

DREAM

Danish Research Institute for
Economic Analysis and Modelling

MAKRO

Fiscal sustainability effects of changes to the Danish retirement age

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1 Introduction

This paper analyzes how alternative paths for the Danish statutory retirement age after 2040 affect fiscal sustainability.¹ The results are summarized using the standard fiscal sustainability indicator (*holdbarhedsindikatoren* in Danish). The current statutory indexation rule yields an indicator of 1.00 pct. of GDP, i.e. a significant structural surplus. Replacing this rule with the Pension Commission proposal or with a rule that holds expected years in retirement constant gives an indicator close to zero. Indexing the retirement age, using a cohort approach, to keep the number of years in retirement a constant share of total life expectancy—or, nearly equivalently, a constant share of adult life—reduces the indicator to -0.41 pct. of GDP. Freezing the retirement age at 70 from 2040 onward lowers it by 2.35 percentage points to -1.35 pct. of GDP, implying a large permanent deficit.

2 Model and baseline

The calculations combine DREAM's population and socioeconomic forecasting models with MAKRO, DREAM's macroeconomic model of the Danish economy. The baseline is the Danish Economic Council's Autumn 2025 projection [1]. MAKRO is used to produce the Council's long-run economic forecast and applies the Council's assumptions on long-term growth, inflation, interest rates, and related macroeconomic conditions; in the short run it is calibrated to broadly match the Council forecast. A key input is DREAM's socioeconomic projection, which is based on Council assumptions and derived from the joint Statistics Denmark–DREAM population projection from June 2025.

The baseline scenario describes the long-run path of the Danish economy in that projection. Its statutory retirement age (*folkepensionsalder*) is computed in DREAM's population model from the Welfare Agreement (*Velfærdsforliget*) and the indexation rule in the Pension Act, which links future increases to observed cross-sectional life expectancy at age 60. The retirement age was gradually raised from 65 to 67 in 2019–2022. The next three increases have already been adopted: to 68 in 2030, 69 in 2035, and 70 in 2040 (in practice first affecting the 1971/72 cohort, who reach that age in 2041). Thereafter the statutory rule is applied every five years and can raise the retirement age by 0, 0.5, or 1 year depending on the increase in remaining life expectancy. Increases from 2045 onward are part of the political agreement but must be adopted 15 years before taking effect; the next decision is therefore whether the retirement age should rise to 71 in 2045. In the baseline, the expected effect of both adopted and agreed increases is included, raising the statutory retirement age by a further five years from 2040 to 2080.

All five alternative scenarios are constructed outside MAKRO as deviations from this baseline. The alternative retirement-age paths are calculated by PerCent, specified in the population

¹ The analysis is prepared by DREAM for the Pension Research Centre (PerCent) at Copenhagen Business School.

model, and then passed through DREAM’s socioeconomic forecasting model, which recomputes the affected paths for pension reciprocity, labor-market participation, and structural employment. MAKRO receives these paths as inputs and simulates the effects on macroeconomic aggregates and public finances. Other exogenous inputs—productivity, underlying demography, and world prices—are held fixed.

In all scenarios the earliest eligibility ages for voluntary early retirement (*efterløn*), flexible early retirement benefits (*fleksydelse*), and early pension (*tidlig pension*) are adjusted in line with the statutory retirement age, but take effect three years earlier, so the maximum benefit period is three years from 2030 onward. *Seniorpension* can be received by people with less than six years to the statutory retirement age. Thus the alternative scenarios do not change the maximum duration of these early-exit schemes relative to current rules.

3 Scenarios

We report results for five alternative paths for the statutory retirement age after 2040. The indexation principles are summarized in Table 3.1. In all five cases the path for the statutory retirement age is calculated by PerCent.

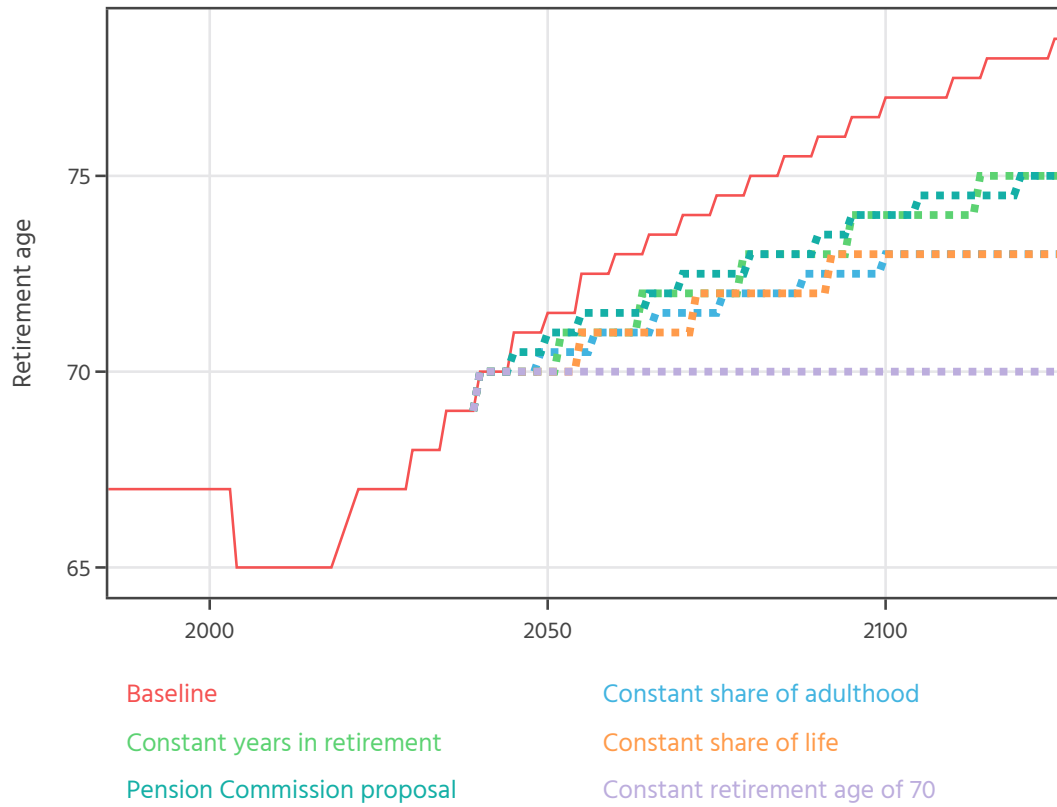
Table 3.1
Alternative scenarios for the retirement age after 2040

Scenario	Indexation principle
Constant share of adulthood	Successive cohorts spend the same share of adult life (measured from age 25) in retirement as the cohort born in 1971/72, with the retirement age adjusted in steps of half a year. This corresponds to 29.6 pct. of adult life in retirement.
Constant years in retirement	Successive cohorts have the same expected number of years in retirement, equal to 18.9 years (the cohort-based remaining life expectancy at age 70 for the cohort born in 1971/72).
Constant share of life	Successive cohorts spend the same share of total life expectancy in retirement as the cohort born in 1971/72 (21.3 pct.).
Pension Commission proposal	Following the 2022 Pension Commission, the retirement age is raised by 80 pct. of the increase in observed cross-sectional remaining life expectancy measured from the prevailing retirement age, capped at one year per indexation step and announced with 15 years’ notice.
Constant retirement age of 70	The retirement age is held at 70 from 2040 onward; no further indexation.

Note: All scenarios coincide with the baseline up to and including the statutory increase to age 70 in 2040 and differ only in the indexation applied thereafter.

Source: PerCent calculations using DREAM’s population model.

Figure 3.1
Retirement age across scenarios



Note: Statutory retirement age (*folkepensionsalder*) by calendar year.
Source: PerCent calculations using DREAM's population model.

Table 3.2
Retirement age in selected years

Year	Baseline	Constant adult-life share	Constant years in retirement	Constant life share	Pension Commission	Constant age 70
2040	70	70	70	70	70	70
2045	71	70	70	70	70.5	70
2050	71.5	70.5	70	70	71	70
2055	72.5	70.5	71	71	71.5	70
2060	73	71	71	71	71.5	70
2065	73.5	71	72	71	72	70
2070	74	71.5	72	71	72.5	70
2075	74.5	71.5	72	72	72.5	70
2080	75	72	73	72	73	70

Note: The alternatives coincide with the baseline through 2040.

Source: PeRCent calculations using DREAM's population model.

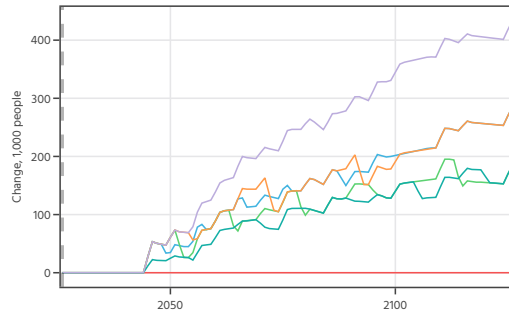
4 Socioeconomic channels

If the statutory retirement age rises less than in the baseline, some people retire earlier via the old-age pension than they would otherwise have done. The immediate socioeconomic effect is therefore more old-age pension recipients and fewer people in the labor force, including fewer employed and unemployed persons. The effect grows over time because the distance to the baseline path widens as the baseline retirement age continues to rise after 2040. The pattern is visible in Figure 4.1: old-age pension reciprocity increases in all alternative scenarios, while structural employment and gross unemployment fall relative to the baseline.

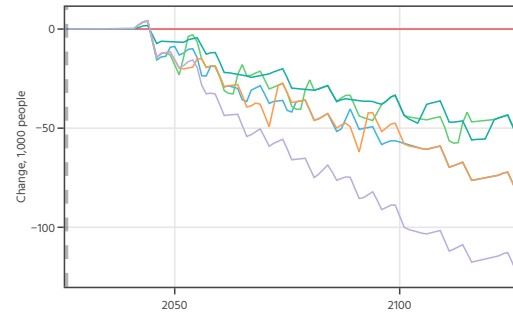
Transfer reciprocity also changes outside the old-age pension. The number of recipients of other income-replacement benefits is lower in the alternative scenarios, especially for disability pension, because some people who would not yet have reached the retirement age in the baseline instead move onto the old-age pension when eligibility is brought forward. This reduction is largest for disability pension. Reciprocity of early-exit schemes changes only modestly, since the alternative paths preserve the same maximum benefit periods for each cohort; the annual number of recipients can still vary because changing the retirement age changes how many cohorts are eligible in a given calendar year.

Figure 4.1
Changes in structural socioeconomic groups

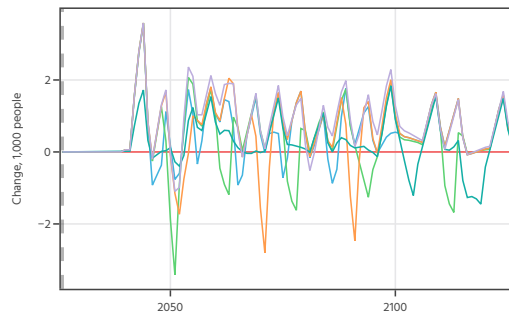
a) Old-age pension



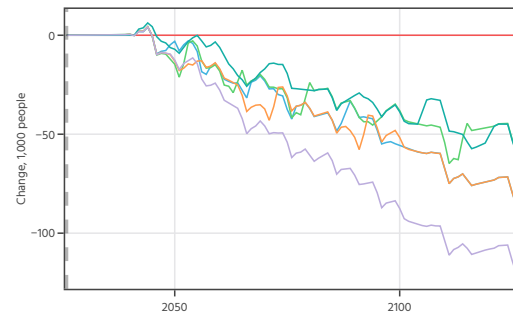
b) Disability pension



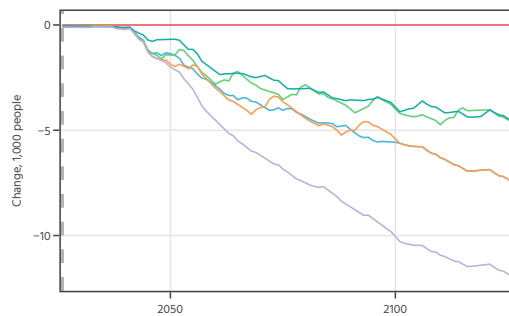
c) Early retirement



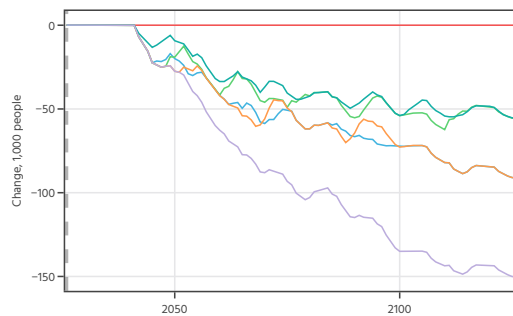
d) Others outside labor force



e) Gross unemployed



f) Structural employment



— Baseline — Constant share of adulthood — Constant years in retirement — Constant share of life
— Pension Commission proposal — Constant retirement age of 70

Note: Changes relative to the baseline, measured in 1,000 persons. Early retirement includes voluntary early retirement, senior pension, and flexible early retirees (snSoc[efter1+seniorpens+fleksyd]).

Source: Own calculations using DREAM's socioeconomic forecasting model.

5 Main results

We summarize the fiscal effects of each scenario by the standard fiscal sustainability indicator $H(t_0)$ (*holdbarhedsindikatoren* in Danish; see Appendix A for a formal definition). A positive value of $H(t_0)$ is the permanent fiscal space, measured as a share of GDP, available without violating the government’s intertemporal budget constraint; a negative value is the permanent tightening needed to satisfy it. In the calculations below the base year is $t_0 = 2025$. Future primary balances are summed to a numerical horizon of $t_{\text{end}} = 2128$, by which time the demographic transition has largely settled, and a growing-perpetuity terminal condition is imposed thereafter. Discounting uses the time-varying nominal government interest-rate path in the baseline projection, which converges to about 4 pct.; robustness with respect to a constant risk premium is reported in Section 7.

Table 5.1 reports the indicator in the baseline and in each of the five alternative scenarios.

Table 5.1
 Fiscal sustainability indicator

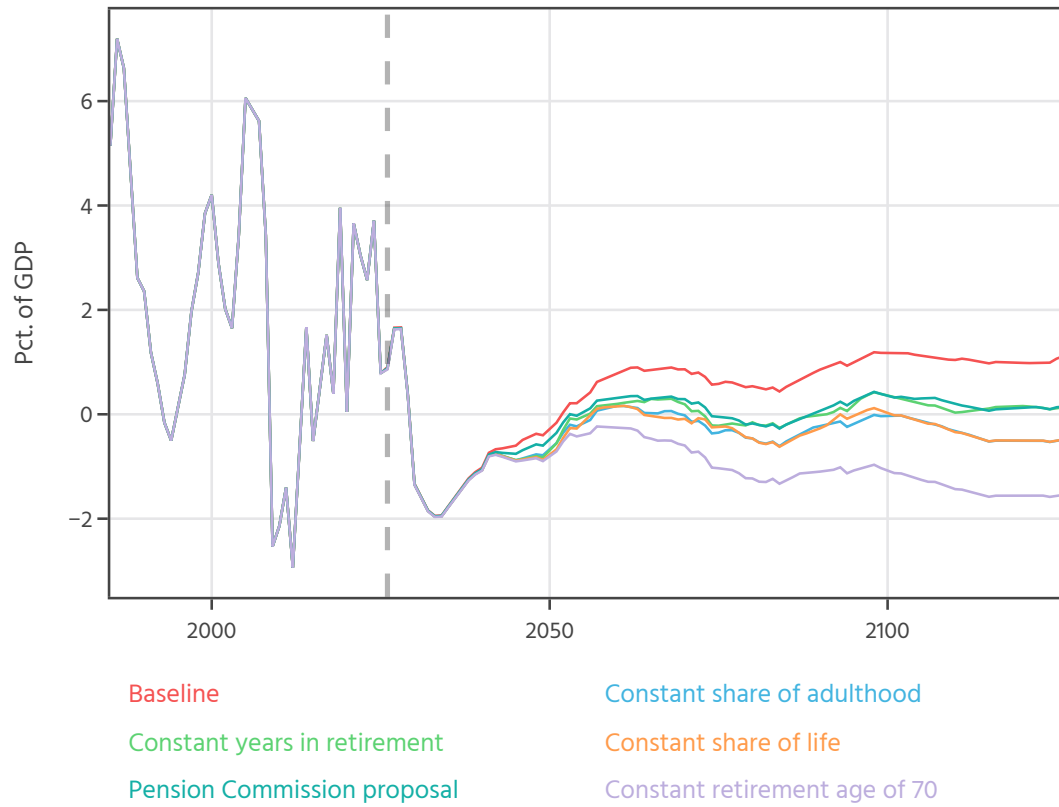
Baseline	Constant share of adulthood	Constant years in retirement	Constant share of life	Pension Commission proposal	Constant retirement age of 70
1.00	-0.41	0.12	-0.41	0.15	-1.35

Note: Sustainability indicator $H(t_0)$ evaluated in $t_0 = 2025$, reported in pct. of GDP.
 Source: MAKRO simulations.

The baseline yields an indicator of 1.00 pct. of GDP, a small structural surplus under current policy. Replacing the existing indexation with the Pension Commission proposal, or with a rule that holds expected years in retirement constant, leaves sustainability close to balance ($H = 0.15$ and 0.12 pct. respectively). The two “constant share” rules—constant share of adult life and constant share of total life expectancy—both yield $H = -0.41$ pct.; the indexation paths underlying these rules happen to coincide closely over the cohorts that affect the present value calculation, so the outcomes are nearly identical. Freezing the retirement age at 70 from 2040 onward is the only scenario that moves the indicator sharply, lowering it by 2.35 percentage points to -1.35 pct. of GDP and turning the small surplus into a sizable permanent deficit.

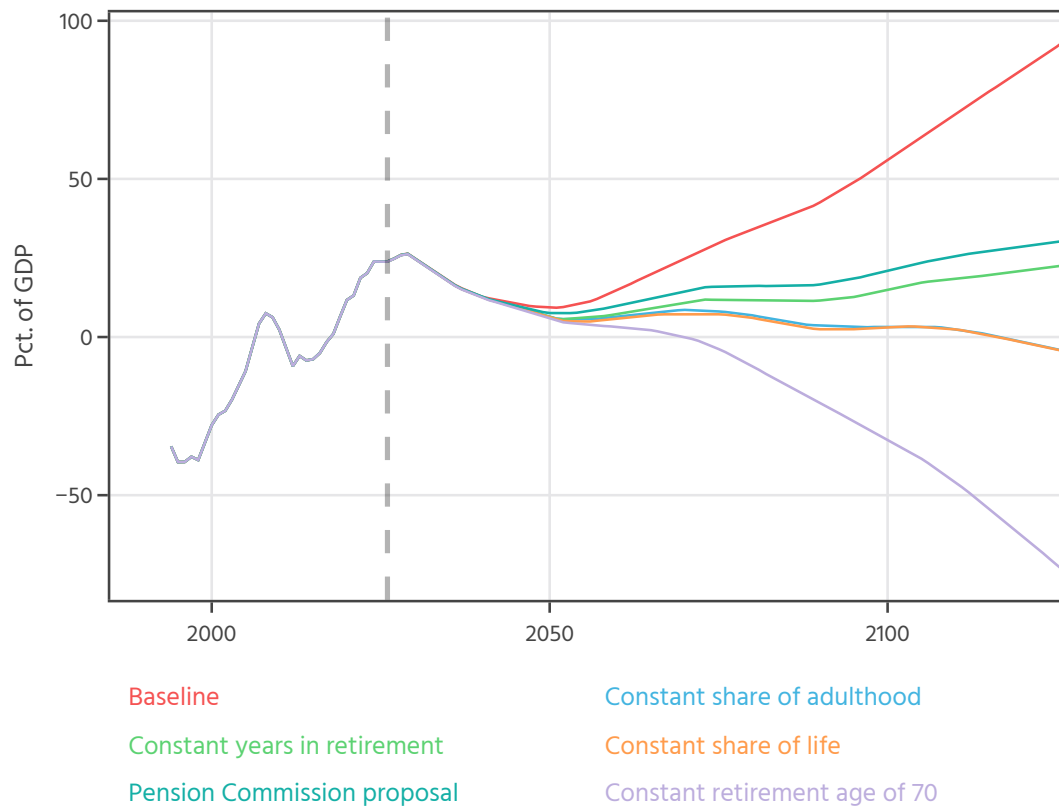
Figures 5.1 and 5.2 show the underlying time profiles. The primary-balance paths are essentially identical across scenarios up to 2040 and fan out thereafter, with the constant-70 scenario deteriorating most quickly because the rising old-age dependency ratio is no longer offset by a higher retirement age. The implied differences in net financial wealth accumulate slowly and continue to widen well past mid-century, illustrating why a long horizon is needed to capture the full fiscal impact of indexation choices.

Figure 5.1
Public primary balance, share of GDP



Note: Primary public balance as a share of GDP ($v_{PrimSaldo}/v_{BNP}$).
Source: MAKRO simulations.

Figure 5.2
 Public net financial wealth, share of GDP



Note: Public net financial wealth as a share of GDP ($v0ff13Net/vBNP$).
 Source: MAKRO simulations.

6 Decomposition of changes in the public primary balance

The change in the sustainability indicator across scenarios can be split into contributions from individual components of the primary balance. For each present-value object $V_{t_0}(x)$ the contribution to $\Delta H(t_0)$ is calculated as

$$\frac{V_{t_0}(x)^{scen} - V_{t_0}(x)^{base}}{V_{t_0}(Y)^{base}},$$

with the sign reversed for expenditure components, so that all entries contribute positively to the sustainability indicator when the present value of future revenues rises or the present value of future expenditures falls. By construction the components sum to the total change in $H(t_0)$ in the top row.

Table 6.1
Decomposition of changes in the sustainability indicator

	Constant share of adulthood	Constant years in retirement	Constant share of life	Pension Commission proposal	Constant retirement age of 70
Δ Fiscal Sustainability Indicator	−1.41	−0.88	−1.41	−0.85	−2.35
Primary public revenues	−0.40	−0.21	−0.39	−0.23	−0.72
Direct taxes	−0.31	−0.17	−0.30	−0.18	−0.55
Indirect taxes	−0.09	−0.04	−0.08	−0.05	−0.16
Other public revenues	−0.01	0.00	−0.01	0.00	−0.01
Primary public expenditures	−1.00	−0.67	−1.01	−0.62	−1.59
Government consumption	−0.28	−0.20	−0.28	−0.17	−0.44
Income transfers	−0.86	−0.56	−0.87	−0.54	−1.38
Old-age pension	−1.41	−0.90	−1.41	−0.89	−2.22
Disability pension	0.48	0.31	0.48	0.31	0.73
Other	0.07	0.03	0.06	0.04	0.11
Other expenditures	0.13	0.08	0.13	0.08	0.24

Note: Changes relative to the baseline, in percentage points of GDP. All entries are scaled by the present value of baseline GDP. Expenditure items enter with the opposite sign so that positive numbers always raise the sustainability indicator. Sub-items are indented; they sum to their parent up to a residual.

Source: MAKRO simulations.

The decomposition shows that the deterioration in sustainability under each alternative scenario reflects two reinforcing channels of comparable importance: a rise in primary expenditures and a fall in primary revenues. Across all five scenarios the expenditure side accounts for roughly two thirds of the total change in $H(t_0)$ and the revenue side for the remaining third.

On the expenditure side the dominant item is the old-age pension. A lower retirement age, or a slower indexation of it, mechanically increases the number of pension recipients and lengthens the period over which each cohort draws benefits. Taken on its own this channel would lower the sustainability indicator by between 0.89 percentage points (Pension Commission proposal) and 2.22 percentage points (constant retirement age of 70). The effect is partly offset, however, by lower expenditure on disability pension (*førtidspension*). Because eligibility for disability pension ends when the recipient reaches the statutory retirement age, a lower retirement age shortens the average duration on disability pension, and the number of recipients in any given year falls. This offset is sizeable: it recovers about a third of the gross old-age pension cost in each scenario, ranging from 0.31 percentage points under the Pension Commission proposal to 0.73 percentage points when the retirement age is frozen at 70. Government consumption also rises modestly as a nominal share of baseline

GDP, due to higher wages stemming from lower labor supply.

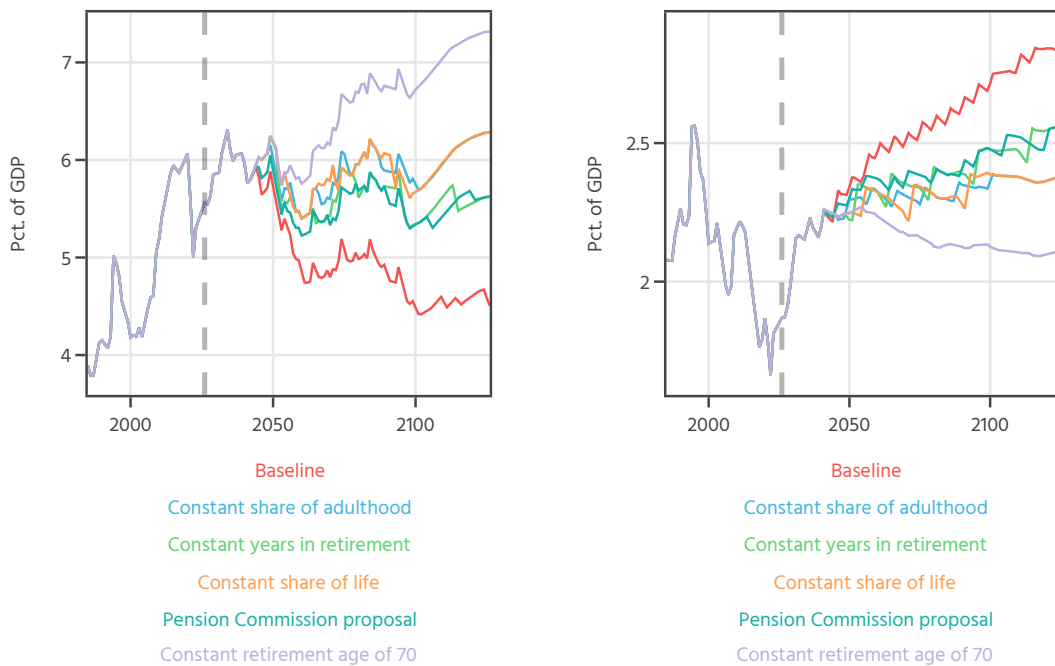
On the revenue side direct taxes account for the bulk of the loss. Lowering the retirement age reduces structural employment, since people who would otherwise have been working draw an old-age pension instead. Aggregate wage income therefore falls, and with it revenue from direct labor income taxes. Indirect tax revenue (mainly VAT) falls by less, in line with the smaller decline in private consumption relative to wage income. Other revenue items contribute negligibly.

The relative magnitudes are very similar across scenarios—each component scales roughly with the cumulative reduction in the retirement age—so the ranking of scenarios in Table 5.1 is essentially driven by how much the retirement age is lowered relative to the baseline rather than by qualitative differences in the underlying fiscal channels.

Figure 6.1
Old-age and disability pension expenditure

a) Old-age pension expenditure, share of GDP

b) Disability pension expenditure



Note: Panel a): expenditure on the old-age pension as a share of GDP ($v0vf[\text{pension}]/v\text{BNP}$). Panel b): Disability pension expenditure as a share of GDP ($v0vf[\text{fortid}]/v\text{BNP}$).

Source: MAKRO simulations.

7 Robustness: discount-rate sensitivity

The sustainability indicator discounts future primary balances using the nominal government interest-rate path in the projection. To assess how sensitive the conclusions are to this choice, we recompute the indicator after adding a constant risk premium of 0.5, 1, 2 and 3 percentage points to the discount rate in every period. A higher discount rate reduces the weight placed on distant primary balances, so the impact on $H(t_0)$ depends on the sign and time profile of those balances. Because the cross-scenario differences in primary balances mainly materialize after 2040, raising the discount rate compresses the differences in H across scenarios.

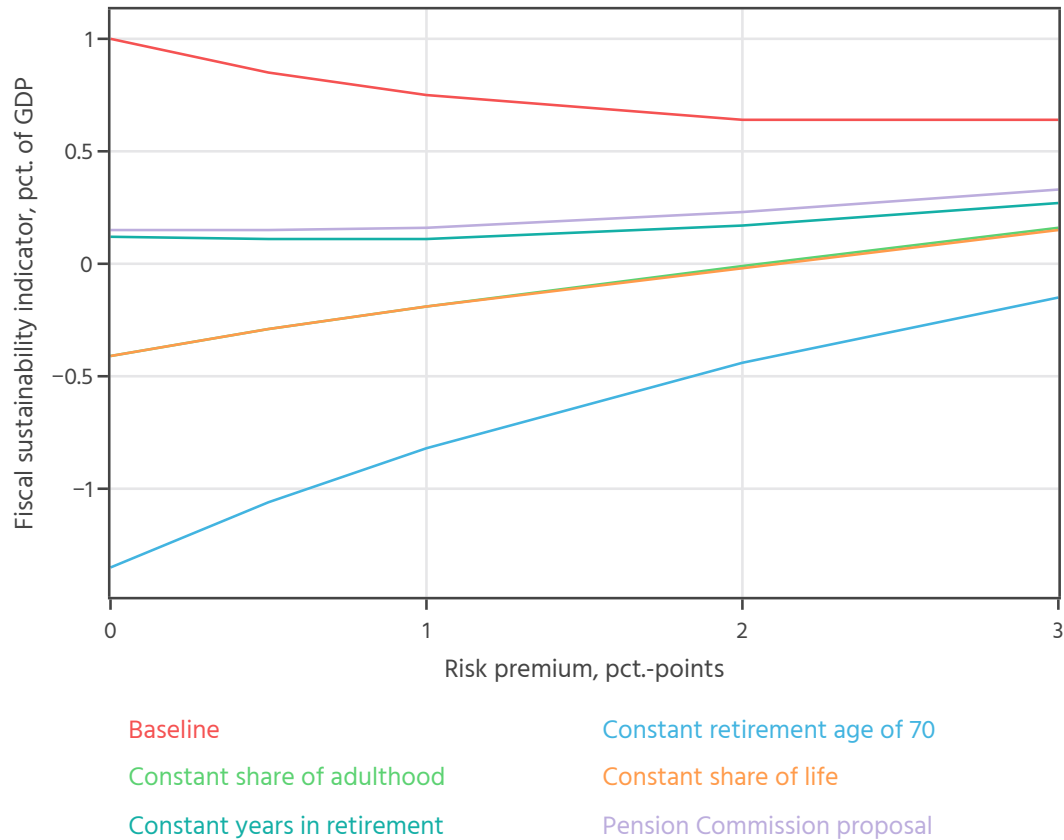
Table 7.1
 Sustainability indicator under alternative discount-rate assumptions

Risk premium (pct.-points)	Baseline	Constant share of adulthood	Constant years in retirement	Constant share of life	Pension Commission proposal	Constant retirement age of 70
0.0	1.00	-0.41	0.12	-0.41	0.15	-1.35
0.5	0.85	-0.29	0.11	-0.29	0.15	-1.06
1.0	0.75	-0.19	0.11	-0.19	0.16	-0.82
2.0	0.64	-0.01	0.17	-0.02	0.23	-0.44
3.0	0.64	0.16	0.27	0.15	0.33	-0.15

Note: Sustainability indicator $H(t_0)$ evaluated in $t_0 = 2025$, in pct. of GDP. Each row corresponds to a constant risk premium added to the nominal government discount rate in every period; the first row reproduces Table 5.1.

Source: MAKRO simulations.

Figure 7.1
 Sustainability indicator as a function of the risk premium



Note: $H(2025)$ as a function of the risk premium, using the values in Table 7.1.
 Source: MAKRO simulations.

The relative position of the policies is unchanged by the alternative discount rates. The Pension Commission proposal and the rule with constant years in retirement remain closest to the baseline, the two constant-share rules remain slightly weaker, and the constant retirement age of 70 remains the least sustainable scenario. The baseline indicator also moves closer to zero when future balances are discounted more heavily. This indicates that part of the excess fiscal space in the baseline comes from tight fiscal policy far in the future rather than from the near-term fiscal position.

A The fiscal sustainability indicator

The starting point is the government's intertemporal budget constraint: current policy is fiscally sustainable if initial net financial wealth plus the present value of future primary balances is non-negative, and unsustainable if it is negative.

Let W_{t_0} denote the government's net financial wealth at the end of the base year t_0 , and let $\{B_t\}$ and $\{Y_t\}$ denote the sequences of primary fiscal balances and nominal GDP, respectively, with $\{r_t\}$ the nominal one-period government discount-rate path. With the present-value operator

$$V_{t_0}(x) = \sum_{t=t_0+1}^{\infty} \frac{x_t}{\prod_{u=t_0+1}^t (1+r_u)},$$

the sustainability condition is

$$W_{t_0} + V_{t_0}(B) \geq 0.$$

If $W_{t_0} + V_{t_0}(B) < 0$, current policy violates the intertemporal budget constraint. The indicator $H(t_0)$ measures the constant share of GDP by which the primary balance can be reduced in every future year while exactly satisfying the constraint:

$$W_{t_0} + V_{t_0}(B) - H(t_0)V_{t_0}(Y) = 0. \quad (1)$$

Solving for $H(t_0)$ gives

$$H(t_0) = \frac{W_{t_0} + V_{t_0}(B)}{V_{t_0}(Y)}. \quad (2)$$

$H(t_0)$ therefore has a direct policy interpretation. A positive value is the permanent fiscal space, measured as a share of GDP, that can be used without violating the intertemporal budget constraint. A negative value is the permanent tightening needed to satisfy it. A value of zero means that current policy is exactly sustainable: the present value of future primary balances equals minus initial net financial wealth.

References

- [1] De Økonomiske Råd (2025). *Dansk økonomi, efterår 2025*. De Økonomiske Råds Sekretariat.