

Economic Policy Committee - Ageing Working Group

2024 Ageing Report

Hungary - Country Fiche

13-12-2023

Ministry of Finance

Hungarian State Treasury

Table of contents

Introduction	5
1. Overview of the pension system	6
1.1. Description of the pension system.....	6
Old-age pension benefit.....	6
1.2. Recent reforms of the pension system included in the projections	10
1.3. Description of the actual ‘constant policy’ assumptions used in the projection.....	11
2. Overview of the demographic and labour force projections	12
2.1. Demographic projections	12
2.2. Labour force projections	14
3. Pension projection results	18
3.1. Coverage of the pension projections	18
3.2. Overview of projection results	20
3.3. Description of main driving forces behind the projection results and their implications.....	22
3.4. Financing of the pension system	26
3.5. Sensitivity analysis	28
3.6. Changes in comparison with previous Ageing Report projections	31
4. Description of the pension projection model and the base data	33
4.1. Institutional context in which the projections are made	33
4.2. Data used to run the model.....	33
4.3. Reforms incorporated in the model	33
4.4. General description of the model(s)	33
4.5. Other features of the projection model.....	34
Methodological annex	36

List of tables

Table 1 – Qualifying conditions for retirement	7
Table 2 – Main demographic variables	12
Table 3 – Participation rate, employment rate and share of workers	15
Table 4 – Labour market exit behaviour	17
Table 5 – ESSPROS and AWG definition of pension expenditure (% GDP).....	18
Table 6 – Projected gross and net pension spending and contributions (% GDP)	20

Table 7 – Gross public pension spending by scheme (%GDP).....	20
Table 8 – Factors behind the change in public pension expenditure between 2019 and 2070 (pps of GDP) – pensioners.....	23
Table 9 – Benefit ratio (BR), replacement rate at retirement (RR) and coverage by pension scheme (in %).....	23
Table 10 – System dependency ratio and old-age dependency ratio.....	24
Table 11 – Public pensioners to (inactive) population by age group (%).....	24
Table 12 – Female pensioners to (inactive) population by age group (%).....	25
Table 13 – Breakdown of new public pension expenditure (old-age and early earnings-related pensions).....	25
Table 14 – Financing of the public pension system.....	27
Table 15 – Revenue from contributions and number of contributors in the public scheme.....	28
Table 16 – Expenditure projections under different scenarios (pps deviation from baseline).....	30
TABLE 17 – DISAGGREGATION OF THE CHANGE IN THE PUBLIC PENSION EXPENDITURE-TO-GDP RATIO IN CONSECUTIVE AGEING REPORTS (PPS OF GDP).....	31
Table 18 – Disaggregation of the difference between the 2021 projections and actual public pension expenditure in 2019-2022 (% GDP).....	31
Table 19 – Disaggregation of the difference between the 2021 and the new public pension projections (% GDP).....	32
Table A1 – Economy-wide average wage at retirement (1000 EUR).....	36
Table A2 – Disability rates by age groups (%).....	36
Table A3 – Factors behind the change in public pension expenditure between 2022 and 2070 (pps of GDP) – pensions.....	37

List of figures

Figure 1 – Age structure: 2022 vs 2070.....	13
Figure 2 - Evolution of population between 2022 and 2070.....	14
Figure 3 - Improving employment assumptions underlying Ageing Reports.....	16
Figure 4 - Public pension expenditure (% GDP) - AR2024 AND AR2021.....	21
Figure 5 – Disaggregation of public pension expenditure.....	22
Figure 6 – Comparison of pension expenditure (% of GDP) under sensitivity scenarios and the baseline.....	30
Figure 7 – the whole process of the model.....	35

Introduction

The present country fiche for Hungary 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 edition is the eighth update and covers the period up to 2070.

This fiche was prepared by Ministry of Finance and Hungarian State Treasury in agreement with the *Ageing Working Group* of the *Economic Policy Committee* and based on a common set of assumptions and methodologies. The pension expenditure projections presented in this fiche have been peer reviewed by the other Member States and the European Commission within the *Ageing Working Group*. The projections were finalised in the autumn of 2023 and represent the situation of the pension system on 01/12/2023.

Section 1 provides a general overview of the pension system in Hungary. 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 methodology used to produce the pension projections.

1. Overview of the pension system¹

1.1. Description of the pension system

The Hungarian mandatory pension system is a pure pay-as-you-go state pension system. It covers all persons who are engaged in any kind of employment as well as recipients of unemployment and certain childcare benefits. This is a defined-benefit PAYG system with an earnings-related public pension. This scheme covers the following pension benefits:

- old-age pension benefit,
- pension benefit for women with ‘40 years’ eligibility period”,
- survivors’ pension benefit.

Other modelled “pension benefits” that are not part of the mandatory pension system:

- disability benefits, old-age allowance, other social allowances etc.

Indexation of all pension benefits

As from January 2012, pensions are indexed to inflation. Pension benefits are increased accordingly to the level of consumer price-index planned for the relevant economic year and defined in the annual budgetary act. A retroactive correction takes place every year in November, if fact CPI and pensioners’ CPI data (calculated upon available data for the first eight month) exceeds the planned CPI in the budget.

Financing the Pension System

As of 1 July 2020 a new Act on Social Security entered into force. As a result of the simplification of the tax system, four contribution types are combined into a single 18.5% social security contribution. In practice, the rate of individual pension contribution remained 10% (of the employee’s gross wage) which represents 54% share of social security contribution. The rate of social contribution tax (paid by the employer) decreased gradually from 27% to 15.5% as from 2017 to July 2020, then decreased further to 13% from January 2022, of which the pension contribution rate amounts to 9.3%. In the budget the social contribution tax revenue is shared between the Pension Insurance and Health Insurance Fund. In 2022, 71.63% of the total social contribution goes to the Pension Insurance Fund while 28.37% is directed to the Health Insurance Fund.

Old-age pension benefit

Retirement age

The standard retirement age for old-age pension (“öregségi nyugellátás”) was 62 years in 2013 and it will have been gradually increasing, related to the year of birth. Beginning with the people born in 1952, the statutory retirement age will gradually ascend six months for each cohort both for women and men until 65 years of age by 2022 with those born in 1957.

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

TABLE 1 – QUALIFYING CONDITIONS FOR RETIREMENT

		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	65	65	65	65	65	65	
	Minimum requirements	Contributory period - men	20	20	20	20	20	20
		Retirement age - men	65	65	65	65	65	65
		Contributory period - women	20	20	20	20	20	20
		Retirement age - women	65	65	65	65	65	65
Qualifying condition for retirement without a full pension	Early retirement age - men	-	-	-	-	-	-	
	Early retirement age - women	-	-	-	-	-	-	
	Penalty in case of earliest retirement age	-	-	-	-	-	-	
	Bonus in case of late retirement	0.5%/m	0.5%/m	0.5%/m	0.5%/m	0.5%/m	0.5%/m	
	Minimum contributory period - men	15	15	15	15	15	15	
	Minimum contributory period - women	15	15	15	15	15	15	
	Minimum residence period - men	-	-	-	-	-	-	
Minimum residence period - women	-	-	-	-	-	-		

Source: Hungarian State Treasury

Calculation of benefits

The calculation of benefits is based on 1) the number of service years and 2) the average of wages earned since 1988 (which were liable to pension contribution).

Step 1: Calculation of net wages for each year

Earnings have to be reduced by employees' social security contributions (for pension, health and unemployment) and personal income tax (the amount of which is only computed on wages net of contributions).

Step 2: Valorisation of net wages for each year

Thereafter, all earnings are revalued (valorised) by the growth of nationwide net average earnings up to one year before the retirement (i.e. in 2023 to year 2022).

Step 3: Calculation of the average pensionable monthly income

For higher levels of the accordingly calculated average valorised net wages (above a pre-set level – HUF 372,000 [ca. EUR 958]) there is a progressive reduction to be applied. (Only 90% of the incomes between HUF 372,000 and 421,000 [ca. EUR 1,084], and 80% of the monthly incomes above 421,000 have to be taken into account)².

² E.g. if the average monthly income is HUF 500,000, the pensionable average income is HUF 479,300. $(372.000 \cdot 100\% + ((421.000 - 372.000) \cdot 90\% + (500.000 - 421.000) \cdot 80\%)$.

Step 4: Taking into account the number of service years

Finally, the average of these adjusted earnings is multiplied by a rate pertaining to the number of service years the person has acquired (for example, this rate is 80 per cent for 40 service years). The rates belonging to the number of service years are not linear.

YEARS OF SERVICE AND MULTIPLIERS

Years of Service	Multiplier (%)	Years of Service	Multiplier (%)	Years of Service	Multiplier (%)	Years of Service	Multiplier (%)
15	43	22	57	29	67	36	74
16	45	23	59	30	68	37	75.5
17	47	24	61	31	69	38	77
18	49	25	63	32	70	39	78.5
19	51	26	64	33	71	40	80
20	53	27	65	34	72	40+	+2/year
21	55	28	66	35	73		

Source: Hungarian State Treasury

Minimum amount of pension

The minimum amount of pension (28,500 HUF/month) is for those who are eligible to full pension (having minimum 20 service years), and according to the benefit calculation their pensions do not reach this amount. This is a very rare case (less than 200 persons).

Pensioners above retirement age can get pension benefits and continue working without any limitation on their income in the private sector. Whereas the pension benefit is suspended – with specific exemptions in order to ensure the performance public duties in education and social sector – if a pensioner continues working in the public sector.

Pension for women with 40 years eligibility period

Pension for women with 40 years eligibility period (“nők 40 év jogosultsági idővel szerzett kedvezményes nyugdíja”) is the only early pension scheme, available for those women, regardless of age, who have gained at least 40 years of eligibility period. Eligibility period means any period gained with gainful activity (work) or benefits connected to child raising or nursing fee. At least 32 years of gainful activity is needed besides the periods of child raising; or 30 years of gainful activity in case of nursing fee. The eligibility period is decreased by 1 year after every child raised in the household. Women raising 5 or more children can gain altogether a maximum of 8 years eligibility period. In this scheme, women are entitled for full pension benefits, i.e. benefits are not reduced because of early retirement.

Survivors' benefits

Survivors' benefits (“hozzá tartozói nyugellátás”) are calculated on the basis of the pension that the deceased person was or would have been entitled to. The three types of survivors' benefits are widow(er)s' pension (“özvegyi nyugdíj”) for the spouse, parental pension (“szülői nyugdíj”) and orphan's allowance (“árvaellátás”) for the children of the deceased person.

Other pension-like benefits

Disability benefits

Disability benefits are financed from the Health Insurance Fund. Based on the complex evaluation of the incapacitated persons' health status, they are eligible for benefits for persons with changed working capacity with the form of rehabilitation or disability benefit („rehabilitációs ellátás” or „rokkantsági ellátás”). Those who can be rehabilitated are eligible for rehabilitation benefit and receive financial support as well as services aimed at facilitating their (re-)entry into the labour market. Whereas those who cannot be rehabilitated or can be rehabilitated but who have less than 5 years to retirement age, are eligible for disability benefit and only receive financial support. The period spent in employment while receiving rehabilitation benefit is taken into account when years of service are calculated.

Early pensions, temporary benefits under retirement age

Benefits provided below the retirement age were largely eliminated by regulations introduced in 2011. The only two groups of workers who may be entitled to early pension-like benefits are miners and dance artists with at least 25 service years. Benefits for the participants of former early retirement schemes have been transformed to the new “benefit under retirement age” (“korhatár előtti ellátás”) that functioned the same way as the previous benefits and were converted to regular old-age pensions upon reaching the retirement age. These benefits were gradually phased out between 2012 and 2016. The early pension of armed forces or dangerous and hazardous jobs has been abolished as well. Benefits of pensioners formerly worked in the armed forces and close enough to the retirement age (born in 1954 or before) are practically unchanged. Younger beneficiaries of this group were offered jobs in the public sector or they had to accept a 16% lower service benefit for armed forces (“szolgálati járandóság”). Both type of pension will be phased out. No new early pension of armed forces will be established in the future.

Old-age allowance

Those who reach the standard retirement age, but are not eligible for a pension (i.e. not having a minimum of 15 years of service), or who are eligible for a pension, but its amount is below the income thresholds defined by law³, and have no other source of sufficient income, can apply for a means-tested old-age allowance (“időskorúak járadéka”). This allowance is financed by taxes and forms part of the social assistance system. The eligibility for the old-age allowance is revised in every two years.

Pension-like supplementary social allowances

Disability allowance (“rokkantsági járadék”), work-accident allowance (“baleseti járadék”), spouse supplement (“házastársi pótlék”), regular allowances for agricultural workers (“mezőgazdasági szövetkezeti járadékok”), merit, victims and deprived persons, WWII heroes or 1956 Hungarian Revolution war heroes and other allowances.

Voluntary supplementary pension schemes

The projections do not cover voluntary, privately managed, supplementary pension schemes, which are not part of the mandatory system, and provide for additional benefits for the elderly, depending on their choice and possibilities to save. Existing voluntary pension schemes are the following:

- voluntary pension funds (individual, DC) – approximately 23% of employed

³ Act III of 1993 on Social Governance and Social Benefits

participates in this scheme,

- voluntary privately managed pension funds (ex-mandatory) – approximately 1% of employed participates in this scheme,
- occupational pension institutions – new possibility for employers, only one institution operates with very few members,
- retirement saving accounts – approximately 10% of employed,
- pension insurance products – approximately 10% of employed.

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

Social contribution tax reduction

(as of 1 January 2017)

The rate of social contribution tax was cut from 27% to 15.5% as from 2017 to July 2020, then decreased further to 13% from January 2022. *The reductions implemented after the 2021 Ageing Report decreases the pension revenues in the projection.*

The reintroduction of a 13th monthly pension (as of 2021)

The 13th monthly pension was re-introduced⁴ in 2021, according to a recent law⁵ adopted in 2020, as part of the response to the COVID-19 crisis to improve the beneficiaries' income situation. According to this new measure, pensioners received an extra ¼ monthly benefit in 2021 and, from 2022 onwards, a full 13th monthly benefit has been paid to all pensioners, as long as they are entitled to benefits. Such measure is applied to all benefits (i.e. as presented in section 1.1.). The 13th monthly pension is incorporated as a no-policy-change assumption in long-term.

Increase the amount of the the orphan's allowance

The minimum amount of the orphan's allowance was increased from HUF 24250 (EUR 62) to HUF 50000 (EUR 129) by 1st of January 2022.

Former changes to the pension system introduced in the past decade

The changes in this subsection were already incorporated in the 2021 Ageing Report, thus there is no impact on the current projection.

Changes in the calculation of minimum and maximum disability benefits (as from May 2015)

The indexation of the minimum and maximum amount of disability benefits follows the rules of pension indexation. Pension benefits indexed to inflation (as from 1 January 2012) As from January 2012, pensions are indexed only to inflation. Before 2012 the indexation was linked to the proportion of inflation and wage index, depending on the real GDP growth rate.

No new entrants into early retirement (as from 1 January 2012)

Before 2012 there were several options to retire prior to reaching the statutory retirement age that were largely abolished and remaining provisions have broadly been phased out since. (see section 1.1.4.)

⁴ In Hungary following the 2008 economic crisis it became clear that serious reforms were necessary to avoid state bankruptcy. In the context of restrictive fiscal policy, the 2009 reforms phased out the 13th monthly pension from 2010 onwards.

⁵ Act LXXVIII of 2020 on Amendments to Certain Acts to Reintroduce 13th Monthly Pension

Reform of the disability system (as from 1 January 2012) Starting from January 1, 2012 disability ceased to be part of the pension system, and the disability pension was transformed to disability benefit (“rokkantsági ellátás”) and rehabilitation benefit (“rehabilitációs ellátás”), the latter being different from the former rehabilitation annuity, which was also withdrawn. The disability benefit functions in effect in the same way as the disability pension. People belonged to disability pensioners’ class 1 and 2 (both include people with high disability) receive this new provision. The same applies to people classified to the 3rd category (at least 50% disabled) provided they were born in 1954 or before. The rest obtained rehabilitation provision which focuses more on rehabilitation. After a complex review of the health condition and rehabilitation options of the beneficiary – depending on the result of this review – the provision is transformed to disability benefit (if the client cannot be rehabilitated) or a reduced amount of rehabilitation (if s/he can be rehabilitated) or withdrawn (if health conditions allow the client to work).

Suspension of pension benefits for those who continue working in the public sector (as from 1 January 2013)

For certain types of occupations, the rules on the interruption of pension payments have changed.

New preferential tax regime for self-employed (as from 1 January 2013)

Small entrepreneurs can meet their total tax and contribution obligation with a flat amount (HUF 50,000). It is an attractive option for a number of entrepreneurs but it implies slightly less pension eligibility periods. As the ensuing base for the pension calculation is below the minimal wage, they can only collect proportionally shorter length of service years. Nevertheless when the minimum length of service years for pension eligibility is calculated (20 years), the whole period can be taken into account, so it does not affect the number of persons, who are eligible for pensions. It has only an impact on the amount of pension benefits.

Contribution allowances for those who have too small income to use the whole family tax allowance (as from 1 January 2014).

In the Hungarian tax system, those who have children can deduct a pre-set amount from their personal income tax base. As from 2014, those who have not enough income and thus PIT base to deduct the maximum allowance can get the remaining allowance from the health contribution. If this is still insufficient for the whole deduction, they can deduct the remaining part from the pension contribution.

1.3. Description of the actual ‘constant policy’ assumptions used in the projection

The old-age social allowance is not a base or a minimum pension. It is provided to persons who have no other income from other sources. Outturn data shows that only 20-25% of those persons, who are not entitled to other benefits included in the modelled receive this kind of benefit. This ratio was kept constant for the whole simulation period.

2. Overview of the demographic and labour force projections⁶

2.1. Demographic projections

In the period covered by the forecast, the population decreased continuously, from 9.7 million people in 2022 to 9.0 million people in 2070. At the same time, the continuous increase in life expectancy resulted in a continuous increase in old-age dependency rates. For the 65+ population this value increased from 34.5 to 54.3. Ageing can also be observed in the 65+ age group itself, which will increase from 22.6 to 40.4.

A natural consequence of the improved mortality is that not only the life expectancy at birth but also the life expectancy at age 65 increases for both genders as well as the survivor rates.

After the middle of the period, net migration stabilizes at around 25,000-26,000 people.

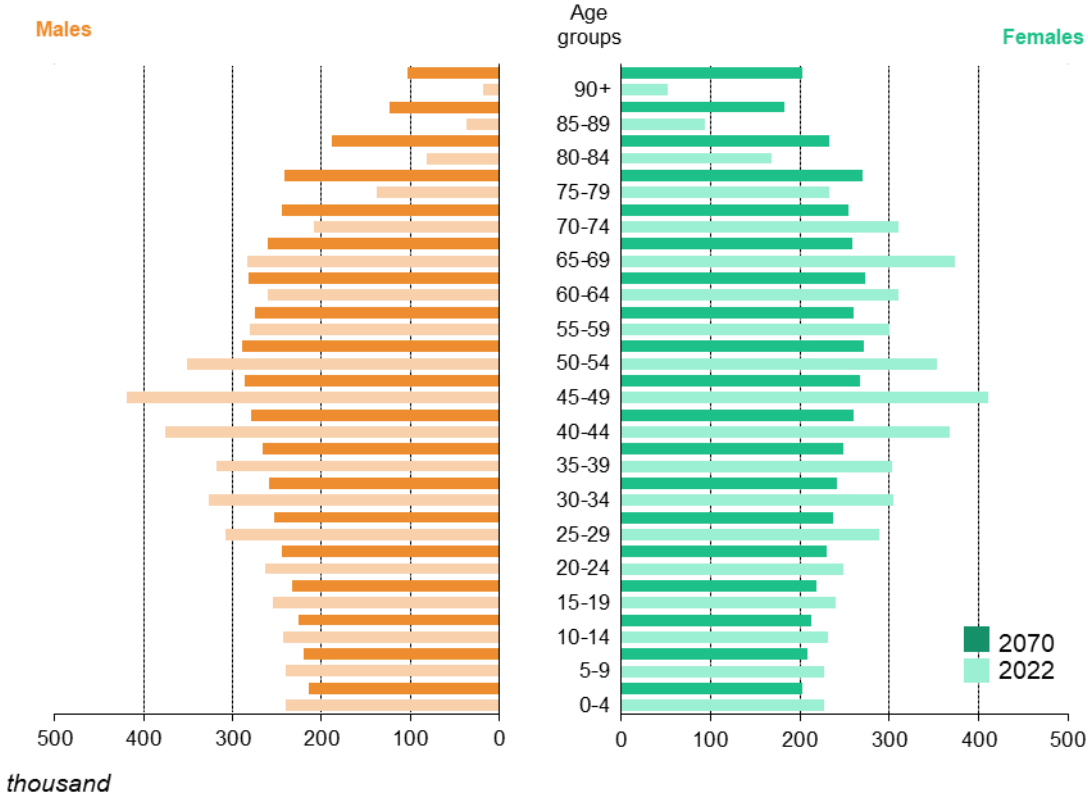
TABLE 2 – MAIN DEMOGRAPHIC VARIABLES

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Population (thousand)	9 689	9 515	9 334	9 226	9 143	9 021	9 689	2022	-668
Population growth rate	-0.2%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	2056	0.1%
Old-age dependency ratio (pop 65+ / pop 20-64)	34.5	35.3	41.9	49.8	54.5	54.3	54.9	2062	19.8
Old-age dependency ratio (pop 75+ / pop 20-74)	11.8	15.0	16.2	20.3	25.1	26.9	26.9	2070	15.1
Ageing of the aged (pop 80+ / pop 65+)	22.6	26.6	30.3	29.5	38.4	40.4	40.4	2070	17.8
Men - Life expectancy at birth	72.5	74.7	77.2	79.5	81.6	83.6	83.6	2070	11.1
Women - Life expectancy at birth	79.3	81.2	83.3	85.2	86.9	88.5	88.5	2070	9.2
Men - Life expectancy at 65	14.5	16.0	17.5	19.0	20.5	21.8	21.8	2070	7.3
Women - Life expectancy at 65	18.4	19.8	21.3	22.7	24.1	25.4	25.4	2070	7.0
Men - Survivor rate at 65+	73.0	77.3	81.6	85.2	88.1	90.4	90.4	2070	17.4
Women - Survivor rate at 65+	86.7	89.0	91.0	92.6	94.0	95.0	95.0	2070	8.3
Men - Survivor rate at 80+	33.2	40.9	49.1	56.8	63.7	69.8	69.8	2070	36.6
Women - Survivor rate at 80+	56.8	63.3	69.5	74.9	79.4	83.2	83.2	2070	26.4
Net migration (thousand)	47.6	19.4	27.6	24.6	25.4	25.7	47.6	2022	-22.0
Net migration (% population previous year)	0.5%	0.2%	0.3%	0.3%	0.3%	0.3%	0.5%	2022	-0.2%

Source: Eurostat, European Commission.

⁶ For more details, see European Commission and EPC (2023), *The 2024 Ageing Report: Underlying assumptions and projection methodologies*, European Economy, Institutional Paper 257.

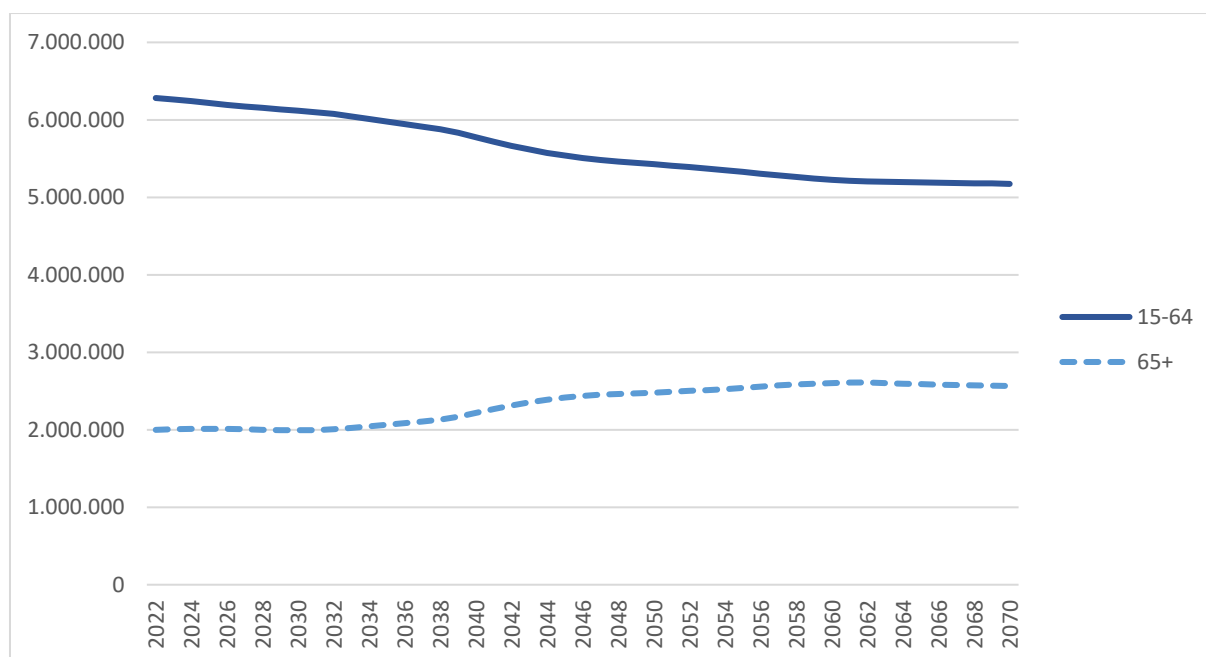
FIGURE 1 – AGE STRUCTURE: 2022 VS 2070



Source: Eurostat, European Commission.

The number of people aged 65+ rises to around 2,6 million people at the end of the projection horizon by 0.6 million people (+28.4%). Parallel to the increase in the number of old-age people, the active age population sharply decreases from 2022 to 2070 by 1.1 million people (-17.6%).

FIGURE 2 - EVOLUTION OF POPULATION BETWEEN 2022 AND 2070



Source: EUROSTAT

As a result, the old age dependency ratio is expected to increase sharply by 2070 and to reach 54.3%. The average life expectancy rises continuously by 11.1 years for males and 9.2 for females, over the projection horizon.

The population projections issued by Eurostat (EUROPOP 2023) in the case of Hungary provides broadly similar results as the EUROPOP 2019. Fertility rate assumption is minimally higher and net migration is slightly higher in the new projection. The life expectancy at age of 65 (both in case of men and women) is a little higher.

2.2. Labour force projections

The reforms implemented in the last decade have had a significant impact on the labour market. Participation and employment rates increased substantially. The most important measures were, among others, the following:

- Since 2012, the rise in the statutory retirement age, cancellation of early retirement options, and the tightening of the conditions of disability benefits increase the effective retirement age and prolong the working carrier.
- Since 2010, Hungary also implemented significant measures on the supply and demand side of the labour market. The tax burden on labour has been gradually decreased, the period to get unemployment benefit has been lowered to 90 days, and many other measures were implemented to promote the labour market. In particular, the Job Protection Action Plan was launched in 2013, which offered targeted tax deduction from employer taxes (social contribution tax and small business tax) to incentivise the employment of the most disadvantaged groups

(among others employees over 55 years of age) on the labour market. Since 1 July 2020, those who work while entitled to pension benefit, only personal income tax of 15% is levied on the wage.

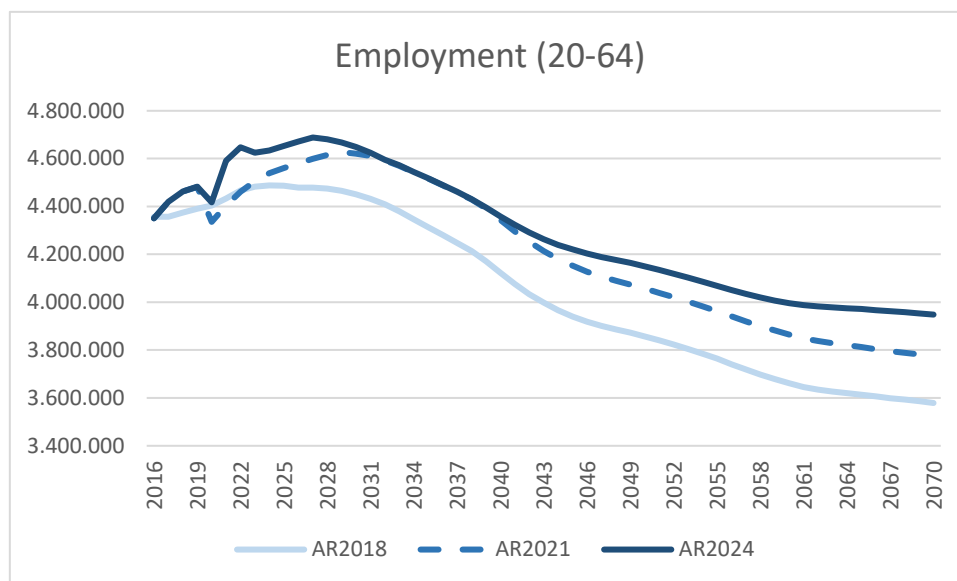
TABLE 3 – PARTICIPATION RATE, EMPLOYMENT RATE AND SHARE OF WORKERS

	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Labour force participation rate 20-64	83.2	84.9	85.3	86.5	86.7	86.6	86.8	2062	3.4
Employment rate of workers aged 20-64	80.3	82.3	82.3	83.5	83.7	83.6	83.8	2062	3.3
Share of workers aged 20-64 in the labour force 20-64	96.5	96.9	96.5	96.5	96.5	96.5	97.3	2027	0.1
Labour force participation rate 20-74	70.8	73.6	71.9	71.5	72.4	73.3	74.0	2032	2.5
Employment rate of workers aged 20-74	68.4	71.3	69.4	69.1	70.0	70.8	71.5	2031	2.4
Share of workers aged 20-74 in the labour force 20-74	96.5	96.9	96.6	96.6	96.6	96.6	97.3	2027	0.1
Labour force participation rate 55-64	68.0	72.8	74.0	78.2	77.9	77.8	78.5	2063	9.8
Employment rate of workers aged 55-64	65.9	70.9	71.8	75.8	75.6	75.5	76.2	2063	9.6
Share of workers aged 55-64 in the labour force 55-64	96.9	97.3	97.0	97.0	97.0	97.0	97.7	2027	0.1
Labour force participation rate 65-74	9.7	9.3	11.3	10.8	11.7	11.6	11.9	2057	1.9
Employment rate of workers aged 65-74	9.5	9.1	11.0	10.5	11.5	11.3	11.6	2057	1.9
Share of workers aged 65-74 in the labour force 65-74	97.8	98.1	98.0	97.8	97.9	97.9	98.3	2027	0.1
Median age of the labour force	42.0	43.0	44.0	43.0	42.0	43.0	44.0	2036	1.0

Source: European Commission.

The labour force participation and employment rates (20-64) are increased by 3.4-3.3 during the projection period. The change of the participation and employment rates of the 55-64 cohort follows the trend of the children of the baby boom population which reach the retirement age from the middle of the 2030's. This effect can be recognized in the 65-74 cohort after the 2050's, when the participation and employment rates reach 11.0.

FIGURE 3 - IMPROVING EMPLOYMENT ASSUMPTIONS UNDERLYING AGEING REPORTS



In addition to demographic characteristics, reforms over the past decade have had a significant impact on the labour market, including on the evolution of the number of workers aged 55-64 and 20-64, as shown in Figure 3.

Together with these effects, we can expect an upward trend until 2030 and then a downward trend in line with demographic characteristics.

As a result of the reforms introduced, we expect the high employment rate to be maintained at a high level.

Among the introduced reforms, we find:

- The increase of the retirement age from 62 to 65, which started in 2014, will be completed by 2022.
- The Hungarian government has abolished personal income tax for women with more than 4 children.
- From 1 July 2020, only 15% personal income tax will be levied on the wages of those entitled to a pension.
- The rules on working while receiving a pension have also changed, which in our case affects women who retired before the working age.

TABLE 4 – LABOUR MARKET EXIT BEHAVIOUR

TOTAL	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	62.8	61.6	62.3	61.9	62.1	62.3	63.0	2022	-0.4
Average labour market exit age (CSM)**	63.6	63.9	64.3	64.3	64.3	64.3	64.3	2070	0.7
Contributory period	36.2	37.1	38.4	38.4	38.1	39.0	39.0	2070	2.8
Duration of retirement***	15.9	18.7	19.8	21.3	22.8	24.1	24.1	2070	8.2
Duration of retirement/contributory period	44%	50%	52%	55%	60%	62%	62%	2068	18%
Percentage of adult life spent in retirement****	26%	30%	31%	32%	34%	35%	35%	2070	10%
Early/late exit*****	1.5	1.8	1.4	1.2	1.1	1.2	1.9	2031	-0.3

MEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	64.0								
Average labour market exit age (CSM)**	64.4	64.6	64.6	64.6	64.6	64.6	64.6	2039	0.2
Contributory period	38.4	38.1	39.1	37.7	38.3	39.8	39.8	2070	1.4
Duration of retirement***	13.3	16.0	17.5	19.0	20.5	21.8	21.8	2070	8.5
Duration of retirement/contributory period	35%	42%	45%	50%	53%	55%	56%	2068	20%
Percentage of adult life spent in retirement****	22%	26%	28%	30%	31%	33%	33%	2070	11%
Early/late exit*****	0.9	1.2	1.0	0.9	0.8	0.9	1.2	2031	0.0

WOMEN	2022	2030	2040	2050	2060	2070	peak value	peak year	change 2022-2070
Average effective retirement age*	61.7								
Average labour market exit age (CSM)**	62.9	63.3	64.0	64.0	64.0	64.0	64.0	2048	1.1
Contributory period	34.4	36.5	37.7	39.0	37.9	38.2	39.0	2054	3.8
Duration of retirement***	18.4	21.4	22.1	23.6	25.0	26.3	26.3	2070	7.9
Duration of retirement/contributory period	53%	59%	59%	61%	66%	69%	69%	2070	15%
Percentage of adult life spent in retirement****	29%	33%	33%	35%	36%	37%	37%	2070	8%
Early/late exit*****	2.0	2.5	1.8	1.5	1.3	1.5	2.5	2031	-0.5

* 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.

In line with the effects indicated in the interpretation of Table 3, the "average labour market exit age" rises from 63.6 years in 2023 to 64.3 years in 2050 and then remains at this level (Table 4).

Furthermore, the "contributory period" increases from 36.2 years in 2023 to 39.0 years in 2070, with an increasing trend. At the same time, the 'duration of retirement' increases from 15.9 years in 2023 to 24.1 years in 2070, with a steady increase in life expectancy. Due to the lower starting point, the increase is higher for men.

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 44% and 26% in 2023 to 62% and 35% in 2070, respectively.

3. Pension projection results

3.1. Coverage of the pension projections

The aim of this chapter is to give an overview about the development of the main factors of the Hungarian pensions system between 2022 and 2070 and to analyse the result of the pension projections by referring to the driving forces shaping the outcome of the projections.

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	9.4	8.9	8.5	8.4	8.0	7.6	7.3	7.5	7.0	-2.4
Eurostat public pension expenditure (A)	9.4	8.9	8.5	8.4	8.0	7.6	7.3	7.5	:	-1.9
Public pension expenditure (AWG: outcome) (B)	11.4	10.6	10.0	9.8	9.2	8.7	8.3	8.4	8.3	-3.1
Difference Eurostat/AWG: (A)-(B)	-2.0	-1.7	-1.5	-1.4	-1.2	-1.1	-1.0	-0.9	:	-1.1

Source: Eurostat, European Commission.

The projections cover the mandatory social security pension scheme, the disability benefits, the old-age allowances, all pension-like supplementary social allowances and the temporary benefits below the retirement age. (For more detailed description see section 1.1.)

BENEFITS COVERED BY THE PROJECTION

Name of the benefit	No. of beneficiaries (November 2023, thousand persons)
Old-age and early retirement schemes	
Old-age pension (above statutory retirement age) (<i>korbetöltött öregségi nyugdíj</i>)	1,847,098
Women with 40 years of service	147,975
Disability provision above retirement age (<i>rokkantsági ellátás</i>)	54,459
Miners allowance – <i>to be phased out scheme</i>	1,640
Allowance of armed force born after 1954 (<i>szolgálati járandóság</i>) – <i>to be phased out scheme</i>	21,657
Below-retirement-age provisions (<i>korhatár előtti ellátások</i>) – <i>to be phased out schemes</i>	6,881
Survivor's benefits (hozzátartozói ellátások)	
Widows' and parentals pensions (<i>özvegyi és szülői nyugdíj</i>)	43,734
Orphans' benefit (<i>árvaellátás</i>)	55,186
Disability provisions	
Disability provisions below retirement age (<i>rokkantsági ellátás</i>)	245,200
Rehabilitation provision (<i>rehabilitációs ellátás</i>)	13,562
Miners' health impairment allowance (<i>bányász egészségkárosodási járadék</i>)	1,135
Other benefits	
Disability allowance (<i>rokkantsági járadék</i>)	32,886
Old-age social allowance (<i>időskorúak járadéka</i>)	6,557*
Accident allowance (<i>baleseti járadék</i>)	4,382
Spouse's supplement (<i>házastársi pótlék</i>)	627
Regular allowances for agricultural workers (<i>mezőgazdasági szövetkezeti járadékok</i>)	498
Other allowances (<i>egyéb járandóság</i>)	13,467

Source: Hungarian State Treasury

*Average number of beneficiaries in 2022, source: Hungarian Central Statistical Office

The projections do not cover the voluntary privately managed supplementary pension schemes, which are not part of the mandatory system, and which may provide for additional benefits for the elderly depending on their choice and possibilities to save.

3.2. Overview of projection results

In this part of Chapter 3 those demographic and employment data are presented which have a significant impact on pension expenditures and thereby the sustainability of the pension system.

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	7.7	7.7	9.0	10.7	11.5	12.0	12.0	2070	4.3
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	:	:	:	:	:	:	:	:	:
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	7.7	7.7	9.0	10.7	11.5	12.0	12.0	2070	4.3
Net public pension expenditure*	:	:	:	:	:	:	:	:	:
Net total pension expenditure*	:	:	:	:	:	:	:	:	:
Contributions									
Public pension contributions	6.8	6.9	6.9	6.8	6.8	6.8	7.1	2024	0.0
Total pension contributions	6.8	6.9	6.9	6.8	6.8	6.8	7.1	2024	0.0
Balance of the public pension system (%GDP)**	-0.9%	-0.8%	-2.1%	-3.8%	-4.7%	-5.2%	-5.2%	2070	-4.3%

*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.

Pension expenditures in Hungary (Table 7) are projected to decline until 2029, to then start increasing again until the end of the projection horizon. The total expenditure trend is mainly determined by the old-age and early pension category. Overall, public spending on pension ranges from 7.7% (in 2022) to around 12.0% (in 2070) of GDP. As the Hungarian pension benefits are not subject to taxation, gross and net expenditure coincide (Table 6).

In comparison with the projection results of the 2021 Ageing Report, the pension expenditure proportional to GDP is lower thus the sustainability factor of the pension system improves.

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	7.7	7.7	9.0	10.7	11.5	12.0	12.0	2070	4.3
Old-age and early pensions	6.3	6.4	8.0	9.7	10.5	11.1	11.1	2070	4.7
<i>Flat component</i>	:	:	:	:	:	:	:	:	:
<i>Earnings-related</i>	6.3	6.4	8.0	9.7	10.5	11.1	11.1	2070	4.7
<i>Minimum pensions (non-contributory)</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2022	0.0
Disability pensions	0.6	0.5	0.5	0.4	0.4	0.4	0.6	2022	-0.2
Survivor pensions	0.8	0.6	0.5	0.5	0.5	0.5	0.8	2024	-0.3
Other pensions	0.1	0.0	0.1	0.1	0.1	0.1	0.1	2070	0.0

Source: European Commission, EPC.

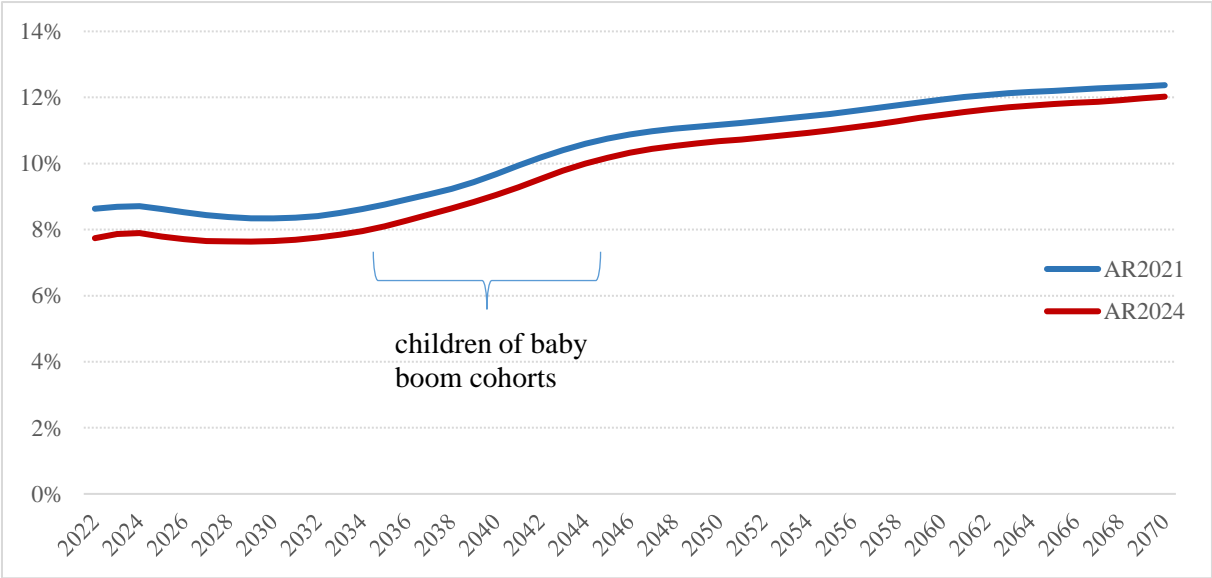
The most important factors affecting the development of public pension expenditures are the following. The largest cohorts of the baby boom generation of the 1950s retired in 2010s, which drove the level of pension expenditures upwards in the last decade. Afterwards, the gradual increase in the statutory retirement age increases from 62 to 65, occurred between 2013 and 2022, has a downward impact on pension expenditures. Nevertheless, spending on pension starts to increase again in the second half of 2030s, when the children of the baby boom generation start to retire..

The reason is that the number of births increased significantly after 1975 (end of the second baby boom of the 20th century) and after disappearance of the children of the first baby boom generation from the pensioners (about 2060), the number of pensioners slightly decreases until the end of the projection horizon. But due the increase of the proportion of pensioners in the society and the improving labour market projections with longer service periods, the total public pension expenditure increases until the end of the projection horizon.

In the new projections, pension expenditures as a share of GDP are mildly lower, in the long term, than what projected in the 2021 Ageing Report (Figure 4). In 2070, the new projections shows 0.4 pp. difference compared to the 2021 Ageing Report. The first factor behind the decline is related to the higher GDP data. Until 2029, the pension expenditure-to-GDP ratio is slightly decreases but from this point onwards, the ratio gradually increases, until the end of the projection horizon. In 2070, the new projections shows -0.4 pp. difference compared to the 2021 Ageing Report. The lower total expenditure trend is mainly determined by the favourable GDP trajectory.

The second factor behind the decrease – in comparison with the projection of the Ageing Report 2021 – is related to the lower number of pensioners in the base year what is caused by the COVID-19 effect and this consequence is reflected during the whole projection horizon.

FIGURE 4 - PUBLIC PENSION EXPENDITURE (% GDP) - AR2024 AND AR2021



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

FIGURE 5 – DISAGGREGATION OF PUBLIC PENSION EXPENDITURE

$$\frac{\text{pension expenditure}}{\text{GDP}} = \overset{\text{dependency ratio}}{\downarrow} \frac{\text{population } 65+}{\text{population } 20-64} \times \overset{\text{coverage ratio}}{\downarrow} \frac{\text{number of pensioners}}{\text{population } 65+} \times \overset{\text{benefit ratio}}{\downarrow} \frac{\text{average pension income}}{\frac{\text{GDP}}{\text{hours worked } 20-74}} \times \overset{\text{labour market effect}}{\downarrow} \frac{\text{population } 20-64}{\text{hours worked } 20-74} \quad [1]$$

$$\frac{\text{number of pensioners}}{\text{population } 65+} = \overset{\text{coverage ratio old-age}}{\downarrow} \frac{\text{number of pensioners } 65+}{\text{population } 65+} + \overset{\text{coverage ratio early-age}}{\downarrow} \left(\frac{\text{number of pensioners } \leq 65}{\text{population } 50-64} \times \overset{\text{cohort effect}}{\downarrow} \frac{\text{population } 50-64}{\text{population } 65+} \right) \quad [2]$$

$$\frac{\text{population } 20-64}{\text{hours worked } 20-74} = \overset{1/\text{employment rate}}{\downarrow} \frac{\text{population } 20-64}{\text{employed people } 20-64} \times \overset{1/\text{labour intensity}}{\downarrow} \frac{\text{employed people } 20-64}{\text{hours worked by people } 20-64} \times \overset{1/\text{career shift}}{\downarrow} \frac{\text{hours worked by people } 20-64}{\text{hours worked by people } 20-74} \quad [3]$$

Source: European Commission, EPC.

One of the main reasons behind the increase of public pension expenditure-to-GDP ratio is the strong dependency ratio effect during 2030s and 2040s derived from the retirement of the children of the baby boom generation. A determining effect during the projection period is the continuous increase in life expectancy. It must be taken account that after the 2030s the benefit ratio effect is also considerable which is a consequence of the real wage increase since the 2010s which has a significant effect on the amount of pension benefits due to the current valorisation rule used for pension calculation (Table 8).

TABLE 8 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2019 AND 2070 (PPS OF GDP) – PENSIONERS⁷

	2022-30	2030-40	2040-50	2050-60	2060-70	2022-70
Public pensions to GDP	-0.1	1.4	1.6	0.8	0.6	4.3
Dependency ratio effect	0.2	1.4	1.7	1.0	0.0	4.3
Coverage ratio effect*	0.2	-0.2	-0.3	-0.2	0.1	-0.4
<i>Coverage ratio old-age</i>	0.2	-0.1	0.4	0.0	0.1	0.7
<i>Coverage ratio early-age</i>	-1.0	1.1	-0.9	0.2	-0.4	-1.0
<i>Cohort effect</i>	1.2	-1.4	-2.0	-1.3	0.2	-3.3
Benefit ratio effect	-0.3	0.3	0.4	0.0	0.5	0.8
Labour market effect	-0.1	-0.1	-0.1	-0.1	0.0	-0.4
<i>Employment ratio effect</i>	-0.2	0.0	-0.1	0.0	0.0	-0.3
<i>Labour intensity effect</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Career shift effect</i>	0.0	-0.1	0.0	0.0	0.0	0.0
Residual	0.0	0.0	0.0	0.0	0.0	0.0

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

Source: European Commission, EPC.

In particular, the benefit ratio decreases until 2032 and then it increases sharply until 2047. After that, until 2055 the BR slightly decreases and after 2056 until the end of the projection period it increases. On the basis of the projection result the development of the BR figure is explained by the changes of the length of contributory period. The level of replacement rate slightly increases. Due to the valorisation method the values of the replacement rate reflect the development of real wages (Table 9).

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)	38%	37%	38%	40%	40%	42%	3%
<i>Coverage</i>	100%	100%	100%	100%	100%	100%	0%
Public scheme: old-age earnings related (BR)	39%	39%	41%	41%	41%	43%	4%
Public scheme: old-age earnings related (RR)	40%	47%	47%	48%	47%	48%	8%
<i>Coverage</i>	79%	80%	83%	87%	88%	89%	9%
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
<i>Coverage</i>	:	:	:	:	:	:	:
Private individual schemes (BR)	:	:	:	:	:	:	:
Private individual schemes (RR)	:	:	:	:	:	:	:
<i>Coverage</i>	:	:	:	:	:	:	:
Total benefit ratio	38%	37%	38%	40%	40%	42%	3%
Total replacement rate (earnings-related benefits)	30%	33%	36%	37%	37%	37%	7%

Coverage of each pension scheme is calculated as a ratio of the number of pensioners within the scheme and the total number of pensioners in the country. In case data on pensioners are not available, the calculation is based on the number of pensions

Source: European Commission, EPC.

⁷ For the disaggregation based on the number of *pensions*, see Table A3 in the methodological annex.

Due to the demographic changes it is obvious that the dependency ratio increases during the examined period, but in comparison with the projections of the Ageing Report 2021 the system efficiency is the same in the new projections.

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

	2022	2030	2040	2050	2060	2070	change 2022- 2070
Number of pensioners (thousand) (I)	2549	2610	2832	3057	3160	3135	586
Employment (thousand) (II)	4787	4767	4516	4305	4152	4090	-697
Pension system dependency ratio (SDR) (I)/(II)	0.5	0.5	0.6	0.7	0.8	0.8	0.2
Number of people aged 65+ (thousand) (III)	1997	1995	2218	2479	2604	2565	568
Working-age population 20-64 (thousand) (IV)	5786	5649	5294	4972	4773	4721	-1065
Old-age dependency ratio (OADR) (III)/(IV)	0.3	0.4	0.4	0.5	0.5	0.5	0.2
System efficiency (SDR/OADR)	1.5	1.6	1.5	1.4	1.4	1.4	-0.1

Source: European Commission, EPC.

Because of the demographic trends, the number of pensioners in the age group -54 decreases after 2030s, because of the decreasing number of the children of the baby boom generation among pensioners. Due to the relatively high employment level of the ages 55-64, the proportion of the pensioners slightly decreases until the end of the projection horizon. In the case of women, the trends are similar.

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

pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	9.6	9.8	8.5	7.7	7.3	7.0
Age group 55-59	128.0	131.8	195.6	202.4	208.3	211.0
Age group 60-64	100.5	105.2	123.4	127.0	138.0	131.7
Age group 65-69	104.4	110.1	105.6	121.8	115.7	114.2
Age group 70-74	101.1	113.2	101.5	112.8	106.6	114.1
Age group 75+	100.1	96.1	103.0	98.2	104.0	103.7

pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	3.6	3.7	3.3	3.0	2.8	2.7
Age group 55-59	22.6	19.2	21.3	19.0	19.1	19.2
Age group 60-64	46.7	44.4	47.6	44.4	48.4	45.8
Age group 65-69	90.8	94.7	88.9	101.6	96.1	94.8
Age group 70-74	95.6	107.9	95.9	106.5	100.1	107.3
Age group 75+	100.1	96.1	103.0	98.2	104.0	103.7

Source: European Commission, EPC.

TABLE 12 – FEMALE PENSIONERS TO (INACTIVE) POPULATION BY AGE GROUP (%)

female pensioners / inactive population	2022	2030	2040	2050	2060	2070
Age group -54	9.3	9.9	8.4	7.4	6.9	6.7
Age group 55-59	132.2	140.5	241.3	282.3	294.5	300.9
Age group 60-64	99.7	113.3	147.2	158.9	175.8	168.3
Age group 65-69	102.9	112.4	107.9	125.9	119.7	118.8
Age group 70-74	99.4	111.1	100.9	112.1	106.4	113.6
Age group 75+	100.3	96.3	103.0	98.7	103.6	103.6

female pensioners / total population	2022	2030	2040	2050	2060	2070
Age group -54	3.7	3.9	3.4	3.0	2.8	2.7
Age group 55-59	27.8	24.4	29.0	25.7	26.1	26.5
Age group 60-64	62.6	60.9	69.7	66.7	74.1	70.4
Age group 65-69	92.7	98.3	91.9	105.1	99.2	98.3
Age group 70-74	95.2	107.4	95.9	106.1	100.0	107.0
Age group 75+	100.3	96.3	103.0	98.7	103.6	103.6

Source: European Commission, EPC.

A significant increase will occur concerning the expenditures on new pensions between 2022 and 2070. This growth is affected by the longer service periods, the predicted increase of wages which has a strong impact on the pension amounts because of the valorization rule. The development of the number of new pensioners is in accordance with the demographic data, indicating with a higher value of new pensioners as the retirement of the children of the baby boom generation around 2040s.

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)*	398.3	646.7	1462.5	1927.9	3337.6	4731.0
I. Number of new pensions (1000)	63.3	52.8	66.2	56.5	58.4	52.0
II. Average contributory period (years)	35.9	37.1	38.5	38.4	38.1	39.0
III. Average accrual rate (%)	0.0	0.0	0.0	0.0	0.0	0.0
IV. Monthly average pensionable earnings (1000 EUR)	0.6	1.2	2.1	3.4	5.7	8.9
V. Sustainability/adjustment factors	:	:	:	:	:	:
VI. Average number of months paid the first year	5.7	5.5	5.7	5.7	5.7	5.7
Monthly average pensionable earnings / monthly economy-wide average wage	52%	59%	63%	60%	62%	63%

MEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	203.5	285.6	703.9	922.6	1756.1	2424.9
I. Number of new pensions (1000)	28.0	21.0	29.6	26.3	29.2	25.2
II. Average contributory period (years)	38.5	38.0	39.1	37.8	38.3	39.8
III. Average accrual rate (%)	0.0	0.0	0.0	0.0	0.0	0.0
IV. Monthly average pensionable earnings (1000 EUR)	0.7	1.3	2.3	3.5	5.9	9.2
V. Sustainability/adjustment factors	:	:	:	:	:	:
VI. Average number of months paid the first year	5.7	5.3	5.6	5.5	5.6	5.5
Monthly average pensionable earnings / monthly economy-wide average wage	58%	65%	67%	62%	65%	65%

WOMEN	2022	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	194.8	361.0	758.6	1005.3	1581.5	2306.1
I. Number of new pensions (1000)	35.4	31.9	36.6	30.2	29.2	26.7
II. Average contributory period (years)	33.9	36.5	38.0	39.0	37.9	38.2
III. Average accrual rate (%)	0.0	0.0	0.0	0.0	0.0	0.0
IV. Monthly average pensionable earnings (1000 EUR)	0.5	1.1	2.0	3.3	5.4	8.6
V. Sustainability/adjustment factors	:	:	:	:	:	:
VI. Average number of months paid the first year	5.7	5.6	5.8	5.8	5.8	5.8
Monthly average pensionable earnings / monthly economy-wide average wage	47%	56%	60%	58%	60%	61%

Source: European Commission, EPC.

3.4. Financing of the pension system

The evolution of contributions to GDP can be explained by the higher employment and the gradual reduction in the employers' contribution rate. As from 2011 all the insured pay the whole contribution only to the public pillar. Employees' contribution is 10% of gross wages and the employers' contribution (social contribution tax) is 13%, of which the pension contribution rate amounts to 9.3%. The social contribution tax is shared between the Pension Insurance and Health Insurance Fund. In 2022, 71.63% of the total social contribution (this corresponds to the rate of 9.3% pension contribution) rate goes to the Pension Insurance Fund while 28.37% is directed to the Health Insurance Fund. The disability schemes are financed from the Health Insurance Fund. In the model all social contribution tax going to the Pension Insurance Fund and a given proportion of the part going to the Health Insurance Fund is taken into account. Furthermore there are specific contribution allowances for individuals and

entrepreneurs that are also taken into account in the model. This explains the slight differences from the above mentioned proportions. In addition employment figures have improved and are projected to improve further explaining the growing number of contributors by the beginning of the 2030s.

TABLE 14 – FINANCING OF THE PUBLIC PENSION SYSTEM

	Public employees	Private employees	Self-employed
Contribution base	gross wage	gross wage	gross earning
Contribution rate			
<i>Employer</i>	71.63% of the social contribution tax (the social contribution tax is 13% of the gross wage)	71.63% of the social contribution tax (the social contribution tax is 13% of the gross wage)	71.63% of the social contribution tax (the social contribution tax is 13% of the gross wage) and 10% of the gross earning
<i>Employee</i>	10.0%	10.0%	
<i>State*</i>	In case of the Pension Insurance Fund has a shortage, the state budget financed the loss.		
<i>Other revenues*</i>			
Maximum contribution			
Minimum contribution			

Source: Ministry of Finance

As the level of contributions does not change during the examined period, there is no difference in proportion of the GDP between 2022 and 2070. The decrease in the number of contributors and the employment after 2030 is caused by the demographic trends.

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)	6.8	6.9	6.9	6.8	6.8	6.8	0.0
<i>Employer contributions</i>	3.1	3.2	3.2	3.2	3.1	3.1	0.0
<i>Employee contributions</i>	3.7	3.7	3.7	3.7	3.7	3.7	0.0
<i>State contribution*</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Other revenues*</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Number of contributors (I) (1000)	4701	4765	4543	4298	4125	4046	-655
Employment (II) (1000)	4787	4767	4516	4305	4152	4090	-697
(I) / (II)	0.98	1.00	1.01	1.00	0.99	0.99	0.0

*Includes only legislated contributions.

Source: European Commission, EPC.

3.5. Sensitivity analysis

Higher life expectancy

The higher life expectancy increases the number of pensioners and the length of the average period spent in retirement. In short term, the higher life expectancy does not have a negative impact on pension expenditure but, in the long-term projections, it increases the pension expenditure-to-GDP ratio by 0.7 percentage points by 2070.

Higher migration

In case of the higher migration scenario, the level of GDP and the number of pensioners are increasing as the majority of the migrants are in working age. Due to this effect – according to the age structure and the number of migrants – the pension expenditure-to-GDP ratio is decrease by 0.3 percentage points in long-term projection.

Lower migration

Lower migration decreases both the number of pensioners and GDP. In this scenario the change in pension expenditure between 2022 and 2070 is 1 percentage points compared to the baseline.

Lower fertility

Lower fertility decreases the GDP therefore pension expenditures as a percent of GDP are higher throughout the projection horizon. The change in pension expenditure between 2022 and 2070 is 1 percentage points compared to the baseline.

Higher inflation scenario

In case of higher inflation, the pension expenditure is slightly higher (by 0.02 percentage points) by 2070 than in case of baseline. One reason is that pensions are indexed by CPI. Another reason is that the increase of pensions is higher than the increase of the GDP.

Higher employment rate of older workers

The higher assumptions for the employment of older workers lead to higher average service years that increase the average amount of pension benefits. It does not influence the number and share of pensioners, as according to the model people continue working above the retirement age parallel to receiving pension benefits (and claim for the increase of benefit according to their income in each year). As the positive effect on GDP growth is nonetheless more significant, pension expenditures as a percentage of GDP are lower during the projected period. Overall, in this scenario, the change between 2022 and 2070 is lower by 0.4 percentage points compared to the baseline.

Higher total factor productivity scenario

Higher wage assumptions in this scenario lead to higher benefits and increase the amount of pension benefits. This is nonetheless more than offset by the positive effect on GDP growth; therefore pension expenditures as a percentage of GDP are lower throughout the projection horizon. The change in pension expenditure between 2022 and 2070 is smaller by 0.3 percentage points compared to the baseline.

Lower total factor productivity scenario

In case of lower TFP, after 2032 the GDP decreases, the wages are lower than in case of the baseline which leads to lower amount of pension benefits. As the amounts of pension expenditure are close to the baseline level, the pension expenditure increases by 0.6 percentage points in proportion of the GDP until 2070.

Link of retirement age to life expectancy

The first cohort that would be affected by this scenario is the cohort of 1962, the members of this cohort are expected to retire in 2027 – according to current legislation – but it would be postponed by one year. With the continuous rise in the life expectancy pension expenditures are projected to decrease. This scenario implies a biggest impact on the evolution of pension expenditure. Overall in this scenario the change between 2022 and 2070 is lower by 2.3 percentage points than in the baseline.

Constant benefit ratio scenario

This policy scenario has not been simulated as the (earnings-related) public pension benefit ratio does not decrease by 10% relative to the base year.

Constant retirement age scenario

This scenario has a quite low impact on the expenditure as share of GDP because there are similar assumptions to the baseline in this scenario (i.e. the retirement age is also overall constant in the baseline). Overall in this scenario the change between 2022 and 2070 is 0.2 percentage points than in the baseline.

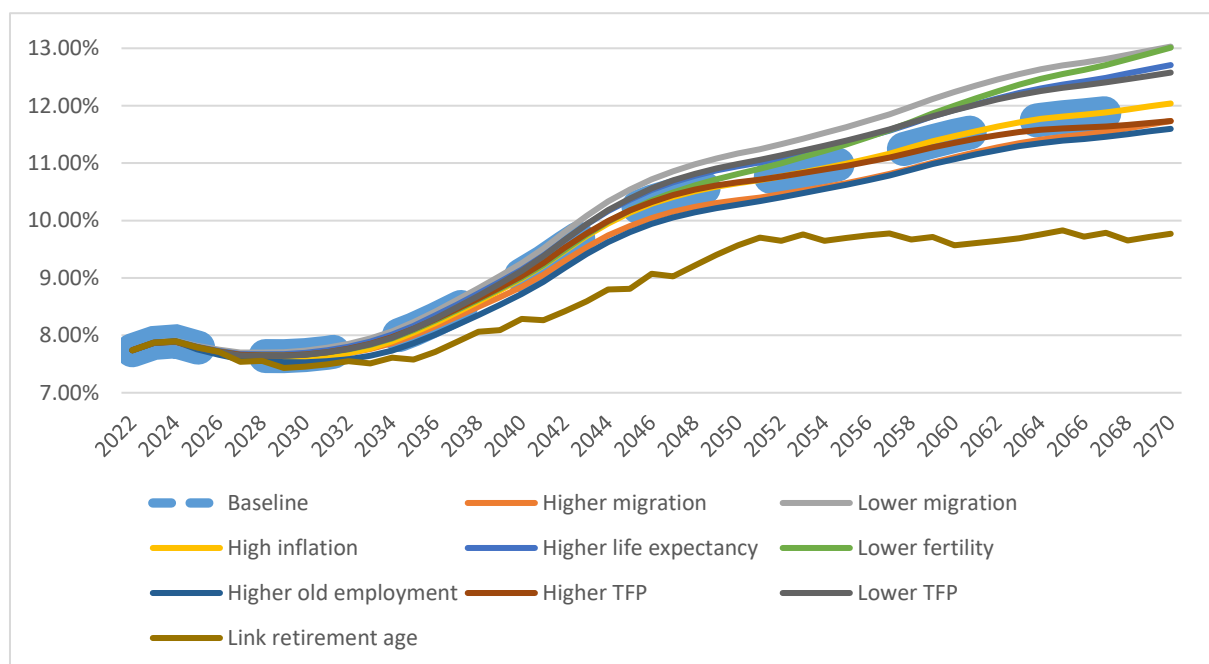
TABLE 16 – EXPENDITURE PROJECTIONS UNDER DIFFERENT SCENARIOS (PPS DEVIATION FROM BASELINE)⁸

Public pension expenditure	2022	2030	2040	2050	2060	2070	change 2022-2070 (pps)
Baseline (%GDP)	7.7	7.7	9.0	10.7	11.5	12.0	4.3
Higher life expectancy at birth (+2y)	0.0	0.0	0.1	0.3	0.5	0.7	0.7
Higher migration (+33%)	0.0	0.0	-0.2	-0.3	-0.4	-0.3	-0.3
Lower migration (-33%)	0.0	0.1	0.2	0.5	0.8	1.0	1.0
Lower fertility (-20%)	0.0	0.0	0.0	0.1	0.5	1.0	1.0
Higher inflation scenario (2% by 2052)	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0
Higher employment rate of older workers (+10 pps)	0.0	-0.1	-0.3	-0.4	-0.4	-0.4	-0.4
Higher productivity (TFP converges to 1%)	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.3
Lower productivity (TFP converges to 0.6%)	0.0	0.0	0.1	0.3	0.4	0.6	0.6
Policy scenario: link retirement age to longevity	0.0	-0.2	-0.8	-1.1	-1.9	-2.3	-2.3
Policy scenario: constant retirement age	0.0	0.0	0.1	0.2	0.2	0.2	0.2
Policy scenario: constant benefit ratio	:	:	:	:	:	:	:

Source: European Commission, EPC.

Figure 6 summarises the impacts of the sensitivity test with respect to the baseline.

FIGURE 6 – COMPARISON OF PENSION EXPENDITURE (% OF GDP) UNDER SENSITIVITY SCENARIOS AND THE BASELINE



⁸ For more information on the design of the sensitivity scenarios, see Chapter 5 of Part 1 in European Commission and EPC (2023), *The 2024 Ageing Report: Underlying assumptions and projection methodologies*, European Economy, Institutional Paper 257.

3.6. Changes in comparison with previous Ageing Report projections

The increase of public pension expenditure during the projection period has not changed since the last Ageing Report. In accordance with the previous trends, the increase of the dependency ratio effect is moderated. Similarly to the previous trends, the decrease of the coverage ratio effect slightly lower than in case of the previous Reports. The increase of the benefit ratio effect is higher than last Ageing Report. The change of the labour market effect is negative, similarly to the previous reports. The change of the residual (incl. interaction effect) is unchanged.

TABLE 17 – 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)	6.4	10.5	-4.5	2.0	-1.1	-0.4
2009 Ageing Report (2007-2060)	-0.2	8.9	-4.6	-2.7	-1.1	-0.7
2012 Ageing Report (2010-2060)	0.5	9.6	-4.9	-1.9	-1.4	-0.9
2015 Ageing Report (2013-2060)	-0.1	7.8	-3.5	-1.9	-1.9	-0.5
2018 Ageing Report (2016-2070)	1.5	6.4	-1.8	-1.6	-1.1	-0.3
2021 Ageing Report (2019-2070)	4.1	5.7	-1.3	0.6	-0.8	-0.1
2024 Ageing Report (2022-2070)	4.3	4.3	-0.4	0.8	-0.4	0.0

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.

TABLE 18 – 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)	8.3	8.9	8.6	8.6
<i>Assumptions (pps of GDP)</i>	0.0	-0.5	-0.3	-1.2
<i>Coverage of projections (pps of GDP)</i>				
<i>Constant policy impact (pps of GDP)</i>				
<i>Policy-related impact (pps of GDP)</i>				0.3
Actual public pension expenditure (%GDP)	8.3*	8.4*	8.3*	7.7

Source: European Commission, EPC; *Hungarian Central Statistical Office

In case of 2022 data – due to the accelerated reintroduction of the 13th monthly pension (the full monthly amount was paid out, compared to the originally accepted schedule on reintroduction) – a 0.3 pps of policy-related change is indicated. As in the previous Ageing Report, the effect of the reintroduction of the 13th monthly pension was included - therefore after 2022 there is no further impact on the projections data. Despite the negative impact of the 13th monthly pension on expenses, due to the large increase of GDP in 2021 and in particular in 2022 and the negative effect of the COVID-19 on the numbers of pensioners (i.e. the normal average mortality impact of 2020s on expenditure was concentrated in 2021 and 2022), the pension expenditure was significantly lower in 2022 than it was projected in the Ageing Report 2021.

TABLE 19 – DISAGGREGATION OF THE DIFFERENCE BETWEEN THE 2021 AND THE NEW PUBLIC PENSION PROJECTIONS (%GDP)

	2022	2030	2040	2050	2060	2070
Ageing Report 2021 projections	8.6	8.3	9.7	11.2	11.9	12.4
<i>Change in assumptions (pps of GDP)</i>	-1.2	-0.6	-0.7	-0.5	-0.4	-0.4
<i>Improvement in the coverage or in the modelling (pps of GDP)</i>						
<i>Change in the interpretation of constant policy (pps of GDP)</i>						
<i>Policy-related changes (pps of GDP)</i>	0.3					
New projections	7.7	7.7	9.0	10.7	11.5	12.0

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 Department for Economics and Analytics of Central Administration of National Pension Insurance has developed the used model and the Department (as part of Hungarian State Treasury from November 2017) is still in charge of maintaining and updating the model if needed.

One of the main purposes of estimating the long term incomes and outcomes of the pension system is to make our report to AWG. The other reason, why estimation of the long term incomes and outcomes of the pension system is of major importance in pension policy is analysing the long term effects of measures concerning the pension system.

4.2. Data used to run the model

The starting data for the model consists of a 20% random sample of the 2012 population stratified by age, gender, work status (employed, unemployed) and type of provision (old-age pension, widow's pension and orphan's allowance) and, therefore, the first simulated time period is 2013.

The choice of the basis year was determined by the available database. During the model development phase it was its latest – full year – entitlement database that constituted the point of departure for projections. Incidentally, 2012 was a good year for the acquisition of entitlement. On the one hand, relatively recent data were used as the basis for the model, reducing the number of estimated periods together with errors stemming from estimation. Moreover, data for after 2012 are also continuously available therefore an adequate testing period is available for calibrating the model.

4.3. Reforms incorporated in the model

All the reforms and changes in legislations are incorporated in our model. For further information, please see Section 1.2. Recent reforms included in the projections.

4.4. General description of the model(s)

Since the model uses discrete time, it is possible to specify the hierarchy and running sequence of the various modules making up the model right from the initial data of 2012 up to the generation of the projected data. This process is illustrated in the figure below.

Main modules of the model include:

- marriage market,
- labour market, and
- pension register module with a pension calculator.

Marriage market module

The original data consisted of various socio-economic characteristics of the subjects. It however did not include any information on the family relations between the individuals. Therefore, in order to be able to simulate the marriage market, various family relationships, e.g. marriage, cohabitation, parent-child relationships were imputed using logistic regression models, whose coefficients had been estimated using the 2011 census data. If needed, adjustments were made using the corresponding CSO data.

Labour market module

The simulation of the labour market activity in the model is based on logistic regression models as well. Two characteristics play a central role in these models. The first is the lagged employment status (employed or unemployed) of the individual. The second key variable describes the so-called labour

market profile, which reflects for each individual the long-term history of the occupational changes since 1990; a period which includes large-scale political, societal and economic transformations in Hungary.

Pension calculator and pension register module

Within this module the amount of pension is calculated in several steps according to law. During the pension payment period the amount paid is indexed until the end of provision.

4.5. Other features of the projection model

The selection algorithm applied in the MIDAS_HU – and the MIDAS model family – LIAM2 system is regarded as the most important element of the projection methodology.

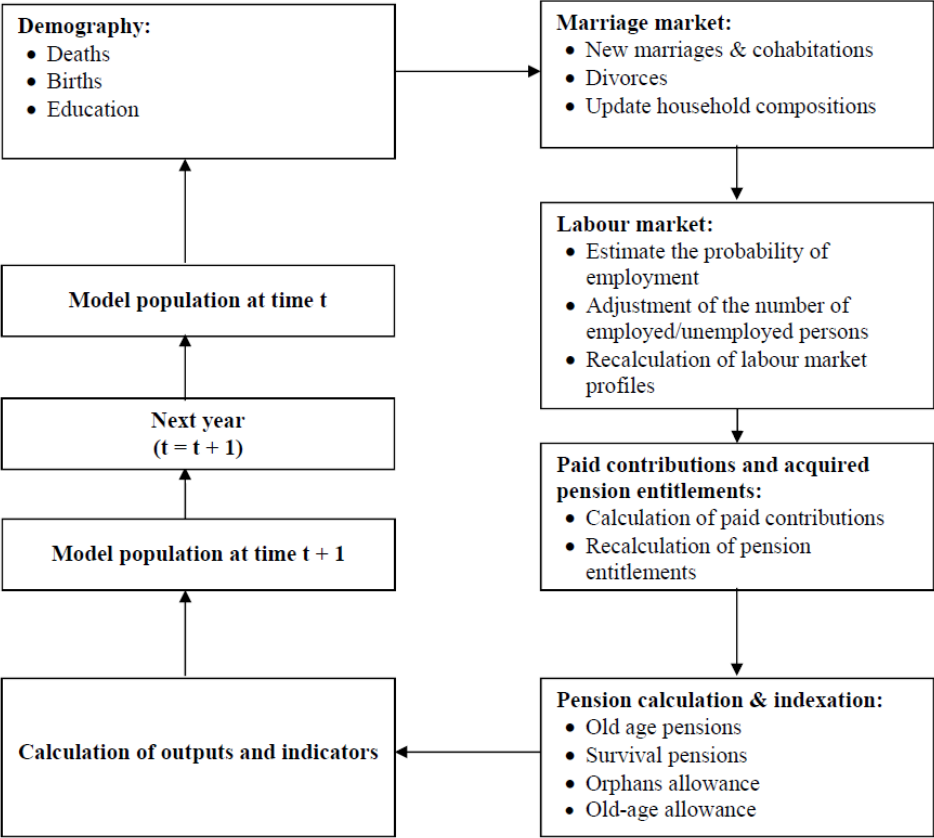
The key element of selection is a logistic regression (logit) model, along with the alignment procedure applied together with it. The operation of the procedure is illustrated through the example of the selection of employees. In the first step the probability of being employed during the current period is estimated for each model person, with the help of a logistic regression exercise on the basis of the relevant parameters of each person, such as labour market status in the preceding period, age, gender as well as a random error component. This is followed by assigning the model persons to groups on the basis of age and gender, in a decreasing order of estimated probability within each group.

This is followed by picking the n individuals having the highest estimated probability from each group, making sure that the ratio of the number of those so selected (n), to the total number of individuals in that particular group, equals or is as close as possible to the macro data specified in the alignment table.

Model calibration

For model-checking and cross-calibration the validation sample of 2013-2014 was used against the development sample of 2012 within the framework of microsimulation modelling with alignments.

FIGURE 7 – THE WHOLE PROCESS OF THE MODEL



Methodological annex

Economy-wide average wage at retirement

The evolution of economy-wide average wage at retirement is described in Table A1.

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

	2022	2030	2040	2050	2060	2070
Economy-wide average gross wage at retirement	15.6	26.2	46.3	69.8	119.3	185.9
Economy-wide average gross wage	13.5	23.8	40.4	67.5	109.0	168.8

Source: European Commission, EPC.

Pensioners vs pensions

The total number of pensioners is not equal to the sum of the benefit subcategories. A pensioner who receives an old-age pension and a survivor's pension at the same time is calculated only once. However, for pensions, it is counted as two.

Pension taxation

Pension benefits are not the subject to taxation; the benefits are calculated on a net basis (gross and net expenditure results are the same).

Disability pensioners

The driving forces behind the projections of disability benefits are described in section 1.1. and section 3.2. The following table also includes the disability provision above and below retirement age.

TABLE A2 – DISABILITY RATES BY AGE GROUPS (%)

	2022	2030	2040	2050	2060	2070
Age group -54	1.7	1.7	1.4	1.3	1.3	1.3
Age group 55-59	13.9	13.2	12.8	12.0	11.7	11.6
Age group 60-64	23.6	22.5	22.0	20.1	20.4	20.0
Age group 65-69	8.2	9.3	8.7	8.2	8.0	7.8
Age group 70-74	6.0	7.8	7.7	7.5	6.9	7.0
Age group 75+	0.8	4.6	7.3	7.6	7.4	7.0

Source: Hungary.

Survivors' pensions

The driving forces behind the projections of survivors' benefits are described in section 3.2.

Non-earnings-related minimum pension

The share of the minimum pension is negligible.

Contributions

The implicit contribution rate is supposed to be constant over the projection horizon as a no policy change assumption.

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 (rather than pensioners).

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	-0.1	1.4	1.6	0.8	0.6	4.3
Dependency ratio effect	0.1	1.4	1.7	1.0	0.0	4.2
Coverage ratio effect*	0.0	-0.5	-0.5	-0.3	0.0	-1.3
<i>Coverage ratio old-age</i>	-0.1	-0.5	0.0	-0.1	0.1	-0.5
<i>Coverage ratio early-age</i>	-1.0	1.0	-0.9	0.2	-0.4	-1.0
<i>Cohort effect</i>	1.2	-1.4	-2.0	-1.3	0.2	-3.3
Benefit ratio effect	-0.1	0.6	0.6	0.1	0.5	1.7
Labour market effect	-0.2	-0.1	-0.1	-0.1	0.0	-0.4
<i>Employment ratio effect</i>	-0.2	0.0	-0.1	0.0	0.0	-0.3
<i>Labour intensity effect</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Career shift effect</i>	0.0	-0.1	0.0	0.0	0.0	0.0
Residual	0.1	0.0	0.0	0.0	0.0	0.1

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

Source: European Commission, EPC.