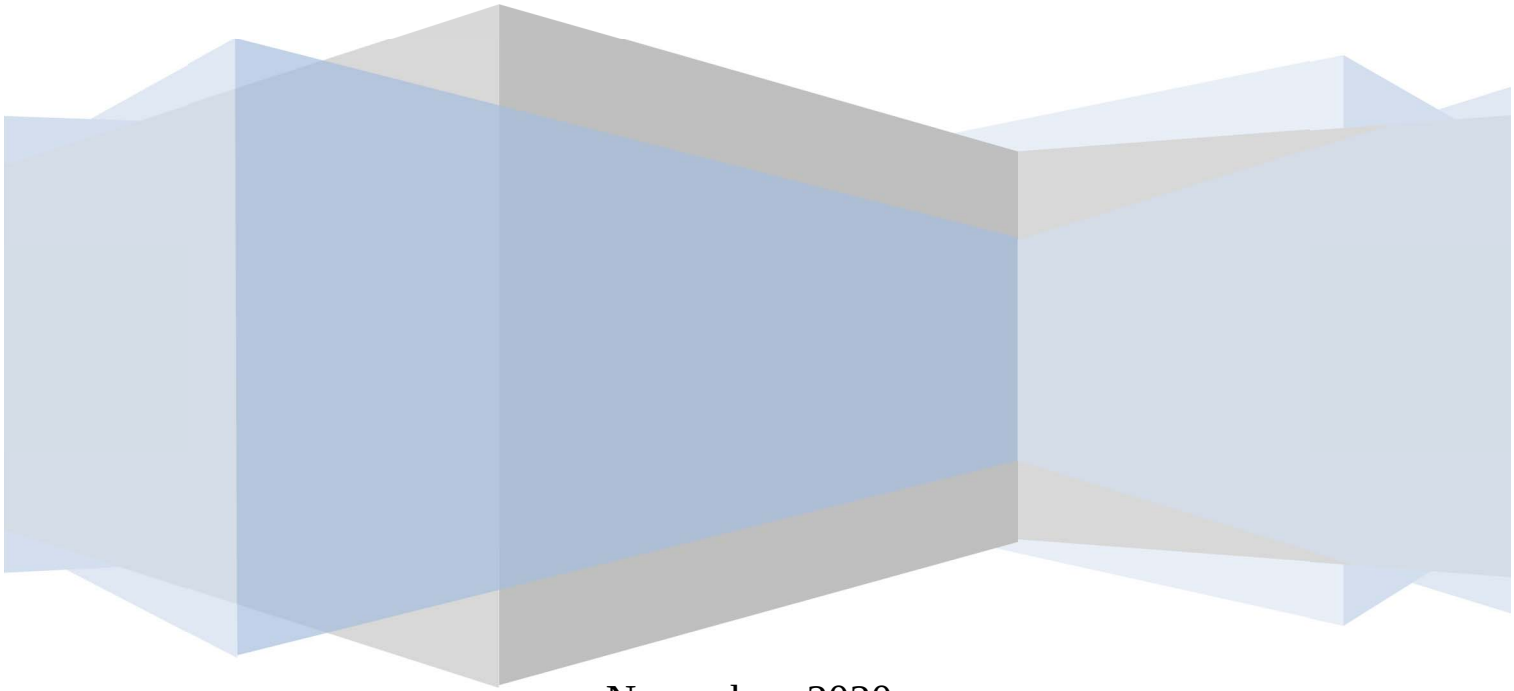
Ministry of Finance
Hungarian State Treasury

COUNTRY FICHE ON PENSION
HUNGARY



November, 2020

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1. Overview of the Hungarian pension system

1.1. Description

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 include:

- Disability benefits, old-age allowance, other social allowances etc. (see below section 1.1.1-1.1.4 and section 3.1.1)

Indexation of all pension benefits

As from January 2012, pensions are indexed to inflation. Pension benefits are increased according 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 actual CPI data exceeds the planned CPI in the budget.

Financing the Pension System

As of 1 July 2020 a new Act on Social Security[1] 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 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. In the budget, the social contribution tax revenue is shared between the Pension Insurance and Health Insurance Fund. In 2020, 71.63% of the total social contribution goes to the Pension Insurance Fund (this corresponds to a rate of 11.1% pension contribution) while 28.37% is directed to the Health Insurance Fund.

1.1.1. Old-age pension benefit

Retirement age

The standard retirement age for old-age pension ("öregségi nyugellátás") was 62 years in 2013 and according to the 2009 reforms[2] following the 2008 crisis, it was set to gradually increase based on the year of birth. Beginning with the people born in 1952, the statutory retirement age will gradually increase by six months for each cohort, both for women and men, until reaching 65 years of age by the second half of 2021. The age requirement for old-age retirement for those born in 1957 (a retirement age of 65 is applicable) is fulfilled in 2022 on their birthday (Table 15).

[1] Act CXXII of 2019 on Entitlements to Social Security Benefits and on Funding These Services

[2] Act XL of 2009 on the Amendment of Act LXXXI of 1997 on Social Insurance Pensions

TABLE 1 – QUALIFYING CONDITIONS FOR RETIREMENT

			2019	2020	2030	2040	2050	2060	2070
Qualifying condition for retiring with a full pension	Minimum requirements	Contributory period – men*	20	20	20	20	20	20	20
		Retirement age – men	64	64.5	65	65	65	65	65
		Contributory period – women	20	20	20	20	20	20	20
		Retirement age – women*	64	64.5	65	65	65	65	65
	Statutory retirement age – men		64	64.5	65	65	65	65	65
	Statutory retirement age – women		64	64.5	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	0.5% /m
	Minimum contributory period – men		15	15	15	15	15	15	15
	Minimum contributory period – women		15	15	15	15	15	15	15
	Minimum residence period – men		-	-	-	-	-	-	-
	Minimum residence period – women		-	-	-	-	-	-	-

** For women there is an option to retire if they have 40 years eligibility period (gained only from work and childcare years) regardless their age, other early retirement schemes are largely abolished (see in Section 1.1.2 and 1.1.4)*

Source: Hungarian State Treasury

Calculation of benefits

The calculation of benefits is based on 1) the number of years of service 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 2020 to year 2019).

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 1,050]) there is a progressive reduction to be applied. (Only 90% of the incomes between HUF 372,000 and 421,000 [ca. EUR 1,200], and 80% of the monthly incomes above 421,000 have to be taken into account)[3].

Step 4: Taking into account the number of years of service

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

[3] E.g. if the average monthly income is HUF 500,000, the pensionable average income is HUF 479,300. (372.000*100%+((421,000-372,000)*90%+(500,000-421,000)*80%).

TABLE 2 –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

In Hungary, one of the eligibility criteria for an old-age pension is to acquire at least 15 years of service. Those eligible for a full pension (i.e. who have reached the statutory retirement age and attanined a minimum of 20 years of service) but whose pension, according to the benefit calculation, is lower than the minimum amount of 28,500 HUF/month, will be entitled to the minimum pension. A requirement of 15 years of service is required to receive a partial pension, without eligibility to the minimum pension. This is a very rare case.

Old-age pensioners can get pension benefits and continue working without any limitation on their income in the private sector, whereas the pension benefit is suspended if a pensioner continues working in the public sector.

1.1.2. Pension for women with 40 years eligibility period

Pension for women with a 40 years eligibility period ("nők 40 év jogosultsági idővel szerzett kedvezményes nyugdíja") is the only early-pension scheme, exclusively available for those women who, regardless of age, have gained at least a 40 years eligibility period. This early old age pension is meant to acknowledge women's dual performance throughout their lifetime: at the workplace and within the household. The eligibility period represents any period acquired through gainful activity (i.e. work) or any benefit connected to child raising or nursing fees. However, at least 32 years of gainful activity are needed (when taking into account periods of child raising), and 30 years of gainful activity (when taking into account nursing fees). The eligibility period is decreased by one year for each child in households with five or more children (a maximum of seven years is possible, and at least 25 years of gainful activity is necessary). Under this scheme, women are entitled to full pension benefits, i.e. with no penalization due to early retirement.

1.1.3. Survivors' benefits

Survivors' benefits ("hozzátartozói ellátás") 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 widows' pension ("özvegyi nyugdíj) for the spouse, parent's benefit ("szülői nyugdíj") and orphans' benefit ("árvaellátás") for the children of the deceased person.

1.1.4. 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 rehabilitation or disability provisions („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, are eligible for disability provisions and only receive financial support. The period spent in employment while receiving rehabilitation provisions 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 still entitled to early pension benefits are miners and artists with at least 25 years of service. 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 are gradually being phased out. 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 army benefit ("szolgálati járandóság"). Both type of pension will be phased out. No new early pension of armed forces will be established in the future. Accordingly this (rather minor – expenditures of 0.3% of GDP in 2016) scheme is also phased out in the next decades.

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.

Old-age social 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 law[4], and have no other source of sufficient income, can apply for a means-tested old-age social allowance ("időskorúak járadéka"). This allowance is financed by taxes and forms part of the social assistance system. The eligibility for the old-age social allowance is revised in every two years.

1.1.5. 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 26% of employed participates in this scheme,
- voluntary privately managed pension funds (ex-mandatory) – less than 2% of employed participates in this scheme,
- occupational pension institutions – new possibility for employers, only one institution operates with very few members,
- retirement saving accounts,
- pension insurance products.

[4] Act III of 1993 on Social Governance and Social Benefits

1.2. Recent reforms included in the projections

1.2.1. Social contribution tax reduction
(as of 1 January 2017)

The rate of social contribution tax was cut from 27% to 22% to 19.5% and to 17.5% in 2017, 2018 and 2019 respectively and decreased further to 15.5% by July 2020. ***The reductions implemented after the 2018 Ageing Report decreases the pension revenues in the projection***.

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

The 13th monthly pension will be re-introduced[5] in 2021, according to a recent law[6] adopted in 2020, as part of the response to COVID-19 crisis to improve the beneficiaries' income situation. According to this new measure, pensioners will receive an extra ¼ monthly benefit in 2021, ½ monthly benefit in 2022, ¾ monthly benefit in 2023. From 2024 onwards, a full 13th monthly benefit will be 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 1.1.1-1.1.4.). The 13th monthly pension is incorporated as a no-policy-change assumption in long-term. ***The reintroduction of 13th monthly pension increases the pension expenditures in the projections.***

1.2.3. Former changes to the pension system introduced in the past decade

The changes in this subsection is already incorporated in the 2018 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.)

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

[5] 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.
[6] Act LXXVIII of 2020 on Amendments to Certain Acts to Reintroduce 13th Monthly Pension

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)
If workers in the public sector remain in status their pension benefits shall be suspended.

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 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. If the person wants to get one year service year for every working year, s/he can pay a higher amount of flat tax (HUF 75,000).

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 projections

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 benefits. This ratio was kept constant for the whole simulation period.

2. Demographic and labour forces projections

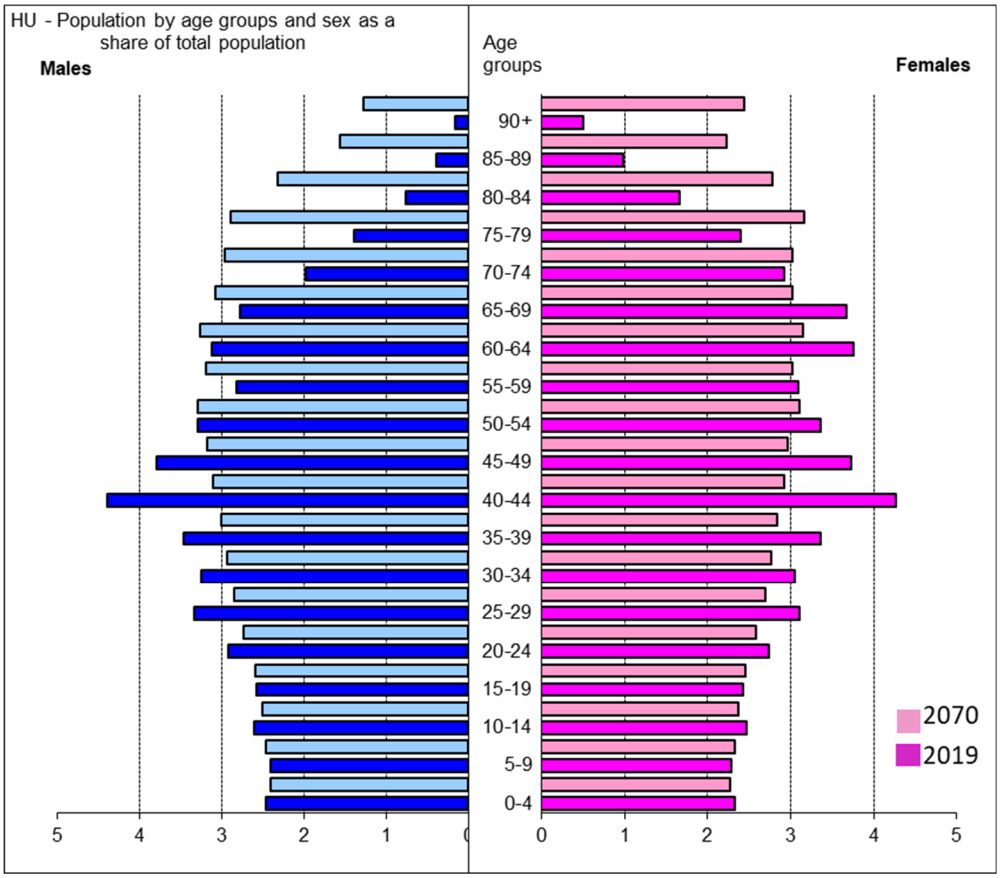
2.1. Demographic development

TABLE 3 – MAIN DEMOGRAPHIC VARIABLES

	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Population (thousand)	9 772	9 611	9 432	9 263	9 108	8 918	9 772	2019	-854
Population growth rate	0.0	-0.2	-0.2	-0.2	-0.2	-0.2	0.0	2019	-0.2
Old-age dependency ratio (pop 65+ / pop 20-64)	32.2	36.6	43.5	52.0	57.0	57.4	57.6	2063	25.1
Old-age dependency ratio (pop 75+ / pop 20-74)	11.4	15.8	17.4	21.6	26.6	28.4	28.4	2070	17.0
Ageing of the aged (pop 80+ / pop 65+)	22.7	27.3	31.8	30.8	39.3	41.0	41.0	2070	18.3
Men - Life expectancy at birth	72.9	75.4	77.7	79.8	81.8	83.6	83.6	2070	10.7
Women - Life expectancy at birth	79.8	81.8	83.7	85.4	87.0	88.5	88.5	2070	8.7
Men - Life expectancy at 65	14.8	16.4	17.9	19.3	20.6	21.9	21.9	2070	7.1
Women - Life expectancy at 65	18.7	20.2	21.6	23.0	24.2	25.4	25.4	2070	6.7
Men - Survivor rate at 65+	75.0	80.0	83.6	86.7	89.2	91.2	91.2	2070	16.2
Women - Survivor rate at 65+	87.7	90.1	91.8	93.2	94.4	95.4	95.4	2070	7.7
Men - Survivor rate at 80+	38.7	47.3	54.6	61.3	67.3	72.5	72.5	2070	33.8
Women - Survivor rate at 80+	62.0	68.5	73.7	78.1	81.8	85.0	85.0	2070	23.0
Net migration (thousand)	36.3	23.5	23.3	23.2	23.3	23.5	36.3	2019	-12.8
Net migration over population change	-11.4	-1.4	-1.3	-1.5	-1.3	-1.3	-1.2	2066	10.1

Source: EUROSTAT and European Commission

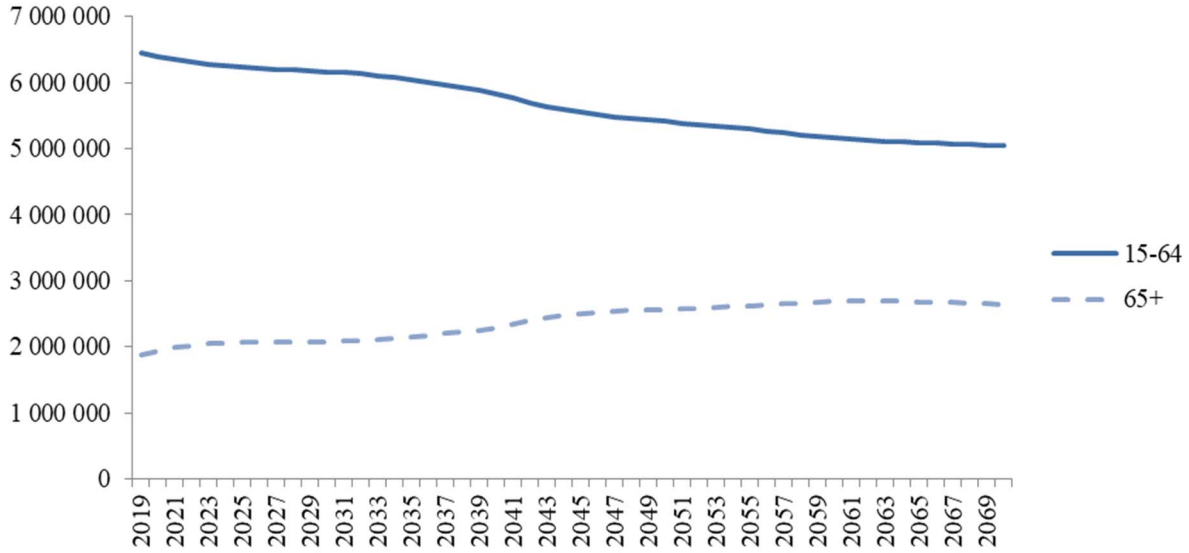
FIGURE 1 – AGE PYRAMID, COMPARISON BETWEEN 2019 AND 2070



Source: EUROSTAT and European Commission

The number of people aged 65+ rises to around 2,7 million people at the end of the projection horizon by 0.8 million people (+40.1%). Parallel to the increase in the number of old-age people, the active age population sharply decreases from 2019 to 2070 by 1.4 million people (-21.9%).

FIGURE 2 – EVOLUTION OF POPULATION BETWEEN 2019 AND 2070



Source: EUROSTAT

As a result, the old age dependency ratio is expected to increase sharply by 2070 and to reach 57.4%. The average life expectancy rises continuously by 10.7 years for males and 8.7 for females, over the projection horizon.

The population projections issued by Eurostat (EUROPOP 2019) in the case of Hungary provides broadly similar results as the EUROPOP 2015. Fertility rate assumption is somewhat lower and net migration is slightly higher in the new projection. Whereas the old age dependency ratio is similar in the new projection in 2070 (compared to 57.3% in EUROPOP 2015).

2.2. Labour force

TABLE 4 – PARTICIPATION RATE, EMPLOYMENT RATE AND SHARE OF WORKERS FOR THE AGE GROUPS 20-64, 20-74, 55-64 AND 65-74

	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Labour force participation rate 20-64	77.9	84.6	84.8	85.3	85.3	85.3	85.4	2062	7.3
Employment rate of workers aged 20-64	75.4	81.2	81.4	81.9	82.0	81.9	82.0	2062	6.5
Share of workers aged 20-64 in the labour force 20-64	96.7	96.0	96.0	96.1	96.1	96.1	96.7	2019	-0.7
Labour force participation rate 20-74	66.8	73.2	71.6	70.3	71.1	71.7	73.8	2033	4.9
Employment rate of workers aged 20-74	64.6	70.3	68.8	67.6	68.3	68.9	70.9	2033	4.3
Share of workers aged 20-74 in the labour force 20-74	96.7	96.0	96.1	96.1	96.1	96.1	96.7	2019	-0.6
Labour force participation rate 55-64	58.2	81.5	81.7	83.5	83.6	83.7	83.9	2064	25.5
Employment rate of workers aged 55-64	56.9	79.3	79.5	81.2	81.4	81.4	81.6	2064	24.5
Share of workers aged 55-64 in the labour force 55-64	97.8	97.2	97.3	97.3	97.3	97.3	97.8	2019	-0.4
Labour force participation rate 65-74	7.1	9.6	12.6	10.6	11.8	11.5	12.7	2041	4.5
Employment rate of workers aged 65-74	7.0	9.4	12.4	10.4	11.6	11.4	12.5	2041	4.4
Share of workers aged 65-74 in the labour force 65-74	98.6	98.3	98.4	98.3	98.3	98.3	98.6	2019	-0.3
Median age of the labour force	41.0	44.0	44.0	44.0	43.0	43.0	44.0	2027	2.0

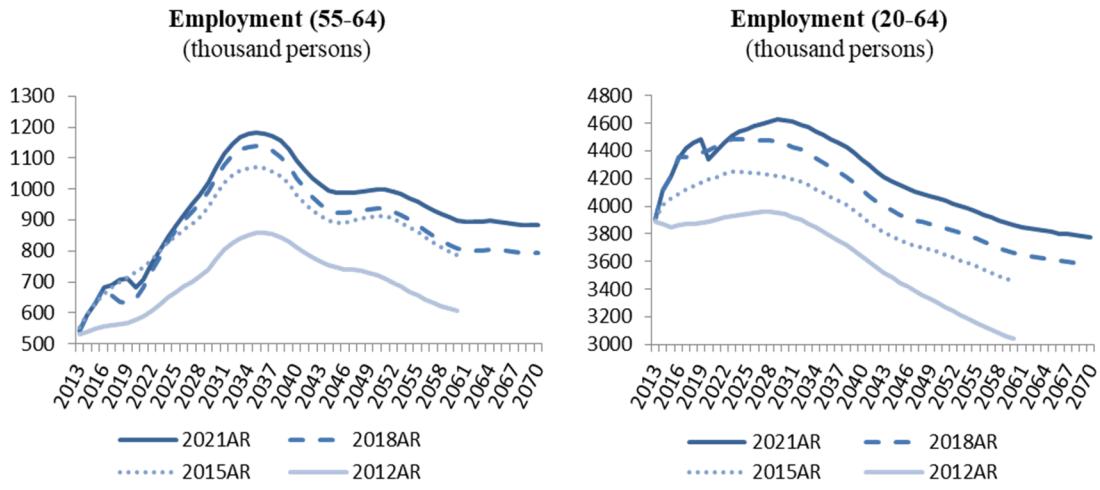
Source: European Commission

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 retirement 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 3 months, 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 disadvantageous groups (among others employees over 55 years of age) on the labour market.

Due to the increase in the effective retirement age, labour force participation of the persons aged 55-64 rises, although some lead time is needed for the labour market to take up those who lose their right to retire earlier (Figure 3).

FIGURE 3 – IMPROVING EMPLOYMENT ASSUMPTIONS UNDERLYING AGEING REPORTS



Source: European Commission and Ministry of Finance

TABLE 5A – LABOUR MARKET EXIT AGE, EFFECTIVE RETIREMENT AGE AND EXPECTED DURATION OF LIFE SPENT IN RETIREMENT – MEN

	2020	2030	2040	2050	2060	2070	peak value	peak year	change 2020-2070
Average effective retirement age (administrative data)*	64.0								
Average labour market exit age (CSM)**	63.2	65.3	65.3	65.3	65.3	65.3	65.3	2024	2.1
Contributory period	36.4	38.3	38.4	36.9	39.3	38.7	39.8	2062	2.3
Duration of retirement***	16.0	16.4	17.9	19.3	20.6	21.9	21.9	2070	5.9
Duration of retirement/contributory period	0.4	0.4	0.5	0.5	0.5	0.6	0.6	2070	0.1
Percentage of adult life spent in retirement****	26.1	25.7	27.4	29.0	30.3	31.6	31.6	2070	5.5

TABLE 5B – LABOUR MARKET EXIT AGE, EFFECTIVE RETIREMENT AGE AND EXPECTED DURATION OF LIFE SPENT IN RETIREMENT – WOMEN

	2020	2030	2040	2050	2060	2070	peak value	peak year	change 2020-2070
Average effective retirement age (administrative data)*	62.0								
Average labour market exit age (CSM)**	62.4	64.8	64.8	64.8	64.8	64.8	64.8	2023	2.5
Contributory period	34.9	37.4	37.8	38.5	37.7	37.5	38.8	2048	2.6
Duration of retirement***	21.1	20.2	21.6	23.0	24.2	25.4	25.4	2070	4.3
Duration of retirement/contributory period	0.6	0.5	0.6	0.6	0.6	0.7	0.7	2070	0.1
Percentage of adult life spent in retirement****	32.2	30.1	31.6	32.9	34.1	35.2	35.2	2070	2.9

* The effective retirement age shows the age at which people on average start receiving an old-age pension benefit. It is calculated on the basis of the administrative data for 2019 (see Annex Tables A4a and A4b); ** The labour market exit age as calculated based on Labour Force Survey data for the base year and estimated by the Cohort Simulation Model thereafter; *** 'Duration of retirement' is calculated as the difference between the life expectancy at the average labour market exit age and that exit age itself; **** The 'percentage of adult life spent in retirement' is calculated as the ratio between the duration of retirement and the life expectancy minus 18 years

Source: European Commission

3. Pension projection results

3.1. Extent of the coverage of the pension schemes in the projections

3.1.1. Covered benefits

The projections cover the mandatory social security pension scheme, the disability benefits, the old-age social allowances, all pension-like supplementary social allowances and the temporary benefits below the retirement age. (For more detailed description see section 1.1.1-1.1.4)

TABLE 6 – BENEFITS COVERED BY THE PROJECTION

Name of the benefit	**No. of beneficiaries** (September 2020, thousand persons)
Old age and early retirement schemes	
Old-age pension (above statutory retirement age) (*korbetöltött öregségi nyugdíj*)	1,869,818
Women with 40 years of service	158,542
Disability provision above retirement age (*rokkantsági ellátás*)	56,731
Miners allowance ***– to be phased out scheme***	2,295
Allowance of armed force born after 1954 *(szolgálati járandóság)* ***– to be phased out scheme***	26,824
Below-retirement-age provisions (*korhatár előtti ellátások*) – ***to be phased out schemes***	8,338
Survivor's benefits (hozzátartozói ellátások)	
Widows' and parentals pensions *(özvegyi és szülői nyugdíj)*	56,595
Orphans' benefit *(árvaellátás)*	52,106
Disability provisions	
Disability provisions below retirement age (*rokkantsági ellátás*)	209,309
Rehabilitation provision (*rehabilitációs ellátás*)	19,527
Miners' health impairment allowance (*bányász egészségkárosodási járadék*)	1,569
Other benefits	
Disability allowance *(rokkantsági járadék)*	33,313
Old-age social allowance *(időskorúak járadéka)*	6,825*
Accident allowance *(baleseti járadék)*	5,619
Spouse's supplement *(házastársi pótlék)*	1,518
Regular allowances for agricultural workers *(mezőgazdasági szövetkezeti járadékok)*	942
Other allowances *(egyéb járandóság)*	17,876

Source: Hungarian State Treasury
**Average number of beneficiaries in 2019, 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.

3.1.2. Difference between ESSPROS and AWG numbers

TABLE 7 – EUROSTAT (ESSPROS) VS. AGEING WORKING GROUP DEFINITION OF PENSION EXPENDITURE (% GDP)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	change 2009-2018
Eurostat total pension expenditure	10.8	10.7	10.8	9.3	9.4	8.9	8.6	8.5	8.1	7.8	-3.0
Eurostat public pension expenditure (A)	10.8	10.7	10.8	9.3	9.4	8.9	8.6	8.5	8.1	7.8	-3.0
Public pension expenditure (AWG: outcome) (B)	11.1	10.9	11.0	11.6	10.8	10.7	10.2	9.9	9.3	8.8	-2.3
Difference Eurostat/AWG: (A)-(B)	0.3	0.2	0.2	2.3	1.4	1.8	1.6	1.4	1.2	1.0	0.7
Expenditure categories not considered in the AWG definition	:	:	:	:	:	:	:	:	:	:	:

Source: EUROSTAT and Hungarian State Treasury

3.2. Overview of the projection results

The number of employed people increases until 2030 then continuously decreases (Table 12) because of demographic reasons (as the fertility rate is below 2.1).

TABLE 8 – PROJECTED GROSS AND NET PENSION SPENDING AND CONTRIBUTIONS (% OF GDP)

Expenditure	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Gross public pension expenditure	8.3	8.3	9.7	11.2	11.9	12.4	12.4	2070	4.1
Private occupational pensions	:	:	:	:	:	:	:	:	:
Private individual mandatory pensions	:	:	:	:	:	:	:	:	:
Private individual non-mandatory pensions	:	:	:	:	:	:	:	:	:
Gross total pension expenditure	8.3	8.3	9.7	11.2	11.9	12.4	12.4	2070	4.1
Net public pension expenditure*	8.3	8.3	9.7	11.2	11.9	12.4	12.4	2070	4.1
Net total pension expenditure*	8.3	8.3	9.7	11.2	11.9	12.4	12.4	2070	4.1
Contributions	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Public pension contributions	7.7	7.4	7.4	7.4	7.4	7.4	8.0	2020	-0.3
Total pension contributions	7.7	7.4	7.4	7.4	7.4	7.4	8.0	2020	-0.3

Source: European Commission

3.2.1. Total pension expenditure

Pension expenditures in Hungary (Table 9) are projected to decline until 2031, to then start increasing again until the end of the projection horizon. Overall, public spending on pension ranges from 8.3% (in 2019) to around 12.4% (in 2070) of GDP. As the Hungarian pension benefits are not subject to taxation, gross and net expenditure coincide (Table 8).

TABLE 9 – PROJECTED GROSS PUBLIC PENSION SPENDING BY SCHEME (% OF GDP)

Pension scheme	2019	2030	2040	2050	2060	2070	peak value	peak year	change 2019-2070
Total public pensions	8.3	8.3	9.7	11.2	11.9	12.4	12.4	2070	4.1
Old-age and early pensions	6.7	7.0	8.5	10.1	10.9	11.3	11.3	2070	4.6
Flat component	:	:	:	:	:	:	:	:	:
Earnings-related	6.7	7.0	8.5	10.1	10.9	11.3	11.3	2070	4.6
Minimum pensions (non-contributory) i.e. minimum income guarantee for people above 65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2035	0.0
Disability pensions	0.59	0.63	0.57	0.50	0.49	0.50	0.66	2022	-0.1
Survivors' pensions	0.92	0.69	0.55	0.51	0.50	0.48	0.97	2020	-0.4
Other pensions	0.06	0.05	0.06	0.07	0.07	0.08	0.08	2070	0.0

Source: European Commission, Hungarian State Treasury

The most important factors affecting the development of public pension expenditures are the following. In the beginning of the projection period, the largest cohorts of the baby boom generation of the 1950s retire, which drives the level of pension expenditures upwards in the 2010s. However, the gradual increase in the statutory retirement age increases from 62 to 65, projected to occur between 2012 and 2021, has a downward impact on pension expenditures. Spending on pension starts to increase again when the children of the baby boom generation start to retire in the mid-2030s.

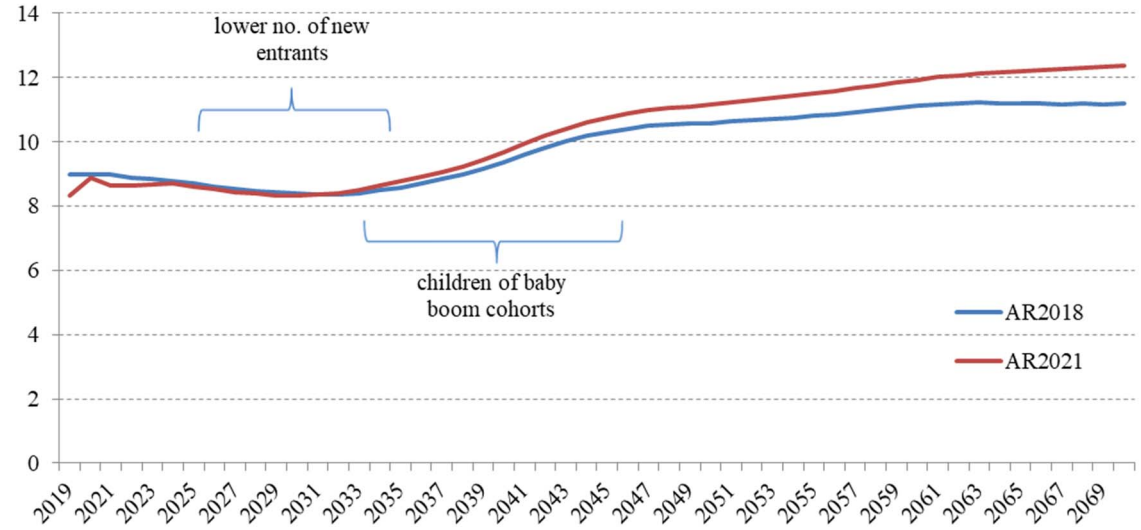
In the new projections, pension expenditures as a share of GDP are significantly higher, in the long term, than what projected in the 2018 Ageing Report. Before 2031, the pension expenditure-to-GDP ratio is slightly lower than under previous projections. However, from this point onwards, the ratio gradually increases, until the end of the projection horizon. In 2070, the new projections shows 1.2 pp. difference compared to the 2018 Ageing Report.

The higher total expenditure trend is mainly determined by the old-age and early pension category (Table 9). In this context, the re-introduction of a 13th monthly pension as of 2021 plays a major role, as it significantly raises the real value of all benefits. The second factor behind the rise is related to the higher number of pensioners. This is due to lower mortality rates, which raise the number of elderly people. As a result of the improving labour market projections, more people can reach the eligibility criteria, so the coverage ratios of pensioners and population have also increased.

Furthermore, the pension expenditures, in nominal terms, are higher than in 2018 Ageing Report. This is related to the higher assumed CPI is in the new projection[7].

[7] As agreed in the Ageing Working Group, the convergence value is higher by 1.0 percentage point, which is in line with the national central bank' inflation target (3% in Hungary).

FIGURE 4 – EVOLUTION OF PENSION EXPENDITURES (% OF GDP)

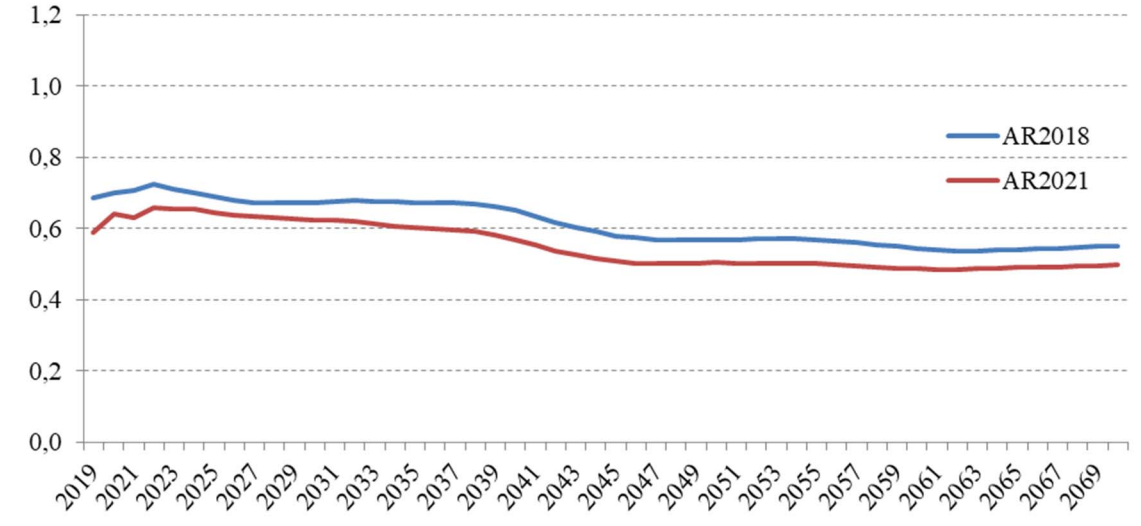


Source: Hungarian State Treasury

3.2.2. Disability pension expenditures

Disability provisions have been tightened considerably since 2012. As a result of the 2012 reform, the provision of benefits ceases to exist without a complex review of the health conditions of the beneficiary (after which s/he can receive disability or rehabilitation benefit that is to reintegrate people into the labour market and can only be provided for up to 3 years). Recent trends accordingly show a reduction of the recipients of these (disability+rehabilitation) benefits. The model assumes that these recent trends (2012-2016) continue. As a consequence of the stricter eligibility rules for the disability system along with the expected improvement in health status the number of disabled decreases remarkably in the next two and half decades. The results are marginally lower than expenditures included in the 2018 Ageing Report (Figure 5) due to firstly new outturn data being slightly lower than previously projected (broadly constant difference in the projection period).

FIGURE 5 – EVOLUTION OF DISABILITY PENSION EXPENDITURES (% OF GDP)

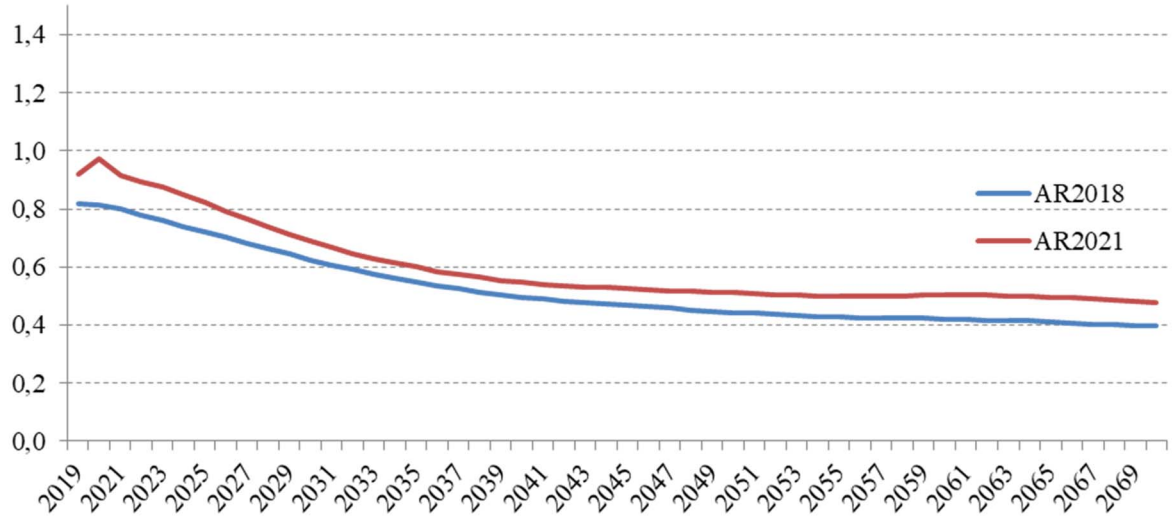


Source: Hungarian State Treasury

3.2.3. Survivor pension expenditures

Survivor pension expenditures show a continuous decrease throughout the projection horizon (Figure 6) due to the constant probability assumptions on marriages and divorces with values based on outturn data (that show a trend of less permanent marriages). The results are marginally higher than those included in the 2018 Ageing Report, due to slightly higher outturn data (broadly constant difference in the projection period).

FIGURE 6 – EVOLUTION OF SURVIVOR PENSION EXPENDITURES (% OF GDP)



Source: Hungarian State Treasury

3.2.4. Contribution

The results on contribution are mostly affected by the number of actives and wage assumptions. The reduction of the rate of social contribution tax decreases the pension revenues compared to previous projections.

3.3. Description of the main driving forces behind the projection results and their implications for main items from a pension questionnaire

3.3.1. Main driving forces

The main driving force behind the increase in pension expenditures is the significant growth of the number of older people (dependency ratio effect) and, in smaller part, the 13th monthly pension (benefit ratio effect), while better employment developments in order cohorts mitigate the change in public pension expenditures (labour market effect).

TABLE 10 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURES BETWEEN 2019 AND 2070 (IN PERCENTAGE POINTS OF GDP) - PENSIONERS

	2019-30	2030-40	2040-50	2050-60	2060-70	2019-70
Public pensions to GDP	0.0	1.3	1.5	0.8	0.4	4.1
Dependency ratio effect	1.1	1.6	1.9	1.1	0.1	5.7
Coverage ratio effect*	-0.5	-0.1	-0.5	-0.2	0.0	-1.3
Coverage ratio old-age	-0.2	0.2	0.0	0.0	0.0	0.1
Coverage ratio early-age	-1.7	0.4	-0.5	0.0	0.0	-1.8
Cohort effect	0.4	-1.5	-2.0	-1.3	0.0	-4.4
Benefit ratio effect	0.1	0.0	0.2	-0.1	0.3	0.6
Labour market effect	-0.7	-0.1	0.0	0.0	0.0	-0.8
Employment ratio effect	-0.6	0.0	-0.1	0.0	0.0	-0.7
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	0.0	-0.1	0.0	0.0	0.0	-0.1
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

3.3.2. Replacement rate and benefit ratio

In the first third of the projection period the replacement rate (RR) is expected to increase gradually and remain practically at that level afterwards (Table 11). The benefit ratio (BR) is going to remain relatively stable over the horizon.

The reason behind the slightly different evolution of the two indicators is that (the numerator of the) RR is driven by the average level of newly awarded benefits that are mostly determined by wage growth (because of valorisation rules based on past wage growth - see Step 2 in the calculation of benefits, in Section 1.1.1), while the BR is primarily influenced by the increase in the much larger amount of already awarded benefits that are indexed to inflation. The deceleration and then halting of the BR growth in 18-20 years reflects the time needed for the change of the stock of old-age pensions, that is, the constant difference of about 1.5-2 pp between inflation and wage growth assumptions is (broadly) fully built in the system in about 18 years.

It has to be highlighted that replacement rates are gross figures. As in Hungary there is no tax on pensions and pension benefits are calculated on a net basis, RR projections show the proportion of net pensions to gross wages. Therefore gross replacement rates are much lower than the net ratios. The denominator (gross wages) includes the personal income tax of 15% and a single 18.5% social security contribution.

TABLE 11 – REPLACEMENT RATE AT RETIREMENT (RR), BENEFIT RATIO (BR) AND COVERAGE BY PENSION SCHEME (IN %)

	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Public scheme (BR)	38%	38%	38%	39%	38%	40%	2%
Coverage	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Public scheme: old-age earnings related (BR)	38%	39%	40%	40%	39%	41%	3%
Public scheme: old-age earnings related (RR)	45%	49%	48%	47%	48%	48%	3%
Coverage	80.4	80.3	83.8	87.3	88.8	89.1	8.7
Private occupational scheme (BR)	:	:	:	:	:	:	:
Private occupational scheme (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Private individual schemes (BR)	:	:	:	:	:	:	:
Private individual schemes (RR)	:	:	:	:	:	:	:
Coverage	:	:	:	:	:	:	:
Total benefit ratio	38%	38%	38%	39%	38%	40%	2%
Total replacement rate	34%	35%	38%	37%	37%	37%	3%

Source: European Commission

3.3.3. Number of pensioners compared to total and inactive population

The number of pensioners compared to the total population is largely stable throughout the projection horizon (Table 12). Before 2022, the baby boom generation of the 1950s (number of births was the highest in 1954) retires, which worsen the dependency ratio. This effect is partially offset by the reduction of coverage ratios, especially those for early retirement ages, due to the abolishment of early retirement schemes. As a result of additional benefit of growing retirement age and improving employment of the elderly cohort, the coverage ratio will decline in the 65-69 and 70-74 age groups. This effect will be balanced by the end of the decade. This is because the cohorts with lower numbers of pensioners will reach the older age groups. These cohorts are highly influenced by the declining labour market in the early 1990s, and many insured persons had permanently excluded from the labour market, resulting in a lack of eligibility for pension. (The insured persons in younger age groups are much less influenced by this effect.) One possible reason for values above 100% in the ratio of pensioners to total population in some age groups may be the non-residents.

The ratio comparing the number of pensioners to the inactive population is consequently mainly influenced by the developments in inactivity. In this context, very high (>100%) figures for pensioners to inactive population, especially for women (particularly in the cohort just below the statutory retirement age from 2030), are driven by two aspects: first, the assumed favourable employment developments (in the case of the 60-64 cohort, notably by a spectacular drop in the corresponding inactivity ratios as a result of gradual increase of statutory retirement age to 65); second, the pensioners' possibility to work while receiving a pension (Table 13A, 14A).

TABLE 12 – SYSTEM DEPENDENCY RATIO AND OLD-AGE DEPENDENCY RATIO

	2019	2030	2040	2050	2060	2070	change 2019-2070
Number of pensioners (thousand) (I)	2631	2700	2970	3138	3218	3160	529
Employment (thousand) (II)	4590	4744	4518	4213	4023	3917	-673
Pension system dependency ratio (SDR) (I)/(II)	57.3	56.9	65.7	74.5	80.0	80.7	23.4
Number of people aged 65+ (thousand) (III)	1916	2082	2323	2575	2690	2643	727
Working age population 20-64 (thousand) (IV)	5944	5687	5336	4953	4715	4607	-1337
Old-age dependency ratio (OADR) (III)/(IV)	32.2	36.6	43.5	52.0	57.0	57.4	25.1
System efficiency (SDR/OADR)	1.8	1.6	1.5	1.4	1.4	1.4	-0.4

Source: European Commission

TABLE 13A – PENSIONERS (PUBLIC SCHEME) TO INACTIVE POPULATION RATIO BY AGE GROUP (%)

	2019	2030	2040	2050	2060	2070
Age group -54	9.0	9.1	9.1	8.0	7.2	6.6
Age group 55-59	98.4	104.0	157.6	160.5	170.3	175.1
Age group 60-64	86.7	80.6	183.8	189.5	199.8	210.2
Age group 65-69	107.1	104.6	112.9	121.5	117.2	119.1
Age group 70-74	104.9	103.4	96.6	105.2	101.2	102.2
Age group 75+	102.9	102.2	102.4	101.7	104.5	103.3

Source: European Commission

TABLE 13B – PENSIONERS (PUBLIC SCHEMES) TO TOTAL POPULATION RATIO BY AGE GROUP (%)

	2019	2030	2040	2050	2060	2070
Age group -54	3.6	3.6	3.2	2.9	2.8	2.7
Age group 55-59	23.4	19.8	19.6	18.8	19.1	18.9
Age group 60-64	49.6	46.6	44.6	44.5	44.8	45.6
Age group 65-69	97.2	92.6	96.1	93.7	94.4	94.6
Age group 70-74	100.4	95.1	102.6	99.0	101.2	99.8
Age group 75+	102.9	102.4	101.7	104.5	103.3	103.3

Source: European Commission

TABLE 14A – FEMALE PENSIONERS (PUBLIC SCHEME) TO INACTIVE POPULATION RATIO BY AGE GROUP (%)

	2019	2030	2040	2050	2060	2070
Age group -54	8.1	8.7	7.4	6.5	6.2	5.9
Age group 55-59	98.2	172.6	176.1	195.4	201.9	200.8
Age group 60-64	87.9	219.9	233.1	251.8	266.5	274.0
Age group 65-69	104.9	113.5	122.8	117.9	119.9	120.7
Age group 70-74	102.8	95.8	104.4	100.6	103.2	101.7
Age group 75+	102.6	102.2	101.4	104.0	102.9	103.0

Source: European Commission

TABLE 14B – FEMALE PENSIONERS (PUBLIC SCHEME) TO TOTAL POPULATION RATIO BY AGE GROUP (%)

	2019	2030	2040	2050	2060	2070
Age group -54	3.6	3.8	3.3	2.9	2.8	2.7
Age group 55-59	29.1	25.2	26.5	25.5	26.1	25.9
Age group 60-64	62.8	64.5	65.5	67.4	68.9	70.2
Age group 65-69	97.8	95.6	99.6	96.8	97.7	98.3
Age group 70-74	99.6	94.8	102.1	98.6	101.0	99.6
Age group 75+	102.6	102.2	101.4	104.0	102.9	103.0

Source: European Commission

3.3.4. New pensioners

Table 16 shows the trends in new old-age pensions and early earnings-related pensions. The rise in the statutory retirement age is implemented gradually until 2021. As the legislation increases the retirement age by 0.5 year for each concerned individual cohort, there are years in which only half of the cohorts gains new eligibility. This explains the low new pension expenditures at the beginning of the projection period, such as that in 2020 (projected new pension expenditure in 2020 EUR 138,4 million compared to EUR 326,6 million in 2019, Table 16A), when only those who were born between January and June 1956 gain new eligibility (in the standard old age pension scheme). For women, the difference is nuanced by the option to retire with 40 years of contribution (independently from the date of birth).

As almost continuous retirement during the whole years is assumed, the model calculates with an average of around 6 months paid in the first year for new entrants. However during the gradual (6 months per cohort) increase in the retirement age (2014-2021) when only half of the cohorts reaches the statutory retirement age, the "average number of months paid in the first year" is lower than 6 month (3 months for men and somewhat higher for women due to the option of retirement with 40 years eligibility period). This phenomenon explains the numbers of Table 16a, 16b and 16c.

TABLE 15– INCREASES OF THE RETIREMENT AGE

Cohorts	Retirement age	Date of retirement
1951	62	2013
1952	62.5	H2 2014 – H1 2015
1953	63	2016
1954	63.5	H2 2017 – H1 2018
1955	64	2019
1956	64.5	H2 2020 – H1 2021
1957 or later	65	2022 or later

Source: Hungarian State Treasury

TABLE 16A– PROJECTED AND DISAGGREGATED NEW PUBLIC PENSION EXPENDITURE (OLD-AGE AND EARLY EARNINGS-RELATED PENSIONS)

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	326.6	523.3	1260.1	1517.5	2561.4	3785.3
I. Number of new pensions (1000)	61.6	54.9	75.2	58.3	57.1	52.7
II. Average contributory period (years)	34.6	37.8	38.1	37.7	38.5	38.1
III. Average accrual rate (%)	2.3	2.1	2.1	2.1	2.1	2.1
IV. Monthly average pensionable earnings (1000 EUR)	0.6	1.0	1.7	2.8	4.7	7.6
V. Sustainability/adjustment factors	:	:	:	:	:	:
VI. Average number of months paid the first year	5.7	5.6	5.7	5.7	5.7	5.7
(Monthly average pensionable earnings) / (monthly economy-wide average wage)	55%	63%	65%	62%	64%	65%

**New pension expenditure equals the product of I. II. III. IV. V & VI*

Source: European Commission

TABLE 16B– DISAGGREGATED NEW PUBLIC PENSION EXPENDITURE (OLD-AGE AND EARLY EARNINGS-RELATED PENSIONS) - MEN

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	170.3	239.0	654.3	765.6	1353.1	1988.2
I. Number of new pensions (1000)	27.9	22.4	36.6	28.1	28.6	26.3
II. Average contributory period (years)	36.5	38.3	38.4	36.9	39.3	38.7
III. Average accrual rate (%)	2.3	2.2	2.1	2.1	2.1	2.1
IV. Monthly average pensionable earnings (1000 EUR)	0.6	1.1	1.8	2.9	4.9	7.9
V. Sustainability/adjustment factors	:	:	:	:	:	:
VI. Average number of months paid the first year	5.6	5.4	5.6	5.6	5.6	5.6
(Monthly average pensionable earnings) / (monthly economy-wide average wage)	61%	68%	68%	65%	66%	68%

**New pension expenditure equals the product of I. II. III. IV. V & VI*

Source: European Commission

TABLE 16C– DISAGGREGATED NEW PUBLIC PENSION EXPENDITURE (OLD-AGE AND EARLY EARNINGS-RELATED PENSIONS) - WOMEN

New old-age earnings-related pensions	2019	2030	2040	2050	2060	2070
Projected new pension expenditure (million EUR)*	156.3	284.3	605.8	751.9	1208.2	1797.2
I. Number of new pensions (1000)	33.8	32.5	38.6	30.2	28.5	26.4
II. Average contributory period (years)	33.0	37.4	37.8	38.5	37.7	37.5
III. Average accrual rate (%)	2.3	2.1	2.1	2.0	2.1	2.1
IV. Monthly average pensionable earnings (1000 EUR)	0.5	0.9	1.7	2.6	4.6	7.3
V. Sustainability/adjustment factors	:	:	:	:	:	:
VI. Average number of months paid the first year	5.8	5.7	5.8	5.8	5.8	5.8
(Monthly average pensionable earnings) / (monthly economy-wide average wage)	50%	59%	62%	59%	62%	63%

**New pension expenditure equals the product of I. II. III. IV. V & VI*

Source: European Commission

3.4. Financing 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 15.5%, of which the pension contribution rate amounts to 11.1%. The social contribution tax is shared between the Pension Insurance and Health Insurance Fund. In 2021, 71.63% of the total social contribution (this is corresponds to the rate of 11.1% 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 17– REVENUE FROM CONTRIBUTION (MILLIONS), NUMBER OF CONTRIBUTORS IN THE PUBLIC SCHEME (IN 1000), TOTAL EMPLOYMENT (IN 1000) AND RELATED RATIOS (%)

	Public employees	Private employees	Self-employed
Contribution base	gross wage	gross wage	declared monthly earnings
Contribution rate/contribution			
Employer	as from July 2020: 15.5%	as from July 2020: 15.5%	10% of declared monthly earnings and 15.5% of declared monthly earnings in the form of a social contribution tax.
Employee	10.0%	10.0%	
State	-	-	-
Other revenues	-	-	-
Maximum contribution	-	-	-
Minimum contribution	-	-	-

Source: Ministry of Finance

TABLE 18– REVENUE FROM CONTRIBUTION (%GDP) NUMBER OF CONTRIBUTORS IN THE PUBLIC SCHEME (IN 1000), TOTAL EMPLOYMENT (IN 1000) AND RELATED RATIOS (%)

	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Public pension contributions (%GDP)	7.7	7.4	7.4	7.4	7.4	7.4	-0.3
Employer contributions	*4.2*	*3.8*	*3.7*	*3.7*	*3.7*	*3.7*	*-0.5*
Employee contributions	*3.5*	*3.7*	*3.7*	*3.6*	*3.6*	*3.7*	*0.1*
*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)	4468	4744	4518	4213	4023	3917	-550
Employment (II) (1000)	4590	4744	4518	4213	4023	3917	-673
(I) / (II)	1.0	1.0	1.0	1.0	1.0	1.0	0.0

**only legislated contributions are reported*

Source: European Commission

3.5. Sensitivity analysis

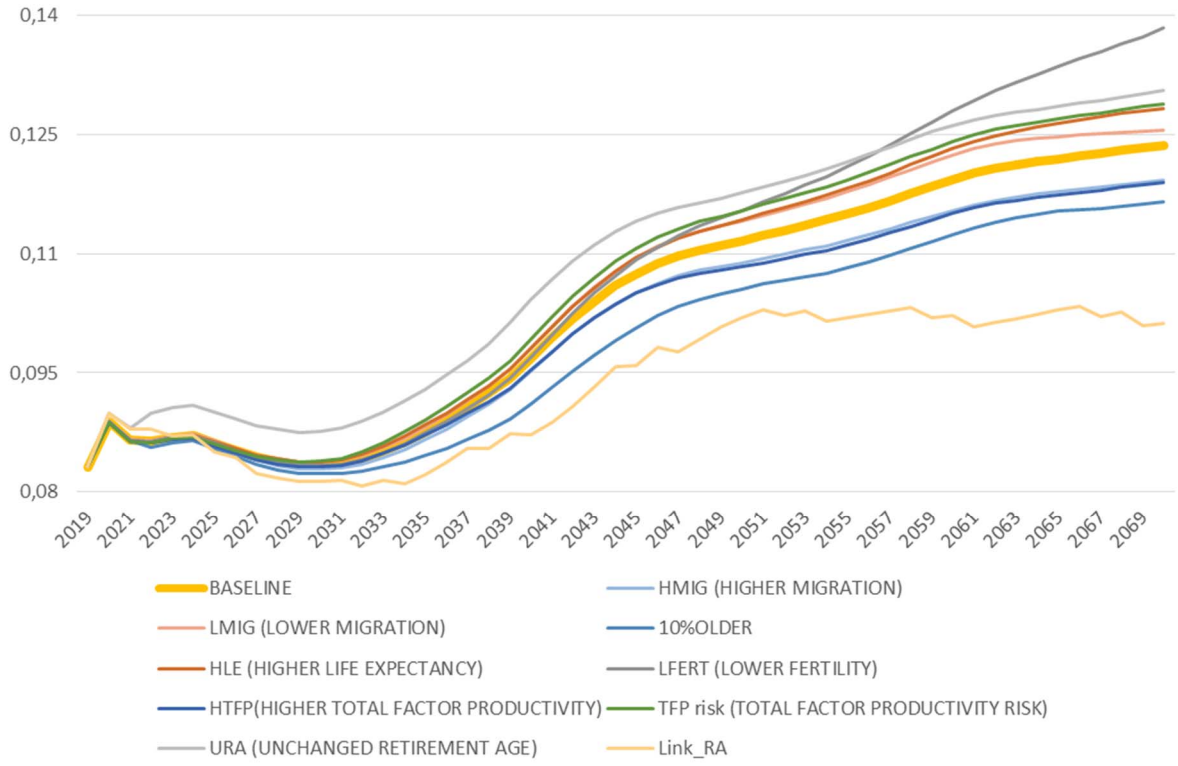
TABLE 19– PUBLIC AND TOTAL PENSION EXPENDITURE UNDER DIFFERENT SCENARIOS (P.P. DEVIATION FROM THE BASELINE)

Public pension expenditure	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Baseline (% GDP)	8.3	8.3	9.7	11.2	11.9	12.4	4.1
Higher life expectancy at birth (+2y)	0.0	0.0	0.1	0.3	0.4	0.5	0.5
Higher migration (+33%)	0.0	-0.1	-0.2	-0.3	-0.4	-0.4	-0.4
Lower migration (-33%)	0.0	0.0	0.1	0.2	0.3	0.2	0.2
Lower fertility (-20%)	0.0	0.0	0.0	0.4	0.9	1.5	1.5
Higher employment rate of older workers (+10 pps.)	0.0	-0.1	-0.6	-0.6	-0.7	-0.7	-0.7
Higher TFP growth (convergence to 1.2%)	0.0	0.0	-0.2	-0.3	-0.4	-0.5	-0.5
TFP risk scenario (convergence to 0.8%)	0.0	0.0	0.2	0.4	0.5	0.5	0.5
Policy scenario: linking retirement age to change in life expectancy	0.0	-0.2	-1.0	-1.0	-1.7	-2.3	-2.3
Policy scenario: unchanged retirement age	0.0	0.4	0.7	0.6	0.7	0.7	0.7
Policy scenario: offset declining pension benefit ratio	:	:	:	:	:	:	:
Lagged recovery scenario	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Adverse structural scenario	0.0	0.3	0.6	1.0	1.2	1.4	1.4

Total pension expenditure	2019	2030	2040	2050	2060	2070	change 2019-2070 (pps)
Baseline (% GDP)	8.3	8.3	9.7	11.2	11.9	12.4	4.1
Higher life expectancy at birth (+2y)	0.0	0.0	0.1	0.3	0.4	0.5	0.5
Higher migration (+33%)	0.0	-0.1	-0.2	-0.3	-0.4	-0.4	-0.4
Lower migration (-33%)	0.0	0.0	0.1	0.2	0.3	0.2	0.2
Lower fertility (-20%)	0.0	0.0	0.0	0.4	0.9	1.5	1.5
Higher employment rate of older workers (+10 pps.)	0.0	-0.1	-0.6	-0.6	-0.7	-0.7	-0.7
Higher TFP growth (convergence to 1.2%)	0.0	0.0	-0.2	-0.3	-0.4	-0.5	-0.5
TFP risk scenario (convergence to 0.8%)	0.0	0.0	0.2	0.4	0.5	0.5	0.5
Policy scenario: linking retirement age to change in life expectancy	0.0	-0.2	-1.0	-1.0	-1.7	-2.3	-2.3
Policy scenario: unchanged retirement age	0.0	0.4	0.7	0.6	0.7	0.7	0.7
Policy scenario: offset declining pension benefit ratio	:	:	:	:	:	:	:
Lagged recovery scenario	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Adverse structural scenario	0.0	0.3	0.6	1.0	1.2	1.4	1.4

Source: European Commission

FIGURE 7 – PUBLIC AND TOTAL PENSION EXPENDITURE UNDER DIFFERENT SCENARIOS, COMPARISON OF EVOLUTION (% OF GDP)



Source: Hungarian State Treasury

Higher life expectancy

The higher life expectancy increases the number of pensioners and the length of the average period spent in retirement. This scenario increases the pension expenditures as a percentage of GDP and the change in pension expenditure between 2019 and 2070 is bigger by 0.5 percentage points.

Higher migration:

Higher migration increases both the number of pensioners and GDP. In this scenario, the change in pension expenditure between 2019 and 2070 is smaller by 0.4 percentage points.

Lower migration

Lower migration decreases both the number of pensioners and GDP. The reason for less symmetric result after 2060 might be the relatively lower number of pensioners compared to the opposite scenario, while before 2060 the number of pensioners is continuously increasing. In this scenario, the change in pension expenditure between 2019 and 2070 is bigger by 0.2 percentage points.

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 2019 and 2070 is bigger by 1.5 percentage points.

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 2019 and 2070 is smaller by 0.7 percentage points.

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 2019 and 2070 is smaller by 0.5 percentage points.

TFP risk scenario

After 20 years from the baseline, the expenditure to the GDP ratio will gradually increase. This will lead to a 0.5 percentage points higher difference at the end of the horizon.

Linking retirement age to increases in life expectancy (dynamic retirement age scenario)

Currently there is a retirement age increase in process, which is faster than the increases in life expectancy, thus the first cohort that would be affected by this scenario is the cohort of 1960, the members of this cohort are expected to retire in 2025. With the continuous rise in the life expectancy pension expenditures are projected to decrease. This scenario generates the biggest impact on the evolution of pension expenditure. Overall, in this scenario, the change between 2019 and 2070 is smaller by 2.3 percentage points.

Unchanged retirement age scenario

A constant retirement age (64 years) during the whole period will result in a significant increase of the expenditure to the GDP ratio. The change in pension expenditure between 2019 and 2070 is bigger by 0.7 percentage points.

Offset declining pension benefit ratio scenario

The (earnings-related) public pension benefit ratio does not decrease by 10% relative to the base year; therefore this scenario is not calculated.

Lagged recovery scenario:

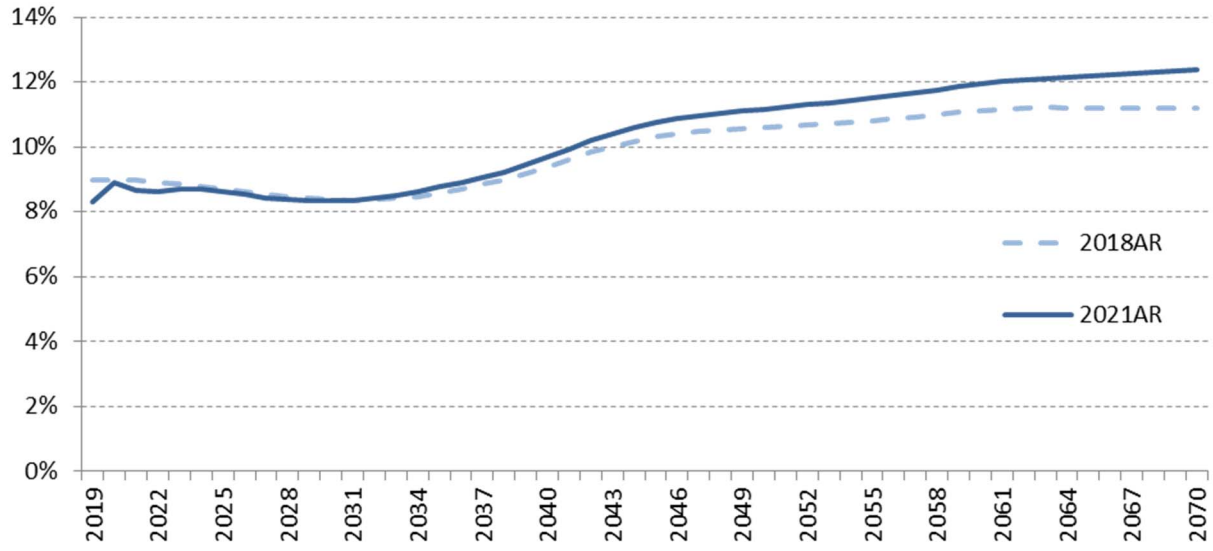
At the start of the projected period there are lower GDP assumptions. This will result in higher expenditure to GDP ratio. However, from 2028, the expenditure\GDP ratio follows the same path as in the baseline scenario. The minor difference is caused by the combined effect of the slightly lower GDP and the higher average wages. In this scenario, the change in pension expenditure between 2019 and 2070 is somewhat bigger, by 0.1 percentage points.

Adverse structural scenario:

During the whole projected period, there are significantly lower GDP and lower average gross wage assumptions. Therefore, the expenditure to the GDP ratio will have a large-scale difference from the baseline scenario. This scenario results an increase of 1.4 percentage points between 2019 and 2070.

3.6. Description of the changes in comparison with the 2009, 2012, 2015 and 2018 Ageing Report (AR) projections

FIGURE 8 – DIFFERENCE BETWEEN PENSION EXPENDITURE PROJECTIONS 2018AR VS. 2021AR (% OF GDP)



Source: Hungarian State Treasury

Overall, projected pension expenditures show a similar upward trend compared to the previous exercise (Figure 8). The increase in public expenditure between 2019 and 2070 was 2.2 percentage points in the 2018AR, while, in the current projection the increase amounts to 4.1 percentage points (Table 20A). The deteriorating result is, on the one hand, attributable to

a more favourable value of the base year (in the 2018AR, public pensions to GDP were projected to be at 9.0% in 2019, but in the 2021AR the actual data is by 0.7 percentage points lower, at 8.3%). In this context, the range between the starting and the final point is widened, thus resulting in a higher increase. On the other hand, mainly due to the re-introduction of 13th monthly pension *(policy-related change)* and the higher number of pensioners *(change in assumptions)* compared to the 2018AR, the results show a higher expenditure in the long term, reaching 12.4% of GDP in 2070, compared to the 11.2% in the 2018AR.

TABLE 20A– BREAKDOWN OF THE DIFFERENCE BETWEEN THE 2018AR AND THE NEW PUBLIC PENSION PROJECTION (% OF GDP)

	2019	2030	2040	2050	2060	2070	Change 2019-2070 (pps.)
Ageing Report 2018 projections	9.0	8.4	9.4	10.6	11.1	11.2	2.2
Change in assumptions (pps of GDP)	-0.7	-0.7	-0.4	-0.3	-0.1	0.3	1.0
Improvement in the coverage or in the modelling (pps of GDP)							
Change in the interpretation of constant policy (pps of GDP)							
Policy-related changes (pps of GDP)	0.0	0.6	0.7	0.9	0.9	0.9	0.9
New projections	8.3	8.3	9.7	11.2	11.9	12.4	4.1

Source: European Commission

Table 20B presents a comparison of the 2018AR projections with the actual public pension expenditure, between 2016 and 2019. In this period, the expenditure to GDP evolved approximately as projected in 2018 Ageing Report. Nevertheless, in 2019, the share of pension expenditure to GDP turned out to be 0.7 percentage points lower than what projected in the 2018AR, mainly due to better outturn GDP growth.

TABLE 20B– BREAKDOWN OF THE DIFFERENCE BETWEEN THE 2018AR PROJECTIONS AND OUTCOME FIGURES (% OF GDP)

	2016	2017	2018	2019
Ageing Report 2018 projections	9.7	9.2	9.0	9.0
Assumptions (pps of GDP)				
Coverage of projections (pps of GDP)				
Constant policy impact (pps of GDP)				
Policy-related impact (pps of GDP)				
Actual public pension expenditure	9.9	9.3	8.8	8.3

Source: European Commission

Regarding the development of projection results on a longer retrospective horizon (Table 20C), in the 2009 Ageing Report round, the figures for pension expenditures improved largely due to the significant parametric reforms (i.e. increase of the statutory retirement age from 62 to 65, change of swiss indexation to CPI indexation[8], cancellation of 13th month pension benefits). In the 2012 Ageing Report, pension expenditures were again projected as higher,

[8] More precisely, the 2009 reforms introduced a GDP growth-related indexation (different combinations of wage+CPI indexations. From 2012 onwards the indexation rules changed to a simply CPI indexation as adopted in 2011.

due to the closure of the mandatory funded private pension schemes. From 2011, the mixed pension system has been practically transformed to a solely state PAYG system (the preponderant part of members switched back fully to the pure PAYG system and members that stayed in the private pillar pay also their contribution to the PAYG system). As pensions that would have been paid from the mandatory private pillar will be paid from the state PAYG system, this systemic change increased significantly the public spending on pension (parallel to increase in revenues). Since the 2018 Ageing Report, except for the re-introduction of 13th monthly pension, only very minor changes were introduced to the pension system.

TABLE 20C– PUBLIC AND TOTAL PENSION EXPENDITURE UNDER DIFFERENT SCENARIOS (P.P. DEVIATION FROM THE BASELINE)

	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

- The disaggregation for 2006/2009/2012 is on the basis of pensions; for 2015/2018/2021 it is on the basis of pensioners.

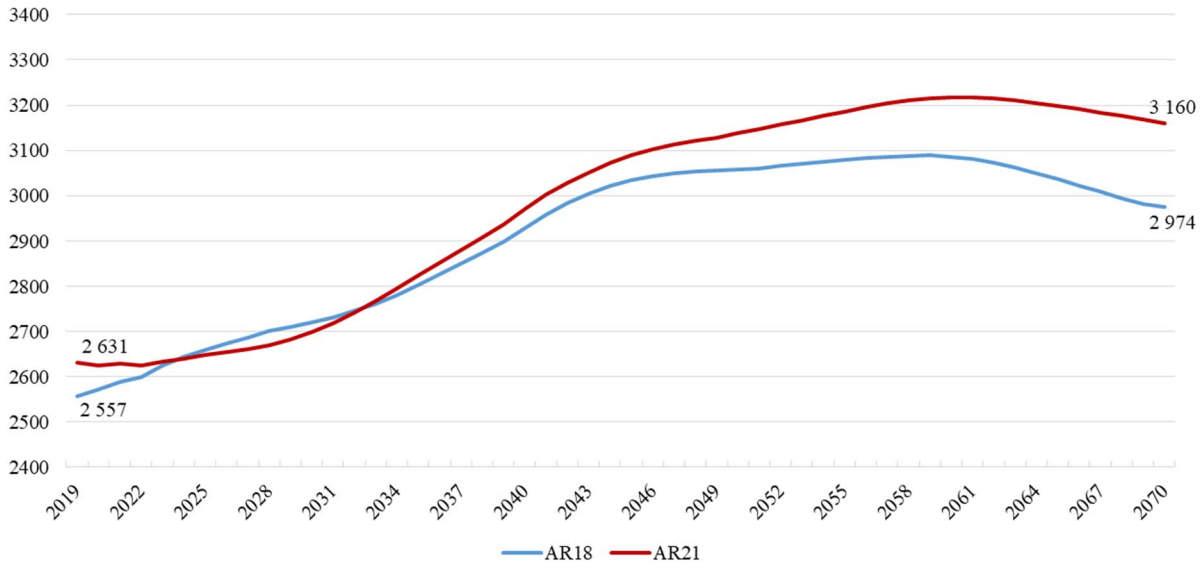
- The projection horizon has been extended over consecutive Ageing Reports, limiting comparability over time.

Source: European Commission

3.6.1. Change in assumptions

The macroeconomic assumptions result in a somewhat higher growth path (average annual real GDP growth rate is 0.2 pp higher) and accordingly a higher nominal GDP path throughout the projection horizon compared to the 2018 Ageing Report. The main factors behind the higher GDP path are higher GDP-deflator, more favourable employment indicators and higher TFP growth. The change in assumptions mitigates the upward pressure on the pension expenditure in the short and medium term offsetting the impact of the 13th monthly pension (Table 20A). Demographic changes nonetheless are somewhat less favourable in terms of their impact on pension expenditures in the long term, as the number of pensioners is somewhat higher than it was projected in the last exercise (Figure 9).

FIGURE 9 – NUMBER OF PENSIONERS 2018AR VS. 2021AR (IN 1000)



Source: Hungarian State Treasury

3.6.2. Change in the interpretation of constant policy

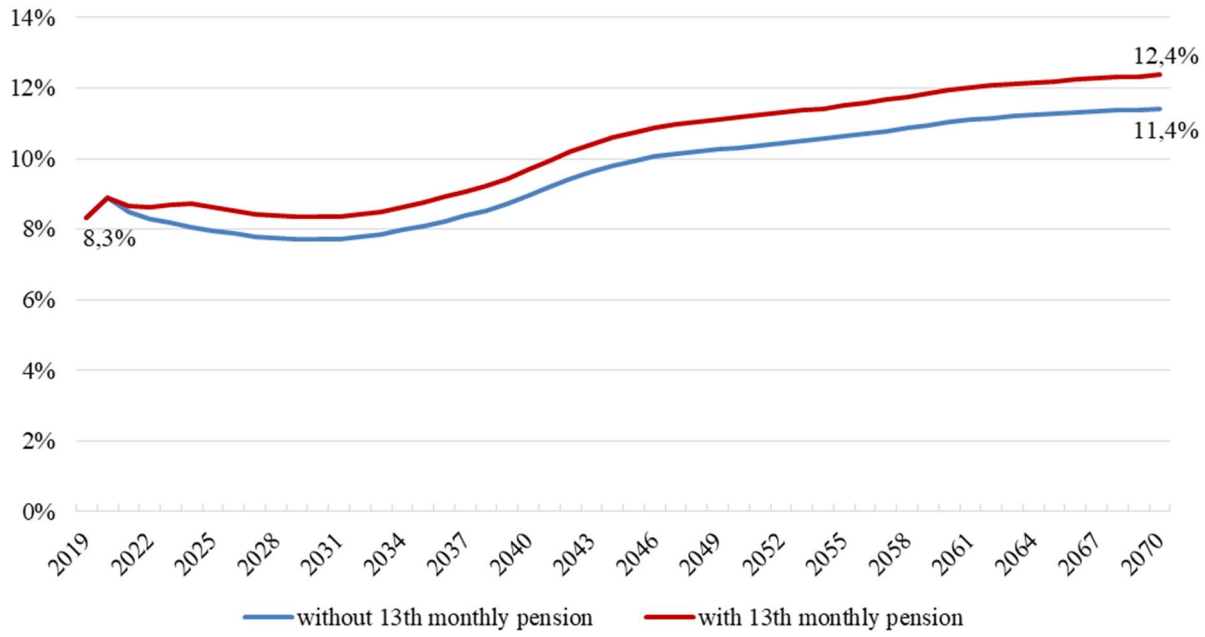
There was no change in the interpretation of constant policy.

3.6.3. Policy related changes

Since the 2018 Ageing Report, the rate of the social contribution tax was further reduced, while, on the expenditure side, the 13th monthly pension will be re-introduced to the pension system. Such new measures were included in pension projections. No major other policy-related change that would have significant impact on the results has been implemented.

Figure 10 shows the impact of the re-introduction of 13th monthly pension on the evolution of pension expenditure. The projected pension expenditure assuming no-policy-change (without the 13th monthly pension measure) shows a difference of around 1 percentage point in 2070, compared to the baseline. In this case, the increase in the expenditures to GDP between 2019 and 2070 amounts to 3.1 percentage points, instead of 4.1 percentage points.

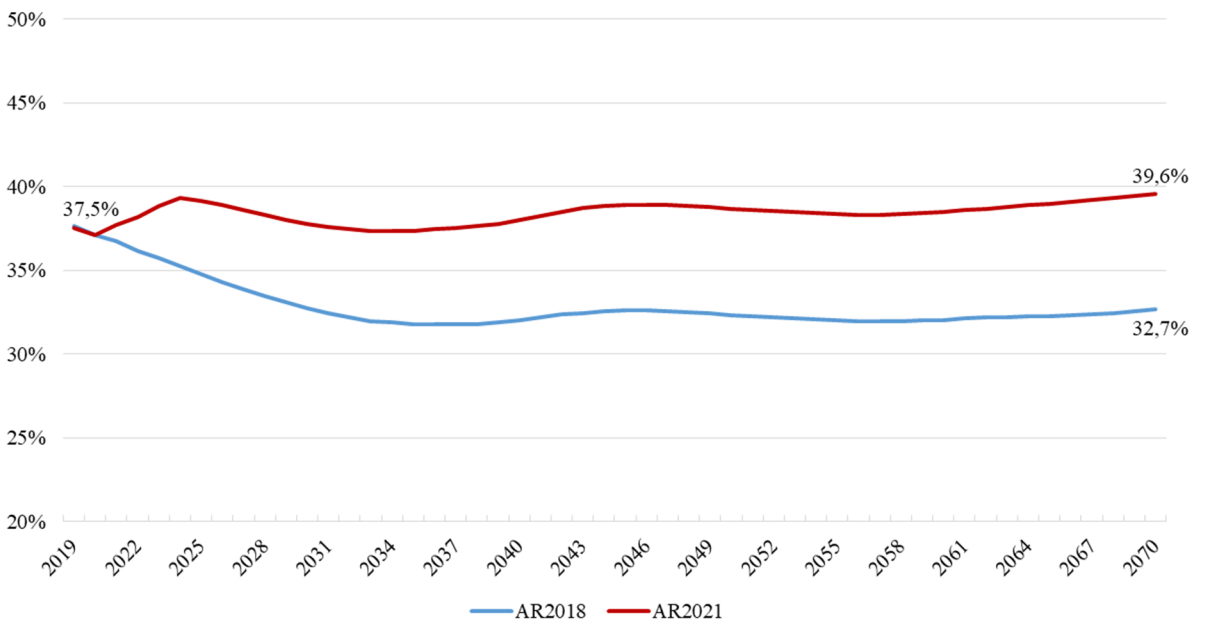
FIGURE 10 – DIFFERENCE BETWEEN PENSION EXPENDITURE PROJECTIONS WITHOUT AND WITH 13TH MONTHLY PENSION 2021AR (% OF GDP)



Source: Hungarian State Treasury

Figure 11 shows the impact of the re-introduction of 13th monthly pension on the evolution of benefit ratio. As a result of the measure, in the 2021AR, the benefit ratio is set to increase until 2024, and then remains relatively stable over the horizon. In the 2018AR, the benefit ratio (BR) was expected to decrease in the first third of the projection period and remained practically at that lower level afterwards. However, such a measure has improved the pension adequacy.

FIGURE 11 –EVOLUTION OF BENEFIT RATIO (BR) 2018AR VS. 2021AR



Source: Hungarian State Treasury

4. Description of the pension projection model and its base data

4.1. Institutional context in which those 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 Hungarion 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. Assumptions and methodologies applied

The model used here belongs to the MIDAS dynamic microsimulation model whose first and dominant member –MIDAS_BE– was developed and is still continuously being developed by the experts of the Federal Planning Bureau of Belgium. It is a cross-sectional model of the whole population that simulates processes at the level of the individual and household, and then at annual period level. The development of the population in this model is the result of birth, death and migration processes.

The current version of MIDAS_HU simulates such elements of the lives of the model persons (nearly 2 million individuals) that are of relevance to the pension scheme, by yearly periods, starting from the basis year of 2012.

The simulated data were aligned to the macroeconomic assumptions of the Hungarian AWG baseline scenario. When a particular AWG forecasting for alignment was not available, e.g. marriage or divorce, then the corresponding Central Statistical Office in Hungary (hereinafter referred to as CSO) and Hungarian Demographic Research Institute, Population projection data were used for model adjustment. The adjustment was always based solely on proportions and not on the absolute numbers.

4.3. 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.

4.4. 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.

4.5. 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 event 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.

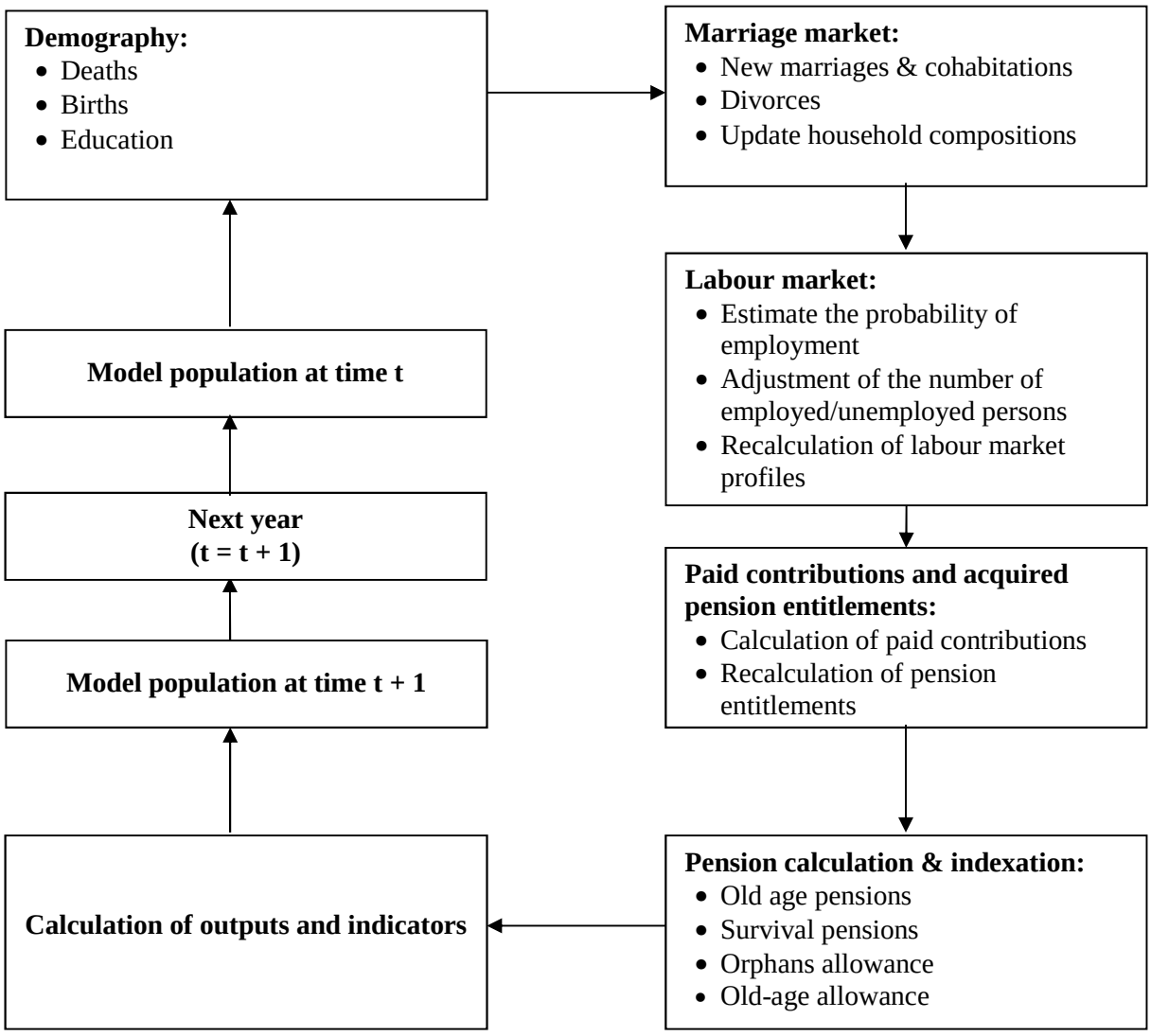
4.6. Additional features of the projection model

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.



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)

	2019	2030	2040	2050	2060	2070	% change 2019-2070
Economy-wide average gross wage at retirement	12.7	19.0	34.8	54.3	93.5	148.3	1072.3
Economy-wide average gross wage	12.1	19.0	32.2	53.9	87.8	139.2	1048.9

Source: European Commission

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 pensions

The driving forces behind the projections of disability benefits are described in section 1.1.4. and section 3.2.2. The following table also includes the disability provision above and below retirement age.

TABLE A2 – DISABILITY RATES BY AGE GROUPS (%)

	2019	2030	2040	2050	2060	2070
Age group -54	1.5	1.6	1.3	1.2	1.2	1.2
Age group 55-59	13.1	13.2	11.6	11.2	11.1	11.0
Age group 60-64	17.4	22.9	20.2	19.9	19.1	19.2
Age group 65-69	9.7	8.8	8.8	7.6	7.5	7.5
Age group 70-74	0.6	7.7	8.2	7.1	7.1	6.8
Age group 75+	0.9	4.8	7.5	8.3	7.7	7.4

Source: Hungarian State Treasury

Survivors' pensions

The driving forces behind the projections of survivors' benefits are described in section 3.2.3.

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 in structure to Table 10, but provides a disaggregation based on pension data as compared to pensioners in Table 10.

TABLE A3 – FACTORS BEHIND THE CHANGE IN PUBLIC PENSION EXPENDITURE BETWEEN 2019 AND 2070 (PERCENTAGE POINTS OF GDP) – PENSIONS

	2019-30	2030-40	2040-50	2050-60	2060-70	2019-70
Public pensions to GDP	0.0	1.3	1.5	0.8	0.4	4.1
Dependency ratio effect	1.1	1.6	1.9	1.1	0.1	5.7
Coverage ratio effect*	-0.8	-0.5	-0.7	-0.3	0.0	-2.2
Coverage ratio old-age	-0.6	-0.3	-0.3	-0.1	0.0	-1.3
Coverage ratio early-age	-1.8	0.4	-0.5	0.0	0.0	-2.0
Cohort effect	0.4	-1.5	-2.0	-1.3	0.0	-4.4
Benefit ratio effect	0.4	0.4	0.4	0.0	0.4	1.5
Labour market effect	-0.7	-0.1	0.0	0.0	0.0	-0.8
Employment ratio effect	-0.6	0.0	-0.1	0.0	0.0	-0.7
Labour intensity effect	0.0	0.0	0.0	0.0	0.0	0.0
Career shift effect	0.0	-0.1	0.0	0.0	0.0	-0.1
Residual	-0.1	0.0	-0.1	0.0	0.0	-0.2

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

Source: European Commission

Administrative data on new pensioners

Tables A4a/A4b/A4c show the administrative data reported for 2019. The old-age figures are used to calculate the average effective retirement ages in Tables 5a and 5b.

TABLE A4A – ADMINISTRATIVE DATA ON NEW PENSIONERS (2019) – MEN

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	3,025	0	1,594	1,431	0
50 - 54	1,413	0	1,100	313	0
55 - 59	2,723	284	1,896	543	0
60 - 64	59,477	55,130	1,960	2,387	0
65 - 69	4,624	2,890	6	1,728	0
70 - 74	1,849	117	1	1,731	0
75+	4,670	18	0	4,652	0

Source: European Commission

TABLE A4B – ADMINISTRATIVE DATA ON NEW PENSIONERS (2019) - WOMEN

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	4,260	0	1,865	2,395	0
50 - 54	2,886	151	1,293	1,442	0
55 - 59	19,426	15,128	1,634	2,664	0
60 - 64	52,974	43,150	1,052	8,772	0
65 - 69	7,935	2,355	5	5,575	0
70 - 74	5,102	44	2	5,056	0
75+	9,536	22	1	9,513	0

Source: European Commission

TABLE A4C – ADMINISTRATIVE DATA ON NEW PENSIONERS (2019) - TOTAL

Age group	All	Old-age	Disability	Survivor	Other (including minimum)
15 - 49	7,285	0	3,459	3,826	0
50 - 54	4,299	151	2,393	1,755	0
55 - 59	22,149	15,412	3,530	3,207	0
60 - 64	112,451	98,280	3,012	11,159	0
65 - 69	12,559	5,245	11	7,303	0
70 - 74	6,951	161	3	6,787	0
75+	14,206	40	1	14,165	0

Source: European Commission