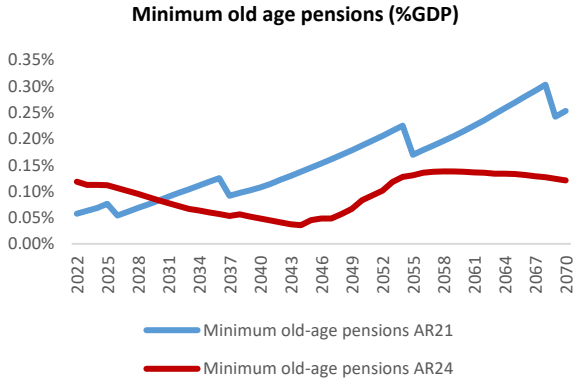
The number of old-age pensioners is projected on an overall decreasing trend over the long run, due to demography, but also due to the recent reform that will result in an extended working life. The significantly lower number of pensions as compared to the AR21 projections is explained by the fact that the former projections included a much larger number of minimum pensions (since minimum pensions had been set to be calculated in relation to the minimum wage according to Law 127/2019)20. Old age and early pension expenditure are also projected above the AR21 trajectory due to the reasons explained above.

Under the current projections, **minimum pensions** are set to increase identically to old-age pensions (Swiss rule) in the first 10 years of projections and in accordance with the general agreed assumption afterwards (linked to wage developments), therefore resulting in lower number of pensions and lower expenditures over the long run.

[20] Minimum pension in Romania (the social allowance for pensioners) represents a top-up for the pensioners with pension benefits under a certain threshold. The provisions of the Law 127/2019 linked minimum pension to the minimum wage, which would have significantly increased this threshold, with a corresponding increased number of minimum pensions granted for many additional pensioners (if a pensioner gets a minimum pension, it is considered that he/she gets two pensions).

Minimum old age pensions

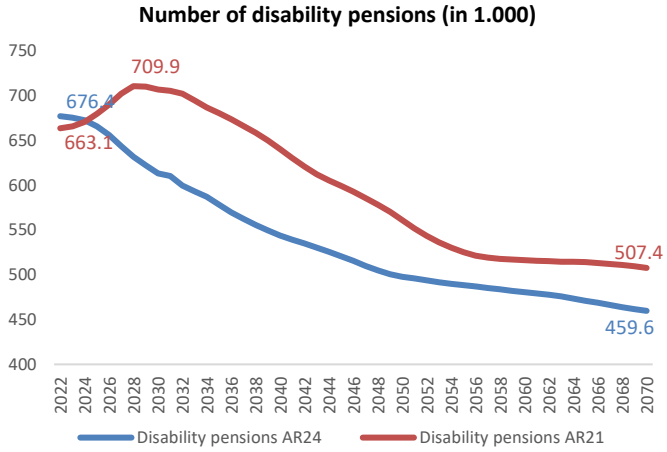


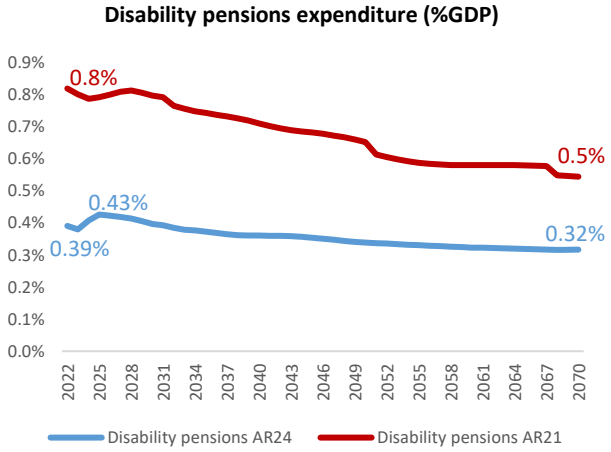


Disability pensions expenditures are also projected below the trajectory in AR21. The reasons behind this large change are the following:

- The number of disability pensioners has decreased by 20%[21] between 2019 and 2022. Therefore, the base year value for AR24 is much lower than the value considered in AR 21 (for 2019). The number of disability pensioners has been projected in relation to the number of active contributors.
- Slower increase in the PPV (compared to AR21, which was based on Law 127/2019)
- Recent legislative changes. According to the new Law, the monthly number of potential points granted to disabled people have been diminished to 0.25/0.2/0.1 of the PPV, depending on the degrees of disability, which have been redefined according to the functional individual deficiency (I - serious, II - accentuated or III - medium).

Disability pensions

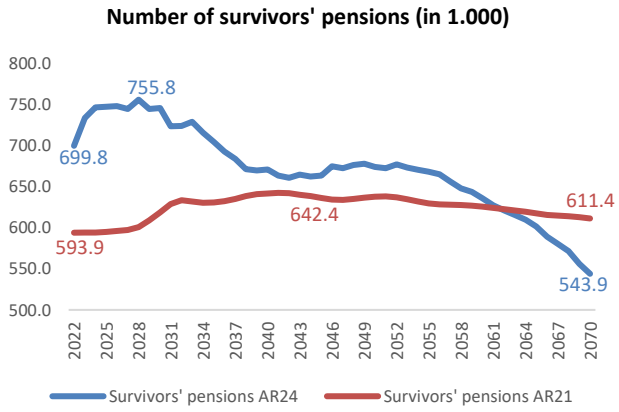


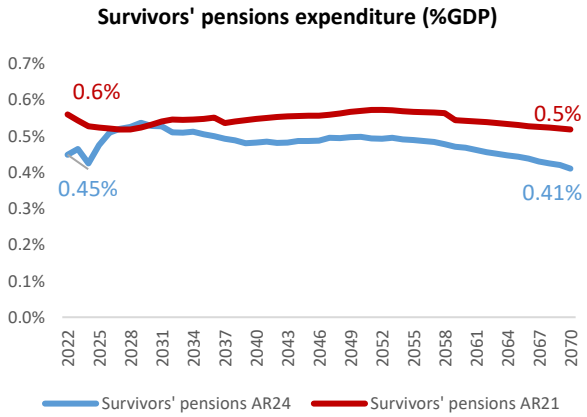


[21] As a result of some changes regarding the qualifying conditions

In the current projections, the number of **survivors** pensioners is projected in relation to the number of old-age pensioners and mortality, while in AR21, the assumption used was that the share of the number of survivors to total population, for each age and gender, would be constant along the projection period. The number of pensions is different from the number of pensioners as it includes the number of social allowances (minimum pensions) granted as a top up for some of the survivors (the ones with the pension below the minimum pension). Since the social allowance is paid form the State Budget (not from the Social Insurance Budget), they are considered as different pensions, even though they are granted to the same pensioners. Under Law127 (used in the AR21 projections), PPV and survivors' benefit were much higher, so fewer people would have been eligible for social allowance as their second pension. Under the current baseline, survivors` benefits are lower and about 100.000 more people would be also eligible for social allowance, thus driving the number of pensions up. This is the reason underlying the decrease of the expenditure.

Survivor pensions





**Other pensions`** expenditure is projected on a downward trend, reaching a much lower level at the end of the projection period, as compared to the projections in AR21. There are many factors that lead to the decrease of the special pensions` share to GDP. First, the total special pension expenditures encompass some closed schemes, such as farmers and merit and deprived pensions. However, as regard merit and deprived, there have been some recent legislative changes that significantly increased both the number of pensioners (e.g. by extending the benefits to the children of the deprived) and the average benefit, so that overall, the expenditure for merit and deprived have increased in recent years and are projected to also increase in 2024. Afterwards, as this is a closed scheme (dedicated to war veterans, participants to the Revolution, etc.), the expenditures are projected on a decreasing trend. Farmer pensions represent a closed scheme granted to persons that used to work in agriculture in the period of the former communist regime. Therefore, the number of pensioners is on a decreasing path and so are expenditures. On the other hand, military

pensions, civil special pensions and judicial pensions have recently been subject to a reform aimed at getting special pensions in line with the contributory principle. The decrease over the long run is based on the calculation of special pensions based on the length of service in the specific professions and the decrease of the percentage related to the income obtained. The minimum contribution period will be similar to the one applied in the general pension system (increased compared to the previous legislative provisions). For details, please see Section 1.2.2.

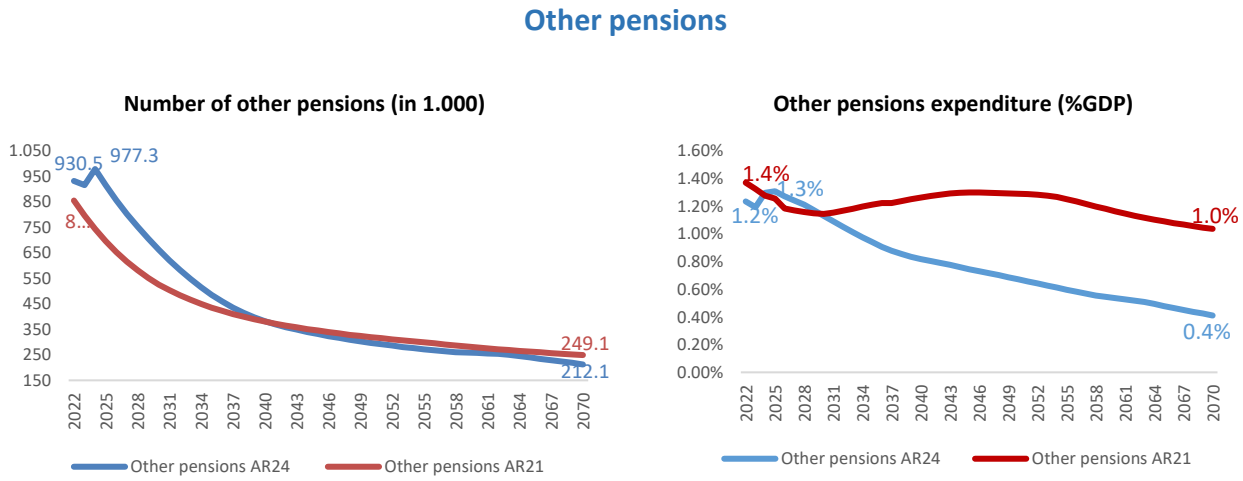


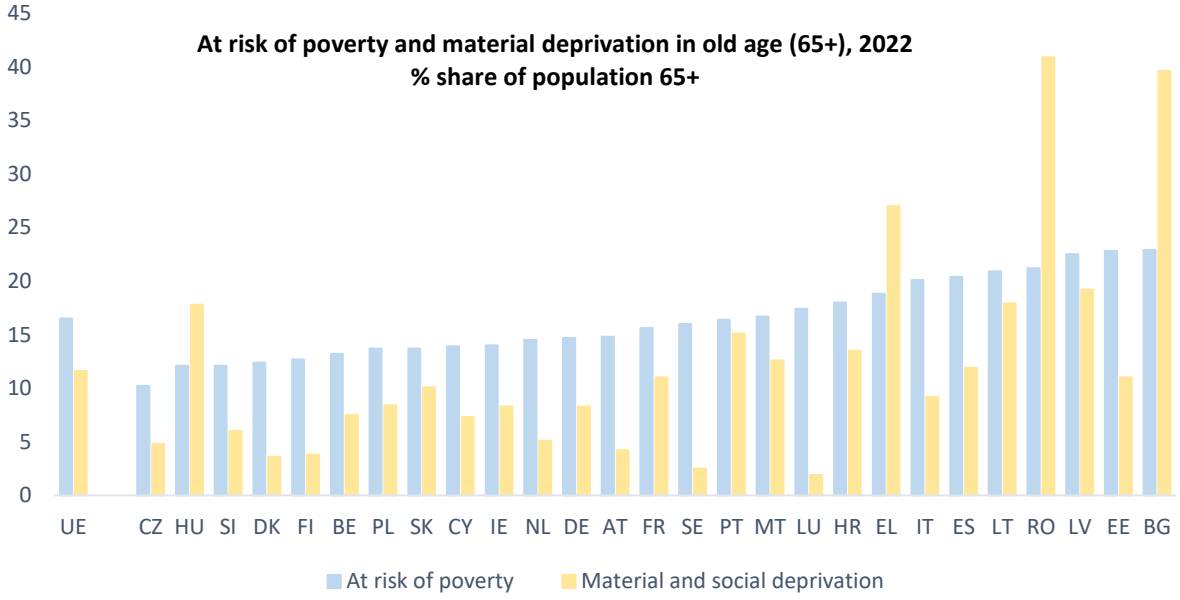
TABLE 7 – GROSS PUBLIC PENSION SPENDING BY SCHEME (%GDP)

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Total public pensions	8.5	10.4	10.3	10.5	9.6	7.6	10.6	2046	-0.9
Old-age and early pensions	6.4	8.3	8.6	9.0	8.2	6.5	9.0	2047	0.0
Flat component									
Earnings-related	6.3	8.2	8.5	8.7	7.9	6.2	8.8	2045	-0.1
Minimum pensions (non-contributory)	0.1	0.1	0.1	0.3	0.3	0.3	0.3	2055	0.1
Disability pensions	0.4	0.5	0.4	0.4	0.4	0.4	0.5	2025	0.0
Survivor pensions	0.4	0.6	0.5	0.5	0.5	0.4	0.6	2028	0.0
Other pensions	1.2	1.1	0.8	0.7	0.5	0.4	1.3	2024	-0.8
Special pension schemes	2022	2030	2040	2050	2060	2070	Peak value	Peak year	change 2022-2070
Total	1.2%	1.1%	0.8%	0.7%	0.5%	0.4%	1.3%	2024	-0.8%
Security and defence	0.7	0.8	0.6	0.5	0.4	0.3	0.8	2025	0.4
Merit and deprived	0.2	0.2	0.1	0.0	0.0	0.0	0.3	2024	0.2
Judicial staff	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2042	0.0
Civil servants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2022	0.0
Farmers	0.2	0.1	0.0	0.0	0.0	0.0	0.2	2022	0.2

Source: European Commission, EPC.

Social aspects

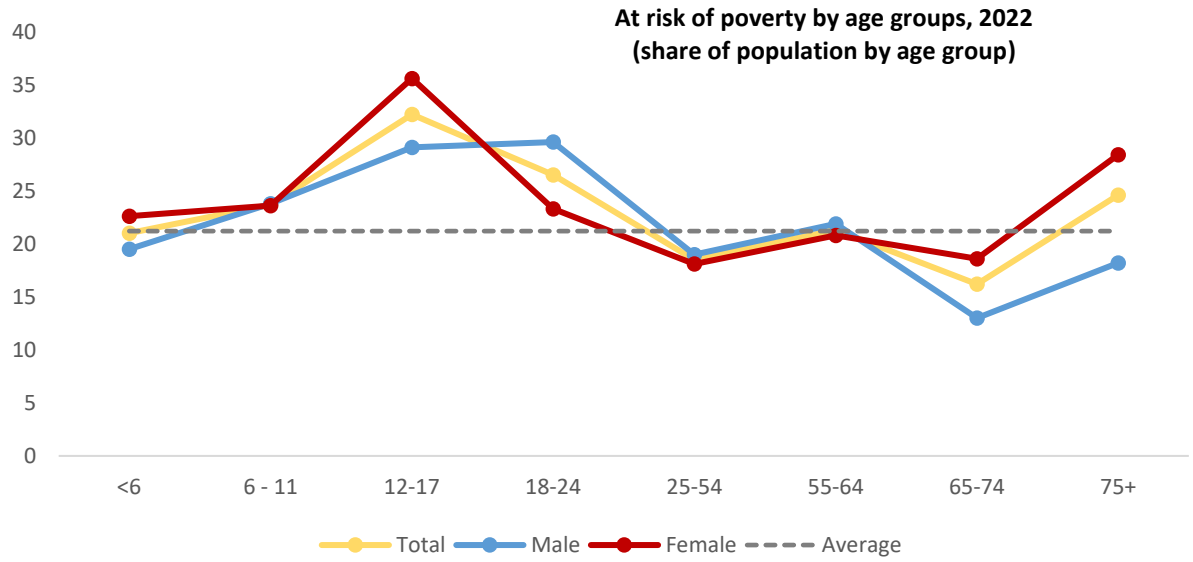
The risk of poverty and social exclusion among the elderly is high in Romania, compared to other member states. In 2022, over 20% of the elderly in Romania were affected by poverty or social exclusion. The share of elderly people who are at risk of poverty has steadily increased since 2012. At the same time, material and social deprivation, although at a high level, is steadily decreasing



Source: Eurostat

Note: at risk of poverty cut-off point: 60% of median equated income after social transfers

Under these circumstances, policy measures aimed at improving the standard of living for the elderly were needed.



Source: Eurostat

3.3 Description of main driving forces behind the projection results and their implications

This part provides more details about the development of public pension expenditures (Table 8). It uses a standard arithmetic disaggregation of the pension expenditures-to-GDP ratio into the dependency ratio, coverage ratio, benefit ratio and a labour market effect (Figure 2, first equation). Two further sub-decompositions have been agreed in the past. First, the coverage ratio can be split to look into the take-up ratios for old-age pensions and early pensions (second equation in Figure 2). Second, the labour market indicator is further disaggregated according to the third equation in Figure 2.

FIGURE 2 – DISAGGREGATION OF PUBLIC PENSION EXPENDITURE

$$\frac{pension\ \ exp enditure}{GDP} = \underset{\downarrow}{\frac{population\ \ 65+}{population\ \ 20-64}} \times \underset{\downarrow}{\frac{number\ \ of\ \ pensioners}{pop ulation\ \ 65+}} \times \underset{\downarrow}{\frac{average\ \ pension\ \ income}{\frac{GDP}{hours\ \ worked\ \ 20-74}}} \times \underset{\downarrow}{\frac{population\ \ 20-64}{hours\ \ worked\ \ 20-74}} \quad [1]$$

dependency ratio *coverage ratio* *benefit ratio* *labour market effect*

$$\frac{number\ \ of\ \ pensioners}{pop ulation\ \ 65+} = \underset{\downarrow}{\frac{number\ \ of\ \ pensioners\ \ 65+}{pop ulation\ \ 65+}} + \left(\underset{\downarrow}{\frac{number\ \ of\ \ pensioners\ \ \leq 65}{population\ \ 50-64}} \times \underset{\downarrow}{\frac{population\ \ 50-64}{population\ \ 65+}}\right) \quad [2]$$

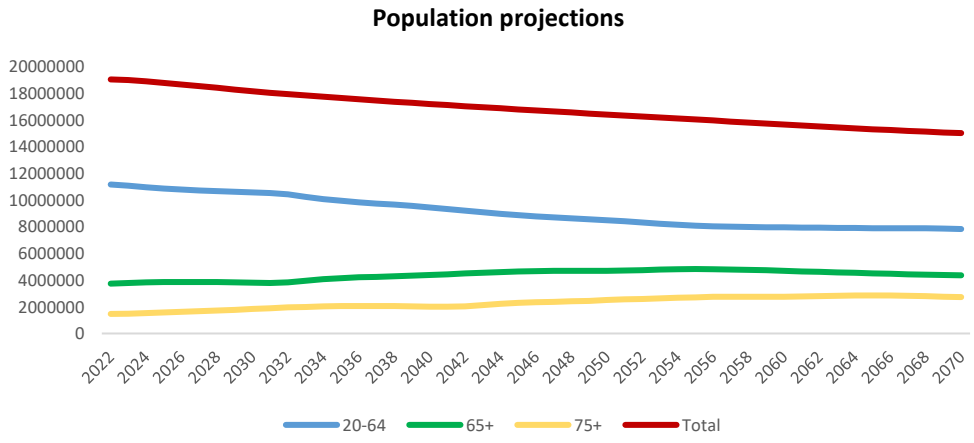
coverage ratio old-age *coverage ratio early-age* *cohort effect*

$$\frac{population\ \ 20-64}{hours\ \ worked\ \ 20-74} = \underset{\downarrow}{\frac{population\ \ 20-64}{employed\ \ people\ \ 20-64}} \times \underset{\downarrow}{\frac{employed\ \ people\ \ 20-64}{hours\ \ worked\ \ by\ people\ \ 20-64}} \times \underset{\downarrow}{\frac{hours\ \ worked\ \ by\ people\ \ 20-64}{hours\ \ worked\ \ by\ peop le\ 20-74}} \quad [3]$$

1/employment rate *1/labour intensity* *1/career shift*

Source: European Commission, EPC.

On the overall projection horizon, the public pension expenditures as % of GDP will decrease by 1.1 pp, as opposite to the increase of 3.8pp projected in AR21. However, in the first part of the projection horizon, the expenditure will increase, and the main pressure related to the increase of the pension expenditures comes from the *dependency ratio*, as a result of worsened demographics and population ageing (see graph below), which will significantly change the ratio between the active and the old-age population. The peak of the dependency is forecasted to be reached during the decade 2030-40, when the generations born in 1967-1970, representing the Romanian „baby boom" phenomenon, will exit the labour supply.



The *labour market effect* on expenditures will be slightly negative and quite limited (as in the previous AR), while the *benefit ratio effect* is overall negative and greater in absolute terms than in AR21 (-2.4 compared to -1.7), given the fact that the benefit ratio is projected below the trajectory in AR21, as a result of lower pension benefits. However, the trend of the dynamic is similar and is also explained by the fact that labour productivity is expected to grow faster than pension benefits.

TABLE 8 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2019 AND 2070 (PPS OF GDP) – PENSIONERS[22]

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.9	-0.1	0.2	-1.0	-1.9	-0.9
Dependency ratio effect	0.7	2.8	1.9	0.7	-0.5	5.6
Coverage ratio effect*	0.0	-1.3	-0.6	-0.8	-1.1	-3.7
Coverage ratio old-age	0.7	0.2	-0.2	-0.8	-1.2	-1.2
Coverage ratio early-age	-2.3	-5.1	-0.8	-0.2	-1.4	-9.8
Cohort effect	0.6	-2.5	-2.7	-0.8	1.2	-4.2
Benefit ratio effect	1.2	-1.2	-0.9	-0.8	-0.5	-2.1
Labour market effect	0.0	-0.2	-0.1	-0.1	0.1	-0.3
Employment ratio effect	0.1	0.0	-0.1	-0.1	0.1	-0.1
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.1	-0.2	0.0	0.0	0.0	-0.2
Residual	0.0	-0.3	-0.1	0.0	0.1	-0.4

** Subcomponents of the coverage ratio effect do not add up necessarily.*

Source: European Commission, EPC.

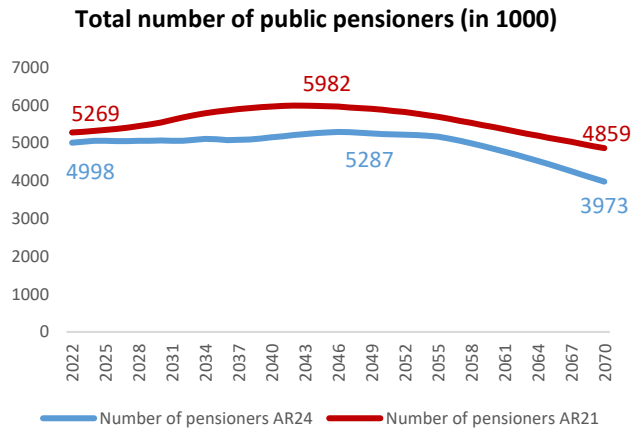
The *coverage ratio effect* is negative and a bit more intense than in AR21 (-3.7 pps compared to -3 pps), mainly on the backdrop of a much higher impact of the coverage ratio for the early age (-9.8pp compared to –2.5pp in AR21). This can be explained by the fact that the recent reform will reduce the possibilities for early retirement and will create incentives for longer working lives (see details below), alongside increasing the statutory retirement age for women. The developments in the coverage ratio effect compared to AR21 is shown in the table below:

	2022-2030	2030-2040	2040-2050	2050-2060	2060-2070	2022 - 2070
AR21	0.3	-0.8	-1.1	-0.9	-0.4	-3.0
AR24	-0.1	-1.2	-0.5	-0.7	-1.0	-3.6

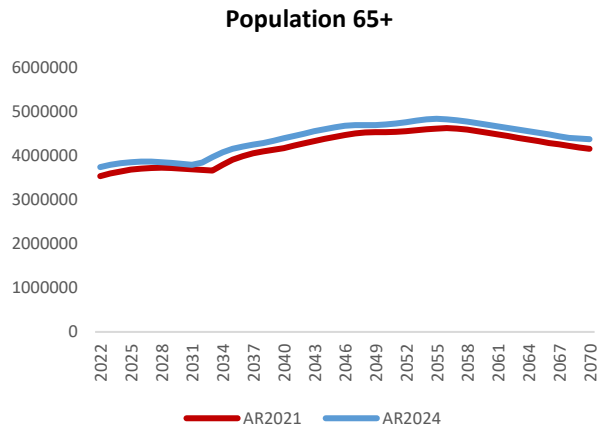
Overall, the differences between AR 21 and AR24 are explained by the different trends in the number of pensioners (see graph below), while the population is projected similarly.

[22] For the disaggregation based on the number of *pensions*, see Table A3 in the methodological annex.

Total number of pensioners



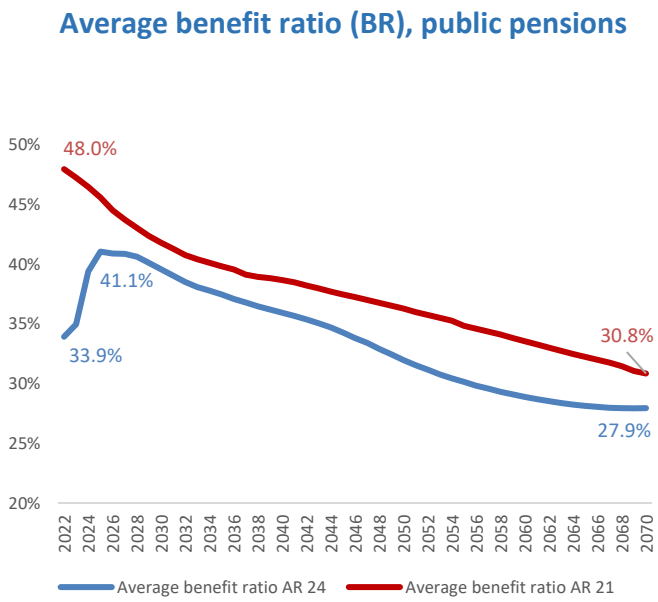
Population projections



Gross replacement rate (RR) and Benefit Ratio (BR)

The replacement rate (RR) at retirement represents the first pension as percentage of the last wage. Gross average replacement rate of public pensions is projected to increase until 2030 (as a result of the recent reform measure) and afterwards is set on a decreasing trend, with a slightly lower trajectory as compared to AR21, reaching 24% at the end of the projection horizon. This is mainly due to the effect of the change in the pension formula (abolition of the correction index). Moreover, as Pillar 2 matures over time, the average number of pension points is assumed to decline, given the fact that part of the contributions are redirected to the private funds.

The benefit ratio (BR) measures the average pension benefit against the average, economy-wide wage. The average benefit ratio for public pensions is projected below the trajectory in AR21, given the fact that the overall pension benefits are projected at lower levels. Within the current baseline, BR is projected to increase in the first years of the projection horizon (due to the recalculation of pensions and the additional points granted) and decrease afterwards. Also, alongside economic convergence, the dynamics of the economy-wide wages are expected to be higher than the dynamics of pension benefits, which, over the long run, will also determine a decrease of the benefit ratio.



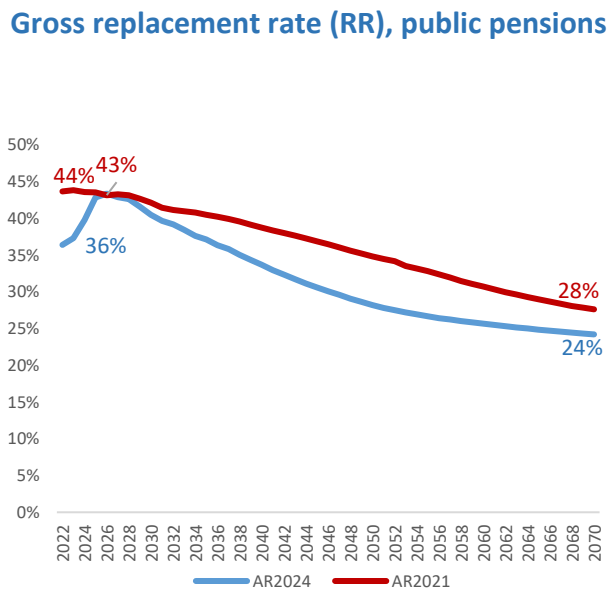


TABLE 9 – BENEFIT RATIO (BR), REPLACEMENT RATE AT RETIREMENT (RR) AND COVERAGE BY PENSION SCHEME (IN %)

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public scheme (BR)	34%	41%	36%	33%	30%	29%	-5%
Coverage	100%	100%	100%	100%	100%	100%	0%
Public scheme: old-age earnings related (BR)	34%	42%	37%	33%	31%	30%	-4%
Public scheme: old-age earnings related (RR)	38%	43%	39%	35%	32%	31%	-7%
Coverage	75%	77%	80%	81%	81%	79%	4%

Source: European Commission, EPC.

The number of pensioners is projected below the trajectory in AR21, due to the effect of the reform (increasing retirement age for women and LOS). It is expected to increase as a result of the retirement of baby-boomers, reaching a peak in 2046 (5.282 mil. pensioners), and afterwards it is set on a decreasing trend, in line with the drop of the population. At the same time, employment is also projected to decrease, so that the pension system dependency ratio will increase to 0,9 in 2050 and then decrease to 0,7 at the end of the projection horizon. Similarly, the old-age dependency ratio will increase from 0,3 in 2022 to about 0.6 in 2070, given the fact that over the entire interval the population 65+ will increase (from 3,7 mil. To 4.3 mil.), while the working age population 20 – 64 will decrease significantly (by 30%, to 7.8 mil persons in 2070).

TABLE 10 – SYSTEM DEPENDENCY RATIO AND OLD-AGE DEPENDENCY RATIO

	2022	2030	2040	2050	2060	2070	change 2022-2070
Number of pensioners (thousand) (I)	4998	5087	5161	5230	4833	3962	-1036
Employment (thousand) (II)	7743	7362	6705	6078	5734	5592	-2151
Pension system dependency ratio (SDR) (I)/(II)	65%	69%	77%	86%	84%	71%	6%
Number of people aged 65+ (thousand) (III)	3735	3812	4386	4703	4697	4367	632
Working-age population 20-64 (thousand) (IV)	11163	10580	9441	8489	7945	7826	-3337
Old-age dependency ratio (OADR) (III)/(IV)	33%	36%	46%	55%	59%	56%	22%
System efficiency (SDR/OADR)	193%	192%	166%	155%	143%	127%	-66%

Source: European Commission, EPC.

As mentioned before, as an outcome of the recent reform, the average length of service (LOS) at retirement is expected to increase. Longer LOS would be required in the future for beneficiaries to maintain the same level of pension benefits that are granted now with shorter LOS. This is the effect of reform measures aimed at the elimination of non-contributory LOS for eligibility purposes, reduction of the early retirement period by 3 years for workers in special or unusual working conditions, as well as for women with many children. Thus, for the projections, we assume that the measures mentioned above will result in a commensurate increase of LOS, which in turn will drive down the number of new pensioners of younger age groups and also corresponding pension coverage in the long run, as fewer individuals would become pensioners at the given age, since they will prolong their working lives. These effects explain the decline in the coverage ratios for the 60-64 and 65 – 69 age groups.

As regards the decline in the coverage ratios for older population (70-74), their decrease can be explained by decreasing labour force participation (or employment) as compared to the total population in certain age cohorts. As shown by Pension House data for the base year, the older the population, the lower the employment rate. Therefore, lower proportions of older workers acquire pension rights, which in time will result in lower pension coverage ratios of future older age cohorts.

TABLE 11 – PUBLIC PENSIONERS TO (INACTIVE) POPULATION BY AGE GROUP (%)

pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	4.6	4.6	3.7	3.6	3.6	3.7
Age group 55-59	73.0	60.2	45.9	41.6	47.1	36.1
Age group 60-64	117.8	93.9	45.9	32.4	34.4	26.3
Age group 65-69	102.1	115.3	116.7	110.6	95.2	76.6
Age group 70-74	90.3	105.5	107.4	100.9	90.0	75.1
Age group 75+	94.6	99.6	106.5	107.3	101.6	90.9

pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	2.1	2.2	1.8	1.7	1.7	1.7
Age group 55-59	24.0	17.1	12.5	11.9	12.9	9.9
Age group 60-64	80.5	54.3	22.9	16.2	17.3	13.2
Age group 65-69	96.9	101.3	97.8	91.8	79.4	63.3
Age group 70-74	89.1	103.2	103.5	96.6	86.2	71.9
Age group 75+	94.6	99.6	106.5	107.3	101.6	90.9

Source: European Commission, EPC.

Coverage ratios (pensioners/total population) will overall decrease between 2022 and 2070, but the steepest drop can be observed for the age group 60-64 (in 2070 only 13.2% of the 60-64 population will be pensioners) due to the increase in the retirement age for women, combined with the reasons explained above. Also, high coverage ratios in the base year can be explained by the fact that current pensioners are former employees in the ex-communist regime, which obliged every person to have a job (regardless of the very low productivity). In addition, another factor that might have an overall impact on the coverage rates refers to the fact that Romanian migrants that used to work abroad will get back home at retirement, so they will be part of the population, but will receive pensions from other countries.

Coverage ratios larger than 100% (number of pensioners>population) can be explained by three important factors:

- migrants who receive pensions in Romania, but moved abroad after retirement;
- military pensioners that after retirement (at an early age) continued to work in the private sector and get a second pension as a result of fulfilling the minimum contributory period in the first Pillar. Such a pensioner is double-counted, both in the military statistics and in the general system statistics
- survivors – also double counted in cases in which, for example, a person has received a survivor benefit for half a year and then switched to old-age benefit for the other half.

Table 12 – Female pensioners to (inactive) population by age group (%)

female pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	3.3	3.2	2.9	2.9	2.9	2.9
Age group 55-59	59.5	43.6	29.7	26.7	30.3	25.4
Age group 60-64	117.1	94.1	39.9	24.1	27.3	21.3
Age group 65-69	96.7	98.5	97.5	95.1	83.4	70.4
Age group 70-74	86.1	101.5	97.7	87.3	79.6	70.0
Age group 75+	82.4	95.9	102.9	100.2	92.3	82.3

female pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	1.7	1.7	1.6	1.6	1.6	1.6
Age group 55-59	24.9	14.9	9.9	10.1	10.9	9.1
Age group 60-64	93.9	61.3	20.5	12.7	14.7	11.5
Age group 65-69	93.5	90.1	83.1	80.1	71.1	59.5
Age group 70-74	85.1	100.4	95.3	84.1	76.7	67.5
Age group 75+	82.4	95.9	102.9	100.2	92.3	82.3

Source: European Commission, EPC.

To assess the consistency of the pension projections, Table 13 provides information on (i) new old-age earnings-related public pension expenditure, (ii) the number of new pensions, (iii) average contributory periods, (iv) average accrual rates, (v) average pensionable earnings, (vi) sustainability or adjustment factors and (vii) the number of months a pension benefit is received the first year. Multiplying the factors should match the reported spending on new pension benefits. To take into account gender inequalities in the labour market and different pension rules that may result in quite different dynamics between sexes, the same information is provided for males and females.

TABLE 13 – BREAKDOWN OF NEW PUBLIC PENSION EXPENDITURE (OLD-AGE AND EARLY EARNINGS-RELATED PENSIONS)

TOTAL	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	934	1863	3341	3977	3786	4308
I. Number of new pensions (1000)	189.7	185.2	214.0	175.6	115.5	93.7
II. Point value (EUR/month)	12.9	23.2	34.2	49.3	70.2	98.3
III. Average accrual rate (points/year) (IV/V)	0.9	1.0	1.0	1.0	1.0	1.0
IV. Total pension points at retirement	32	36	38	38	39	39
V. Average contributory period (years)	35	38	39	39	39	39
VI. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VII. Correction coefficient	1.0	1.0	1.0	1.0	1.0	1.0
VIII. Average number of months paid the first year	12.0	12.0	12.0	12.0	12.0	12.0

MEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	493	970	1943	2230	2152	2320
I. Number of new pensions (1000)	102.7	99.6	129.2	101.5	67.7	51.8
II. Point value (EUR/month)	12.9	23.2	34.2	49.3	70.2	98.3
III. Average accrual rate (points/year) (IV/V)	0.9	0.9	0.9	0.9	1.0	1.0
IV. Total pension points at retirement	31	35	37	37	38	38
V. Average contributory period (years)	37	38	39	39	39	39
VI. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VII. Correction coefficient	1.0	1.0	1.0	1.0	1.0	1.0
VIII. Average number of months paid the first year	12.0	12.0	12.0	12.0	12.0	12.0

WOMEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	441	893	1399	1747	1634	1987
I. Number of new pensions (1000)	87.0	85.5	84.8	74.1	47.9	41.9
II. Point value (EUR/month)	12.9	23.2	34.2	49.3	70.2	98.3
III. Average accrual rate (points/year) (IV/V)	1.0	1.0	1.0	1.0	1.1	1.0
IV. Total pension points at retirement	33	37	40	40	41	40
V. Average contributory period (years)	34	37	38	38	39	39
VI. Sustainability/adjustment factors	1.0	1.0	1.0	1.0	1.0	1.0
VII. Correction coefficient	1.0	1.0	1.0	1.0	1.0	1.0
VIII. Average number of months paid the first year	12.0	12.0	12.0	12.0	12.0	12.0

**New pension expenditure equals the product of I, II, IV, VI, VII & VIII.*

Source: European Commission, EPC.

3.4 Financing of the pension system

The pension system is mainly financed by social contributions, most of the amount being paid by the employees. The contribution rate is 25%, out of which 4.75% is redirected to Pillar II (except for the employees that do not contribute to funded pillar). Employers have to pay contributions for special and unusual working conditions. Old age and early, disability and survivor pensions are financed by the social insurance budget, while the social allowance for pensioners and special pensions (with some exceptions for part of special pensions for civil servants) are financed by the state budget.

As for the existence of a buffer fund, to smooth the financing gaps that occur due to the cyclicality of employment, this is not expressly stipulated. However, at the budgetary revisions, the necessary amounts can be transferred from the State's Budget to the Social Insurance Budget. The extent to which the State has an obligation to cover any remaining financing gaps is related to people's right to benefit of social insurance. This right is guaranteed by the State, in accordance with the fundamental law.

TABLE 14 – FINANCING OF THE PUBLIC PENSION SYSTEM

	Public employees	Private employees	Self-employed
Contribution base	wage	wage	Declared income
Contribution rate/contribution			
Employer	Between 0% and 8%: 0% (normal working conditions); 4% (difficult working conditions) and 8% (special working conditions)	Between 0% and 8%: 0% (normal working conditions); 4% (difficult working conditions) and 8% (special working conditions)	-
Employee	25.0%	25.0%	25%
*State**	-	-	-
*Other revenues**	Funds from the state budget are provided in order to cover the deficit of the public pension system	Funds from the state budget are provided in order to cover the deficit of the public pension system	Funds from the state budget are provided in order to cover the deficit of the public pension system
Maximum contribution	No threshold	No threshold	No threshold
Minimum contribution	Minimum wage	Minimum wage	Minimum wage

**Only legislated contributions are reported.*

Source: European Commission, EPC.

The share of contributors in employment will decrease up to 2040, and then it will stabilize around 70% until the end of the projection horizon. The projection is similar to the one in AR21.

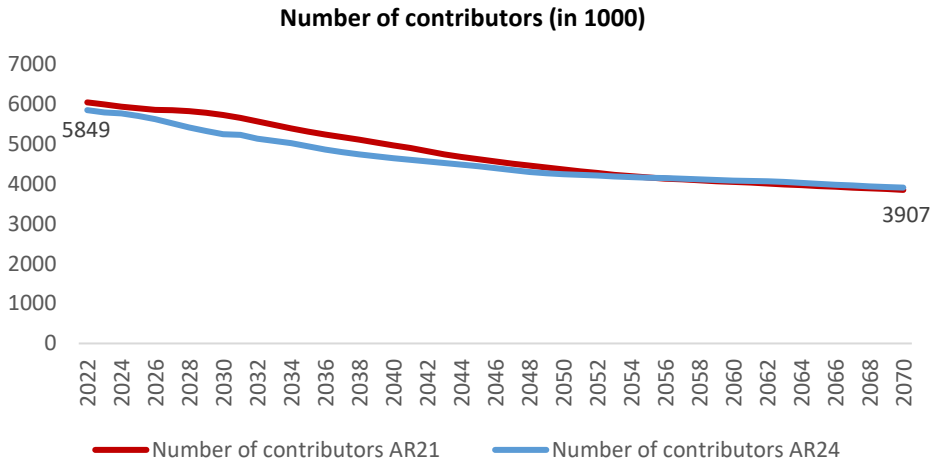


TABLE 15 – REVENUE FROM CONTRIBUTIONS AND NUMBER OF CONTRIBUTORS IN THE PUBLIC SCHEME

	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Public pension contributions (%GDP)	6.0	5.5	5.2	5.2	5.3	5.2	-0.7
Employer contributions	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Employee contributions	*5.9*	*5.4*	*5.2*	*5.2*	*5.2*	*5.2*	*-0.7*
*State contribution**	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
*Other revenues**	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Number of contributors (I) (1000)	5850	5572	4902	4393	4216	4089	-1760
Employment (II) (1000)	7743	7362	6705	6078	5734	5592	-2151
(I) / (II)	0.76	0.76	0.73	0.72	0.74	0.73	0.0

**Includes only legislated contributions.*

Source: European Commission, EPC.

Differences between the number of contributors and the number of employees stem from the different calculation methodologies. For instance, in Romania many people work in agriculture, in their own subsistence farms, and they are considered employed, but do not pay contributions. On the other hand, the unemployed that receive unemployment benefits are considered contributors, but not included in employment.

3.5 Sensitivity analysis

The sensitivity analysis of the public pension expenditure, as a percentage of GDP, is undertaken through a series of alternative scenarios, based on specific deviations from the baseline scenario. The deviations in assumptions apply to only one parameter for each alternative scenario, while the other parameters considered remain unchanged, in line with the agreed AWG methodology.

Higher life expectancy (+2y) would determine, as expected, gradually higher ratios of pension expenditures to GDP, compared to the base year (+0.6pp in 2070 compared to 2022).

Higher migration (+33%) would lead to gradually lower pension expenditures (-0.3pp in 2070 as compared to 2022), while lower migration (-33%) would determine a gradual increase of the pension expenditures, by 0.4pp until 2060, decreasing to 0,2pp at the end of the projection horizon, as compared to the baseline.

Under the **lower fertility (-20%) scenario**, pension expenditures are projected to remain constant in the first half of the projection horizon, increasing in the last two decades, up to 0,6pp above the baseline.

As regards the **higher inflation scenario**, there is a larger impact in the first part of the projection horizon (to -0.7pp in 2040), followed by a decreasing impact afterwards (-0.4pp in 2070). The differences compared to the baseline are due to the effect of the indexation mechanism in the new Law: capped indexation contains the growth of expenditures. As a result, nominal GDP in this scenario grows much faster than expenditures, so that expenditures as a percentage of the GDP decrease. The magnitude of the impact of the cap depends on how much higher inflation impacts the nominal growth of social insurance revenues.

Higher employment rate of older workers (+10pps) would determine a decrease of the pension expenditures by 0.4pp as of 2050, followed by a lower decrease afterwards (-0.3pp in 2070).

Higher productivity (TFP converges to 1%) would have a limited impact, mainly towards the end of the projection horizon (-0,2pp in 2070), while **lower productivity (TFP converges to 0.6%)** will positively impact pension expenditures starting 2040 (+0.4pp in 2070).

For the policy scenario linking the retirement age to life expectancy (increase of the retirement age by ¾ of the increase in life expectancy), the impact will be negative, gradually increasing starting 2040, to – 0,6pp in 2070, due to a decrease of the number of pensioners and to an increase of employment and GDP.

Under the **constant retirement age scenario**, the positive impact on expenditures will peak to 1pp in 2040 – 2050, decreasing to 0,2pp in 2070. The effect is explained by the fact that maintaining the retirement age constant will increase significantly the number of female pensioners (since their retirement age will no longer be on an upward path, as in the baseline).

The impact will be higher in the first part of the projection period, with corresponding growth of expenditures, while later in the projection horizon, the impact decreases due to demographics and the fact that new female retirees enter the system with lower benefits due to decreased length of service associated with the lower retirement age.

The **constant benefit ratio policy scenario** would only impact expenditures in the last part of the projection horizon (increase of 0.6 pp in 2070), given the fact that, in the baseline, the benefit ratio will increase in the first part of the projection interval, and then decrease towards the end of the projection period below the constant value of 2022.

TABLE 17 – PENSION EXPENDITURE PROJECTIONS UNDER DIFFERENT SCENARIOS (PPS DEVIATION FROM THE BASELINE)

Public pension expenditure	2022	2030	2040	2050	2060	2070	change 2022-2070
Baseline (%GDP)	8.5	10.4	10.3	10.5	9.6	7.6	-0.9
Higher life expectancy at birth (+2y)	0.0	0.0	0.2	0.4	0.5	0.6	0.6
Higher migration (+33%)	0.0	-0.1	-0.2	-0.3	-0.4	-0.3	-0.3
Lower migration (-33%)	0.0	0.1	0.2	0.3	0.4	0.2	0.2
Lower fertility (-20%)	0.0	0.0	0.0	0.1	0.5	0.6	0.6
Higher inflation scenario (2% by 2052)	0.0	-0.7	-0.7	-0.6	-0.5	-0.4	-0.4
Higher employment rate of older workers (+10 pps)	0.0	-0.2	-0.4	-0.4	-0.3	-0.3	-0.3
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.1	0.3	0.4	0.4	0.4
Policy scenario: link retirement age to longevity	0.0	0.0	-0.2	-0.3	-0.4	-0.6	-0.6
Policy scenario: constant retirement age	0.0	0.4	1.0	1.0	0.6	0.2	0.2
Policy scenario: constant benefit ratio	0.0	0.0	0.0	0.0	0.4	0.6	0.6

Total pension expenditure	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Baseline (%GDP)	8.6	10.9	11.0	11.4	10.3	8.6	0.0
Higher life expectancy at birth (+2y)	0.0	0.0	0.2	0.4	0.5	0.6	0.6
Higher migration (+33%)	0.0	-0.1	-0.2	-0.4	-0.4	-0.3	-0.3
Lower migration (-33%)	0.0	0.1	0.2	0.4	0.4	0.3	0.3
Lower fertility (-20%)	0.0	0.0	0.0	0.2	0.5	0.7	0.7
Higher inflation scenario (2% by 2052)	0.0	-0.7	-0.7	-0.6	-0.5	-0.5	-0.5
Higher employment rate of older workers (+10 pps)	0.0	-0.2	-0.4	-0.4	-0.3	-0.3	-0.3
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.1	0.4	0.4	0.4	0.4
Policy scenario: link retirement age to longevity	0.0	0.0	-0.2	-0.3	-0.5	-1.0	-1.0
Policy scenario: constant retirement age	0.0	0.4	1.0	1.0	0.6	0.2	0.2
Policy scenario: constant benefit ratio	0.0	0.0	0.0	0.0	0.4	0.6	0.6

3.6 Changes in comparison with previous Ageing Report projections

In the current exercise, public pension expenditures are projected to decrease, on the backdrop of the recent reform, fostering the sustainability of the pension system. Dependency ratio shows improvements, while coverage ratio effect will be lower (see explanations above).

TABLE 18 – DISAGGREGATION OF THE CHANGE IN THE PUBLIC PENSION EXPENDITURE-TO-GDP RATIO IN CONSECUTIVE AGEING REPORTS (PPS OF GDP)

	Public pension expenditure	Dependency ratio effect	*Coverage ratio effect*	*Benefit ratio effect*	*Labour market effect*	*Residual (incl. interaction effect)*
2006 Ageing Report (2004-2050)						
2009 Ageing Report (2007-2060)	**9.2**	*13.6*	*-4.9*	*1.7*	*0.3*	*-1.5*
2012 Ageing Report (2010-2060)	**3.7**	*12.9*	*-4.7*	*-3.7*	*0.4*	*-1.2*
2015 Ageing Report (2013-2060)	**-0.1**	*6.8*	*-2.3*	*-4.0*	*0.0*	*-0.6*
2018 Ageing Report (2016-2070)	**0.7**	*5.6*	*-1.7*	*-2.6*	*-0.1*	*-0.5*
2021 Ageing Report (2019-2070)	**3.8**	*9.4*	*-3.0*	*-1.7*	*-0.6*	*-0.4*
2024 Ageing Report (2022-2070)	**-0.9**	*5.6*	*-3.7*	*-2.1*	*-0.3*	*-0.4*

- The disaggregation for 2006/2009/2012 is on the basis of the number of pensions; for the other vintages it is on the basis of pensioners.

- The projection horizon has been extended over consecutive Ageing Reports, limiting comparability over time.

Source: European Commission, EPC.

Comparing the projected figures for pension expenditures and the effective outcome, we observe some important differences, which are mainly due to the fact that Law 127/2019 has not entered into force as initially planned. Therefore, the PPV has been indexed below the initial provision of the law, while the minimum pension linked to minimum wage has never been applied. Therefore, the level of expenditures turned out much lower.

TABLE 19 – DISAGGREGATION OF THE DIFFERENCE BETWEEN THE 2021 PROJECTIONS AND ACTUAL PUBLIC PENSION EXPENDITURE IN 2019-2022 (%GDP)

	2019	2020	2021	2022
Ageing Report 2021 projections (%GDP)	8.1	9.8	11.1	13.7
Assumptions (pps of GDP)	0.0	-0.40	-0.6	-1.5
Coverage of projections (pps of GDP)	0	0	0	0
Constant policy impact (pps of GDP)	0	0	0	0
Policy-related impact (pps of GDP)	0	-0.1	-1.4	-3.7
Actual public pension expenditure (%GDP)	8.1	9.3	9.1	8.5

Source: European Commission, EPC.

As regards the differences in the share of pension expenditure to GDP compared to AR21, for the period 2020 – 2022, the main underlying reasons stem from higher effective GDP levels and lower levels of pension expenditures due to the fact that Law 127 did not enter into force as initially planned. Both factors have a negative influence, leading to the decrease of the share of public pension expenditures to GDP.

TABLE 20 – DISAGGREGATION OF THE DIFFERENCE BETWEEN THE 2021 AND THE NEW PUBLIC PENSION PROJECTIONS (%GDP)

	2022	2030	2040	2050	2060	2070
Ageing Report 2021 projections	13.7	12.9	14.2	14.8	13.6	11.9
Change in assumptions (pps of GDP)	-1.5	-2.9	-3.1	-3.6	-3.2	-2.8
Improvement in the coverage or in the modelling (pps of GDP)	0	0	0	0	0	0
Change in the interpretation of constant policy (pps of GDP)	0	0	0	0	0	0
Policy-related changes (pps of GDP)	-3.7	0.4	-0.8	-0.7	-0.8	-1.5
New projections	8.5	10.4	10.3	10.5	9.6	7.6

Source: European Commission, EPC.

4 Description of the pension projection model and the base data

4.1 Institutional context in which the projections are made

The projections have been prepared by The Ministry of Finance of Romania – General Directorate for Policy, Analysis and Research, for the scope of the Ageing Report 2024. They have been accomplished using the World Bank's **Pension Reform Options Simulation Toolkit (PROST)** and have not been subject of any internal review. Projections have been used under the context of the recent reform, in order to assess the long-run impact of the proposed changes.

4.2 Data used to run the model

The main data necessary in order to forecast the expenditure for the pension system are:

Entry Indicators:

A. GENERAL:

1. Base year data
2. Wage and pension brackets and cumulative distributions
3. Demographic trends (sex ratio at birth, mortality rate multiplier for disabled, mortality rate multiplier for Old Age pensioners)
4. Macroeconomic trends (actual figures until 2016, EC projections afterwards)
    a) real GDP growth
    b) productivity growth of minimum wage workers
    c) inflation rate
5. Interest rate
6. Benefit eligibility
7. Percentage of people willing, but not allowed for normal retirement, after reform
8. Replacement rate
9. Revenue sources
10. Costs and other expenditure
11. Indexation
    a) pension indexation to inflation
    b) pension indexation to normal wage growth
12. Benefit formula parameters for old age

B. POPULATION:

1. Population volume
2. Fertility rates
3. Mortality rates
4. Immigration

C. LABOR

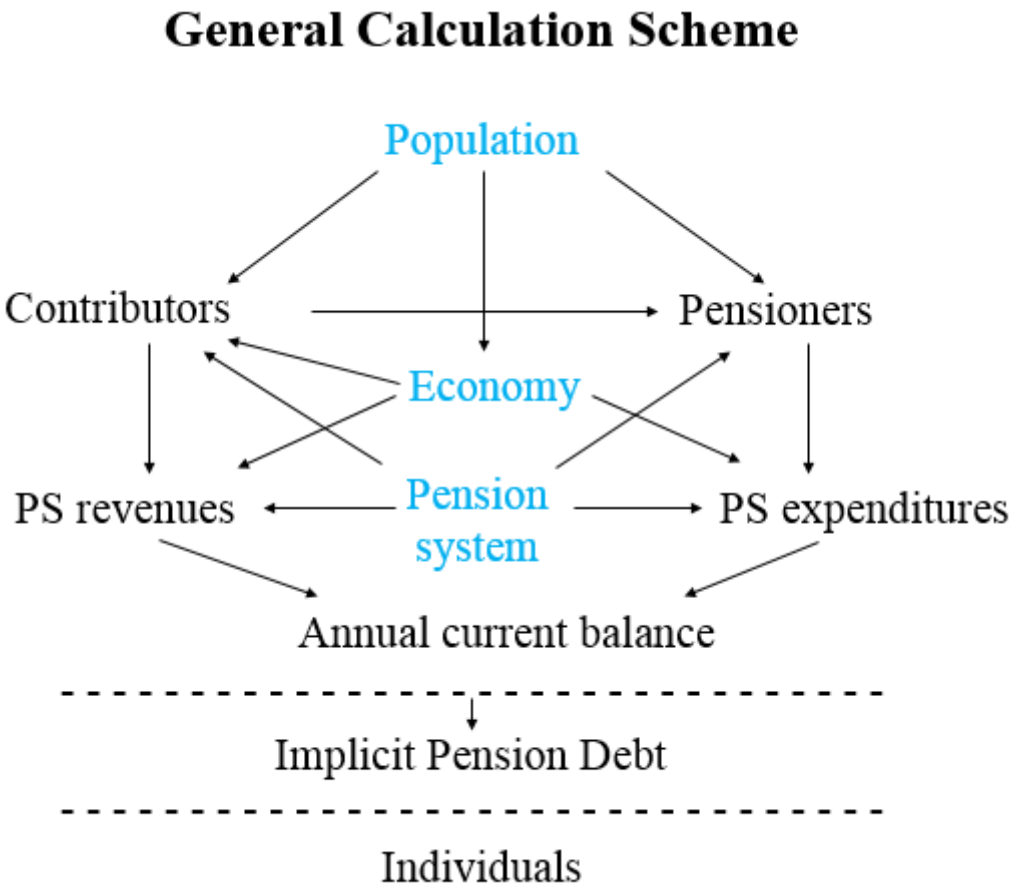
1. Labour participation rate

2. Unemployment rate
3. Earning profile in terms of minimum wage
4. Pension profile in terms of minimum pension

D. PENSION
1. Pension system in base year and reform
2. Length of service at retirement
3. Contributors as percentage of population
4. Old age – stock of population
5. Disabled as percentage of population
6. Survivors as percentage of population
7. Exemption rate

The model is data intensive in order to support the robustness of the results. The key required data are:

- Population fertility and mortality rates by age and gender.
- Labour force participation rates and unemployment rates by age and gender.
- Numbers of contributors and beneficiaries, their contribution and retirement patterns by age and gender.
- Wages and pensions by age and gender, income distribution for contributors and pensioners.



4.3 Reforms incorporated in the model

The model can assess a wide range of parametric reforms of initial pay-as-you-go systems (changing pensionable ages, contribution rates, benefits, indexation etc.), as well as structural reforms, such as the introduction of individual, funded retirement savings accounts or notional accounts. PROST model can handle provident fund schemes as well as pay-as-you-go systems as the starting point, before reform.

4.4 General description of the model(s)

The core model is the World Bank's Pension Reform Options Simulation Toolkit (PROST). It comprises a set of instruments which can model pension contributions, entitlements, system revenues and system expenditures over a long timeframe into the future.

PROST model utilizes country-specific data, provided by the European Commission, and generates population projections. These projections, combined with economic assumptions, are used to forecast future numbers of contributors and beneficiaries. In turn, this approach generates flows of revenues and expenditures. The model then projects fiscal balances, taking into account any partial pre-funding of liabilities. The model can use either a 'stock' or a 'flow' approach. In the stock concept, parameters such as retirement are expressed as total retirees as a percentage of population rather than as probabilities of retirement, since the stocks can be more stable predictors of the future.

There are three indices (dimensions) for each variable: a=age, t= time (year), g=gender.

Main equations:

Total population:

$$P(a,t,g) = [1 - m\%(a-1,t-1,g)]P(a-1,t-1,g) + im(a,t,g),$$

where im(a,t,g) is the net migration, and m(a,t,g) is the probability of dying.

The equation can be used for any age group, other than the new-born (a>0). For the latter, the following formula applies:

$$NEWBORN(t) = \sum_{a} f\%(a,t-1)P(a,t-1,2),$$

where f(a,t) is the fertility rate.

The PROST model groups the total population in 3 age categories: youth (YP), working age (WP) and old (OP). If ar represents the retirement age, then:

$$YP(t,g)=\sum_{a=0}^{14}P(a,t,g),\quad WP(t,g)=\sum_{a=15}^{a_r}P(a,t,g),\quad OP(t,g)=\sum_{a=a_r}^{a_{\max}}P(a,t,g)$$

Labour supply:

$$LF(a,t,g)=P(a,t,g)\cdot lfp\%(a,t,g),$$

where lfp(a,t,g) is the labour supply's participation rate.

Employed:

$$EM(a,t,g)=LF(a,t,g)\cdot[1-u\%(a,t,g)],$$

where u(a,t,g) is the unemployment rate.

Number of existing pensioners:

$$EP(a,t,g)=P(a,t,g)\cdot rr\%(a,t,g),$$

where rr(a,t,g) is the retirement (exit) rate.

Number of existing disabled:

$$ED(a,t,g)=P(a,t,g)\cdot ds\%(a,t,g),$$

where ds (a,t,g) represents the disability occurrence rate

Number of effective contributors:

$$EC(a,t,g)=NC(a,t,g)\cdot[1-ee\%(a,t,g)],$$

where ee(a,t,g) represents the contributors' exemption rate, and NC(a,t,g) is the number of nominal contributors.

Number of nominal contributors:

$$NC(a,t,g)=P(a,t,g)\cdot cr\%(a,t,g),$$

where cr(a,t,g) is the contribution rate, calculated as percentage of the contributors of age **a** and gender **g** within total persona of age a and gender g.

Pension fund revenues:

$$REV(t)=CON\_COLL(t,3)+PEN\_COLL(t)+TR(t)+O\_REV(t)+INVEST(t),$$

Where CON_COLL(t,3) represents the contributions from the income tax;

PEN_COLL(t) represents the contributions from pensions (e.g. pension tax);

TR(t) represents transfers from the state's budget;

O_REV(t) represents other revenues;

INVEST(t) represents investment revenues.

Pension funds expenditures:

$$EXP(t) = PAYM\_T(3,t) + O\_EXP(t) + ADMIN(t) + ASSET\_M(t),$$

where PAYM_T(3,t) represents expenditures incurred with the pension payments;

O_EXP(t) represents other expenditures;

ADMIN(t) represents administrative expenditures;

ASSET_M(t) represents the costs incurred with the administration of the assets.

Current balance:

$$BAL(t) = REV(t) - EXP(t)$$

Model output

The PROST program produces five output modules, presented as Microsoft Excel tables with graphic summaries. The modules are:

Population projections, including life tables, population pyramids, population dependency ratios etc.

Demographic structure: labour force and employment, numbers of contributors and beneficiaries, system dependency ratio.

Financial flows: projections of wages, benefits, revenues and expenditures of the pension system, pension scheme balance and the implicit pension debt. The financial flows module also calculates the adjustments—to benefit levels or contribution rates—that would 'balance' the system, i.e. would bring revenues and expenditures into line.

Fundamental systemic reforms: this module illustrates the effect of a shift to a 'multipillar' regime, incorporating both a pay-as-you-go, defined-benefit pension and a funded, defined contribution scheme or exclusively one or the other. Again, it measures the impact both on the system finances and on individuals' pension entitlements, including measurement of transition costs. The total pension benefit and the value of each of the pillars are provided separately.

Projections on other pensions categories have been accomplished outside the model. Projections for magistrates and military pensions have used a microsimulation model (PROMIS), while the other small categories (farmers and special allowances) have been modelled using a simple, linear model, based on data provided by the House of Pensions (taking into account the base year cohorts of pensioners and demographic developments).

4.5 Other features of the projection model

The model can accommodate a distribution of wages per cohort which allows users to determine the effects of changes in floors and ceilings of income, subject to contribution and the effects of changes in the minimum and maximum pension levels. The model, which can be based either on population or on employment, also allows different transition paths to a new system, including the age cohorts (generations) covered by the new system (such as applying reforms only to younger workers) and the treatment of pension rights accrued before the reform. Accrued rights can be paid in multiple ways, including as recognition bonds and as proportional wages. On-going funded defined contribution schemes and notional accounts can be modelled in PROST as well.

Additionally, the developments of the number of pensioners and pension expenditures, corresponding to the non-earnings related pensions, facultative private pensions and special (sectorial) pensions have also been modelled outside the main model.

Methodological annex

Economy-wide average wage at retirement

In the projections, the economy-wide average wage at retirement in 2022 is at the closest level to the economy-wide average gross wage. Thereafter, the average wage at retirement evolves in line with the average yearly gross wage. But the difference between them is increasing, reaching the end of the projection horizon to be a difference of approximately 9 percentage points.

TABLE A1 – ECONOMY-WIDE AVERAGE WAGE AT RETIREMENT (1000 EUR)

	2022	2030	2040	2050	2060	2070
Economy-wide average gross wage at retirement	12.9	23.5	40.4	65.2	101.2	150.0
Economy-wide average gross wage	14.4	24.9	43.0	69.2	107.5	159.1

Source: European Commission, EPC.

Pensioners vs pensions

Generally speaking, every pensioner gets a public pension. Some of the public pensioners become switchers; further, a segment of the public pensioners may also enlist in the private facultative pensions. Almost23 all of the beneficiaries of a social pension receive it additionally

[23]There are also people receiving the minimum income guarantee, but as they are not registered separately by category, the elder can't be counted separately, hence not included in the projections

to the old-age / disability / survivor pension. This is why we used to count them in the questionnaire only as public pensioners, so the figures for the number of public earning related pensions could be found in the Questionnaire's chapter „Number of pensioners".

Pension taxation

Pensions under 2000 lei are not taxed. Income tax is 10% and is withheld exclusively on monthly pension income that exceeds, the non-taxable amount of 2000 lei.

Disability pensioners

TABLE A2 – DISABILITY RATES BY AGE GROUPS (%)

	2022	2030	2040	2050	2060	2070
Age group -54	2.27%	2.3%	2.3%	2.3%	2.3%	2.3%
Age group 55-59	17.24%	12.3%	12.8%	14.5%	14.9%	13.3%
Age group 60-64	15.12%	11.7%	11.0%	11.2%	14.9%	12.4%
Age group 65-69	1.09%	1.4%	0.9%	1.0%	1.1%	1.1%
Age group 70-74	0.01%	0.0%	0.0%	0.0%	0.0%	0.0%
Age group 75+	0.12%	0.1%	0.1%	0.0%	0.0%	0.0%

Source: [Romania]

Survivors' pensions

The number of Survivors pensioners is projected in relation to the number of old-age pensioners and mortality.

Non-earnings-related minimum pension

Under the current projections, minimum pensions are set to increase identically to old-age pensions (Swiss rule) in the first 10 years of projections and in accordance with the wage afterwards (in accordance to the general agreed assumption), therefore resulting in lower number of pensions and lower expenditures.

Contributions

The implicit contribution rate (contributions relative to the economy-wide gross wage total) will increase in the first years of the projection horizon (to a peak of 15,4% in 2027) and thereafter will decrease and remain broadly constant over last decades of the projection period (around 14.3 – 14.5%) of total gross wage. Small variations may reflect changes in the retirement age for women and the fact that the new law significantly reduces the possibilities

of early retirement, introduces incentives to extend working life (additional points) and voluntarily increase working lives up to70 years old (which would incentivise especially people with low income that will receive 1 additional point/year).

Alternative pension spending disaggregation

Table A3 is similar to Table 8 but provides a disaggregation of the change in pension expenditure based on the number of pensions as compared to the number of pensioners in Table 8.

TABLE A3 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2022 AND 2070 (PPS OF GDP) – PENSIONS

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	1.9	-0.1	0.2	-1.0	-1.9	-0.9
Dependency ratio effect	0.5	2.8	1.9	0.7	-0.5	5.4
Coverage ratio effect*	-0.5	-1.7	0.1	-0.5	-1.1	-3.8
Coverage ratio old-age	0.0	-0.2	0.6	-0.5	-1.2	-1.3
Coverage ratio early-age	-2.3	-5.2	-0.7	-0.1	-1.2	-9.4
Cohort effect	0.8	-2.5	-2.7	-0.8	1.2	-4.1
Benefit ratio effect	2.0	-0.7	-1.5	-1.0	-0.5	-1.8
Labour market effect	0.1	-0.2	-0.1	-0.1	0.1	-0.2
Employment ratio effect	0.2	0.0	-0.1	-0.1	0.1	0.0
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	-0.1	-0.2	0.0	0.0	0.0	-0.2
Residual	-0.2	-0.3	-0.1	0.0	0.1	-0.6

** Subcomponents of the coverage ratio effect do not add up necessarily.*

Source: European Commission, EPC.