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Ageing costs, public debt sustainability and EU fiscal rules

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Abstract

This paper examines the role of ageing costs and the underlying assumptions in the reformed EU fiscal rules. To comply with these rules, governments facing rising ageing costs over the decade that follows a multi-year adjustment period must pre-emptively implement fiscal consolidation measures to compensate for these projected increases. We evaluate the key assumptions on ageing costs embedded in the underlying debt sustainability analysis (DSA) framework and assess how sensitive public debt projections and implied fiscal adjustment requirements are to alternative ageing expenditure paths. Drawing on different projection vintages, varying time horizons, and using alternative demographic and macroeconomic assumptions, we show that even modest changes in how ageing costs are incorporated can lead to substantial differences in required fiscal tightening and projected debt ratios.

The current DSA framework does not account for uncertainty in baseline ageing cost projections in country-specific assessments. Our simulations further indicate that lower projected ageing costs do not necessarily reduce long-run debt ratios, as they imply weaker upfront consolidation, which can allow debt to rise over time. More broadly, the effects of additional fiscal adjustment aimed at pre-funding projected increases in ageing-related costs depend critically on assumptions: if fiscal multipliers are larger or more persistent, the resulting weaker growth could offset public debt reduction.

Overall, our findings underscore the importance of critically examining the assumptions underlying ageing cost projections, the fiscal policy responses embedded in the framework and the assumed macroeconomic effects of fiscal consolidation when assessing policies aimed at pre-emptively addressing a projected rise in ageing costs. The current treatment of ageing costs in the DSA framework constrains elected governments on the basis of uncertain and arbitrary ageing-related assumptions.

Keywords: Ageing costs, fiscal policy, fiscal rules, austerity, public debt, debt sustainability

JEL classification: E62, J11, J14

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1. Introduction

The population in Europe is ageing. The share of elderly people (aged 65 and over) in the EU is projected to rise from about 21.1% in 2022 to 32.5% by 2100. Over the same period, the share of the working-age population is expected to decline from roughly 63.9% to 54.4%, corresponding to an overall reduction of more than 57 million people. These projections, however, are subject to a high degree of uncertainty (Eurostat, 2023). In the absence of migration into the EU, the decline in the working-age population would be even more pronounced (Pinkus and Kirkegaard, 2025). The ageing of European societies will increase government expenditure – particularly on pensions, health care and long-term care (European Commission, 2024a) – while the shrinking working-age population is likely to put downward pressure on economic growth (e.g. Maestas et al., 2023; Fernández-Villaverde et al., 2025; Bodnár and Nerlich, 2022).

How should fiscal policy makers respond to the challenges posed by demographic change? This will remain a major question in the coming years and decades. This paper examines the link between ageing costs and debt sustainability from the perspective of the reformed EU fiscal rules framework, which entered into force in April 2024. Our contribution focuses on analysing the assumptions about ageing costs embedded in the new rules and in the underlying debt sustainability framework. We quantitatively assess how sensitive public debt ratio projections and fiscal consolidation requirements are to alternative assumptions regarding the evolution of ageing costs, and provide a discussion of key assumptions.

There is substantial uncertainty surrounding the future evolution of ageing costs (e.g. European Commission, 2024a), as these depend on assumptions about macroeconomic developments (e.g. productivity growth, employment among older workers) and demographic trends (e.g. fertility and migration) (European Commission, 2024b). We analyse how this uncertainty – and the political nature of seemingly technical modelling assumptions (e.g. Heimberger et al., 2020; Guzman and Stiglitz, 2024) – affects debt sustainability assessments and the fiscal consolidation requirements derived from the EU's fiscal framework.

The remainder of the paper is structured as follows. Section 2 explains how ageing costs are treated under the new EU fiscal rules. Section 3 explains ageing costs in the debt sustainability analysis (DSA) framework. Section 4 introduces key ageing cost assumptions and alternative scenarios based on the latest Ageing Report. Section 5 presents our sensitivity tests illustrating how projections of the public debt ratio and fiscal consolidation requirements respond to alternative ageing cost assumptions. Section 6 provides a discussion of the key underlying assumptions against the background of our simulations. Section 7 sets out our conclusions.

2. The treatment of ageing costs in reformed EU fiscal rules

The new EU fiscal rules build on country-specific debt sustainability analysis (DSA) conducted within a common analytical framework (European Commission, 2024c). With DSA now institutionalised at the core of the EU's fiscal architecture, it is important to scrutinise the robustness and policy implications of the key underlying assumptions (Darvas et al., 2023; Heimberger et al., 2024; Gottschalk et al., 2025). This paper contributes to this debate by focusing on the role of ageing cost assumptions in the DSA framework.

In June 2024, marking the first application of the reformed framework, the European Commission issued country-specific reference trajectories to member states with fiscal deficits above 3% of GDP and/or public debt ratios exceeding 60% of GDP. These trajectories set out multi-year fiscal consolidation paths intended to ensure that the public debt ratio follows a plausibly declining path or, at a minimum, remains at prudent levels even under adverse scenarios (EU Regulation 2024). The assessment of whether a debt ratio is plausibly declining is based on the Commission's DSA framework (Heimberger et al., 2024; European Commission, 2024c).[1] On the basis of these reference trajectories, national governments subsequently negotiated multi-year fiscal-structural plans with the European Commission. Future applications of the reformed rules will follow the same procedure.

The DSA framework applies a baseline scenario and a set of stress tests. Specifically, it includes three deterministic stress tests – capturing a deterioration in the structural balance, a worsening of the interest-growth differential and a temporary increase in interest rates – and a stochastic analysis. The debt path is considered plausibly downward when the probability that the public debt ratio will decline in the five years following the adjustment period reaches at least 70%. The reference trajectory typically assumes a four-year adjustment period, but member states may request an extension of up to seven years by presenting investment and reform packages. The Commission grants such an extension only if the proposed measures are assessed as growth-enhancing and consistent with debt sustainability.

The DSA framework relies on assumptions regarding the evolution of economic growth, interest rates, inflation, fiscal policy and ageing costs (Darvas et al., 2023; Heimberger et al., 2024). These assumptions are to be discussed by a newly established DSA working group. Although a small body of research has begun to examine the sensitivity of the DSA framework to changes in its core parameters (Darvas et al., 2023; Heimberger et al., 2024), a systematic assessment remains lacking.

[1] The so-called 'safeguards', which stipulate minimum fiscal adjustment requirements, will only be applied if they are stricter than the DSA-based fiscal consolidation criterion. However, the DSA-based criteria were binding for most countries in the first round of reference trajectories (Darvas et al., 2024).

A distinctive feature of the current DSA framework is its treatment of ageing costs. Ageing costs refer to public spending driven by demographic change. They are measured as the combined expenditure on pensions, health care, long-term care, and education. The transmission operates through changes in population structure and age-specific spending profiles: a higher old-age dependency ratio increases pension spending by raising the number of beneficiaries relative to contributors, while ageing raises healthcare and long-term care costs through higher per-capita expenditure at older ages. Meanwhile, lower shares of younger age cohorts reduce education spending, partly offsetting the overall increase in age-related expenditure.

After the multi-year adjustment period, fiscal policy is assumed to remain unchanged, except for developments in ageing costs. Ageing costs enter through the *ageing component*, defined as the increase in ageing-related expenditure relative to its level at the end of the adjustment period (e.g. the year 2028 under a four-year adjustment over the period 2025-2028). This implies that changes in ageing costs after 2028 matter for the analysis, but level shifts affecting all years equally have no impact. The DSA framework assumes that projected increases in ageing costs will fully materialise, while it is simultaneously intended to prevent such an outcome by incentivising reforms that contain ageing-related expenditure over the medium to long term. However, its mechanism does not incorporate this effect, as projections are based on a no-policy-change assumption and therefore allow ageing costs to fully materialise despite the incentivised reforms.

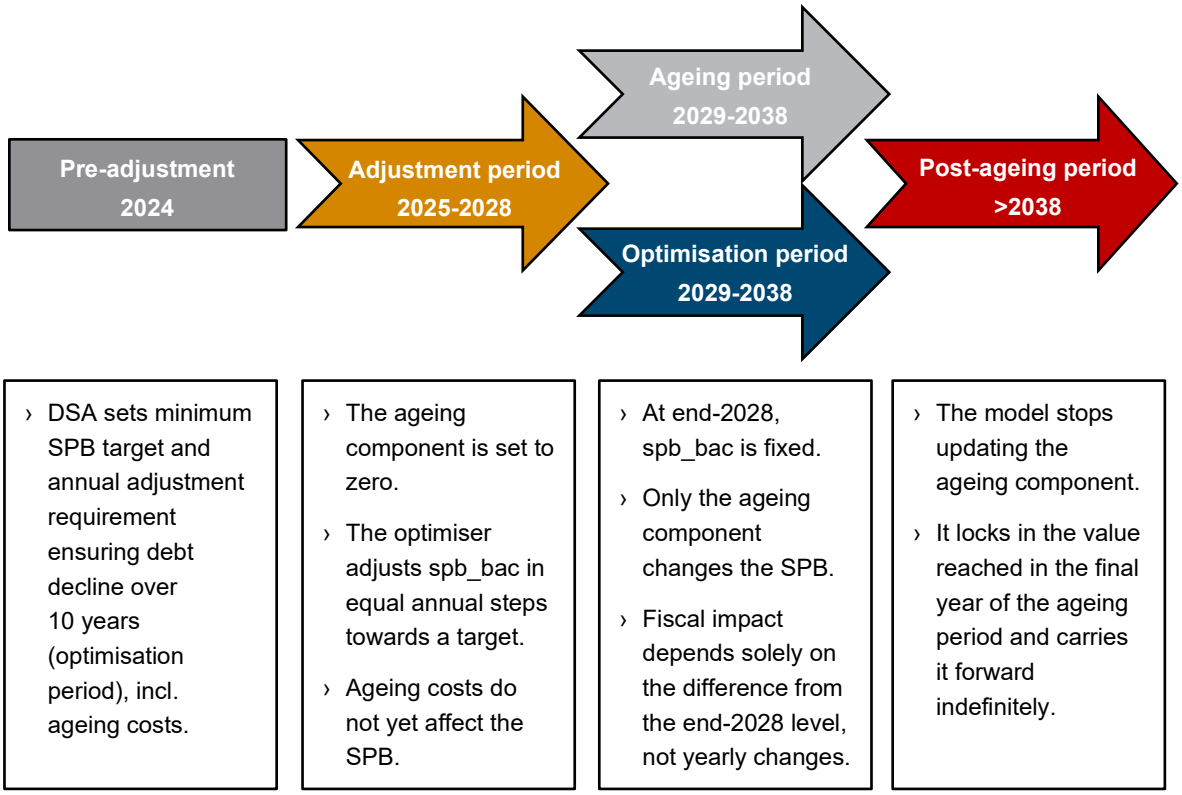
The DSA determines the minimum structural primary balance (SPB) path required to ensure a decline in the public debt ratio over the 10-year period following adjustment, taking into account the projected increase in ageing costs. As a result, higher (lower) ageing cost growth over this horizon translates into stronger (weaker) required fiscal adjustment (see section 3 for details). As stated previously, the DSA framework further assumes no offsetting policy response (i.e. no future reforms or revenue increases to counteract higher ageing-related spending). Consequently, governments facing rising ageing costs over the decade that follows the multi-year adjustment period must pre-emptively consolidate to compensate for these projected increases. Conversely, countries where ageing costs are expected to decline over the same horizon face correspondingly lower adjustment requirements (Paetz and Watzka, 2025; Darvas et al., 2025).

3. Ageing cost impact in the DSA framework

This section offers a detailed illustration of the key assumptions and dynamics related to ageing costs within the DSA framework underpinning the new EU fiscal rules, including numerical examples. Such a detailed technical explanation of the DSA mechanisms is not provided in the European Commission's related publications (European Commission, 2024c; European Commission, 2026). Hence, we shed some light on hidden assumptions and adjustment mechanisms.

The DSA framework defines four distinct phases in how ageing costs interact with the SPB as shown in Figure 1: pre-adjustment, adjustment period, ageing period and post-ageing period. In our estimation, the adjustment period starts in 2025 and lasts four years (2025-2028). The four-year adjustment period is chosen to ensure comparability.[2] The ageing period follows the adjustment period and, by default in the DSA framework, lasts 10 years.

Figure 1 / Phases of SPB determination and ageing cost integration in the DSA



Source: Own illustration.

[2] Alternative ageing cost assumptions affect the DSA in a similar way under both four- and seven-year horizons.

Before the adjustment period, the DSA optimiser finds the smallest SPB target (spb_target_{2028}) that satisfies the debt decline criterion: debt to GDP must fall in every year from the end of the adjustment period throughout the subsequent 10 years (2029-2038). This window, which we refer to as the *optimisation period*, is fixed and does not depend on the length of the ageing period. Ageing costs affect the required SPB target only if they occur within this window.

To satisfy the debt decline criterion, the DSA framework computes a constant annual adjustment step ($annual\_adjustment$) for the *structural primary balance before the ageing costs* (spb_bac), which adjusts the SPB from its initial level in 2024 to the required 2028 target over the adjustment period:

$$annual\_adjustment = \frac{spb\_target_{2028} - spb\_bac_{2024}}{adjustment\_period} \quad (1)$$

During the adjustment period, the ageing component is set to zero. The optimiser adjusts spb_bac by the annual adjustment steps ($annual\_adjustment$) towards the SPB target:

$$spb\_bac_{2025} = spb\_bac_{2024} + annual\_adjustment \quad (2)$$

After the adjustment period ends, the ageing component is computed each year as the change in projected ageing costs relative to their level at the end of the adjustment period:

$$AgeingComponent_{t>2028} = AgeingCost_{t>2028} - AgeingCost_{\{2028\}} \quad (3)$$

The ageing component is then subtracted from spb_bac to produce the SPB that enters the primary balance and debt ratio estimation. Once the ageing period expires, the framework stops updating the ageing component. It locks the value reached (ageing component and SPB) in the final year of the ageing period and carries it forward indefinitely:

$$spb_{t>2028} = spb\_bac_{t>2028} - AgeingComponent_{t>2028} \quad (4)$$

The computed SPB feeds into the primary balance:

$$pb_{t>2028} = spb_{t>2028} + cyclical_{t>2028} \quad (5)$$

The debt to GDP ratio then evolves from the previous year's level, adjusted by: interest (*r*) - growth (*g*) dynamics, the primary balance (*pb*), and stock-flow adjustments (*sf*):

$$d = d_{t>2028-1} * \frac{1 + r_{t>2028}}{1 + g_{t>2028}} - pb_{t>2028} + sf_{t>2028} \quad (6)$$

A larger ageing component during the ageing period reduces the primary balance, accelerates debt accumulation and forces the optimiser to raise spb_bac. This translates directly into a larger annual adjustment step during the adjustment period.

To illustrate how higher ageing costs affect fiscal dynamics, we consider two scenarios that differ only in the path of ageing cost: a baseline ageing cost and a higher ageing cost scenario. The DSA framework is identical in both cases, including the same optimisation window and the same adjustment

mechanisms. Table 1 illustrates how differences in the ageing costs translate into different fiscal adjustment requirements and SPB outcomes. As already explained, only the change in ageing costs after 2028 is relevant for the DSA. When ageing costs increase more strongly during the optimisation window (2029-2038), they worsen the debt trajectory within the period that is binding for the DSA criterion. As a result, the optimiser requires larger annual adjustment steps during the adjustment period to ensure that debt continues to decline throughout the optimisation window. This stronger upfront adjustment raises the path of the SPB before ageing costs. Although higher ageing costs generate a larger negative ageing component after 2028, the additional fiscal effort implemented during the adjustment period can more than offset this drag. Consequently, the resulting SPB can be higher than in the lower-ageing scenario.

This mechanism is particularly pronounced when the increase in ageing costs relative to their 2028 level is large within the optimisation window. In that case, the optimiser internalises a substantial future fiscal burden and responds with stronger consolidation. By contrast, if the ageing cost path is relatively flat compared with its 2028 level, the implied ageing component remains small and the optimiser does not require significantly stronger adjustment, as the debt decline criterion is already satisfied.

After the ageing period ends, the ageing component is no longer updated and remains fixed at its final level. From that point onward, differences in SPB across scenarios reflect the combined effect of earlier adjustment efforts and the permanently higher (or lower) ageing burden locked in at the end of the ageing period.

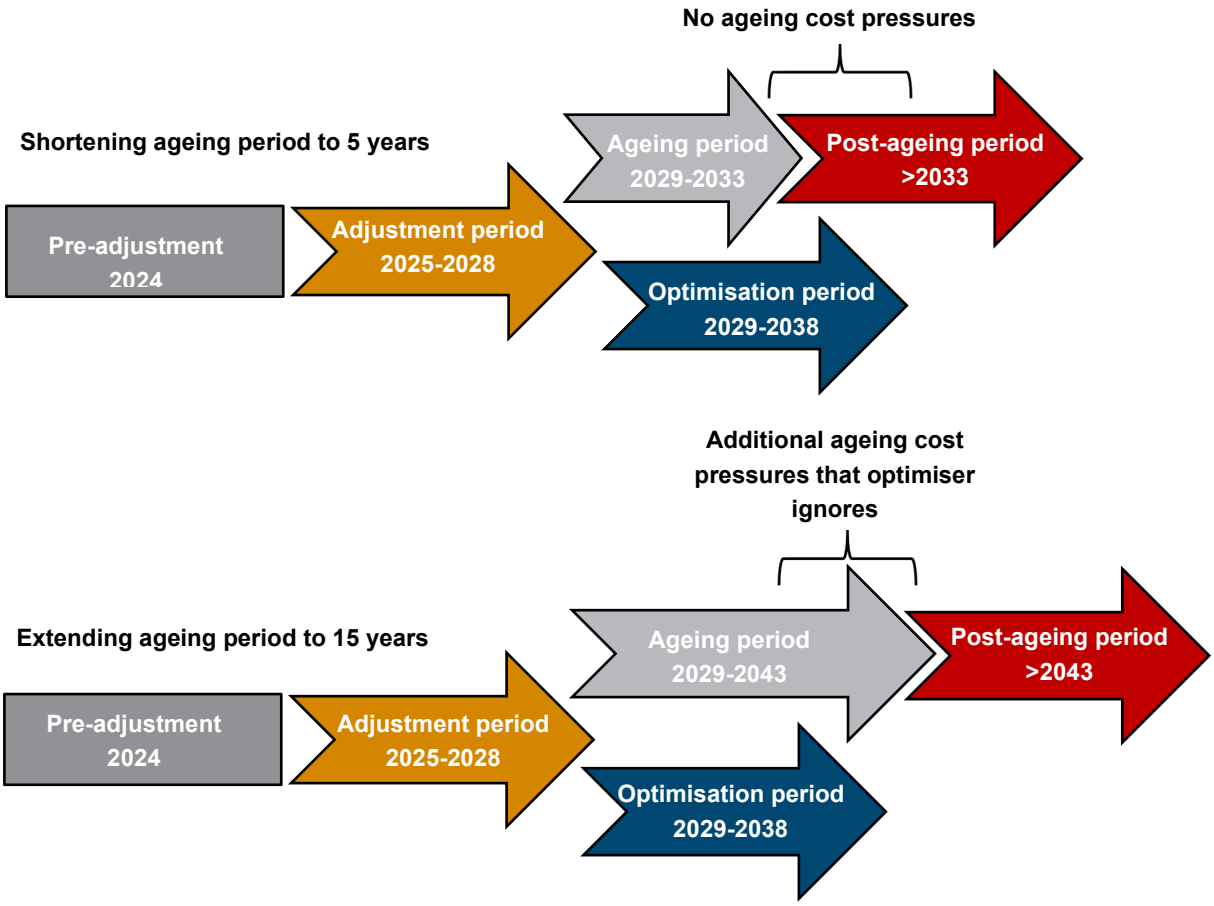
Table 1 / Ageing costs and SPB adjustment dynamics (numerical example)

Year	Phase	Adjustment step (base)	Adjustment step (high)	Ageing cost (base)	Ageing cost (high)	Ageing component (base)	Ageing component (high)	SPB (base)	SPB (high)
2024	Pre-adjustment	-	-	28.2	28.2	-	-	-1.0	-1.0
2025	Adjustment	-0.7	-1.5	28.3	28.3	-	-	-0.3	0.5
2026	Adjustment	-0.7	-1.5	28.3	28.4	-	-	0.4	2.0
2027	Adjustment	-0.7	-1.5	28.4	28.5	-	-	1.1	3.5
2028	Adjustment	-0.7	-1.5	28.4	28.6	-	-	1.8	5.0
2029	Ageing period	-	-	28.5	28.7	0.1	0.1	1.8	4.9
2030-2037	Ageing period	-	-	28.9	29.5	0.5	0.9	-0.5	0.5
2038	End of ageing period	-	-	28.9	29.6	0.5	1.0	-1.0	-0.5
>2038	Post- ageing period	-	-	29.0	29.7	-	-	-1.0	-0.5

Source: Own calculations.

When the ageing period is shorter than the 10-year optimisation window (e.g. reduced to five years, as in Figure 2), the additional ageing cost pressures in the later years of the optimisation window are effectively removed. By contrast, when the ageing period is extended beyond the optimisation window (e.g. to 15 years), additional ageing cost pressures arise outside the horizon considered by the optimiser and are therefore not internalised in the required fiscal adjustment.

Figure 2 / Change in the ageing period and its impact on the DSA



Source: Own illustration.

Table 2 presents a numerical example of how changes in the length of the ageing period affect the SPB. Reducing the ageing period to five years implies that ageing-related pressures are present for five fewer years compared with the baseline. As a result, the optimiser calculates a smaller annual adjustment requirement, and with lower cumulative ageing pressures, the SPB at the end of the ageing period remains higher, with a correspondingly smaller negative drag.

By contrast, when the ageing period is extended to 15 years, the optimiser still internalises only the 10-year optimisation window. Consequently, the required adjustment is the same as in the baseline 10-year ageing scenario. However, because ageing costs continue to increase for an additional five years beyond the optimisation window, these extra pressures are not accounted for in the optimisation. This results in a lower SPB once the full ageing period is realised.

The dynamic depends first on the evolution of ageing costs relative to their level at the end of the adjustment period (2028). If ageing costs decline or remain broadly flat relative to this reference level, the resulting ageing component is small and the associated pressure on the SPB is limited. Moreover, any increases in ageing costs occurring after the ageing period are not captured by the DSA optimiser. By contrast, if ageing costs rise significantly during the ageing period relative to their level at the end of the adjustment period, the resulting ageing component exerts a substantial negative pressure on the

SPB. This effect persists even if ageing costs subsequently stabilise or decline, as the accumulated ageing component is locked in once the ageing period ends.

Second, the magnitude of the fiscal adjustment set by the optimiser depends on the scale of the increase in the ageing component. A larger rise in the component induces a stronger adjustment and therefore a higher required SPB, whereas smaller changes have a limited effect and can result in similar or only marginally different adjustment paths, leading to a lower SPB.

Table 2 / Ageing costs and SPB adjustment dynamics (numerical example)

		Adjustment steps			Ageing	Ageing component			SPB		
Year	Phase	5 year	10 year	15 year	cost	5 year	10 year	15 year	5 year	10 year	15 year
2024	Pre-adjustment	-	-	-	28.2	-	-	-	-1.0	-1.0	-1.0
2025	Adjustment	-0.4	-0.7	-0.7	28.3	-	-	-	-0.7	-0.3	-0.3
2026	Adjustment	-0.4	-0.7	-0.7	28.3	-	-	-	-0.3	0.4	0.4
2027	Adjustment	-0.4	-0.7	-0.7	28.4	-	-	-	0.0	1.1	1.1
2028	End of adjustment	-0.4	-0.7	-0.7	28.4	-	-	-	0.4	1.8	1.8
2029	Ageing period	-	-	-	28.5	0.1	0.1	0.1	0.3	1.8	1.8
2030	Ageing period	-	-	-	28.5	0.1	0.1	0.1	0.2	1.7	1.7
2031	Ageing period	-	-	-	28.6	0.2	0.2	0.2	0.1	1.5	1.5
2032	Ageing period	-	-	-	28.6	0.2	0.2	0.2	-0.1	1.3	1.3
2033	Ageing period	-	-	-	28.7	0.3	0.3	0.3	-0.4	1.0	1.0
2034	Ageing period	-	-	-	28.7	-	0.3	0.3	-0.4	0.7	0.7
2035	Ageing period	-	-	-	28.8	-	0.4	0.4	-0.4	0.4	0.4
2036	Ageing period	-	-	-	28.8	-	0.4	0.4	-0.4	0.0	0.0
2037	Ageing period	-	-	-	28.9	-	0.5	0.5	-0.4	-0.5	-0.5
2038	Ageing period	-	-	-	28.9	-	0.5	0.5	-0.4	-1.0	-1.0
2039	Ageing period	-	-	-	29.0	-	-	0.6	-0.4	-1.0	-1.5
2040	Ageing period	-	-	-	29.0	-	-	0.6	-0.4	-1.0	-2.1
2041	Ageing period	-	-	-	29.1	-	-	0.7	-0.4	-1.0	-2.8
2042	Ageing period	-	-	-	29.1	-	-	0.7	-0.4	-1.0	-3.5
2043	Ageing period	-	-	-	29.2	-	-	0.8	-0.4	-1.0	-4.2
2043+	Frozen	-	-	-	29.2	-	-	-	-0.4	-1.0	-4.2

Source: Own calculations.

4. Assumptions and incorporation of ageing costs in the DSA framework

The DSA framework that underlies new EU fiscal rules makes use of the reference scenario of the projected total cost of ageing as reported in the latest Ageing Report and shown in Figure 3 (European Commission, 2024a). The Ageing Report uses population projections by Eurostat as a starting point and also long-run macroeconomic projections for each country based on common EU methodologies. Long-term projections follow a general no-policy-change assumption, i.e. they show what the future may hold if there is no change in current policies (subject to a number of assumptions about changes in population and the economy). The demographic and macroeconomic projections are then used for age-related expenditure projections of four items: pensions, health care, long-term care and education. The sum of these four items gives the total cost of ageing (European Commission, 2024b).

Figure 3 illustrates substantial cross-country differences in both the level and the projected evolution of baseline ageing costs over the relevant ageing period of 2029-2038.[3] As of 2028, ageing costs as a share of GDP are lowest in Hungary (15.9%), Malta (16.2%) and Lithuania (16.3%),[4] and highest in Belgium (27.6%), Austria (28.9%) and France (29.3%). According to the Ageing Report (European Commission, 2024a), Southern and Eastern EU countries are expected to experience the largest increases in total ageing costs between 2029 and 2038 (relevant ageing period for DSA). Ageing costs rise by 2.2 percentage points (pp) of GDP in Portugal and Spain, 1.6 pp in Slovenia, 1.5 pp in Cyprus and Lithuania. In contrast, ageing costs are projected to decline in Bulgaria (-0.9 pp), Estonia, Croatia, Latvia and Poland (-0.4 pp), while remaining broadly stable in Malta, Sweden, Romania and France. Overall, 18 of 27 EU member states are projected to face increasing ageing costs over the 10-year ageing period (2029-2038) – precisely the period relevant for the DSA-based fiscal adjustment criterion in the first round of fiscal rules application. However, the magnitude of these increases varies considerably across countries.

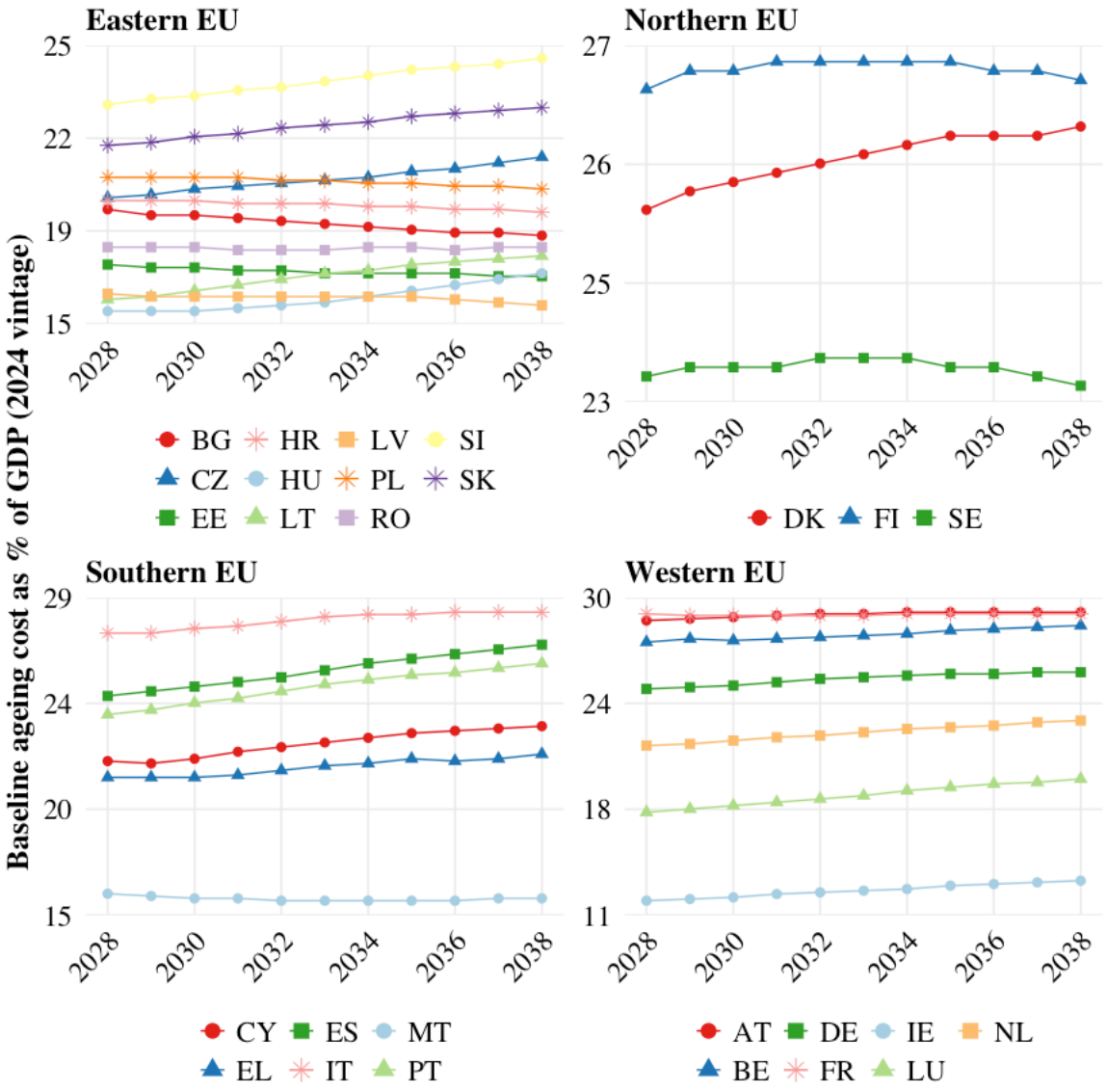
However, the Ageing Report acknowledges explicitly that '[s]ensitivity tests are an indispensable element of any long-term projection exercise given the inherent uncertainty that is involved' (European Commission, 2024a, p. 52). Other publications on demographic change and its fiscal impacts also argue that researchers should use alternative ageing cost trajectories based on variations in key macroeconomic and demographic assumptions (e.g. Paetz and Watzka, 2025; Darvas et al., 2025). The related literature provides evidence of significant population and macroeconomic forecast errors: i.e. ex-post values for demographic and macroeconomic variables have been shown frequently to deviate substantially from the projections; and a longer projection horizon often comes with larger errors (e.g. Smith and Sincich, 1988; Rayer, 2008; Fioramanti et al., 2016; Gatti et al., 2024). These uncertainties

[3] Baseline ageing costs in the 2024 Ageing Report are projected under a no-policy-change scenario using harmonised assumptions, including long-run total factor productivity growth of around 1.0% per year, labour productivity growth of about 1.0-1.5%, pension expenditure determined by existing eligibility and indexation rules, and net migration remaining positive but gradually declining over the projection horizon.

[4] In Ireland, ageing costs as a percentage of GDP are even lower. However, GDP figures in Ireland are known to be distorted by the country's status as a low-tax financial centre for multinational corporations (e.g. Polyak, 2022).

are not explicitly incorporated into the DSA, which relies on a single baseline path for ageing costs. As a result, the fiscal adjustment requirements derived within the framework do not account for the potential variation in ageing cost developments highlighted in the literature.

Figure 3 / Total ageing costs, % of GDP (baseline scenario, 2029-2038)



Source: European Commission (2024a).

In this paper, we assess the role of ageing cost assumptions in the EU's fiscal framework. We critically examine key underlying assumptions and analyse the sensitivity of the relevant DSA projections to variations in these assumptions across nine selected EU member states; we introduce and explain our country selection below. Our robustness analysis considers: (i) alternative ageing periods over which it is determined by how much governments must pre-emptively offset projected increases in ageing-related costs; (ii) the impact of different ageing cost forecast vintages; and (iii) variations in key macroeconomic and demographic parameters based on sensitivity scenarios from the latest Ageing Report.

Our country selection (Austria, Germany, Spain, Finland, France, Italy, Portugal, Romania, Slovenia) is based on two criteria. First, we ensure geographical coverage by including countries from each major EU region (Eastern, Southern, Northern and Western). Second, within each region, we prioritise countries that exhibit a substantial change in projected ageing costs over the relevant post-adjustment horizon. This choice is guided by the structure of the DSA framework, in which ageing costs affect the fiscal path only through their increase relative to the end of the adjustment period. Consequently, countries with little or no change in ageing costs after the adjustment end would show limited or no impact on the SPB.

We conduct a sensitivity analysis of the DSA framework by evaluating how alternative ageing cost projections and modelling assumptions affect fiscal outcomes. Our analysis estimates the annual average fiscal adjustment requirements, together with the resulting SPB paths and public debt to GDP ratios under a range of scenarios derived from the 2024 Ageing Report and earlier vintages. The underlying assumptions are described below, while the results are discussed in Section 5.

The Ageing Report (European Commission, 2024a) provides, in addition to the *baseline* ageing cost scenario used in the DSA framework, projections of ageing-related costs under various alternative demographic and macroeconomic scenarios.

On the macroeconomic side, we consider the following scenarios:

› *Higher (lower) total factor productivity (TFP) growth*. In the higher TFP scenario, TFP growth converges to around 1%, while in the lower TFP scenario it gradually declines to about 0.6% by 2070 (instead of 0.8% in the baseline scenario). In the higher (lower) TFP growth scenario, the total cost of ageing is projected to be lower (higher) than in the baseline, primarily because of higher (lower) GDP projections.

› *Higher employment rates among older workers*. The employment rate of older workers (aged 55-74) is assumed to be 10 pp higher than in the baseline scenario. In this scenario, the ageing cost declines relative to the baseline, driven by higher employment and GDP growth, and because a higher effective retirement age reduces pension expenditure.

On the demographic side, we include the following scenarios:

› *Lower fertility*. The fertility rate is 20% lower over the entire projection period, which increases pension expenditure by around 0.8 pp of GDP.

› *Higher life expectancy*. Life expectancy at birth is assumed to increase by an additional two years by 2070 compared with the baseline scenario, implying higher pension expenditures and increased ageing-related fiscal pressures.

› *Higher (lower) migration*. A 33% higher (lower) level of non-EU immigration over the projection period is associated with lower (higher) ageing-related expenditure growth compared with the baseline, owing to its impact on population size and GDP.

In addition, the report includes a *risk scenario* that assumes higher ageing-related costs, driven by stronger demand for health services (reflecting higher income elasticity) and an increasing share of formal long-term care.

Beyond the sensitivity scenarios presented in the 2024 Ageing Report, we re-estimate the DSA model using the baseline ageing cost projections from the 2018 and 2021 Ageing Reports to assess how sensitive the results are to vintage-to-vintage revisions in ageing cost projections.

As explained in Section 3, the DSA framework incorporates ageing costs through an ageing component that exerts a fiscal drag on the SPB over a fixed post-adjustment horizon (the ageing period), set to 10 years in the baseline. To test the sensitivity of this assumption, we vary the length of the ageing period, considering horizons of zero, five and 15 years while keeping the definition of the ageing component unchanged. The impact of this drag depends on both its magnitude and its timing relative to the DSA optimisation window. Only ageing costs materialising within the 10-year optimisation horizon (2029-2038) influence the required fiscal adjustment, because the optimisation does not internalise fiscal pressures beyond 2038. When a larger share of ageing costs falls within this window, the optimisation triggers stronger fiscal adjustment to stabilise debt dynamics.

When the ageing period is shorter than the optimisation window (e.g. five years), fewer ageing pressures are internalised, resulting in weaker adjustment and a smaller frozen ageing component. With a 10-year ageing period, more costs fall within the window, increasing both the required adjustment and the resulting drag. Extending the ageing period beyond 10 years operates differently. Costs arising after 2038 are not internalised and do not affect the adjustment path; they only increase the ageing component that is permanently embedded in the SPB once the window closes, thereby worsening the post-window fiscal position.

Figure 4 presents the average *ageing component* applied over 2029-2038 (in percentage points of GDP) across scenarios in our sample (see Table A1 in the Appendix for average and cumulative ageing components across countries and scenarios). The ageing component varies substantially across countries and scenarios, reflecting differences in fiscal pressures related to ageing costs. Ageing-related fiscal pressure is highest in Portugal and Spain, followed by Slovenia and Italy, while it is lowest in France, Finland and Romania. The risk and low migration scenarios generate the highest fiscal pressure from ageing, while scenarios with higher employment of older workers and higher migration are associated with lower ageing-related pressures.

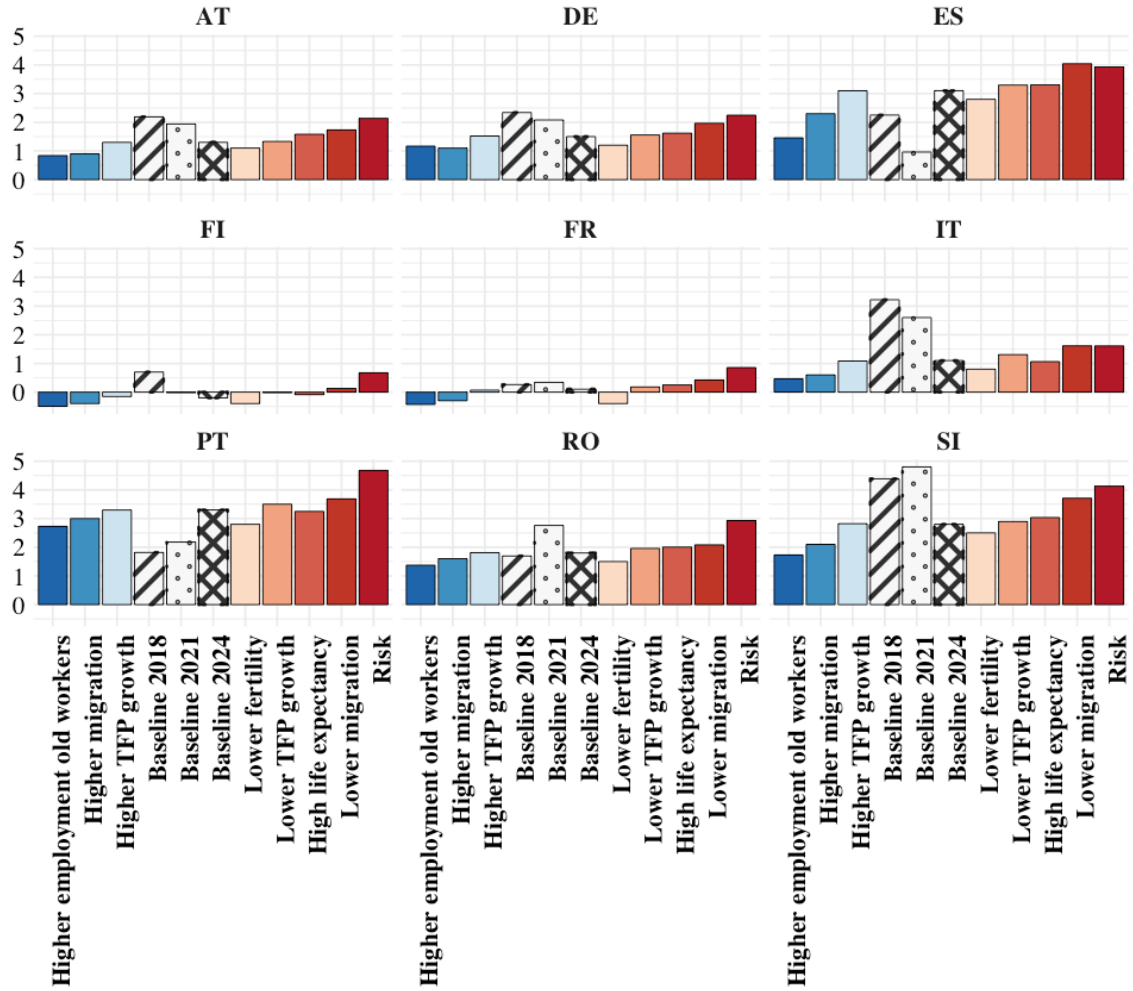
TFP scenarios do not produce any differences. This reflects the convergence paths of the TFP assumptions: in the higher TFP scenario, projections are identical to the baseline until 2040, while in the lower TFP scenario they coincide with the baseline until 2032. Given the 10-year DSA *optimisation window* (2029-2038), these scenarios therefore generate very similar ageing cost paths to those in the baseline.

Lower fertility initially reduces fiscal pressure, as fewer children lead to lower education and healthcare spending. However, in later decades it increases ageing costs through a smaller working-age population and higher dependency ratios. Because these effects materialise beyond the 10-year DSA optimisation window for most countries in our sample, they are not internalised in the DSA framework, resulting in a net reduction in fiscal pressure within the relevant horizon across all countries.

Across vintages, the 2018 and 2021 baseline projections imply significantly larger increases in ageing costs than the 2024 baseline, except for Portugal and Spain. Across the 2018, 2021 and 2024 Ageing Reports, revisions within the ageing period (2029-2038) are mainly driven by labour market outcomes, while demographic updates have limited impact in this period, as most ageing costs materialise beyond

it. Compared with the 2018 report, the 2021 revision is positive, reflecting better than expected labour market performance, with higher employment and participation and lower unemployment, leading to stronger labour income assumptions within the optimisation horizon. The 2024 update broadly maintains this improvement and adds marginal further gains from labour market assumptions. In Spain and Portugal, higher ageing costs in 2029-2038 are mainly driven by rising pension expenditure.

Figure 4 / Ageing component across scenarios, 2038 (change from 2028 level; percentage points of GDP)



Note: The ageing component is calculated for 2029-2038 as the annual difference between ageing costs in each year of the period and the ageing cost at the end of the adjustment period (2028). The figure shows the average change over the 10-year period.
Source: Own calculations.

5. Different ageing cost scenarios and their impact on fiscal adjustment requirements and public debt ratio projections

The following section presents DSA simulations under alternative ageing cost scenarios to quantify the sensitivity of fiscal adjustment requirements and the corresponding public debt ratio projections under the EU's fiscal framework.

The European Commission has not made all elements of the underlying DSA code publicly available. To illustrate how changes in assumptions related to ageing costs affect fiscal consolidation requirements, we rely on a replication of the DSA framework (Darvas et al., 2024; Welslau, 2025).[5] For the projections, we rely on the European Commission's Autumn 2025 Economic Forecast and assume a four-year adjustment period (2025-2028) for all countries,[6] thereby abstracting from seven-year adjustment periods being granted to several EU member states.[7] To ensure comparability across scenarios, we abstract from the safeguards embedded in the reformed EU fiscal rules, i.e. the minimum adjustment requirements that apply only when they are more stringent than the DSA-based criterion (EU Regulation 2024) – and focus exclusively on the DSA projections and the fiscal effort implied by these. This allows us to isolate the effect of alternative ageing cost assumptions on adjustment needs. In practice, overall fiscal requirements could be higher for some member states if a safeguard were to become binding, but this does not affect our assessment of the sensitivity of DSA-based adjustment paths. The purpose of our overall approach is to examine sensitivity and ensure full cross-country comparability in our simulations.

The results for annual average fiscal adjustment requirements are shown in Figure 5,[8] with the red line indicating the baseline consolidation requirement. Four main findings emerge.

First, the choice of Ageing Report vintage has a substantial effect on estimated fiscal adjustment needs. In most countries, the 2018 and 2021 vintages imply higher consolidation requirements than the 2024 baseline, reflecting downward revisions to projected ageing costs in the latest projections. For example, Austria's adjustment requirement declines from 1.01 pp of GDP in the 2018 vintage and 0.91 pp in the 2021 vintage to 0.77 pp in the 2024 baseline, while Italy's requirement falls from 0.86 pp in 2018 and 0.73 pp in 2021 to 0.61 pp of GDP in 2024. Spain and Portugal are notable exceptions, as the 2024 projections imply higher fiscal adjustment needs, reflecting upward revisions in ageing pressures over the relevant horizon.

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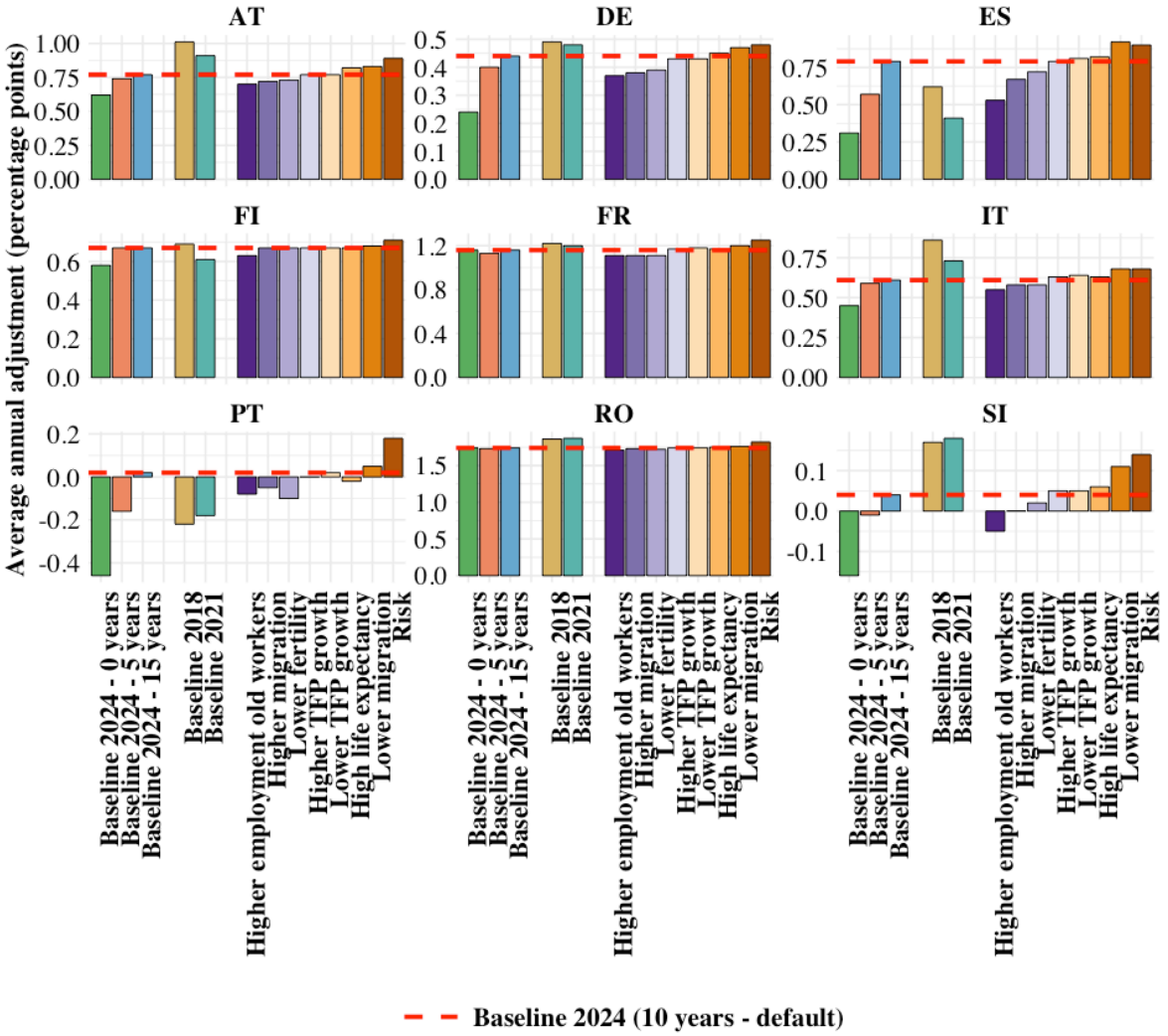
5 See Lennard Welslau's github page: https://github.com/lennardwelslau/eu-debt-sustainability-analysis/

6 The choice of a four-year adjustment period is made for comparability purposes only, as alternative ageing cost assumptions have a similar impact on the DSA under both four- and seven-year periods.

7 Eight EU member states were granted an extension in the first round of applying the reformed EU fiscal framework: Finland, France, Italy, Romania, Spain, Austria, Germany and Belgium.

8 The fiscal adjustment requirement refers to the annual SPB effort needed to ensure debt sustainability, given those expenditure paths.

Figure 5 / Annual average fiscal adjustment requirements across scenarios (percentage points of GDP)



Source: Own calculations, based on Welslau (2025) and the European Commission's Autumn 2025 Economic Forecast.

Second, the assumed ageing period significantly affects fiscal adjustment requirements. Extending the ageing period from zero to 10 (or 15) years increases the required fiscal adjustment, as a larger share of ageing-related fiscal pressures is internalised within the DSA optimisation window. This effect is particularly pronounced in countries where ageing costs rise strongly over 2029-2038, such as Spain, Germany and Austria, where the difference between the zero-year and 10-year adjustment requirements is largest. For example, Spain's adjustment requirement increases from 0.31 pp of GDP when ageing costs are excluded (an ageing period of zero years) to 0.79 pp when the ageing period is extended to 10 years. In contrast, the effect is more limited in countries where projected ageing pressures remain relatively modest during the optimisation horizon, such as Romania and France.

Third, scenario results broadly follow the underlying dynamics of ageing pressures. Scenarios that increase demographic fiscal pressure, such as the risk scenario and the lower migration scenario, lead to higher fiscal adjustment requirements. Scenarios that mitigate demographic pressures, such as higher

employment among older workers or higher migration, reduce consolidation needs. For instance, under the risk scenario, adjustment requirements increase most strongly in Portugal (by 0.16 pp of GDP) and Austria (0.12 pp), but the effect is relatively small in Germany and Finland (around 0.04 pp in each case). Conversely, higher employment among older workers produces the largest reductions in Spain (-0.27 pp of GDP) and Portugal (-0.10 pp); the impact remains limited in Finland and Romania.

Fourth, cross-country differences in fiscal adjustment requirements are substantial. In countries where baseline consolidation needs are already high, variation across scenarios is relatively limited because the need for fiscal adjustment remains consistently elevated. By contrast, in countries with relatively low baseline requirements, such as Portugal and Slovenia, the sensitivity exercises indicate that ageing pressures play a larger role in determining the adjustment path. When ageing costs are excluded from the model (i.e. when the ageing period is set to zero), required fiscal adjustment in these countries declines markedly, indicating that demographic pressures, rather than underlying macroeconomic dynamics, are the main drivers of fiscal consolidation.

Figures A1-A4 in the Appendix illustrate how the DSA optimisation mechanism translates ageing cost projections into the SPB. During the adjustment period (2025-2028), the policy-controlled SPB improves linearly, as required by the optimisation procedure. Once ageing costs begin to materialise after 2028, the realised SPB diverges across scenarios as the ageing component is applied.

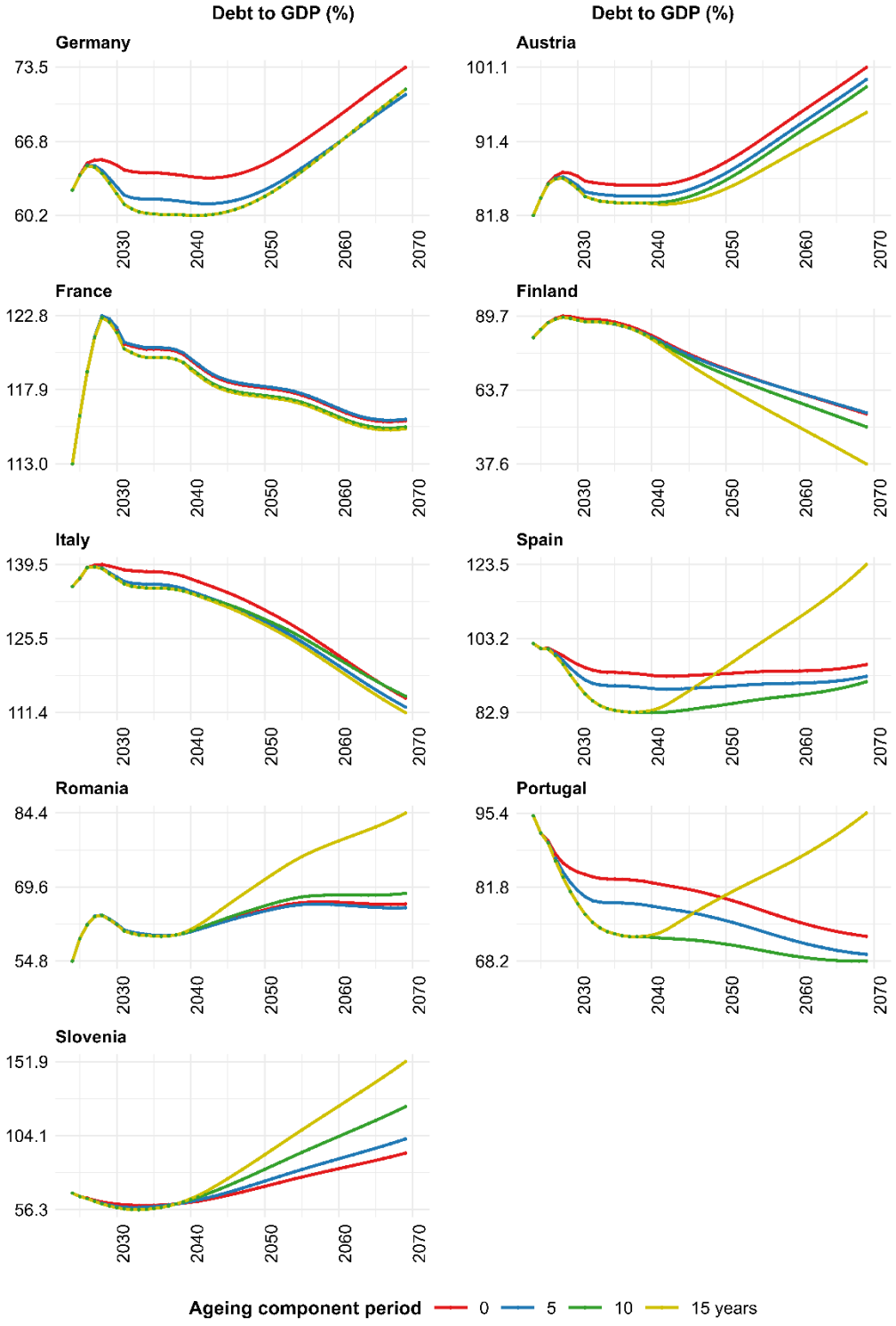
The mechanism is simple. When projected ageing costs are higher, the model requires a higher SPB before the ageing component is applied. This means stronger fiscal tightening in advance to prepare for projected demographic pressures. Once ageing costs start to affect the fiscal balance, however, the SPB paths under different scenarios move closer together or gradually deteriorate over time, as the additional spending from ageing reduces part of the earlier fiscal effort.

These SPB dynamics translate into projected public debt to GDP ratios. Figures 6-9 show that higher projected ageing costs lead the DSA model to require stronger fiscal consolidation during the adjustment period in order to satisfy the debt decline criterion within the 10-year optimisation window (2029-2038). This produces more favourable debt dynamics during the assessment period. Conversely, when projected ageing costs are smaller, the optimisation requires less fiscal adjustment because the anticipated deterioration in the fiscal position is more limited.

However, the assumed ageing period introduces an additional trade-off, as explained in Section 3 (see also Figure 6). Extending the ageing period from zero to 10 years brings more demographic pressures into the optimisation window, which raises the required fiscal adjustment when ageing costs are rising over the extended horizon. When the ageing period is extended to 15 years, the optimiser still internalises only the 10-year optimisation window. The additional five years of ageing costs therefore lie beyond the optimisation window and are not reflected in the required adjustment, but they reduce the SPB once the full ageing period is realised.

Whether longer ageing periods improve or worsen long-run debt outcomes depends on the profile of ageing costs. In countries where ageing costs increase only modestly during the optimisation window, such as Germany and Austria, the stronger fiscal consolidation largely offsets the fixed ageing component. Debt trajectories remain broadly similar across ageing period assumptions, with only minor improvements under longer ageing periods.

Figure 6 / Public debt to GDP projections under alternative ageing component periods



Source: Own calculations.

France and Italy represent an intermediate case, where ageing costs increase slightly during the optimisation window and then stabilise. In these cases, the consolidation effort more than compensates

for the fixed ageing component, and the public debt ratio follows a declining path across all ageing period assumptions.

A different pattern emerges in countries where ageing costs continue to rise beyond the optimisation window. In Slovenia, Romania, Portugal and Spain, the ageing component that becomes fixed after the optimisation period is sufficiently large to dominate long-run debt dynamics despite stronger upfront consolidation.

Finland illustrates the opposite scenario. Projected ageing costs decline beyond the optimisation window, so extending the ageing period captures a demographic improvement, rather than a drag. Under longer ageing period assumptions, the fixed ageing component becomes smaller over time, resulting in significantly lower long-run debt paths.

Overall, the sensitivity of public debt outcomes to the ageing period is mainly driven by how ageing costs evolve relative to their 2028 level (the end of the adjustment period), as only changes in ageing costs after 2028 affect the DSA dynamics. Where ageing costs are stable or only moderately increasing after 2028, extending the ageing horizon has limited impact on long-run debt. By contrast, in countries with strong and persistent increases in ageing costs beyond 2028, extending the horizon from five to 10 years increases the required annual fiscal adjustment, as more of these pressures fall within the 10-year optimisation window. Extending it further to 15 years does not affect the annual adjustment, as the additional extension lies beyond the optimisation period, but it increases unadjusted pressure on the SPB and debt, worsening long-term dynamics.

Figure 7 compares public debt to GDP trajectories under the 2018, 2021 and 2024 Ageing Report baselines. In most countries, the 2024 vintage projects smaller increases in ageing costs over the 2029-2038 period than earlier vintages. This produces more favourable debt paths for Portugal, Spain, Romania and Slovenia, with Romania showing the largest downward revision.

At the end of the adjustment period in 2028, differences across vintages are modest because fiscal policy paths remain similar in the early years. As ageing costs begin to affect structural fiscal balances, however, the gaps widen. By 2038, when the ageing period closes, Portugal's debt to GDP ratio under the 2024 vintage is about 5 pp lower than under the 2018 and 2021 vintages. Italy shows the opposite pattern, with the 2024 vintage implying higher debt than earlier projections. By 2070, the long-term effects become much larger, with Romania and Slovenia showing public debt ratios more than 20 pp lower under the 2024 vintage than under the earlier vintages.

Lower projected ageing costs do not always reduce the debt ratio, however. In Austria and France, earlier vintages imply higher ageing costs and therefore trigger stronger fiscal consolidation during the adjustment period. This stronger upfront fiscal effort can more than offset the later demographic drag, which leads to lower projected long-term debt ratios. When ageing costs are revised downward, as in the 2024 vintage, the model requires less fiscal tightening, and the weaker fiscal effort leads to higher long-run debt ratios. This mechanism is particularly visible in France, where the ageing component in the 2024 vintage is close to zero and debt dynamics are largely driven by the interest-growth differential and the fiscal position, rather than by demographic pressures.

Figure 8 shows debt trajectories under alternative demographic scenarios. Across most countries, a consistent pattern emerges: scenarios with lower immigration generally produce more adverse debt dynamics, while higher immigration improves long-term outcomes. However, the ranking of scenarios varies as demographic developments affect both ageing costs and the fiscal adjustments required because of the DSA optimisation mechanism.

In Austria and Portugal, for example, the low-fertility scenario eventually leads to higher debt. Although lower fertility initially reduces fiscal pressure through lower education and healthcare spending, it leads to stronger ageing pressures in later decades as the working-age population shrinks and dependency ratios increase. In these countries, this demographic deterioration begins relatively early, causing debt trajectories under the low-fertility scenario to diverge from the baseline. In Spain, a different mechanism appears. The high-immigration scenario reduces ageing costs, but it also lowers the fiscal adjustment required during the consolidation phase. The weaker initial fiscal effort makes the debt ratio increase gradually, so that by the end of the projection horizon debt is higher than under some scenarios with greater demographic pressure.

How much the DSA projections for different demographic scenarios vary also differs across countries. Slovenia and Finland exhibit the largest spreads between the most favourable and least favourable scenarios, while Austria and Italy show only limited variation. This indicates that demographic assumptions play a larger role in determining long-run debt dynamics in some countries than in others.

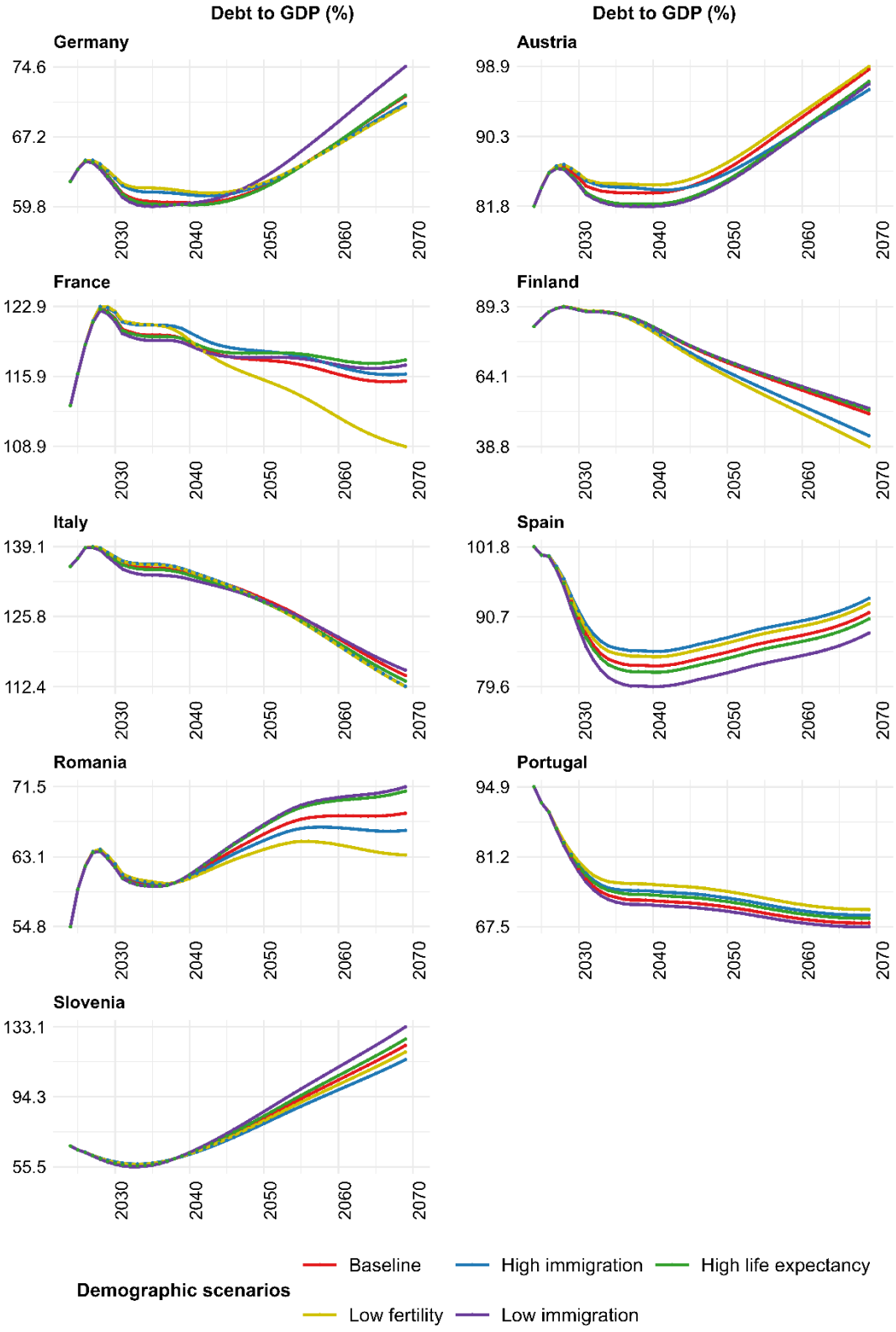
Figure 9 presents debt trajectories under alternative macroeconomic scenarios. The most adverse outcomes generally arise under the risk scenario, which combines higher health spending and increased long-term care costs, and therefore raises projected ageing-related fiscal pressure.

However, as in the demographic scenarios, the relationship between ageing costs and debt outcomes is mediated by the fiscal adjustment required by the DSA optimisation mechanism. In several countries – including Italy, Austria, Spain and Portugal – the scenario with higher employment among older workers produces higher long-run debt, despite reducing ageing costs. Because demographic pressure is smaller, the model requires less fiscal consolidation during the adjustment period, allowing debt to accumulate gradually over time.

The dispersion of outcomes across macroeconomic scenarios varies across countries. Slovenia and Romania exhibit the largest differences between the projections in the most favourable and least favourable scenarios, while France and Austria display comparatively limited variation.

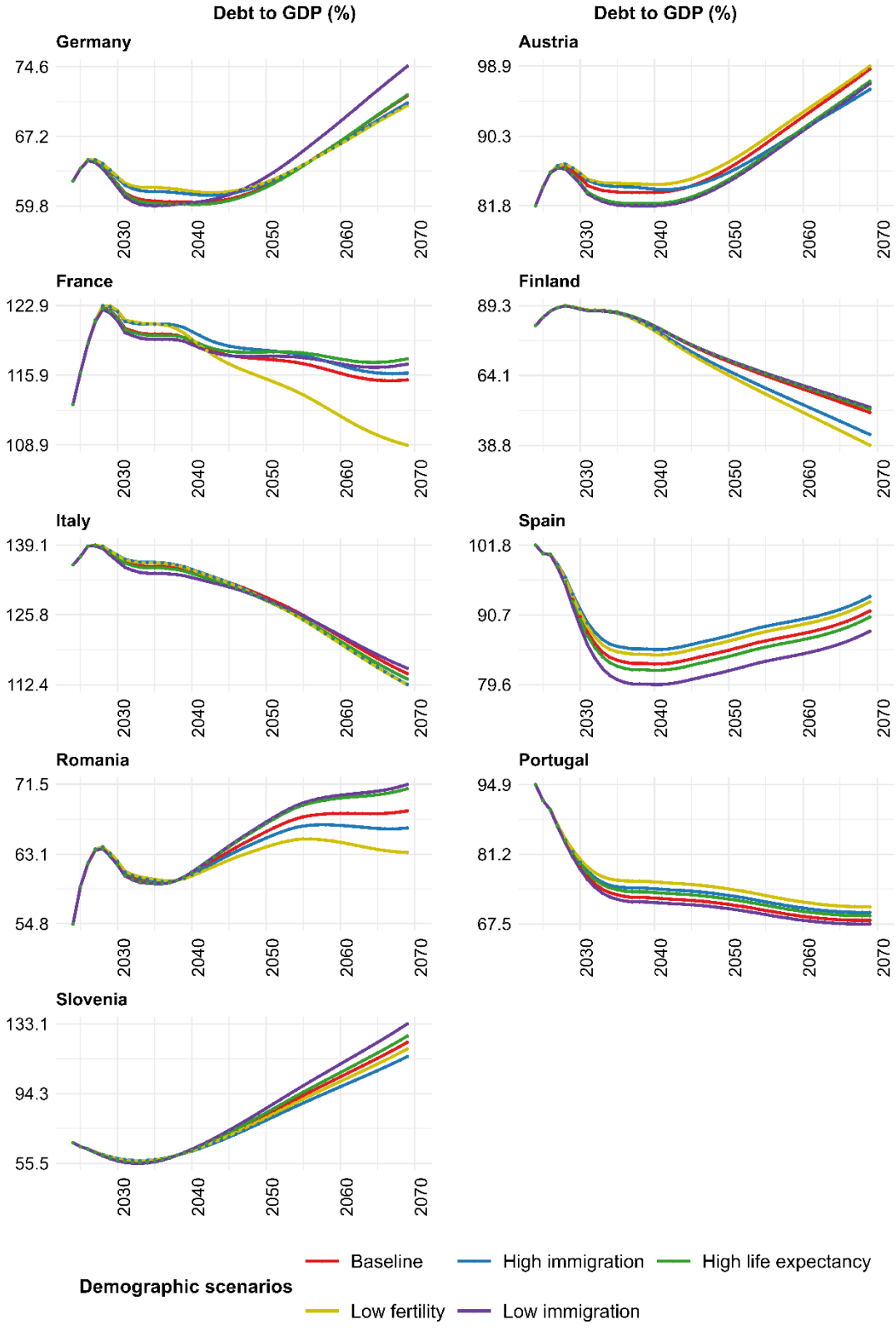
In sum, our results show that long-run public debt ratio projections depend not only on ageing costs but also on the fiscal adjustments they trigger within the DSA framework. Although favourable demographic or macroeconomic developments often reduce ageing pressures, weaker fiscal consolidation can offset these benefits in the context of the DSA.

Figure 7 / Public debt to GDP projections with different ageing cost vintages



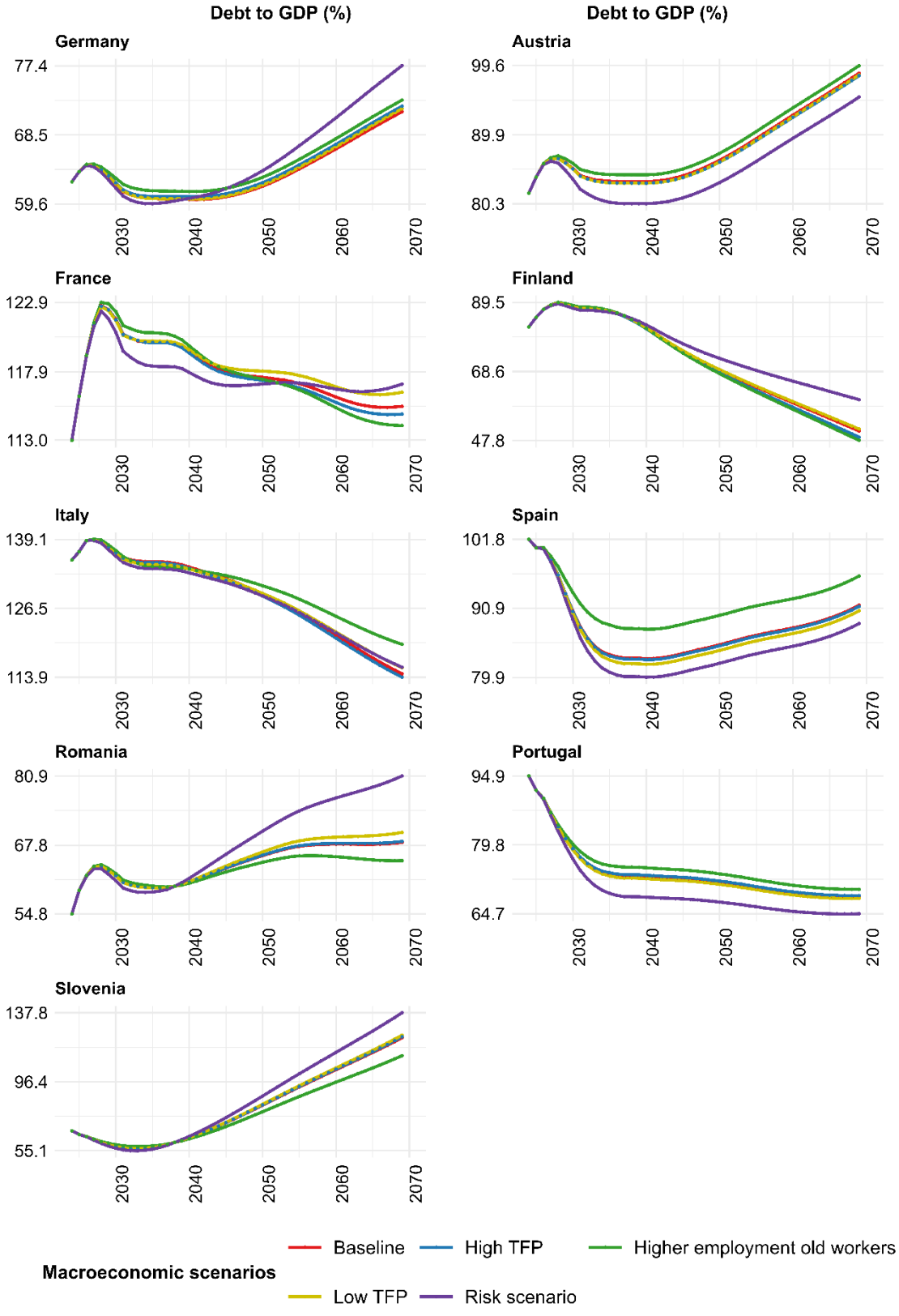
Source: Own calculations.

Figure 8 / Public debt to GDP projections under alternative demographic scenarios



Source: Own calculations.

Figure 9 / Public debt to GDP projections under alternative macroeconomic scenarios



Source: Own calculations.

6. Discussion of key ageing cost assumptions

Against the background of the simulations presented above, we here discuss key ageing cost assumptions in the DSA framework that underpins the reformed EU fiscal rules. Our discussion focuses on six aspects: i) adverse public debt ratio projections in the DSA framework with lower ageing costs; (ii) the no-policy-change assumption, which implies that rising ageing costs directly translate into higher structural primary fiscal deficits; (iii) the presumed exogeneity of ageing costs in relation to GDP; (iv) the political legitimacy of the underlying modelling assumptions; (v) the arbitrariness surrounding ageing period and optimisation phase choices; and vi) uncertainty regarding ageing cost trajectories.

Adverse public debt ratio projections in the DSA framework with lower ageing costs. An important insight from the simulations is that lower projected ageing costs do not necessarily lead to lower long-run debt ratios in the adjustment scenario. This is because the DSA optimisation mechanism adjusts fiscal policy in response to projected demographic pressures. When ageing costs are projected to be higher, the DSA model requires stronger upfront fiscal consolidation during the adjustment period in order to satisfy the debt decline criterion. This stronger consolidation can improve the fiscal position sufficiently to offset part of the subsequent increase in ageing-related expenditure. Conversely, when projected ageing costs are smaller, the required fiscal adjustment is weaker, which may allow debt to accumulate over time. As a result, projections of the public debt ratio in the DSA framework depend not only on projected ageing costs but also on the fiscal adjustments triggered by these projections and the assumed macroeconomic effects of consolidation. This highlights the importance of the DSA assumptions on the short- and long-run output effects of fiscal policy (see the discussion below and Heimberger et al., 2024).

No-policy-change assumption. The DSA framework relies on this assumption. Several EU member states already have (legal) mechanisms to adjust contributions or benefits to preserve fiscal sustainability in response to demographic pressures. The European Commission's DSA framework, however, treats future increases in ageing-related expenditures as if they were entirely unfunded (over the relevant ageing period of 10 years). This mechanically raises the projected structural primary deficit, even though existing and forthcoming mechanisms may ensure partial or full funding. Although revenues are assumed to remain unchanged in the long term, the projected increase in ageing-related expenditure is assumed to materialise in full, even though the fiscal rules themselves should prevent this from happening (e.g. by incentivising governments to implement reforms that lower pension costs in the medium to long run). Our simulations show that the required fiscal adjustment declines substantially in several EU countries when future increases in ageing-related expenditures are assumed to be financed through additional revenues (i.e. DSA results are sensitive to the assumption that increased future ageing costs are unfunded).

In Germany, for example, statutory provisions require adjustments to social contribution rates when the sustainability reserve falls outside legal bounds. This can involve raising contribution rates in response to demographic pressures. Moreover, the pension indexation formula embeds a sustainability factor linking benefits to the contributor to pensioner ratio (Sachverständigenrat, 2023). In Spain, a 2023 reform introduced an Intergenerational Equity Mechanism – an additional social security contribution that

increases on a legal schedule through 2029 and remains in force until 2050 – to strengthen the reserve fund and system sustainability (OECD, 2024).

Priewe (2023) highlights conceptual issues with aggregating implicit and explicit government debt. Implicit debt refers to future costs arising from legal or political commitments – regarded as quasi-assets of private households – primarily related to old-age provision. Such commitments can only be treated as binding if the relevant legal framework is immutable. Yet, over the past decades, these laws and regulations have been frequently revised. Implicit future costs therefore become implicit debt only under the assumption that ageing-related expenditures rise relative to GDP while contributions and tax revenues remain unchanged. This is arguably an implausible premise, given the malleability of public policy (e.g. Barslund, 2020; Hougaard Jensen et al., 2024; ISSA, 2025). Consequently, treating rising ageing costs as directly spilling into higher structural primary deficits and debt may overstate the present fiscal adjustment effort required under the EU's fiscal rules.

Exogeneity of ageing costs. A further issue concerns the DSA treatment of ageing costs as exogenous to broader economic developments. However, the fiscal adjustment triggered by projected ageing costs can itself influence the macroeconomic variables that determine these costs. In the Commission's projections, ageing-related expenditures are expressed as shares of GDP. However, spending on pensions, health care and long-term care depends not only on demographics but also on labour market dynamics and overall economic activity, which renders these expenditures endogenous. For instance, high unemployment or low labour market participation among older workers reduces both social security contributions and future pension entitlements, altering the long-term expenditure profile. Similarly, slower GDP growth increases the ageing cost to GDP ratio even if nominal spending remains stable.

Front-loaded fiscal consolidation must be expected to reduce economic growth in both the short and long run (e.g. Guajardo et al., 2014; Jordà and Taylor, 2016; Gechert et al., 2019; Heimberger, 2025), thereby inflating the share of age-related spending in GDP. Over time, weaker productivity and wage growth constrain tax revenues and narrow fiscal space for health and long-term care (e.g. Dynan, 2018). Treating ageing costs as exogenous thus risks circular reasoning (Heimberger and Kapeller, 2017): higher projected future costs trigger stronger present fiscal tightening, which suppresses growth and employment, ultimately amplifying the very fiscal pressures that justified consolidation in the first place.

Moreover, whether public debt ratios actually decline when governments implement additional fiscal adjustment to pre-fund future ageing costs depends critically on the macroeconomic assumptions embedded in the DSA. The framework now assumes a modest average fiscal multiplier of 0.6[9] – which is lower than the recent evidence on average consolidation multipliers close to 1.0 suggests (Heimberger, 2025; Heimberger and Matzner, 2026) – and a rapid closure of the output gap, implying limited and non-persistent output losses from consolidation. If, however, multipliers are larger in adverse conditions or if the contractionary effects of additional consolidation efforts prove more persistent, the resulting weaker growth path would raise the public debt to GDP ratio, potentially offsetting (part of) the intended fiscal improvement (Heimberger et al., 2024). In that case, additional adjustment undertaken

[9] Our DSA simulations are based on the European Commission's earlier fiscal multiplier assumption of 0.75, which was applied in the first round of implementation of the reformed EU fiscal rules. However, following technical discussions in the DSA Working Group, this assumption has recently been revised downward to 0.6 (European Commission, 2026, pp. 54-56). This lower value further diverges from the empirical literature, which typically finds average fiscal multipliers closer to or around unity (e.g. Gechert, 2015).

today to pre-finance a projected increase in ageing costs could prove less effective – or even counterproductive – in reducing debt ratios over the medium to long term. An alternative policy approach, based on the implicit assumption that ageing costs are to a considerable extent endogenous, may not fine-tune fiscal adjustment now to compensate for a projected increase in ageing costs, but instead would allow fiscal and labour market policies to focus on supporting employment and productivity growth in order to ensure sufficient revenue and social security contributions to finance an increase in ageing costs.

Political legitimacy. As Guzman and Stiglitz (2024, p. 1) observe: 'DSAs are not only technical analyses – they are based also on assumptions that are essentially political.' The DSA assumption that a projected rise in ageing costs one decade after the adjustment period must be offset through front-loaded fiscal adjustment exerts pressure on governments. However, this policy outcome does not stem from a democratically endorsed decision, but from a technical assumption within the DSA framework – an assumption that has not been subject to public deliberation. Such technocratic framing obscures the normative choices embedded in debt sustainability modelling related to intergenerational burden-sharing, fiscal prudence and social protection.

By embedding contestable political judgments within technical parameters, the DSA framework raises questions about democratic legitimacy (Schmidt, 2013, 2020). In effect, governments are compelled to pre-finance projected increases in ageing-related spending, while the underlying distributive and normative implications remain hidden to the general public within the model's technical structure. As argued by Heimberger et al. (2020), economic models may exert political power by delineating the feasible policy space while presenting themselves as neutral and objective. Treating an increase in ageing costs over a 10-year period after the initial adjustment as fully unfunded in the DSA arguably risks both overstating required fiscal adjustments and constraining democratically elected governments without transparent debate over the distributive and macroeconomic consequences of these assumptions.

Arbitrariness of ageing period and optimisation horizon choices. The DSA framework's choice of a 10-year ageing period, i.e. the horizon beyond the adjustment period for compensating projected ageing cost increases, is arbitrary. The DSA determines the minimum SPB path required to ensure a decline in the public debt ratio over the 10-year period following adjustment, taking into account the projected increase in ageing costs. The European Commission provides no analytical or empirical justification for selecting a 10-year horizon rather than any alternative duration, despite the fact that this choice materially affects the magnitude of the required fiscal adjustment.

Uncertainty regarding ageing cost trajectories. Long-term macroeconomic and demographic projections are inherently uncertain (e.g. Müller and Watson, 2016). Projections on fiscal and macroeconomic variables by institutions in individual EU countries may deviate substantially from the Commission's assessments about the baseline for the medium- and long-term development of ageing costs because of differences in underlying macroeconomic or demographic assumptions. Nonetheless, the DSA currently relies exclusively on baseline ageing cost projections from the Ageing Report (European Commission, 2024a) without systematically accounting for uncertainty or conducting robustness checks, although '[s]ensitivity tests are an indispensable element of any long-term projection exercise given the inherent uncertainty that is involved' (European Commission, 2024a, p. 52). In this regard, our simulations in Section 5 based on alternative macroeconomic and demographic assumptions embedded in the latest Ageing Report show that the required fiscal adjustment is sensitive to these underlying assumptions.

7. Conclusions

We examined how projected ageing costs and the assumptions behind these projections influence the operation of the EU's reformed fiscal framework. Under the new rules, EU member states are expected to anticipate and offset increases in ageing-related expenditures by implementing fiscal consolidation measures in advance. We analysed the key assumptions on ageing-related costs embedded in the European Commission's debt sustainability analysis (DSA). To test their robustness, we varied the time horizon over which projected increases in ageing expenditure translate into present adjustment pressures, considered different forecast vintages, and explored alternative macroeconomic and demographic assumptions. This approach enabled us to assess how sensitive official fiscal adjustment requirements and the corresponding public debt projections are to changes in these core assumptions.

Our findings show that even modest adjustments to assumptions about ageing-related expenditures can markedly change the magnitude of the fiscal effort considered necessary and significantly reshape projected public debt trajectories. Moreover, the simulations show that lower projected ageing costs do not necessarily lead to lower long-run public debt ratios in the DSA adjustment scenario. Because the model's optimisation mechanism adjusts fiscal policy in response to projected demographic pressures, higher ageing costs trigger stronger upfront fiscal consolidation during the adjustment period, which may improve the fiscal position sufficiently to offset part of the subsequent increase in ageing-related spending. Conversely, when projected ageing costs are smaller, the required fiscal adjustment is weaker, which may allow the debt ratio to increase over time.

Our simulations also highlight that fiscal adjustment requirements and projected debt trajectories are sensitive to the macroeconomic and demographic assumptions underlying ageing cost projections and their interaction with the DSA optimisation mechanism. Despite this sensitivity, the current technical design of the EU's debt sustainability framework relies exclusively on baseline ageing cost projections from the Ageing Report and does not systematically account for the uncertainty surrounding these projections in country-specific assessments. These issues could be explicitly addressed within the newly established DSA Working Group, alongside efforts to raise awareness among policy makers and the public about the model dependence inherent in current debt sustainability analyses and the fiscal tightening requirements derived from them.

Economic policy making is rarely confined to a single viable course of action, including with respect to ageing and debt sustainability. An alternative perspective would acknowledge that demographic ageing is a structural trend that is indeed set to lead to higher age-related spending in many EU countries in the coming decades, while emphasising that ageing costs (as a share of GDP) are not fully exogenous. They depend in part on economic (and in particular labour market) performance and policy choices (e.g. Koutsogeorgopoulou and Morgavi, 2025). Rather than focusing on calibrating additional fiscal tightening today to fully offset projected increases in ageing costs over an arbitrary horizon – as in the current DSA framework underpinning the EU's reformed fiscal rules – this alternative approach would prioritise fiscal policies, active labour market policies and structural reforms that strengthen employment, labour force participation and productivity growth in the short, medium and long run (e.g. Gottschalk et al., 2025). By

broadening the revenue base and increasing social security contributions, such an approach would aim to enhance the economy's capacity to finance higher age-related spending over time. This perspective does not deny the need for well-designed structural reforms to age-related spending programmes – including pension, healthcare and long-term care systems – in order to safeguard their long-term fiscal sustainability. However, it posits that such adjustments should complement employment- and productivity-oriented policies.

The scope for pursuing such an alternative strategy is now constrained by the institutional link between the DSA and the EU's fiscal rules, which effectively treats projected ageing costs relative to GDP as fully exogenous and compels governments to pre-finance future increases in age-related spending through larger upfront fiscal adjustment. Elected governments are therefore constrained by arbitrary and uncertain assumptions about future ageing costs. This constraint is particularly acute for countries where ageing costs are projected to rise sharply within the – arbitrarily defined – 10-year horizon beyond the adjustment period over which anticipated increases in ageing-related spending must be offset. Existing evidence suggests that fiscal consolidation driven by adverse ageing cost projections will, on average, reduce economic growth by more than is assumed in the DSA (Heimberger et al., 2024; Heimberger, 2025). This may ultimately offset the intended decline in public debt ratios and, by weakening medium- to long-term growth, erode governments' fiscal capacity to finance public spending.

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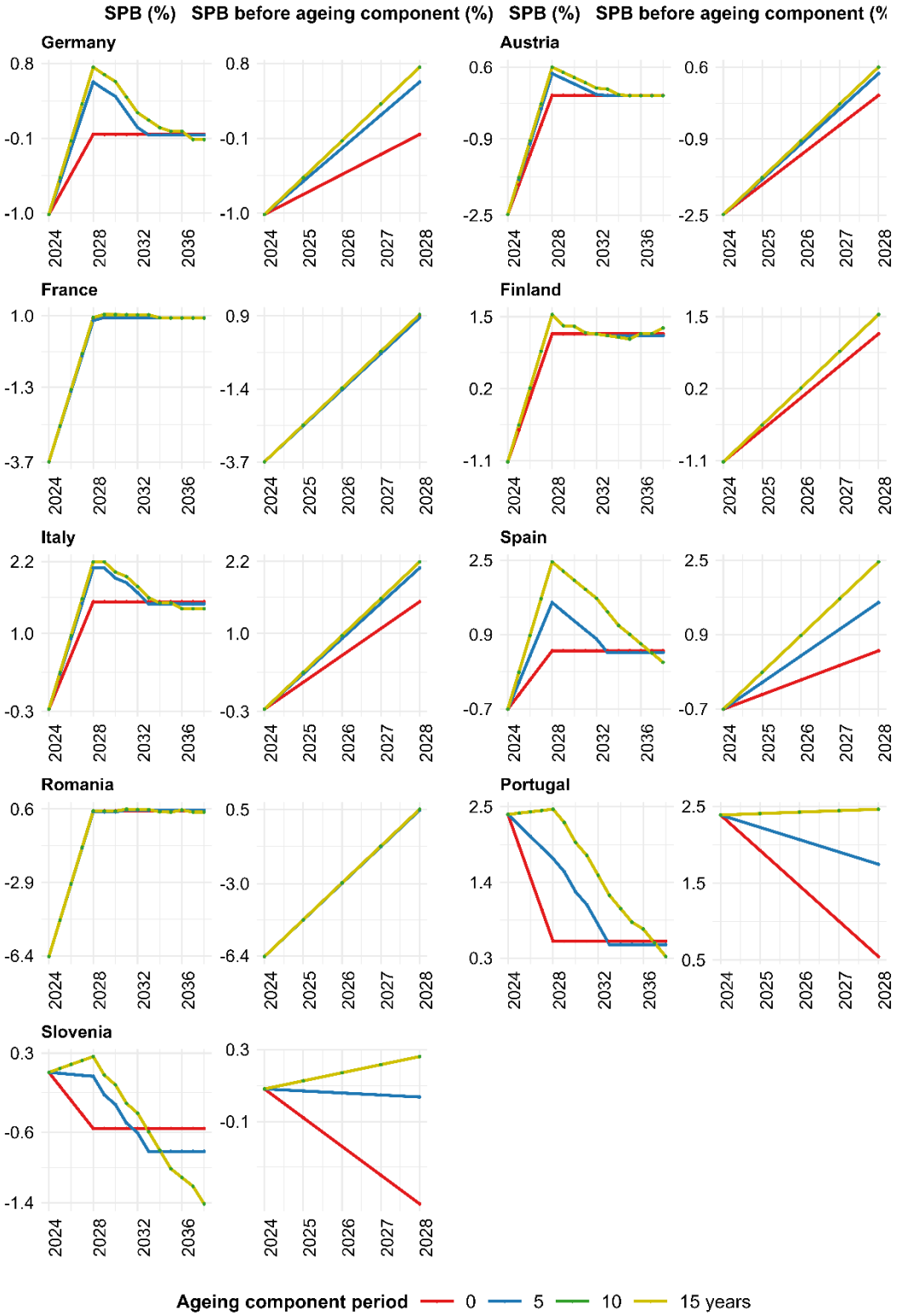
Appendix

Table A1 / Ageing component in the 10 years after the adjustment period (2029-2038): Average and cumulative ageing-related fiscal pressures across countries and scenarios

Country	Ageing component over 10 years after adjustment period	Baseline 2018	Baseline 2021	Baseline 2024	High life expectancy	Higher employment old workers	Higher migration	Higher TFP growth	Lower fertility	Lower migration	Lower TFP growth	Risk
AUT	Average	0.95	0.76	0.39	0.47	0.17	0.21	0.38	0.29	0.52	0.38	0.63
AUT	Cumulative	9.55	7.62	3.9	4.72	1.72	2.1	3.79	2.9	5.16	3.77	6.31
DEU	Average	0.86	0.82	0.66	0.65	0.44	0.47	0.62	0.53	0.77	0.63	0.82
DEU	Cumulative	8.59	8.2	6.6	6.52	4.39	4.7	6.17	5.3	7.7	6.25	8.16
ESP	Average	0.65	0.15	1.21	1.23	0.43	0.88	1.17	1.02	1.46	1.19	1.4
ESP	Cumulative	6.53	1.5	12.1	12.33	4.29	8.8	11.71	10.2	14.57	11.9	13.99
FIN	Average	0.36	-0.02	0.24	0.25	0.06	0.16	0.21	0.13	0.3	0.23	0.47
FIN	Cumulative	3.61	-0.16	2.4	2.49	0.56	1.6	2.14	1.3	3.01	2.32	4.67
FRA	Average	0.17	0.12	-0.05	0.02	-0.23	-0.17	-0.01	-0.21	0.09	0.05	0.21
FRA	Cumulative	1.7	1.24	-0.5	0.23	-2.3	-1.7	-0.08	-2.1	0.9	0.49	2.1
ITA	Average	1.21	1.01	0.6	0.65	0.25	0.51	0.64	0.5	0.8	0.66	0.79
ITA	Cumulative	12.15	10.1	6	6.46	2.46	5.1	6.36	5	8.01	6.63	7.88
PRT	Average	0.67	0.92	1.29	1.2	1.02	1.14	1.26	1.05	1.37	1.28	1.64
PRT	Cumulative	6.73	9.22	12.9	12.02	10.21	11.4	12.55	10.5	13.74	12.78	16.42
ROU	Average	0.56	0.6	-0.04	0.04	-0.18	-0.09	-0.02	-0.11	0.06	-0.01	0.34
ROU	Cumulative	5.57	5.98	-0.4	0.39	-1.78	-0.9	-0.21	-1.1	0.6	-0.05	3.45
SVN	Average	1.47	1.52	0.89	0.96	0.47	0.69	0.9	0.78	1.18	0.91	1.33
SVN	Cumulative	14.66	15.22	8.9	9.63	4.74	6.9	8.98	7.8	11.83	9.09	13.33

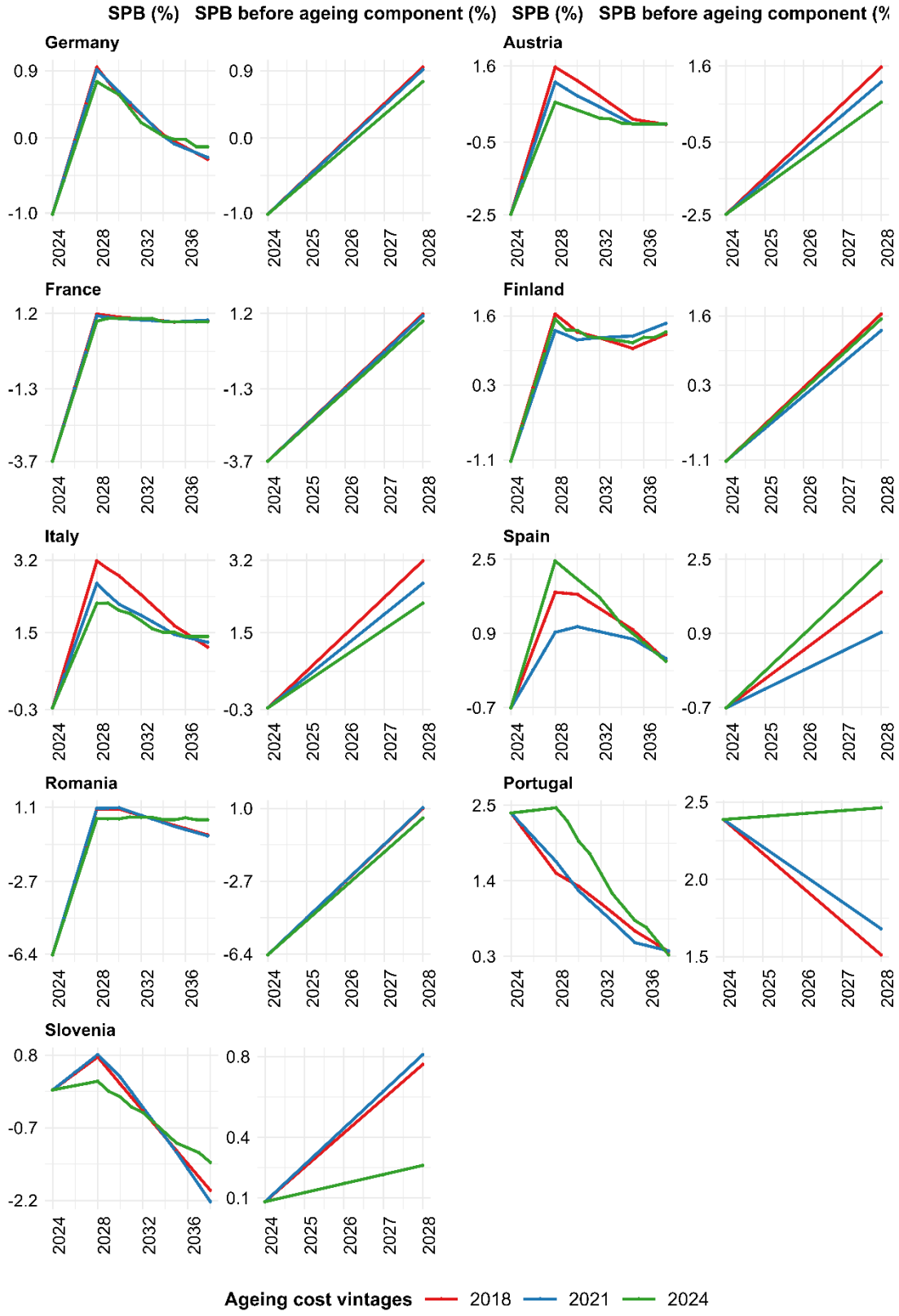
Source: Own calculations, based on Welslau (2025) and the European Commission's Autumn 2025 Economic Forecast.

Figure A1 / SPB projections under alternative ageing component



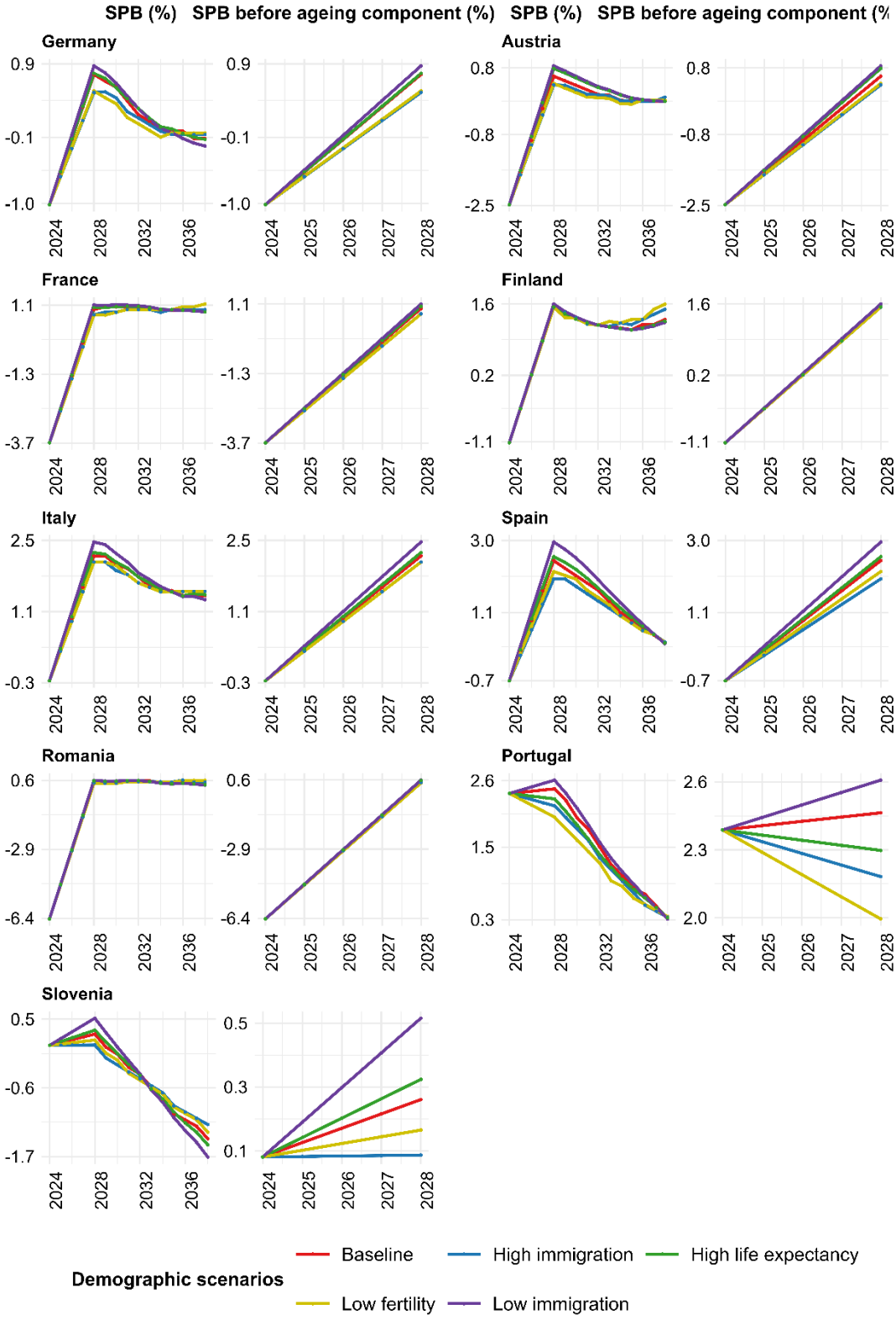
Source: Own calculations, based on Welslau (2025) and the European Commission's Autumn 2025 Economic Forecast.

Figure A2 / SPB projections across ageing cost vintages



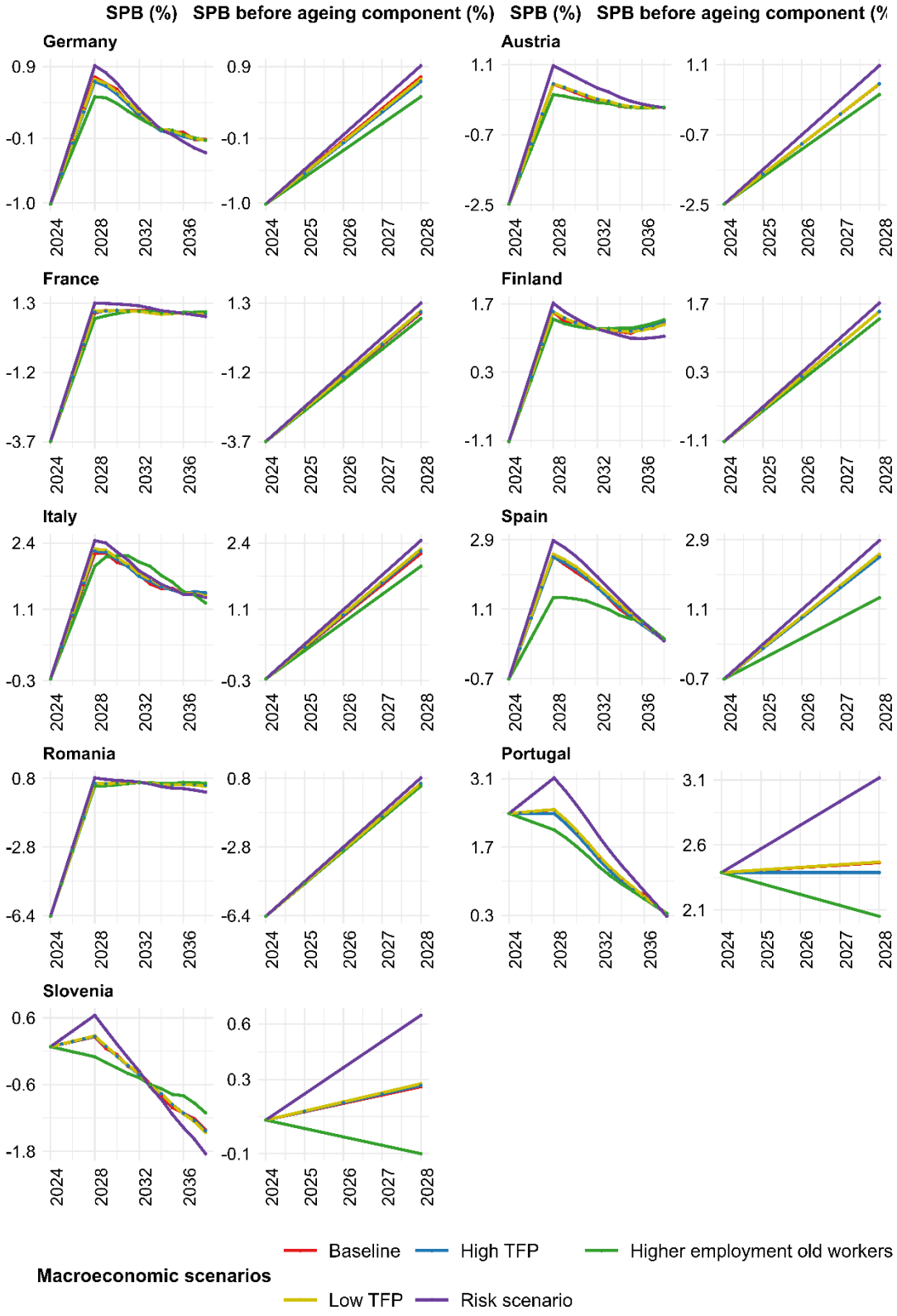
Source: Own calculations, based on Welslau (2025) and the European Commission's Autumn 2025 Economic Forecast.

Figure A3 / SPB projections under alternative demographic scenarios



Source: Own calculations, based on Welslau (2025) and the European Commission's Autumn 2025 Economic Forecast.

Figure A4 / SPB projections under alternative macroeconomic scenarios



Source: Own calculations, based on Welslau (2025) and the European Commission's Autumn 2025 Economic Forecast.

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