2.11. Sweden

2.11.1. Demographic profile and demographic forecast

Table 28: Sweden: demographic forecast

	2019	2030	2040	2050	2060	2070	2019 - 2070
Population (thousand)	10,276	11,131	11,722	12,280	12,727	13,082	10,276 → 13,082
Population growth rate	1.0	0.6	0.5	0.4	0.3	0.3	1 → 0.3
Old-age dependency ratio (pop 65+ / pop 20-64)	35.2	38.4	41.2	43.0	48.4	49.8	35.2 → 49.8
Old-age dependency ratio (pop 75+ / pop 20-74)	13.6	17.3	18.5	20.6	21.9	25.2	13.6 → 25.2
Ageing of the aged (pop 80+ / pop 65+)	25.8	33.7	33.8	37.2	36.9	40.4	25.8 → 40.4
Men - Life expectancy at birth	81.4	82.5	83.7	84.8	85.8	86.8	81.4 → 86.8
Women - Life expectancy at birth	84.7	85.9	87.1	88.2	89.3	90.3	84.7 → 90.3
Men - Life expectancy at 65	19.7	20.4	21.3	22.2	23.0	23.7	19.7 → 23.7
Women - Life expectancy at 65	22.0	22.9	23.9	24.8	25.7	26.6	22 → 26.6
Men - Survivor rate at 65+	90.2	91.6	92.6	93.6	94.4	95.1	90.2 → 95.1
Women - Survivor rate at 65+	93.6	94.5	95.3	95.9	96.4	96.9	93.6 → 96.9
Men - Survivor rate at 80+	64.9	69.4	73.0	76.3	79.2	81.8	64.9 → 81.8
Women - Survivor rate at 80+	75.9	79.6	82.5	85.0	87.2	89.1	75.9 → 89.1
Net migration (thousand)	66.7	52.1	45.5	39.8	35.1	30.3	66.7 → 30.3
Net migration over population change	0.7	0.8	0.8	0.8	0.9	0.9	0.7 → 0.9

Source: European Commission • Created with Datawrapper

For Sweden, following the demographic forecast (Table 28), an increase of the total population from 10.3 million in 2019 to 13.1 million in 2070 is expected, even though population growth is predicted to stall from 1.0% today to 0.3% in 2070. This increase can be explained by other factors, being the migration to the country and the increased life expectancy and hence the increased population longevity. This latter increase in longevity will have substantial influence on the age composition of the Swedish population, as both the conventional old-age dependency ratio (population aged 65+ over population 20-64) and the "ageing of the aged" ratio (population aged 80+ over population aged 65-79) are subjected to increase drastically, both increase by roughly 15 percentage points from today till 2070 (EU, 2020c).

Life expectancy indicators all increase throughout the forecast period, with the life expectancy at birth increasing by roughly 5 years for both men and women, from 81.4 to 86.8 and 84.7 to 90.3 years in 2070 respectively. Similar trends can be observed for the life expectancy at 65 and the survivor rate at 65+. Men are projected to life another 23.7 years when they reach the age of 65 in 2070 opposed to 19.7 years today. Analogously, 95.1% of men will survive the age of 65, compared to 90.2% today. For women, the pattern is similar, they will projectably live another 26.6 year when they reach the age of 65 in 2070, while that number is 22 years today. 96.9% of women will survive the age of 65, while today, 93.6% do. For the survivor rate at 80+, a larger discrepancy in the change for men and women can be seen, while only 64.9% of men today survive the age

of 80, in 2070, 81.8% will survive that age. For women, 75.9% already survive that age today, in 2070, this survivor rate will be 89.1%. Net migration to Sweden does change drastically throughout the projection period, however on very low levels, it will decrease from 66,700 today to 30,300 in 2070 (EU, 2020c).

Table 29: Sweden: exit ages and expected duration of retirement

	2020	2030	2040	2050	2060	2070	2020 - 2070
Average labour market exit age (CSM) - Men	65.6	65.6	65.6	65.6	65.6	65.6	
Duration of retirement - Men	18.7	19.6	20.4	21.3	22.1	22.8	
Percentage of adult life spent in retirement - Men	28.2	29.2	30.0	30.9	31.7	32.4	
Early/late exit - Men	2.8	2.5	2.0	2.3	2.0	1.9	
Average labour market exit age (CSM) - Women	64.5	64.6	64.6	64.6	64.6	64.6	
Duration of retirement - Women	22.7	22.9	23.9	24.8	25.7	26.6	
Percentage of adult life spent in retirement - Women	32.8	32.9	33.9	34.7	35.5	36.3	
Early/late exit - Women	2.3	3.2	2.6	3.0	2.5	2.3	

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; Early/late exit is the ratio between those who retire and are below the statutory retirement age and those who retire at the statutory retirement age or above.

Source: European Commission • Created with Datawrapper

Even though the life expectancy in Sweden increases significantly, the average labor market exit age is not expected to change until the end of the projection in 2070 for neither men nor women (Table 29). For men, this indicator remains 65.6 years for the projection period, for women it is 64.6 years. This unchanged labor market exit age in turn has an influence on the duration of retirement considering the increased the life expectancy. Men will spend on average 22.8 years in retirement in 2070, which equates to 32.4% of their adult life. This is an increase compared to today, as retirement on average lasts 18.7 years, being equal to 28.2% of adult life. For women, due to their higher life expectancy, duration in retirement increases from 22.7 years today to 26.6 years in 2070, which then makes up 32.68% and 36.3% of their adult life, respectively. As for early and late exits, the early to late exit ratio fluctuates slightly for women around 2.3 today, with the highest ratio values projected in 2030 and 2050 with 3.2 and 3.0 respectively. For men, this ratio decreases from 2.8 today to 1.9 in 2070, signifying that less men leave the labor market early or more men defer retirement (Table 29).

The role of migration

Figure 51: Sweden: demographic forecast with and without migration (2022-2060)
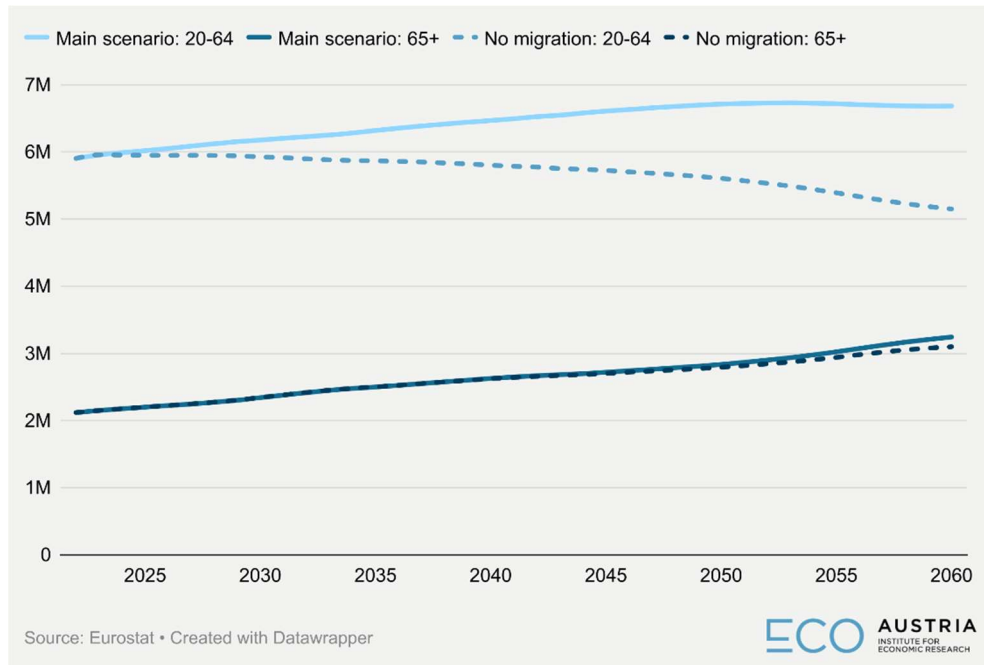
Migration has a considerable impact on the development of the age composition for Sweden. For the population share aged 65+, the effect of migration is negligible, as the scenarios with and without migration differ by about 144,000 individuals or 4.5% in 2060 (Figure 51). For the population share that roughly represents the working age population (20-64), the effect of migration must be mentioned. Without migration, this population share drops to 5.2 million inhabitants, while in the scenario with migration, this population share will be 6.7 million in 2060. This difference of 1.5 million inhabitants corresponds to 23% of the working age population. It is important to note that for the development from today on, Sweden starts off with a population share of inhabitants aged 20-64 of 5.9 million in 2022, thus only with migration, this share can be increased, without migration, this population share slightly decreases.

These opposing trends in population shares in the scenario without migration also have an influence on the significant difference in old-age dependency ratios of the scenarios. While the old-age dependency ratio for the scenario without migration is 60, it is 49 for the scenario with migration (Figure 52). This is due to the more similar trends in population shares in the scenario with migration, the absolute difference in inhabitants only decreases by 345,000 inhabitants from today till 2070. For the scenario without migration, this decrease in absolute difference between the shares is much stronger with 1.7 million inhabitants. The old-age dependency ratio signifies that for every person in the age cohort of 65+, there will be approximately 2.04 persons of working age in the scenario with migration, without migration, only 1.67 individuals correspond to one person in the population share aged 65+.

If it was of relevance, to keep the old-age dependency ratio of 2022 constant over the projection period, one can calculate the necessary migration (or return of expatriates), which is needed to

join the working age population in order to hold the old-age dependency ratio of 35.9 constant. The working age population of 2060 in the scenario with no migration is projected to be 5.15 million. For the old-age dependency ratio to be 35.9, a working-age population of 8.63 million would be required. Assuming an equal fertility rate and age structure for the migrant population, as well as migrants being predominantly in working-age, migration of 3.48 million individuals would be necessary. About 92.000 individuals on average would need to migrate to Sweden every year, to achieve this result during the projection period.

Figure 52: Sweden: old-age dependency ratio (65+/20-64) un the main scenario and without migration

Source: Eurostat Demographic Projections 2022 • Created with Datawrapper
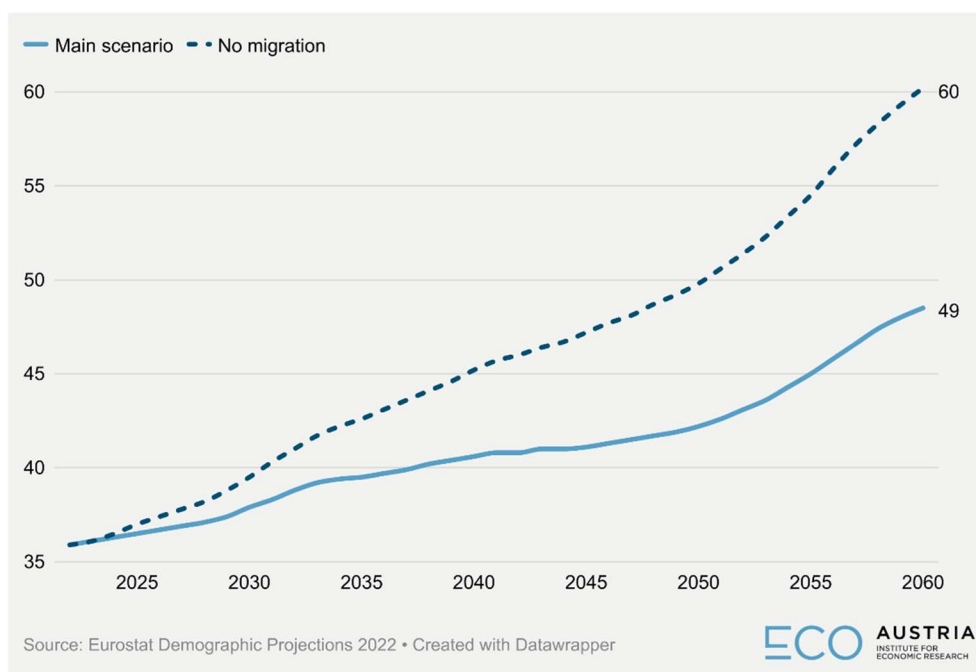
2.11.2. General architecture

The pension system of Sweden can be classified by three tiers with respective subcomponents (EU, 2020c; Schneider, Petrova & Becker, 2021):

- As regards **1st tier** pensions, there is a tax-financed minimum benefit targeted at individuals with no or a very low earnings-related pension. The guarantee pension (*garantipension*) is pension-income-tested minimum top-up. Persons must have lived in Sweden for a minimum of three years with 40 years of residence being required for a full guarantee pension. The pension is reduced proportionally for those with shorter residence periods. For individuals, with a full employment biography but low earnings-related pension, there is also the tax-financed supplement to the earnings-related pension (*inkomstpensionstillägg*).

- The old-age earnings-related system (**2nd tier**) is based on two subcomponents. One part is a PAYG component, the income pension (*inkomstpension*). It is based on notionally defined contributions (NDC). The other part is a fully funded, defined contribution (FDC) component (*premiepension*). The latter gets attributed to private savings in the national

accounts, albeit being mandatory, i.e., they both get paid into separate individual accounts. Pensioners from older cohorts (born 1938-1953) also receive a supplementary income-based pension (*tilläggpension*).

- Beside the universal mandatory system, there are semi-mandatory occupational pension schemes (**funded 2nd tier**), which can both be PAYG and funded, and voluntary private schemes (**third tier**).

Qualifying conditions

Principally, all individuals that have lived or worked, both employees and self-employed, in Sweden are covered by the public pension scheme, as it is a universal mandatory system. The retirement age for the earnings-related pension schemes is flexible up from 62 years old, meaning that individuals can claim pension benefits from this age onwards, without having to stop working. For the guaranteed pension and its supplement, the retirement age is 65. As for other conditions, the old-age earnings-related pension and the premium pension (*premiepension*) have no other requirements besides the retirement age, there is no concept of a complete insurance period that leads to a "full claim". This underlines the flexibility of the Swedish pension system, both in terms of early claims and unlimited pension deferral. Pension eligibility is not tied to nationality in any way.

Contrastingly, for the guaranteed pension, a full pension is awarded for 40 years of residency in Sweden. For the corresponding earnings-related supplement, 30 to 40 years of pensionable income are required, the exact number depends on the birth year of the pensioner. Lastly, individuals qualify for the supplement only if their income is equal or below a certain minimum income[44]. Pensionable income also includes transfers from various parts of the welfare system, e.g., unemployment, sickness, or parental leave (EU, 2020c).

Current and future retirement age

Retirement is possible from the age of 62 regarding the earnings-related pension and 65 for the guaranteed pension. The age of 62 is not a statutory retirement age, in fact, most individuals start claiming benefits at roughly 65 years old, which is the former statutory retirement of the reformed pension system. That is because the accumulated pension capital will be higher by postponing, due to the shorter expected pay-out period based on unisex cohort life expectancies at retirement.

From 2026 on, the retirement age will be tied to a retirement age recommendation. This recommendation will be calculated annually based on the life expectancy. For the years 2026-2028, the recommendation was set at 67 and calculated based on 2020-2022, i.e., the calculation comes to effect six years after calculation (EU,2020c).

First-tier minimum pensions and the public NDC second-tier pensions

The guarantee pension ("Garantipension"), which is non-earnings related and financed by general tax revenues, provides for first tier pensions. The requirements for this pension are restricted to

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[44] This minimum income threshold is calculated with the price basic amount (prisbasbelopp). This amount is determined every year based on changes in the general price level and used to adjust and determine taxes, benefits and other thresholds in the Swedish welfare system as an economic reference point.

the years of residence. The benefits are proportionally reduced by the years not lived in Sweden. Recipients must live in Sweden or the EES area and are eligible for benefits from 65 years onwards. Together with the housing supplement for pensioners (BTP, bostadstillägg), it is means-tested against public pension income and survivor benefits, income from work is exempted. For higher incomes, the guaranteed pension gets phased out stepwise until it is fully phased out at the 3.07-fold of the price base amount (prisbasbelopp) for singles and 2.72 for cohabitants. Similarly, to the other pension schemes, the guarantee pension is price indexed, but also fully taxed. An exception is an additional tax-free means-tested program, which is usually targeted at very low-income household with few years of residence in Sweden. Both the latter and the guarantee pension by design lead to incomes higher than generated through the general assistance benefits.

As mentioned before, the earnings-related pension scheme (2nd tier) can be divided into the notionally defined contribution component (NDC), which is PAYG, and the fully funded, defined contributions component (the FDC based "premiepension"), which described in the following chapter 2.11.3. The payments for these two components, for which pension rights get credited, is 18.5% of the annual pensionable income, while 16 percentage points get paid to NDC systems and 2.5 percentage points to the FDC system. Payments above 8.07 the income base amount (inkomstbasbelopp[45]) do not get credited with pension rights, but rather flow to the government budget as a general tax. Pensionable income is defined as earnings net of the employee contribution, which is 7%. Based on this deduction, the effective contribution of the employee and employer combined is 17,21%, of gross earnings[46]. Relating back to the two subcomponents, 14,88% is allocated to the notional defined contribution system (NDC) while the remaining 2,33% go into the fully funded defined contribution system (FDC) (Pensionsmyndigheten, 2023).

The NDC PAYG public pension system gives benefits in form of an annuity that is determined by the pension assets accumulated till retirement. A divisor particular to unisex life expectancy at the specific retirement date and age is then applied to determine the benefits. This way of calculating benefits has two implications. Due to the flexibility of retirement, individuals are incentivized to defer claiming pension benefits in order limit the negative effect of the divisor, which decreases with a later entry into retirement. Secondly, the application of unisex life expectancies in the divisor leads to higher pensions for women by about 8% opposed to a system, which is tied to gender-specific life expectancies (EU, 2020c).

The pension capital of the NDC system generally is indexed to the average earnings growth per contributor. Nonetheless, the pension benefits are front-loaded, i.e., the benefit payments are comparatively higher at the beginning of retirement and partially reflect real economic growth ahead of time. This is done to mitigate the fall in income after exiting the labour market. However, the front-loading of pensions has been paused in the years 2010-2018 following the financial crisis in 2008. To meet obligations no matter the economic and demographic development, an automatic balancing mechanism guarantees financial sustainability. It is activated when the balance ratio falls below 1, i.e., liabilities of the system are greater than assets. When applied,

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[45] Similar to the price base amount, the income base amount is used as benchmark to calculate benefits and contributions.
[46] See the calculation for pensionable income: (0,07+0,1021) / (1-0,07)=0,185

pension balances and benefits are not indexed to income growth any longer but are rather bound to the indexation of the balance ratio. Briefly explained, the balance ratio considers one third of the deviation from 1 to calculate the "smoothened balance ratio" while still considering the increase in the income index[47]. For the projection period, this automatic balancing mechanism is expected not to be relevant, as the balance ratio is assumed not to fall under 1 in suite of the 2019 pandemic (EU, 2020c).

2.11.3. Second-tier FDC components of public pension scheme

Part of the public pension scheme is also the premium pension, which is a fully funded, defined-contribution system with individual pension accounts. This FDC scheme (*premiepension*) establishes the funded component of the Swedish pension system. The FDC component supplements the public NDC PAYG component. Due to its hybrid nature, the FDC component is presented in this subchapter.

Though the system is organized by the Swedish government, the assets accumulated under this scheme fall under household savings in the National Accounts. Analogously to the public NDC scheme, benefits can be claimed form 62 years onwards, where individuals may choose a fixed or variable annuity. It is possible to allow a partner right for accumulation in terms of a survivor's protection component, which however lowers the annuity considering the expected increase in life expectancy. Pension assets accumulated from these contributions, which are 2.5% of pensionable income, can then be invested into a list of hundreds of funds or are invested in the government run default fund AP7 Såfa. The latter option is a global fund portfolio made up of an equity fund and a fixed income fund. Before the age of 55, all the pensioners contributions will be put into the equity fund to allow for the higher value development. From that age onwards, a share of the accumulated savings is moved to the fixed income fund every year to allow for more secure savings (EU, 2020c).

The equity fund is classified as a high-risk global fund with a strong focus on North America, as well as ICT, finance & real estate and health care. Though the equity fund value development fluctuates over time, even stronger than the market, i.e., due to leverage through derivatives, the risk is adjusted through several factors. These include the transition to the fixed-income fund with age, the lower total combined risk of the NDC (*inkomstpension*) and the FDC (*premiepension*) components, as well as factor investing. Factor investing here refers to portfolio diversification and the selection of shares with low risk covariance. To generate higher returns than the market, the fund also engages in private equity investments. The AP7 equity fund is a global fund, with 99% of assets invested outside of Sweden, implying high currency exposure. However, as the fund's investment strategy is long-term, currency hedging is not practiced due to its related high cost. Furthermore, in the analysis of currency exposure, the NDC pension system is taken into account, which overall leads to a "strong home bias", leading to a high domestic currency

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[47] Calculation example: The balance ratio falls below 1 to 0.99, meaning that liabilities are greater than assets in the pension system. At the same, the income index increases from 100 to 104. The adjustment is then calculated as follows: $(0,99 - 1)/3) + 1 = 0,9967$. This "dampened breakeven number" is then multiplied with the income index $104 * 0,9967 = 103,66$, which thus implies, that pension balances and benefits will only be indexed to 3,66% instead of 4%.

exposure of 50-90% for savers (AP7, 2023a; AP7, 2023b). Overall, the AP7 fund is well perceived internationally for its low administration cost and its good performance on average (Seemann,2020).

In the beginning of the 1990s Sweden entered a deep financial and economic crisis, which necessitated the rethinking of the components of the pension system. As mentioned before, the Swedish public pension system before 1998 consisted of a tax-financed minimum protection scheme and an earning-related public PAYG scheme. In the wake of the financial crisis of the 1990s, serious problems with financial stability, equivalency and long-term stability became obvious. Three main shortcomings of the old system provided the reasons for the 1998 pension reform (Scherman 1999, 7): The first was the dependence between financial performance and economic growth. The benefit formula under the old PAYG-system implied that the pension was raised in accordance with inflation, regardless of growth in the economy. In such a system, when there is low growth in the economy the pension cost as a percentage of GDP is higher than in a situation where there is high growth. The second was the design of the earnings ceiling for the calculation of pensions. The earnings ceiling in the old system was price-indexed. With real wages increasing the earnings ceiling was expected to decline in real terms. The third key rationale behind the Swedish pension reform of 1998 were costs of demographic ageing.

The development and implementation of a fully-funded FDC component within the public pension system was one of the results of the 1998 pension reform. The reform process started in 1994 with the establishment of the cross-party Pension Working Group (*pensionsgruppen*). The reform was destined to start in 1998, yet, came into full force in 2003. At its initiation, there was consensus across all parties represented in the Swedish parliament. The premium pension was initially intended to both mitigate risks associated to increasing longevity, but also, in the wake of the Swedish Financial Crisis in in the 1990s, to diversify risks through investment in global capital markets. Additionally, the freedom of choice regarding the investments played a determining role of the premium pension. The underlying rationale was self-determination, meaning that insurees may have differing preferences when it comes to risk and return rates. It was thus expected that individuals would actively and constantly adjust their investment decision based on their own individual preferences. This aspect of self-determination also implied a shift in responsibility, as for the premium pension, there was no state guarantee, meaning that the individuals were carrying the investment risk themselves. This behavioural component of active investing was also deemed necessary, as only through a competitive market, the quality of the offered pension funds could have been guaranteed (Seemann, 2020).

With the implementation of this pension component, at that time, individuals had two fund options, the private fund market and state fund (*premievalsfonden*). For individuals that did not take an explicit investment choice, pension contributions were invested through the default fund (*premiesparfonden*). Compared to the private market and the state fund, the default option represented the low-risk option with greater security, as it was not justifiable to expose pensioners to a high investment risk if they did not actively make a decision. However, before being implemented, it was expected that most individuals would actively invest their pension funds due to the pursuit of higher returns on the private market. As the overwhelming majority of Swedish

insurees displayed a rather cautious approach to investment, this expectation regarding investment behaviour turned out to be overly optimistic. The majority of contributors was settling for the default option, e.g., in 2007 and 2008, 98% opted for the default option, while already 42% of existing funds were allocated to this option. This issue occurred despite the fact, that there were about 800 private funds available to choose from in 2012 (Seemann, 2020).

To combat these adverse effects, the Swedish government conducted several studies and derived multiple education and information campaigns in an attempt to increase financial knowledge and to guide insurees make an active choice. These efforts were considered unsuccessful. At the same time, the low-risk investment strategy of the default state fund led to a widening of the pension gap, which ultimately culminated in the restructuring of the premium pension. The AP7 equity and fixed income fund were introduced, which now make up the AP7 Såfa as mentioned above. With the AP7 equity fund, the Swedish government intended to increase returns for the default option through a more high-risk strategy, while still giving Swedish pensioners security when they claim their benefits through the life cycle model[48]. In the addition, the individual AP7 funds were made selectable besides being integrated in the default option. In order to ease making a choice, investment options with three different risk profiles were offered, containing differing compositions of equity or fixed income investments (Seemann, 2020; AP7, 2023a).

In recent years, the focus is still on enabling Swedish individuals to make better and more sustainable investment choices, with the underlying rationale to generate the highest possible pension benefits for the society overall while minimizing risks as much as possible and not guaranteeing a pension per se. The system is still confronted with regulatory issues regarding the definition of precise risk and return levels and the oversight of the private pension market. Since 2017, the premium pension fund is again in a reorganisation process, which is still focused on improving the decision-making structure and the administration of funds. The current approach foresees creating a "safe environment", in which every saver can just opt to select a preferred risk profile. At the same time, a professional fund platform is ought to be established, for those, who choose to take an active investment choice, also assuming the responsibility. It is clear that the initial rationale of self-determination has shifted towards state responsibility and security again for the sake of higher and more secure pension benefits. The state-owned AP7 fund is expected to become even more relevant, as the majority of investments will remain in this fund, while it has been increasingly marketed as a good option in recent years.

2.11.4. PAYG and fiscal challenges

Public Expenditure

The ratio of public expenditure to GDP is projected to decline slightly by 0.2 percentage points from 7.6% in 2020 to 7.4% at the end of the projection period in 2060. There are only small fluctuations over the entire projection period, with the lowest point of the projection being between

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[48] The life cycle model here refers to the stepwise shift from the equity fund to the fixed income fund as the contributor ages. The goal is to secure a decent pension with lower risk, once the savers start claiming benefits. The rationale behind this is to generate higher returns in the earlier contributing years through the equity fund, increasing the probability for a higher pension in the end.

2040 and 2050 at 7.0% (Figure 53). Public pension expenditure is therefore stable in Sweden, mainly explained by the maturing mandatory private scheme. Private mandatory pensions are not part of public pension expenditure from an accounting perspective, yet, in terms of total pension expenditure, private mandatory pensions will comparatively grow in importance. From 0% in 2003, the private mandatory pensions will increase to 1.2% of GDP in 2070 through the gradually maturing of the system (EU, 2020c).

Another driving force behind the development of the public pension expenditure is the decrease in earnings-related pensions. Until 2050, the expenditure on these pensions is expected to fall due the ageing effect. At the same time, the transition, which was based on defined benefits, to the NDC PAYG system minimize the drop in the earnings-related pensions ratio. This development is due to the fact that benefits are now based on the whole career, rather than just the 15 best years out of 30 under the old system, which has had a greater impact on pensions, particularly with regard to female labour market participation. In contrast, the minimum guaranteed pension will grow in importance in terms of expenditure, from 0.5% of GDP in 2019 to 1.0% of GDP in 2070. The slow increases of the retirement age compared to increasing life expectancies can be seen as the explanatory in this context (EU, 2020c).

To a lesser degree, the phasing out of high benefit pensions also contributes to the consistency in public pension expenditure. Even though, e.g., the widow's pension will still be paid out for several decades, the number of recipients is forecasted to decrease sharply. Similar things apply to the disability pension, where it is projected that for the next 20 years, the number of recipients of this pension will fall, before it will start increasing from 2040 onwards, due to the ageing of the population.

When it comes to poverty, Sweden is at the OECD average regarding income poverty rates (income lower than 50% of median equivalized household disposable income) of the cohort aged over 75 and of women aged over 65, only deviating by ± 0.3 percentage points. The poverty rates for each cohort respectively are 15.4 and 14.8%. Old individuals (aged >65) are more to prone to experience poverty with 11.4% compared to 9.3% within the total population. Nonetheless, these rates are below the OECD average. The same applies to individuals aged between 66 to 75 with 8.5% and men aged over 65 with 7.5% (OECD, 2023).

The gross replacement rate, i.e., pension income as a percentage of pre-retirement earnings, for Swedish individuals is close to the OECD average with 53.3% for both men and women in 2020. Gross pension wealth as a multiple of average annual gross earnings is also similar to the OECD average with 9.8 times the average annual earnings for men and 10.6 times the average annual earnings for women, which is a deviation by 0.1 from the OECD average. In 2021, total assets in private and funded pension plans were equal to 117% of GDP in Sweden (OECD, 2023), which is above the OECD average. Sweden is one of the countries with the highest amount of pension assets as a % of GDP.

Forecast of public expenditure

Taking into account the decomposition shown in Figure 54, it is clear that the dependency ratio effect has the strongest negative effect on public pension expenditure, meaning that public

expenditure on pension as percentage of GDP is increased by it. This is due to the increasing ratio of old-age individuals against the working population. Throughout the projection period, the level of this effect slightly declines before it reaches its peak of 0.9 percentage points, which indicates that the dependency ratio effect contributes 0.9 percentage points of the total change in public expenditure on pension as percentage of GDP. Towards the end of the projection period, it must be mentioned that the effect of the dependency ratio is mitigated through the migration over the years, as well as the fertility rate remains positive, further increasing the working age population. A slight positive contribution can also be observed in 2050 and 2070 concerning the coverage ratio effect. This can be explained through the increasing numbers of cross-border pensioners, induced through migration, who typically have shorter contribution periods than the average.

Figure 53: Sweden: Forecast of public expenditure on pensions (in % of GDP)

Source: OECD, European Commission • Created with Datawrapper
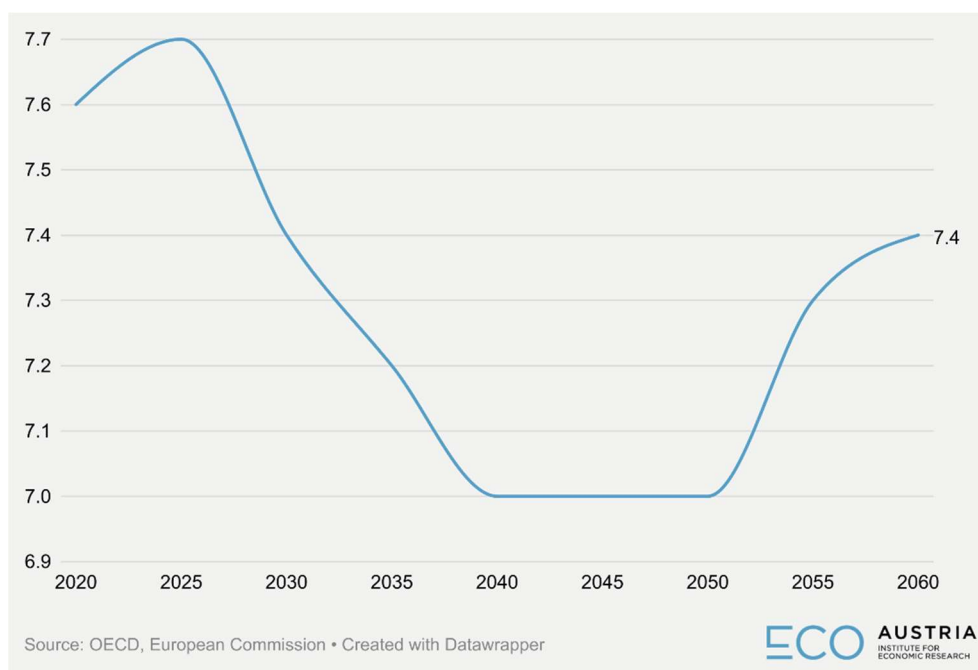
On the other side, mainly the benefit ratio effect balances out the influence of the increase in the longevity and the dependency ratio. As the NDC PAYG pension component is calculated with a divisor, which incorporates the life expectancy at retirement, the increase in longevity is reflected and the benefit ratio falls. Less so, the employment ratio through the labor market effect helps counterbalancing the increases in public pension expenditure at the end of the projection period. The statistical reclassification of the premium pension notably also had a considerable effect on public expenditure, as the whole pension schemes was transferred from the government to the private sector from a bookkeeping point of view.

Figure 54: Sweden: Components of change in the public expenditure
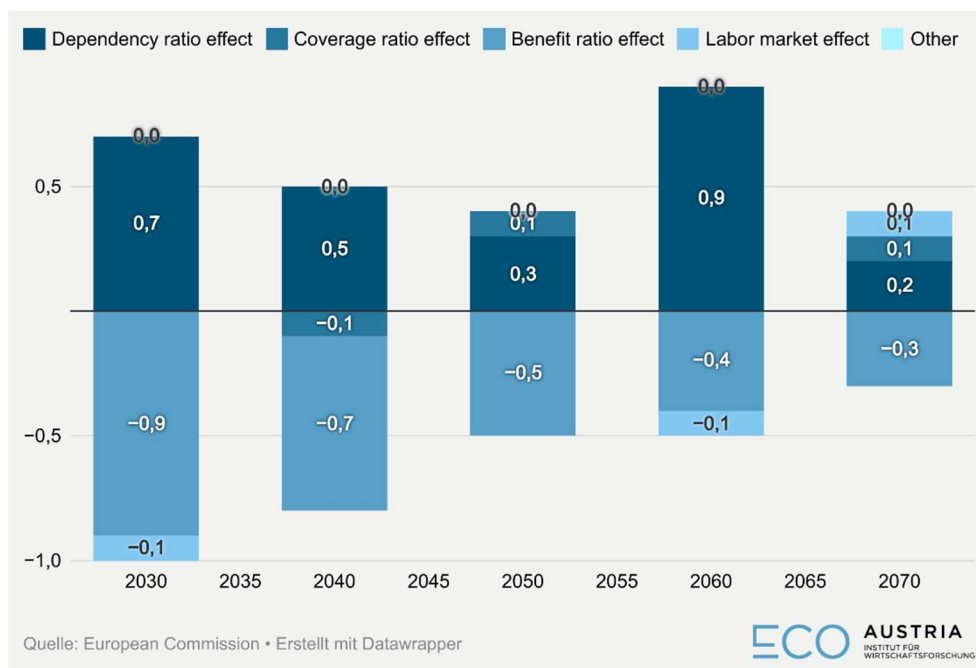
Forecast of replacement rates

Both the benefit ratio as well as the replacement rate are forecasted to decrease in Sweden throughout the projection period. This is largely driven by the assumption that the effective retirement age does not change mandatorily. Even though the Swedish Government introduced the recommended retirement age, it is assumed that the effective retirement age will not change, based on the consistency and no clear trend in average first pension withdrawals in the past years. It is important to make this distinction between labor market exit and first withdrawal of pension since they do not have to coincide necessarily with each other. Even though labor market exit ages are projected to increase, first withdrawals are not. Considering increased longevity, this implies an increase in retirement duration for both men and women by 4 and 4.5 years until 2070 respectively. A longer duration of retirement leads to smaller pensions in the NDC PAYG scheme, as the annuity divisor of that systems becomes bigger.

Additionally, the phasing out of the old DB system will decrease the replacement rate. Even though this is compensated for by the shift towards the premium pension, the total benefit ratio and the replacement rate are subjected to decrease, nonetheless. Specifically, the public pension scheme is frontloaded, which on an individual basis leads to higher benefits than given by standard actuarial principles. This mean that for specific individuals, both the replacement rate and the benefit ratio decrease during the retirement.

Table 30: Sweden: Benefit ratios and replacement rates until 2070

	2019	2030	2040	2050	2060	2070	change in pp
Public scheme (BR)	36%	32%	29%	27%	26%	25%	−11.0
Public scheme: old-age earnings related (BR)	33%	29%	25%	23%	22%	20%	−13.0
Private occupational scheme (BR)	20%	14%	10%	8%	5%	4%	−16.0
Private individual schemes (BR)	7%	5%	5%	5%	5%	5%	−3.0
Total benefit ratio	**54%**	**46%**	**41%**	**38%**	**35%**	**33%**	**−21.0**
Total replacement rate	**42%**	**43%**	**41%**	**38%**	**37%**	**36%**	**−6.0**

Source: European Commission • Created with Datawrapper

Two components of the pensions have roughly offsetting effects on the benefit ratio and the replacement rates. As mentioned before, the premium pension scheme is projected to mature along the forecast period. Due to it being a funded system, its performance is influenced by interest rates, which influences the rates of return of the specifics selectable funds. The effect of increased longevity will be limited if the interest rate is higher than income growth. Contrastingly, due to the abolishment of tax-deductions for private voluntary pensions, especially the replacement rate for this pension scheme will fall drastically. Nevertheless, this is only due to the decreased attractivity of the scheme, individuals will, or rather must shift towards the mandatory premium system (EU, 2020c).

Forecast of debt levels

Sweden has been able to reduce its gross liabilities as a percentage of GDP from 58% in 2000 to 46% in 2010, which can be explained by various factors. In general, Sweden has been able to reduce its liabilities through sound fiscal and public debt management, as well as through structural reforms that have increased the efficiency and sustainability of public finances. From 2010 to 2040, Sweden is forecasted to hold its level of liabilities as a percentage of GDP constant at 46%. From 2040 onwards, the percentage of liabilities is subjected to rise to 48% in 2060 (Figure 55). One can use similar explanations for why public pension expenditures start to rise towards the end of the projection period. The role of increased longevity, which increases the dependency ratio, becomes the most relevant and offsets effects stemming from positive migration inflows and fertility rates (EU, 2020c).

Figure 55: Sweden: Projection of long-term gross financial liabilities (in % of GDP)
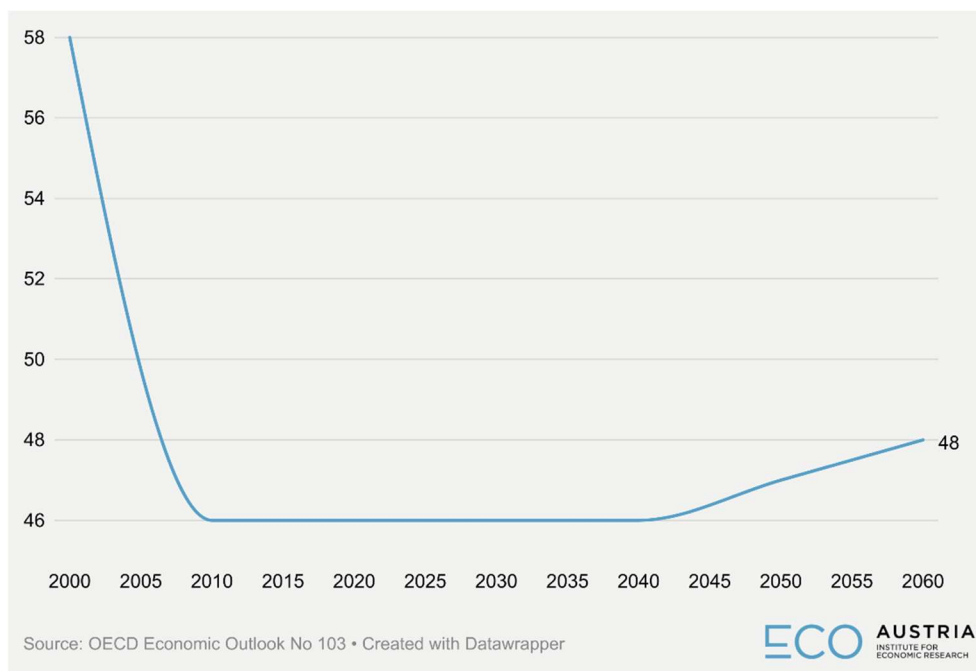
Regarding the S1 and S2 indicators by the European Commission, Sweden is well positioned. Its S1 indicator is the second lowest with roughly -4 percentage points of GDP, meaning that hardly any or no fiscal adjustment might be needed to reach the goal of 60%. The biggest component of this negative indicator regarding Sweden is its low debt requirement (debt service) and its initially good budgetary position. These components both underline Sweden's effective approach in debt management and fiscal sustainability. Regarding the S2 indicator[49], which describes long-term fiscal challenges, Sweden is positioned similarly well, having one of the five lowest S2 indicators. Its initial budgetary position once again has a positive influence, while on the other hand, its long-term projections are less favorable, as the cost of ageing is slightly positive, leading to a marginal sustainability gap. The sustainability gap and therefore the positive S2 indicator are mainly driven by the cost of ageing tied to health and long-term care (European Commission, 2017).

2.11.5. Funded Pensions (Second and third tier)

Voluntary/Mandatory, Occupational/Personal, Book reserves

Occupational pension schemes in Sweden can be described as semi-mandatory, 95% of women and 93% of men are covered through these schemes. They are financed through employers' contributions, fully funded and negotiated by the unions and the employers' confederations in collective agreements. The four occupational pension plans based on sectors are the ones for blue (SAF-LO) and white-collar (ITP) workers in the private sector respectively, as well as the ones for local (KAP-KL / AKAP-KL) and central (PA03) government employees respectively. As they supplement the public pension system, they are of particular relevance for high-income

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[49] The S2 indicator describes long-term fiscal challenges. This entails the permanent fiscal adjustment that is necessary to hold the GDP-to-debt ratio constant over an infinite period over time (European Commission, 2017)

earners, as these plans are not limited by the pension ceiling. Similar to the AP7 Såfa fund, the employee can choose how the money is invested for these occupational schemes. For, e.g., the white-collar pension scheme (ITP), contributions are only covered by the employer, and employees have the choice between traditional insurances or unit-linked insurances by different Swedish providers. The funds from the particular schemes are often administered by companies owned by the respective social partners[50]. It is also possible to opt for a family cover, with several options for different pay-out amounts and durations.

Since a tax reform in 2016, voluntary private pension plans have decreased in relevance, as individuals are not allowed to claim tax-deductions for these plans any longer. As mentioned early, this component is now replaced by the mandatory private pension, which is defined by a 2.5% contribution of pensionable earnings. However, private pension plans are still crucial for the self-employed, in case they did not voluntarily opt for any occupational scheme within their sector. For these individuals without collectively bargained pension plans, tax-deductions are still possible for the contribution payments made to individual pension savings. Nevertheless, the deductions may not exceed 35% of the wage nor be equal to ten times the price base amount[51]. The plans are fully funded, and contributors can choose their contribution rate individually.

Investment regulations[52]

The Swedish Financial Authority that regulates investments of pension providers is called "*Finansinspektionen*". Generally, the prudent person principle of IORP applies as well as the one of Solvency II. For the latter it must be mentioned that if it applies, there are no set limits on investment in the different asset classes. Additionally, there are also no limits to free assets.

Friendly societies[53], i.e., benefit societies, are more strictly regulated than other pension providers, as they are not allowed to hold any kind of equity in their portfolio. Investment into retail or private investment funds is also not possible. Loans can only be held in the investment portfolio without a mortgage guarantee or equal security if the debtor is the either the Swedish state or a Swedish municipality.

Life insurance undertakings and occupational pension plan providers are regulated in the same manner. There are generally no restrictions across asset classes, except for cases when Solvency II does not apply due to the size of the pension fund/the undertaking. In these cases, the same limits on unquoted, i.e., non-publicly traded, loans and bonds apply. Regarding equity, both can only allocate 10% of their investment to unquoted equity. Life insurance undertakings, for which Solvency II does not apply, are also limited in their investment in quoted equity.

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[50] See for instance Collectum and Fora.

[51] This would be equal to SEK 473 000 in 2020

[52] OECD, 2021b.

[53] A friendly society, sometimes called a benefit society or benevolent society, is a mutual association for the purposes of insurance. The organization is formed voluntarily by individuals to protect members against debts incurred through illness, death, or old age.

Interestingly, there are no specific limits for investment into foreign assets for all aforementioned pension plan providers. All asset categories are regulated the same way as well as this applies to the whole world and not to specific regions or selected countries.

Assets allocated

Unfortunately, it is not possible to determine all indirect investments that are made through Collective Investment Schemes (CIS) in Sweden, meaning that it cannot be defined for all CIS, to which investment categories pension assets are allocated. This fallback category of CIS makes up 66.68% of total investment. Investments into equity and bills & bonds roughly hold the same importance, with 14.6% and 12.7% of total investment respectively at the end of 2022. Only looking at these numbers of identified investments, Sweden is below the OECD average when it comes to investment into these categories, as the mean for pension asset allocation into equity is 30.2% and 41.5% for bills and bonds. Investment in assets abroad as well as in foreign currencies has gradually declined over the past 20 years. According to OECD's Pension Markets in Focus, the share of assets in funded and private pension plans invested abroad was 14.2%. In 2001, the figure was 34.1 %. The share of investments of funded and private pension plans in assets issued in foreign currencies was 8.3% in 2021, compared to 33.1% in 2001.

Investment performance

The real (and nominal) investment rates of return of funded and private pension plans have declined from 2019 to 2020. While the real rate of return for investment in 2019 was 9.4% in 2019 (nominal 11.3%), it dropped to 5.4% (nominally 5.6%) in 2020. Both the real and nominal rates are higher than the medians of the OECD and selected jurisdictions of 6.55% and 9.5% respectively in 2019. In 2020 the same applies with the medians being 5.05 and 4% (OECD, 2021f).

Tax treatment

The taxation regimes vary for the different components of the Swedish pension system. While the old-age earnings-related NDC pension, as well as the guarantee pension are subject to income taxation, but not payroll taxation, the mandatory public FDC pension is taxed under an EET regime, meaning only benefits are taxed. The contributions to the PAYG-system made by employees are fully tax-deductible from other income taxes. In fact, the majority of individuals in Sweden pay no contributions at all, as most of them are able to deduct them from their other taxes. Over the pension ceiling of 8.07 times the income base, which equaled SEK 539.000 or EUR 51.000 in 2020, contributions are not awarded any additional pension rights. Instead, they flow as general taxes into the government budget.

Regarding the second and third tier of the Swedish pension system, both funded occupational plans and private pensions savings are taxed on returns as well as benefits paid out (ETT).

As mentioned earlier, in Sweden, receiving pension benefits and paid labor can be combined. It is worth mentioning in this context, that wage earners in pension age (65 years or older) pay a lower income tax, as well as their employment fees are lower.

2.11.6. Highlights and main features of the system

1. Strengths and weaknesses (according to the Overall Pension Index – OPI)
- The Swedish pension systems ranks top with regard to "Sustainability" (OPI score of 0.98 and ranked 2nd among 11 countries compared), with regard to "Adequacy" (OPI score 0.65, ranked 5th), and "Market capitalization" (OPI score 0.76, ranked 2nd)
- The Swedish public pension system is unique in that it includes a fully funded component. The rationale behind is a high degree of self-determination and the pursuit of higher returns leading to a less unequal distribution of pension benefits. The Swedish government mitigates financial risks by shifting to individual responsibility and stimulating investment activity among the its pension contributors. This emphasis on fully funded pension plans also result in a considerable accumulation of pension assets for these tiers.

2. Tax treatment
- Public system de facto EET, as contributions are tax deductible; Other plans: ETT

3. Contribution rate to funded plans and split between employer and employee
- Public scheme: 7% of gross pensionable income by the employee and 10,21% by the employer of income net of the employee's contribution. Thus, in total 18,5% of pensionable income, 17,21% of gross income

4. Asset Allocation
- Equities (13.8%), Bills & Bonds (9.1%), Cash & Deposits (0.7%), CIS[54] (73.1%), Other (3.3%)

5. Obligatory character
- The premium pension (FDC) is part of the public pension; therefore, all wage-earners are covered by a fully-funded pension system
- Public and private sector workers are mandatorily covered by occupational pension plans through collective agreements. Self-employed and employees not covered by collective agreements can either choose to contribute to their respective industry occupational pension plan or to individual pension savings

6. Pay-out options of funded plans
- PAYG-component of public pension: lifelong annuity based on life expectancy at retirement
- Premium pension: fixed or variable annuity[55]
- Occupational plans: by default, lifelong annuities, possibility to opt for fixed-period annuity. Family cover also optional in the event of death of contributor

7. Contributions to funded plans as percentage of GDP
- In 2020, the total general contribution rate to pensions was 12.1% of GDP in Sweden (Vidlund et al., 2022), where 7.5% stem from statutory pensions and 4.5% from occupational pensions

8. Investment performance
- The real investment rate of return between 2011 and 2021 was on average 9.63% for the AP7 fund[56] (Pensionsmyndigheten, 2024)
- At the same time the OECD average was 3.7%.

Additional information and results

- A unisex life expectancy is used to calculate annuities, to close the gender pension gap as females on average have a higher life expectancy.

- A fully funded private mandatory pension scheme was introduced, which substitutes private voluntary pensions schemes. The latter have been disincentivized by abolishing the possibility of using these contributions for tax deductions.

- Public expenditure on pensions is projected to be stable, the fiscal sustainability gap is small.

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[54] Collective investment schemes (when look-through is not available)

[55] The pensioner can decide to transfer the capital from the chosen fund to an insurance for guaranteed yearly payments. If the individual chooses to keep the capital in the fund, the capital is adjusted annually.

[56] The AP7 fund is he default option for the premium pension, when no active investment choice is made.