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EXECUTIVE SUMMARY

1. A CLOSE MONITORING OF DEBT SUSTAINABILITY RISKS IS KEY IN THE CURRENT ENVIRONMENT

The EU economy is at a turning point

The EU economy expanded strongly in the first half of 2022 after having recovered to the pre-COVID-19 pandemic output level in the third quarter of 2021. However, Russia's war of aggression against Ukraine has caused untold suffering and destruction in Ukraine, but has also had strong repercussions on the global economy. The EU is among the most exposed economies due to its geographical proximity to the war and its heavy reliance on imports of fossil fuels. The sharp rise in inflation, driven by the pressure of energy, food and other commodity prices, is affecting the EU economy. In particular, it has eroded the purchasing power of households and led to a significant decline in consumer and business sentiment. According to the Commission 2022 autumn forecast, real GDP growth in the EU is estimated to be 3.2% in 2022 and 0.3% in 2023, before reaching 1.6% in 2024. The Harmonised Indices of Consumer Prices (HICP) inflation rate in the EU is projected to decline from 9.3% in 2022 to 7% in 2023 and 3% in 2024. ([1])

Fiscal positions still benefited from robust growth in 2022

The aggregate EU government deficit is estimated to have declined from 4.6% of GDP in 2021 to 3.4% in 2022, thanks to the economic expansion. However, new deficit-increasing discretionary policy measures, including those adopted to mitigate the impact of higher energy prices on households and firms, are estimated to have more than offset the phasing out of the COVID-19 pandemic-related support measures in 2022. According to the Commission 2022 autumn forecast, the public debt-to-GDP ratio in the EU as a whole is estimated to have fallen from the historically high level of 91.5% of GDP in 2020 to 89.4% in 2021 and 86% in 2022. This reduction is driven by strong economic growth, lower primary deficits and inflation. Higher interest rates will only gradually increase the implicit cost of public debt and the favourable interest-rate growth differential is still expected to reduce debt ratios.

The NextGenerationEU package should further improve the quality of public finances and lift potential growth

NextGenerationEU (NGEU) continues to support all Member States, in particular those hardest hit by the COVID-19 pandemic. Its centrepiece, the Recovery and Resilience Facility (RRF), provides financing support to reforms and investments in Member States until the end of 2026. In particular, the RRF aims to make European economies and societies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transitions. The RRF is expected to reduce debt sustainability risks by strengthening the quality of public finances and lifting potential growth. The absorption of Recovery and Resilience Facility (RRF) grants is set to increase significantly over the forecast horizon i.e. until 2024.

However, deficit and debt ratios remain high

As economic activity weakens, the EU aggregate deficit is expected to increase to 3.6% of GDP in 2023, before declining to 3.2% of GDP in 2024. Eleven Member States are projected to have a deficit greater than 3% of GDP in 2024. The projected deficits and lower growth rates weigh on debt developments in the coming years. The debt-to-GDP ratio is expected to remain elevated at around 85% in 2023 and 84% in 2024 in the EU as a whole. In most Member States, debt levels are set to remain above pre-

([1]) The Commission 2023 winter forecast published in February 2023 is an interim forecast which only provides an update of the GDP growth and inflation forecast. It is broadly similar to the Commission 2022 autumn forecast.

COVID-19 pandemic levels in 2024. They are projected to exceed 60% of GDP in half of the Member States and remain above 100% of GDP in six countries. Therefore, a close monitoring and assessment of fiscal sustainability risks remains important.

Financing conditions have been tightening

In response to the rising inflationary pressures, central banks in the EU have tightened their monetary policy stances. The ECB, and most central banks in non-euro area Member States, are expected to keep hiking policy rates throughout 2023. Short-term rates should therefore keep increasing over the forecast horizon. Long-term real rates of most Member States are well into positive territory. The spreads of sovereign bonds with respect to the German Bund benchmark have widened since mid-2022.

The outlook is surrounded by a high degree of uncertainty

The uncertainty surrounding the economic outlook is high. The largest downside risk stems from adverse developments on the gas market and the risk of shortages. In addition, the EU remains exposed to further shocks from other commodity markets due to geopolitical tensions. More persistent inflationary pressures and a potential disorderly adjustment on global financial markets to the new higher interest rate environment are additional risk factors, which could also complicate the definition of an appropriate policy-mix between fiscal and monetary policies. Finally, pandemic-related health hazards and the impact of climate change represent additional downside risks to the EU and the global economy.

2. DSM 2022: METHODOLOGY AND USE

This report presents an update of the Commission's fiscal sustainability risk assessment

This edition of the Debt Sustainability Monitor (DSM) provides an updated assessment of fiscal sustainability risks in EU countries compared with the Fiscal Sustainability Report (FSR) 2021. The assessment is based on the latest available Commission macroeconomic and fiscal forecast from autumn 2022. It relies on the Economic Policy Committee's (EPC) commonly agreed methodology to project medium-term GDP growth ([2]), largely taking into account the expected impact of NGEU. The DSM also reflects the agreed long-term economic and budgetary projections from the joint European Commission - EPC Ageing Report 2021.

The assessment is based on the well-established fiscal sustainability risk framework of the Commission

Fiscal sustainability risks are assessed with the well-established comprehensive fiscal sustainability framework. This framework brings together results on debt sustainability analyses (DSA) and fiscal sustainability indicators. It facilitates a horizontally consistent overview of fiscal sustainability risks across three different time horizons (short, medium and long term) and across countries, based on a set of transparent criteria.

([2]) GDP growth over 10 years is projected in line with the EU commonly agreed methodology. It incorporates to a large extent the expected favourable impact of NextGenerationEU, both in the short-term forecast up to 2024 and in its T+10 extension through persistence effects. The expected impact of structural reforms is reflected insofar as these reforms have already been legislated or are certain and known in sufficient detail (see Blondeau, F., Planas, C. and A. Rossi (2021): Output Gap Estimation Using the European Union's Commonly Agreed Methodology: Vade Mecum and Manual for the EUCAM Software, European Commission Discussion Paper 148, October).

The report benefits from two methodological improvements

This edition of the report introduces two methodological improvements as already proposed in the 2021 FSR. ([3]) First, fiscal sustainability challenges over the *medium term* are now captured through the sole use of the DSA toolkit, and no longer through the joint use of the DSA and the S1 fiscal sustainability indicator. This facilitates the use of a single tool that is a well-established reference to assess medium-term risks. Second, fiscal sustainability challenges over *the long term* are now captured through the S2 fiscal sustainability indicator ([4]) complemented by the revised S1 indicator (instead of the DSA). The revised S1 indicator measures the fiscal gap to bring the debt-to-GDP ratio to 60% in the long term rather than in 15 years ([5]). The joint use of S1 and S2, with similar time horizons, allows for an identification of long-term challenges deriving from population ageing, while capturing potential vulnerabilities stemming from high debt levels. ([6])

The key findings are highly relevant for the EU fiscal surveillance process

The analysis of fiscal sustainability challenges presented in this report contributes to the monitoring and coordination of Member States' fiscal policies. It plays a key role for the surveillance under the Stability and Growth Pact (SGP) ([7]) and the European Semester, including the formulation of structural-fiscal country-specific recommendations and post-programme surveillance. It also provides the starting point for the assessment of debt sustainability in the framework of financial assistance programmes.

The debt sustainability analysis could also play a greater role in the reformed EU fiscal governance framework according to the orientations put forward by the Commission

Debt sustainability analyses could also play a greater role in the EU economic governance framework according to the Commission's orientations for a reformed framework released on 9 November 2022 ([8]). The orientations seek to ensure that the framework becomes simpler, more transparent and effective, with greater national ownership and better enforcement, while allowing for strategic investment and reducing high public debt ratios in a realistic, gradual and sustained manner.

The orientations aim to strengthen debt sustainability and promote sustainable and inclusive growth in all Member States. They propose to move towards a more risk-based surveillance framework that puts debt sustainability at its core and differentiates between Member States with low, moderate or substantial public debt challenges. This classification would correspond to the Commission's standard assessment of low, medium or high fiscal sustainability risks over the medium term as assessed based on the debt sustainability analysis and presented in this report. Moreover, the Commission would provide a technical trajectory based on its debt sustainability analysis framework. ([9]) At the same time, this would mean

([3]) See European Commission (2022), Fiscal Sustainability Report 2021, Vol. 1, Institutional Paper 171, Box I.3.3. Possible future methodological revisions, p. 100.

([4]) The S2 indicator shows the required fiscal adjustment, in terms of structural primary balance, to stabilise the debt ratio over the infinite horizon.

([5]) The revised S1 indicator shows the required fiscal adjustment, in terms of structural primary balance, to bring the debt-to-GDP ratio to the 60% of GDP reference value in 2070.

([6]) A thorough description of the Commission multi-dimensional approach can also be found in Chapters 1-3 and in Annex A1 of this report.

([7]) See FSR 2018 for a detailed description of the multiple roles of this analysis in the context of the SGP. Moreover, according to the 'general escape clause', "in periods of severe economic downturn for the euro area or the Union as a whole, Member States may be allowed temporarily to depart from the adjustment path towards the medium-term budgetary objective, *provided that this does not endanger fiscal sustainability in the medium term"*.

([8]) European Commission (2022), Communication on orientations for a reform of the EU economic governance framework, COM(2022) 583 final 9 November.

([9]) The approach largely draws from the Commission's standard DSA presented in this report with only few adaptions due to the specific application of the DSA to compute the technical fiscal trajectories. The few adaptations refer to (i) the time horizon

adhering to a transparent and common EU framework consistent with the 3% of GDP and 60% of GDP reference values of the Treaty. National medium-term fiscal-structural plans for Member States with substantial or moderate public debt challenges should ensure that debt is put on a plausibly declining path, or stays at prudent levels, and that the deficit remains credibly below the 3% of GDP reference value over the medium term. They should outline the medium-term fiscal path, together with reform and investment commitments.

3. KEY RESULTS

Short-term fiscal risks are considered to be overall low despite some vulnerabilities

Chapter 1 of this report shows that short-term fiscal sustainability risks are overall low in 2022 (see Table 1 and 2 for an overview). According to the Commission's early-warning indicator, the S0 indicator, all countries have low risks of fiscal stress in 2023, as indicated by values of S0 below its critical threshold. Nevertheless, the S0 indicator identifies some vulnerabilities in the short term. In particular, government gross financing needs, an important predictor for short-term fiscal sustainability risks, are expected to remain sizeable in six Member States in the short term. In addition, sovereign yields have recently increased in the EU. However, interest rates are expected to feed only gradually into the government debt burden, as debt maturities have been lengthened over time.

Over the medium term, government debt is expected to decline only temporarily in case of no policy action

Chapter 2 shows that in the EU as a whole, the debt-to-GDP ratio is projected to decline slightly at unchanged fiscal policy until the late 2020s. It will then rise again due to the increasing cost of ageing and a gradually less favourable snowball effect, which combines the impact of interest payments and nominal growth on debt dynamics. Under the baseline scenario, the interest-growth rate ('r-g') differential is assumed to remain only slightly negative by 2033 and will therefore only marginally dampen the increasing pressure from ageing costs on public finances. An alternative scenario shows that debt could nearly fall back to its pre COVID-19 pandemic level by 2031 (before increasing again) if the structural primary deficit converged back to the balanced position observed on average in the past 15 years. A more limited fiscal adjustment, a less favourable 'r-g' differential or temporary financial stress would instead weigh on debt dynamics. Moreover, the stochastic projections point to significant uncertainty around the baseline. With an 80% probability, debt will lie between around 80% and 102% in the euro area as a whole by 2027, coming below the 2022 level with a 67% probability.

Compared with the 2021 FSR, almost half of the Member States are projected to reach higher debt levels by 2033, despite a more favourable starting position. In almost all Member States, the initial debt levels expected for 2023 are lower than in the 2021 FSR, mainly due to the stronger-than-expected recovery in 2021 and higher inflation in 2022 and 2023. A large part of this revision is projected to carry over until 2033. However, for most Member States and on aggregate, the growth outlook has been revised

considered to compute the technical fiscal trajectories (10 years *after the adjustment period*); (ii) the lower SPB scenario to stress test the robustness of the medium-term adjustment path instead of the short-term forecast and (iii) the historical SPB scenario, which is omitted since it is relevant to assess risks, including based on past fiscal performance, that support the differentiation of Member States according to public debt challenges, but not in the context of guiding the preparation of the plans.

downwards and the interest rate-growth differential is expected to be less favourable for debt-reduction compared with the 2021 FSR. These more adverse assumptions highlight uncertainty, as well as the protracted impact of the COVID-19 pandemic and of Russia's war of aggression against Ukraine on economic activity, and the tightening financing conditions in a context of higher inflation.

Medium-term risks are high in nine and medium in 10 EU countries

Nine Member States are found to be at high fiscal sustainability risk in the medium term: Belgium, Greece, Spain, France, Croatia, Italy, Hungary, Portugal and Slovakia. The high-risk classification is mainly driven by high and/or increasing debt ratios under the baseline scenario (Belgium, Greece, France, Italy and Portugal), along with elevated uncertainty surrounding the baseline projections (Slovakia), as captured by stochastic analysis, and by vulnerability to more adverse assumptions (Spain, Croatia and Hungary). Furthermore, projected financing needs suggest that countries with the highest debt ratios could also be exposed to liquidity challenges.

Medium-term fiscal sustainability risks are medium in 10 Member States: Czechia, Germany, Cyprus, Malta, the Netherlands, Austria, Poland, Romania, Slovenia and Finland. In Czechia, debt is projected to be on an increasing trend remaining below 60% of GDP. In Germany, Malta, the Netherlands, Poland, Romania and Slovenia, debt is also on an increasing trend, but projected to exceed 60% of GDP both at unchanged policies and under some alternative scenarios. Moreover, among these countries, the debt dynamic is subject to significant uncertainty in the case of Romania and there is a risk that debt does not stabilise by 2027 in Slovenia, as flagged by the stochastic projections. For Austria and Finland, debt would decline under the baseline scenario, but is vulnerable to adverse conditions, under which debt could increase well above 60% of GDP. For Finland, the classification also reflects the risk that debt will not decline by 2027 according to stochastic simulations. Finally, despite its downward debt trend, Cyprus is found to be at medium risk because the stochastic projections point to large uncertainty surrounding the baseline projections.

In the remaining eight Member States (Bulgaria, Denmark, Estonia, Ireland, Latvia, Lithuania, Luxembourg and Sweden), medium-term fiscal sustainability risks are low.

Long-term risks are high in seven and medium in twelve EU countries

Chapter 3 concludes that long-term fiscal sustainability risks are high in seven Member States and medium in twelve Member States. The countries with high long-term risks are Belgium, Luxembourg, Hungary, Malta, the Netherlands, Slovenia and Slovakia. The driving factor behind this risk assessment is based on the S2 indicator, and largely reflects increasing ageing costs. The latter is due to the significant projected increase in pension spending (largest component in Luxembourg, Hungary, Malta, Slovenia and Slovakia), as well as in healthcare and/or long-term care spending (largest component in Belgium and the Netherlands).

Twelve Member States face medium fiscal sustainability risks in the long term (Bulgaria, Czechia, Germany, Ireland, Spain, France, Croatia, Italy, Austria, Poland, Romania and Finland). The driving factor behind this risk assessment is generally the S2 indicator, reflecting projected increases in ageing costs (largest component in Czechia, Germany, Ireland, Austria and

Finland) and/or an unfavourable initial budgetary position (largest component in Bulgaria, Croatia, Poland and Romania). Only in the cases of Spain, France and Italy, the overall risk classification is driven by the S1 indicator, with a significant fiscal effort (above 2 pps. of GDP) needed to reduce the debt-to-GDP ratio from current high levels to 60% by 2070. In eight other Member States (Denmark, Estonia, Greece, Cyprus, Latvia, Lithuania, Portugal and Sweden), long-term fiscal sustainability risks are low, either reflecting the expected reducing long-term impact of past pension reforms (as in Greece and Portugal) and / or the favourable initial budgetary position (as in Denmark, Estonia, Latvia, Lithuania and Sweden in terms of debt level, or Cyprus in terms of structural primary balance).

Compared with last year, short-term sustainability risks have declined, but medium- and long-term risks remain broadly unchanged

Compared with the 2021 FSR, the assessment of fiscal sustainability risks has changed as follows.

Short-term fiscal sustainability risks have declined in particular thanks to the robust growth in 2022. The 2022 DSM concludes that short-term fiscal sustainability risks are overall low in all Member States despite some vulnerabilities. By contrast, short-term risks were considered high in two countries in the 2021 FSR and in 17 countries during the global financial crisis.

Over the medium term, the risk classification is unchanged compared with the 2021 FSR in the vast majority of Member States. However, the updated classification shows a less favourable risk assessment for two Member States (Poland from low to medium risk, and Hungary from medium to high risk) and a more favourable assessment for four Member States (Bulgaria from medium to low risk, and Malta, Romania and Slovenia from high to medium risk).

The worsened risk assessment in the cases of Poland and Hungary reflects less favourable macro-financial outlooks than in the 2021 FSR. The weaker potential growth outlook and tightened financing conditions weigh on their debt dynamics. The improved risk classifications in Malta, Romania and Slovenia mainly result from a more favourable fiscal outlook. In particular, Malta and Slovenia exit the high-risk category as, with a structural primary balance assumed to remain at the improved level forecast for 2024 (and, for Malta, a stronger growth outlook over the medium term), their debts are no longer projected to exceed 90% of GDP under any of the scenarios. For Romania, the high-risk classification in the 2021 FSR was due to the S1 indicator, which would have pointed to medium risk based on the latest forecast, while the DSA-based medium risk signal from the FSR is confirmed in the 2022 DSM. Finally, the classification for Bulgaria improves to low risk because the stochastic projections no longer flag high uncertainty.

Over the long term, the risk classification is also unchanged in the majority of Member States compared with the 2021 FSR. However, one Member State faces higher risks and six Member States lower risks. For the Netherlands, long-term risks are now high compared to medium in the 2021 FSR. This deterioration is driven by a worsening in the S2 indicator due to the less favourable initial budgetary position. Czechia, Spain and Italy are now at medium risk compared to high risk in the 2021 FSR. Greece, Cyprus and Portugal are now at low risk compared to medium risk in the 2021 FSR.

These changes are either due to an improvement of the value of the S2 indicator (Czechia, Spain and Italy), capturing a more favourable initial budgetary position, and/or reflect (for Greece, Cyprus and Portugal) the methodological change using the revised S1 instead of the DSA as a complementary indicator to the S2 in the overall risk classification (see Box 3.1). However, the more favourable assessment for these countries is conditional on them maintaining the structural primary surpluses expected in 2024 over the long term.

Several additional factors need to be taken into account in a balanced assessment of fiscal sustainability risks

Chapter 4 analyses additional risk factors as a complement to the quantitative results of the framework to ensure a balanced overall assessment of fiscal sustainability challenges. These factors are only partially factored in the quantitative results of the framework.

On the downside, the share of short-term debt has increased in many Member States as a result of the COVID-19 pandemic and it is non-negligible in some Member States. Some non-euro area Member States are also exposed to foreign exchange rate risks. In addition, risks exist concerning government contingent liabilities, which increased significantly during the COVID-19 pandemic, as many Member States granted substantial support to the private sector in the form of guarantees. These guarantees are expected to continue declining in 2023 according to Member States' Draft Budgetary Plans. A snapshot analysis of bank balance sheets points to contained vulnerabilities. Yet, simulations based on the Commission's SYMBOL model conclude that (implicit) contingent liabilities' risks linked to the banking sector exist in some Member States, in particular under a stressed scenario.

On the upside, several factors contribute to mitigating debt sustainability risks across the EU, notably the lengthening of debt maturities in past years. The asset purchases' programmes by the Eurosystem in past years also resulted in a substantial increase of the share of government debt held by central banks, representing a stable financing source. Moreover, the structural reforms under the NGEU/RRF, if fully implemented, could have a further positive impact on overall EU GDP growth in the coming years, and therefore further mitigate the debt sustainability risks of Member States.

Table 1: **Fiscal sustainability risk classification by Member States (if different, the risk classification from the FSR 2021 is shown in brackets)**

	Overall SHORT-TERM risk category	Overall MEDIUM-TERM risk category	Overall LONG-TERM risk category
BE	LOW	HIGH	HIGH
BG	LOW	LOW (MEDIUM)	MEDIUM
CZ	LOW	MEDIUM	MEDIUM (HIGH)
DK	LOW	LOW	LOW
DE	LOW	MEDIUM	MEDIUM
EE	LOW	LOW	LOW
IE	LOW	LOW	MEDIUM
EL	LOW (HIGH)	HIGH	LOW (MEDIUM)
ES	LOW	HIGH	MEDIUM (HIGH)
FR	LOW	HIGH	MEDIUM
HR	LOW	HIGH	MEDIUM
IT	LOW	HIGH	MEDIUM (HIGH)
CY	LOW (HIGH)	MEDIUM	LOW
LV	LOW	LOW	LOW
LT	LOW	LOW	LOW
LU	LOW	LOW	HIGH
HU	LOW	HIGH (MEDIUM)	HIGH
MT	LOW	MEDIUM (HIGH)	HIGH
NL	LOW	MEDIUM	HIGH (MEDIUM)
AT	LOW	MEDIUM	MEDIUM
PL	LOW	MEDIUM (LOW)	MEDIUM
PT	LOW	HIGH	LOW (MEDIUM)
RO	LOW	MEDIUM (HIGH)	MEDIUM
SI	LOW	MEDIUM (HIGH)	HIGH
SK	LOW	HIGH	HIGH
FI	LOW	MEDIUM	MEDIUM
SE	LOW	LOW	LOW

Source: Commission services.

Table 2: **Summary heat map of fiscal sustainability risks**

	Heat map for short-term risks in the EU countries																								
	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
S0 overall index	0.28	0.28	0.24	0.22	0.16	0.11	0.23	0.41	0.34	0.34	0.34	0.28	0.29	0.24	0.26	0.22	0.44	0.17	0.22	0.19	0.32	0.40	0.31	0.18	0.29	0.21	0.20
Overall SHORT-TERM risk category	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
	Heat map for medium-term risks in the EU countries - Debt sustainability analysis (DSA)																								
	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Baseline (no-fiscal-policy-change scenario)	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	121.6	40.3	52.2	16.3	70.3	33.6	25.3	125.4	112.4	121.1	84.9	155.9	45.4	36.9	39.6	23.5	81.5	63.4	70.4	74.4	69.0	94.3	62.8	79.3	82.6	71.5	10.9
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2022	2033	2033	2033	2022	2023	2023	2024	2033	2033	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
Stochastic projections	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW
Probability of debt in 2027 > debt in 2022	59%	81%	57%	16%	40%	100%	12.0%	12%	46%	51%	62%	50%	6%	47%	52%	45%	45%	66%	71%	24%	79%	22%	55%	45%	61%	55.1%	8%
Difference between the 10th and 90th percentile in 2027 (p.p. of GDP)	36.2	25.0	27.3	17.9	24.7	9.7	28.1	58.4	38.9	21.7	39.0	43.651	38.1	35.8	29.3	24.3	46.7	26.7	24.4	26.4	20.4	55.0	39.6	29.2	31.3	25.4	16.6
'Historical SPB' scenario	MEDIUM	LOW	MEDIUM	LOW	LOW	LOW	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	106.5	26.7	52.7	13.0	53.1	25.4	42.0	115.4	112.5	119.8	76.2	142.2	50.6	46.6	46.7	15.9	74.1	49.0	54.8	69.5	73.4	101.3	67.0	73.3	75.2	64.7	12.7
Debt peak year	2024	2027	2033	2022	2022	2029	2022	2022	2022	2033	2033	2022	2022	2033	2033	2024	2022	2025	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	88%	90%	35%	69%	53%	77%	80%	21%	77%	91%	53%	46%	30%	73%	61%	79%	59%	52%	90%	85%	86%	41%	82%	66%	55%	86%	61%
'Adverse r-g' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	LOW	LOW	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW
Debt level (2033)	130.5	42.8	56.2	18.3	75.8	35.7	27.5	134.5	121.7	130.7	91.5	169.1	50.2	39.9	42.6	25.3	88.3	68.1	75.2	80.3	74.5	102.4	67.4	85.1	87.4	76.9	12.3
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2023	2033	2024	2033	2033	2033	2033	2033	2022	2033	2033	2033	2033	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
'Financial stress' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	123.1	40.5	52.6	16.6	70.8	33.8	25.4	126.5	114.4	123.0	85.3	160.6	45.7	37.2	39.9	23.6	82.2	63.9	70.7	75.0	69.5	96.0	63.2	79.8	82.9	71.9	11.0
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2023	2023	2024	2033	2033	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
'Lower SPB' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	MEDIUM	HIGH	LOW	MEDIUM	LOW	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	127.5	45.6	60.8	18.0	70.3	34.1	36.3	144.5	114.6	127.1	85.6	164.4	52.3	66.0	43.2	23.3	96.3	73.2	73.4	84.8	80.6	104.0	75.3	88.7	82.1	72.1	15.5
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2033	2033	2023	2033	2033	2033	2033	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	100%	100%	53%	76%	89%	94%	70%	39%	78%	97%	59%	71%	30%	93%	55%	85%	74%	86%	100%	100%	90%	44%	86%	93%	61%	97%	72%
Overall MEDIUM-TERM risk category	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW
	Heat map for long-term risks in the EU countries																								
	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
S2 indicator - Baseline scenario	6.7	3.9	5.5	-0.1	3.6	0.9	4.0	-3.6	1.0	0.9	2.0	0.7	-0.8	-0.4	1.8	7.2	6.1	9.4	6.5	3.2	3.7	-2.1	3.0	10.0	11.3	3.0	0.8
S1 indicator - Baseline scenario	5.9	2.5	3.9	-1.7	2.7	0.4	1.6	-1.7	2.4	2.4	2.1	3.5	-1.7	-0.6	1.3	3.0	4.2	4.8	4.8	2.4	2.8	0.1	3.6	7.7	8.5	1.1	-1.8
Overall LONG-TERM risk category	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	LOW	LOW	HIGH	HIGH	HIGH	HIGH	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	HIGH	MEDIUM	LOW

Source: Commission services.

INTRODUCTION

1. PUBLIC FINANCES IN THE EU

The EU economy is at a turning point. The EU economy expanded strongly in the first half of 2022 after having recovered the pre-pandemic output level in the third quarter of 2021. However, Russia's war of aggression against Ukraine has not only caused untold suffering and destruction in Ukraine but also strong repercussions on the global economy. The EU is among the most exposed economies due to its geographical proximity to the war and heavy reliance on imports of fossil fuels. The sharp rise in inflation under the pressure of energy, food and other commodity prices is hitting the EU economy. In particular, it has eroded the purchasing power of households and led to a significant decline in consumer and business sentiment. According to the Commission 2022 autumn forecast, real GDP growth in the EU is estimated at 3.2% in 2022, and is expected to decelerate to 0.3% in 2023 before reaching 1.6% in 2024. The EU HICP inflation rate is projected to decline from 9.3% in 2022, to 7.0% 2023 and 3.0% in 2024. ([10])

Fiscal positions still benefited from robust growth in 2022. The EU government deficit is estimated to have declined from 4.6% of GDP in 2021 to 3.4% in 2022 thanks to the economic expansion. New deficit increasing discretionary policy measures, including those adopted to mitigate the impact of higher energy prices on households and firms, are however estimated to have more than offset the phasing out of the pandemic-related measures in 2022. The public debt-to-GDP ratio in the EU as a whole is set to have fallen from the historically high level of 91.5% in 2020 to 86% in 2022. This reduction is driven by strong economic growth, lower primary deficits and inflation. Higher interest rates will only gradually increase the implicit cost of public debt and the favourable interest-rate growth differential is still expected to reduce debt ratios.

([10]) The Commission 2023 winter forecast published by the European Commission in February 2023 is an interim forecast, which only provides an update of GDP growth and inflation forecast, and is broadly similar to with the Commission 2022 autumn forecast.

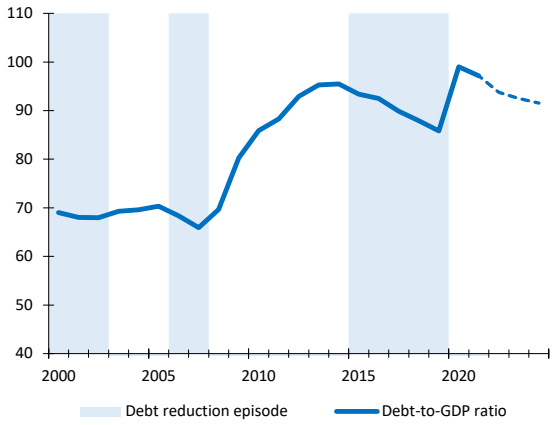
NextGenerationEU (NGEU) is expected to lift potential growth over the short- and medium-term, thus contributing to reducing debt sustainability risks. NextGenerationEU (NGEU) continues to support all Member States, in particular those hardest hit by the COVID-19 pandemic. Its centre piece, the Recovery and Resilience Facility (RRF), provides financing support to reforms and investments in Member States until end 2026. In particular, the RRF aims at making European economies and societies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transitions. The RRF is expected to reduce debt sustainability risks by strengthening the quality of public finances and lifting potential growth. The absorption of Recovery and Resilience Facility (RRF) grants is set to increase significantly over the forecast horizon.

However, deficit and debt ratios remain high. As economic activity weakens, the EU deficit is expected to increase to 3.6% of GDP in 2023, before declining to 3.2% of GDP in 2024. Eleven Member States are projected to have a deficit greater than 3% of GDP in 2024. The projected primary deficits and lower growth rates weigh on debt developments in the coming years. The debt-to-GDP ratio is expected to remain elevated at around 85% in 2023 and 84% in 2024 in the EU as a whole (and above 90% of GDP in the euro area, see Graph 1). Half of the Member States are expected to have debt ratios greater than 60% of GDP in 2024, with Belgium, Greece, Spain, France, Italy and Portugal projected to have debt ratios greater than 100% of GDP. In most Member States, debt levels are set to remain above the pre-pandemic levels in 2024. Therefore, monitoring and assessing fiscal sustainability risks is key.

Financing conditions are tightening. In response to the rising inflationary pressures, central banks in the EU have tightened their monetary policy stance. The ECB and most central banks in non-euro area Member States are expected to keep hiking policy rates throughout 2023. Short-term rates should therefore keep increasing over the forecast horizon. Long-term real rates of most Member States are well into positive territory. The spreads of sovereign bonds with respect to the German Bund benchmark have widened since mid-2022.

The uncertainty surrounding the economic outlook is high. The largest downside risk stems from adverse developments on the gas market and the risk of shortages. In addition, the EU remains directly and indirectly exposed to further shocks to other commodity markets reverberating from geopolitical tensions. More persistent inflationary pressures and potential disorderly adjustments on global financial markets to the new high interest rate environment are additional risk factors. These could complicate the definition of an appropriate policy-mix between fiscal and monetary policies. Finally, pandemic related health hazards and the impact of climate change represent additional downside risks to the EU and the global economy.

Graph 1: **Development of general government debt ratio (% of GDP) and debt reduction episodes (EA aggregate, 2000-2024)**



Source: Commission services.

Against this background, this edition of the Debt Sustainability Monitor (DSM) provides an update of fiscal sustainability challenges faced by Member States. This edition of the DSM 2022 provides an updated assessment of fiscal sustainability risks in EU countries compared with the Fiscal Sustainability Report (FSR) 2021. The assessment is based on the latest available Commission macroeconomic and fiscal forecast from autumn 2022. It relies on the Economic Policy Committee (EPC) commonly agreed methodology to project medium-term GDP growth, taking into account the expected impact from NextGenerationEU (NGEU). The DSM also reflects the agreed long-term economic and budgetary projections from the joint European Commission - EPC Ageing Report 2021.

2. THE COMMISSION FISCAL SUSTAINABILITY RISK FRAMEWORK

2.1. Main features

Fiscal sustainability risks in the short, medium and long term are assessed based on a multi-dimensional approach. Fiscal sustainability risks faced by Member States are assessed according to the comprehensive horizontal fiscal sustainability framework used in the previous reports. ([11]) This framework brings together in a synthetic way results on debt sustainability analysis (DSA) and fiscal sustainability indicators. It allows gaining a horizontally consistent overview of fiscal sustainability risks across time horizons (short-, medium- and long-term) and across countries, based on a set of transparent criteria. In particular, key results are summarised in an overall summary heat map of fiscal sustainability risks per time dimension. This framework is meant to allow identifying the scale, nature and timing of fiscal sustainability challenges. Such a comprehensive and multidimensional assessment framework is key to design appropriate policy responses.

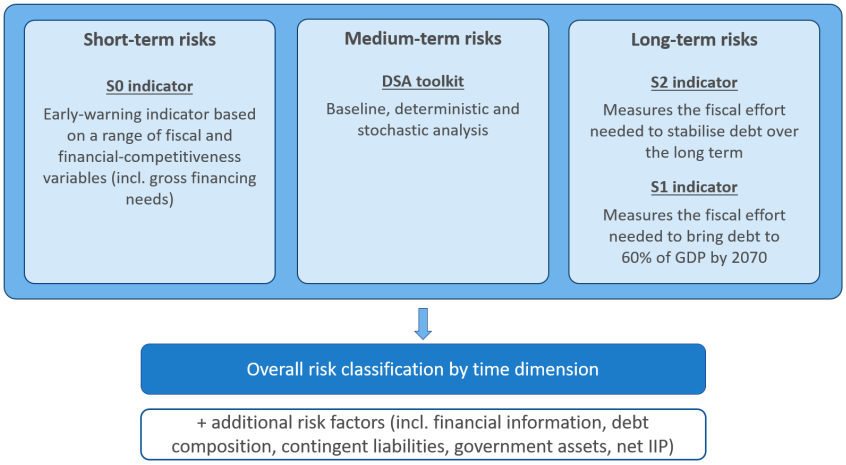
This edition of the Debt Sustainability Monitor brings a few methodological improvements as already proposed in the 2021 FSR: ([12])

First, fiscal sustainability challenges over *the medium term* are now captured through the sole use of the DSA toolkit and not the joint use of the DSA and the S1 fiscal sustainability indicator. This allows relying on a single tool that is a well-established reference to assess medium-term risks.

Second, fiscal sustainability challenges over *the long term* are now captured through the S2 fiscal sustainability indicator, ([13]) complemented by a revised S1 indicator (instead of the DSA). The revised S1 indicator measures the fiscal gap to bring the debt-to-GDP ratio to 60% in the long-term, rather than in 15 years. ([14]) The joint use of

([11]) This framework was introduced with the FSR 2015.
([12]) See European Commission (2022), Fiscal Sustainability Report 2021, Vol. 1, Institutional Paper 171, Box I.3.3. Possible future methodological revisions, p. 100.
([13]) The S2 indicator shows the required fiscal adjustment (to the government structural primary balance) to stabilise the debt ratio over the infinite horizon.
([14]) The revised S1 indicator shows the required fiscal adjustment (to the government structural primary balance)

Graph 2: **Key elements of the Commission's fiscal sustainability risk framework**



Source: Commission services.

these two indicators, with similar time horizons, allows for an identification of long-term challenges deriving from population ageing, while capturing potential vulnerabilities stemming from high debt levels. ([15]) Box 3.1 in Chapter 3 of this report further substantiates the rationale and impact of these changes, which were already announced in the Fiscal Sustainability 2021 (see Fiscal Sustainability Report 2021, Chapter 3, Box 3.3).

The Commission's assessment of fiscal sustainability risk focuses on three different time horizons:

- S*hort-term risk*s are assessed by the S0 indicator, which allows for an early detection of short-term risks of fiscal stress (within the upcoming year) stemming from the fiscal and/or the macro-financial and competitiveness sides of the economy (see Chapter 1).
- *Medium-term risks* are assessed by the well-established Debt Sustainability Analysis (DSA) toolkit, whose features are unchanged compared with the Fiscal Sustainability Report 2021 (see Chapter 2).
- *Long-term risks* are assessed based on two fiscal gap indicators. The S2 indicator measures the fiscal adjustment required to stabilise government debt in the long term. The revised S1 indicator measures the required fiscal adjustment to bring the government debt-to-GDP ratio to 60% by 2070 (see Chapter 3).

The assessment includes sensitivity tests to reflect for uncertainty. The current significant degree of uncertainty implies that sensitivity tests and alternative scenarios, routinely included in the DSM, are particularly relevant. For the DSA, different deterministic scenarios and stress tests are performed to complement the baseline, including for instance the assumption of reversal to historical averages for fiscal variables, or more stringent macroeconomic and financial conditions. Stochastic projections are an important complement to this analysis, whereby a very large number of shocks are jointly simulated, based on the historical volatility of each economy and correlation of shocks (Chapter 2). Furthermore, some alternative calculations to the baseline are computed for the long-term fiscal sustainability indicators, including stress testing the results to alternative productivity growth developments, or non-demographic drivers of health-care and long-term care spending (see Chapter 3).

Additional aggravating or mitigating risk factors are taken into account to ensure a balanced assessment of overall fiscal sustainability risks. The quantitative results and ensuing risk classification based on this horizontal framework need to be complemented by

to bring the debt-to-GDP ratio to the 60% of GDP reference value in 2070.

([15]) A thorough description of the Commission multi-dimensional approach can also be found in Chapters 1-3 and in Annex A1 of the report.

considering complementary qualifying factors. To this end, a number of additional aggravating and mitigating risk factors are also considered, as a complement to model-based quantitative results, and inform the overall assessment of fiscal sustainability challenges (see Chapter 4 and country fiches (see annex A2). The importance of such factors – sometimes more qualitative in nature (such as institutional factors) and / or country specific, and a prudent application of judgment to reach a final assessment of fiscal sustainability risks is a key feature of the Commission DSA framework since 2014, and is in line with other international institutions' practices.

2.2. Role of the Commission's fiscal sustainability analysis in EU surveillance

The Commission analysis of fiscal sustainability challenges presented in this report contributes to the monitoring and coordination of Member States' fiscal policies. It plays a key role in the context of the SGP ([16]) and of the European Semester, the EU integrated surveillance framework, including for the formulation of structural-fiscal country-specific recommendations and for post-programme surveillance. These results also provide the starting point for the assessment of debt sustainability in the framework of financial assistance.

The debt sustainability analysis could also play a greater role in the future in the EU economic governance framework according to the Commission's orientations for a reformed framework released on 9 November 2022. ([17]) The orientations seek to ensure that the framework becomes simpler, more transparent and effective, with greater national ownership and better enforcement, while allowing for strategic investment and reducing high public debt ratios in a realistic, gradual and sustained manner.

The orientations propose to move towards a more risk-based surveillance framework that puts debt sustainability at its core and differentiates between Member States with low, moderate or substantial public debt challenges. This classification would correspond to the Commission's standard assessment of low, medium or high fiscal sustainability risks over the medium term as assessed based on the debt sustainability analysis and presented in this report. Moreover, the Commission would provide a technical trajectory based on its debt sustainability analysis framework. ([18]) At the same time, this would mean adhering to a transparent and common EU framework consistent with the 3% of GDP and 60% of GDP reference values of the Treaty. National medium-term plans for Member States with substantial or moderate public debt challenges should ensure that debt is put on a plausibly declining path, or stays at prudent levels, and that the deficit remains credibly below the 3% of GDP reference value over the medium-term. They should outline the medium-term fiscal path, together with reform and investment commitments.

2.3. Outline of this report

The remainder of the report is organised as follows. Chapter 1 presents the short-term fiscal sustainability analysis. Chapter 2 covers the medium-term fiscal sustainability analysis based on the DSA results. Chapter 3 focuses on the long-term fiscal sustainability analysis. Chapter 4 reviews additional aggravating and mitigating risk factors. Finally, the annex includes detailed country analysis and methodological information.

([16]) See European Commission (2019), Fiscal Sustainability Report 2018, *European Economy Institutional Paper*, No. 94 for a detailed description of the multiple roles of this analysis in the context of the SGP. Moreover, according to the 'general escape clause', "in periods of severe economic downturn for the euro area or the Union as a whole, Member States may be allowed temporarily to depart from the adjustment path towards the medium-term budgetary objective, *provided that this does not endanger fiscal sustainability in the medium term"*.

([17]) See European Commission (2022), Communication on orientations for a reform of the EU economic governance framework, COM(2022) 583 final 9 November.

([18]) The approach largely draws from the Commission's standard DSA presented in this report with only few adaptions due to the specific application of the DSA to compute the technical fiscal trajectories. The few adaptations refer to (i) the time horizon considered to compute the technical fiscal trajectories (10 years *after the adjustment period*); (ii) the lower SPB scenario to stress test the robustness of the medium-term adjustment path instead of the short-term forecast and (iii) the historical SPB scenario, which is omitted since it is relevant to assess risks, including based on past fiscal performance, that support the differentiation of Member States according to public debt challenges, but not in the context of guiding the preparation of the plans.

Box 1: Deterministic debt projection scenarios: the main assumptions

The Commission's government debt projections provide trajectories for debt over the next 10 years, i.e. until 2033 based on the Commission 2022 autumn forecast. They rely on assumptions about key macroeconomic, financial and fiscal variables. Importantly, the Commission baseline debt projections rest to a large extent on assumptions and methodologies commonly agreed with EU Member States represented in different Council formations. ([1]) This ensures that the results are comparable across countries and consistent with other EU processes, in particular the European Semester and fiscal surveillance under the Stability and Growth Pact (SGP).

The baseline

The baseline constitutes the starting point for the debt sustainability analysis and the central scenario around which alternative scenarios and sensitivity tests are built. The assumptions under the baseline are as follows: ([2])

- **Real GDP growth rates** are those of the Commission 2022 autumn forecast for the first two years, i.e. until 2024 in this report. Importantly, this forecast period now captures the bulk of the Next Generation EU (NGEU) package, under which spending will end in 2026. Beyond 2024, the EPC/OGWG 'T+10 methodology' projections are used, i.e. between T+3 and T+10. ([3]) Those projections already take into account legislated reforms and investments, including those made under NGEU. ([4]) Actual GDP growth is derived from potential growth and a standard assumption for the closure of the output gap. ([5])

- **Inflation (as measured by the GDP deflator)** converges linearly from current country-specific values to market-based euro inflation expectations by T+10. ([6]) Beyond T+10, inflation converges to the ECB's 2% target by T+30 at the latest ([7]) and remains constant thereafter (for more details see Chapter 2, Box I.2.1 in the FSR 2021).

- The **primary balance** is projected as follows:

– Assuming 'no-fiscal-policy change', the ***structural primary balance*** (SPB) ***before costs of ageing*** is assumed to remain constant at its value in the last forecast year, i.e. currently 2024, over the remainder of the projection period. ***Ageing-related expenditures*** (pension, health-care, long-term care and education) projected in the joint Commission - Council *Ageing Report 2021*, as well as ***property income*** on government financial and non-financial assets, ([8]) are added to the former to obtain the overall ***SPB***.

– The ***cyclical component*** reflecting the effect of automatic stabilisers is calculated as the product of the output gap and country-specific budget

([1]) Notably the Economic Policy Committee (EPC)'s technical Output gap working group (OGWG) and Ageing working group (AWG).

([2]) For a detailed description of the debt dynamic equation and the impact of macro variables on the debt ratio projections, see Annex A3.

([3]) GDP growth over 10 years is projected in line with the EU commonly agreed methodology. It incorporates to a large extent the expected favourable impact of NextGenerationEU, both in the short-term forecast up to 2024 and in its T+10 extension through persistence effects. The expected impact of structural reforms is reflected insofar as these reforms have already been legislated or are certain and known in sufficient detail. (see Blondeau, F., Planas, C. and Rossi, A. (2021): Output Gap Estimation Using the European Union's Commonly Agreed Methodology: Vade Mecum and Manual for the EUCAM Software, European Commission Discussion Paper 148, October).

([4]) Indeed, since the forecast period already incorporates most of the NGEU timeframe, the effects of NGEU reforms and investment on growth over the forecast mechanically persist over the T+10 period, phasing out only gradually (the 'T+10 methodology' relies on autoregressive models).

([5]) In line with the EPC/OGWG methodology, the output gap is assumed to close 3 years beyond the forecast, i.e. by 2027 this round, after which actual and potential GDP growth coincide.

([6]) For non-euro area countries targeting an inflation rate other than 2% (i.e. Poland, Romania and Hungary), half of the inflation spread vis-à-vis the euro area observed in T+2 is applied to the T+10 target (i.e. the market-based euro inflation expectation).

([7]) For non-euro area countries targeting inflation, national central bank targets are used, namely 2% for Czechia and Sweden, 2.5% for Poland and Romania, and 3% for Hungary.

([8]) For details, see Annex A3.4.

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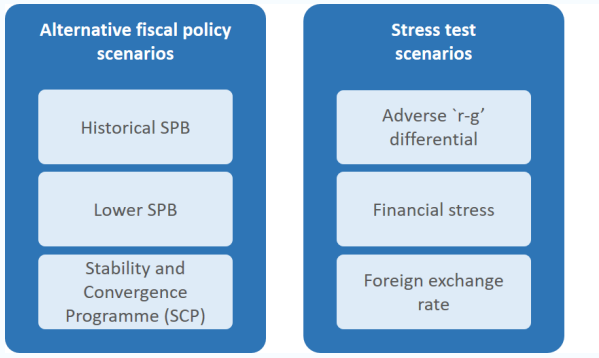
Box (continued)

Map 1: **Deterministic debt projection scenarios: alternative fiscal policy and stress test scenarios**



balance semi-elasticities agreed with the Member States and used for budgetary surveillance under the SGP. ([9]) The cyclical component is, by construction, equal to zero once the output gap closes.

– ***One-off and other temporary measures*** are set to zero beyond T+2.

- **Interest rates** are projected as follows:

– ***Long-term interest rates*** on new and rolled-over debt converge linearly from country-specific current values to country-specific market-based forward nominal rates by T+10. ([10]) Beyond that, they converge to 2% in real terms by T+30 (4% in nominal terms for most EU countries) and remain constant thereafter. ([11])

– ***Short-term interest rates*** on new and rolled-over debt converge linearly from current values to market-based forward nominal rates by T+10. ([12]) Beyond that, they converge to 2% in nominal terms by T+30, assuming a yield curve coefficient of 0.5. ([13])

– ***Implicit interest rates*** are derived endogenously in the debt projection model based on the above assumptions on market interest rates, the maturity structure of government debt and projected financing needs. ([14])

- **The exchange rate** for non-euro area countries is the Commission forecast for T+2 (currently 2024), with no appreciation or depreciation thereafter.

- The **stock-flow adjustment (SFA)** is set to zero beyond the T+2 forecast horizon.

In addition to the baseline, this report includes six additional deterministic scenarios. They reflect alternative assumptions for two types of factors that affect debt paths, namely discretionary fiscal policy decisions and changes in macroeconomic conditions (see Map 1).

Alternative fiscal policy scenarios

This report includes three fiscal policy scenarios. These scenarios incorporate a feedback effect of fiscal policy on GDP growth via a fiscal multiplier of 0.75, meaning that a fiscal consolidation of 1 pp. of GDP reduces GDP growth by 0.75 pp. in the same year compared to the baseline – and, conversely, a fiscal expansion raises it by 0.75 pp. ([15])

([9]) The budget semi-elasticities (for taxes and expenditure) are as reported in Mourre, G. and Poissonnier, A. (2019), The semi-elasticities underlying the cyclically-adjusted budget balance: an update and further analysis, European Economy Discussion Paper 98).
([10]) In line with the Commission forecast approach.
([11]) Nominal long-term interest rates converge to 4.5% for Poland and Romania, and 5% for Hungary, given these countries' higher inflation targets.
([12]) For more details, see Box 3.1 in European Commission (2020), Debt Sustainability Monitor 2019, European Economy, Institutional Paper, 120.
([13]) This factor of 0.5 reflects the standard slope of the euro area yield curve.
([14]) For a detailed discussion, see Annex A3.2.
([15]) Carnot, N. and de Castro, F. (2015), The discretionary fiscal effort: an assessment of fiscal policy and its output effect, European Economy Economic Papers 543.

(Continued on the next page)

Box (continued)

1. **The historical SPB scenario** uses the Commission forecasts until T+2, after which it assumes that the SPB converges gradually to its historical average in 4 years, i.e. by 2028. The historical average is based on available data for 2007-2021. This scenario helps assessing whether the baseline (or other policy scenarios) is realistic, given past fiscal performance.

2. **The lower SPB scenario** assumes that the SPB level is reduced by half of the cumulative forecast change (over 2022-24) in the Commission 2021 autumn forecast. The SPB remains at that reduced value afterwards.

3. **The Stability or Convergence Programme (SCP) scenario** uses only the year 2023 of the Commission forecast as a basis and modifies the fiscal policy assumptions as from 2024. For 2024 and 2025, it assumes that governments implement their fiscal plans fully in line with their 2022 SCPs. The SPB is then assumed to remain unchanged at its 2025 level, except for the impact of the cost of ageing.

Stress test scenarios

Three stress tests indicate how shocks to macro-financial variables may affect debt trajectories compared to the baseline. The shocks affect real GDP growth, interest rates and exchange rates.

1. **The adverse 'r-g' scenario** assumes an interest–rate growth differential permanently higher than in the baseline, by 1 pp., as of 2023. This higher differential is obtained by applying simultaneous adverse shocks to (short- and long-term) market interest rates and economic growth. This scenario illustrates the risk of a (moderate) worsening or reversal of the interest–rate growth differential, while the baseline currently still rests on the assumption of relatively favourable financing conditions (in line with markets' expectations).

2. **The financial stress scenario** assumes a temporary increase in the interest rates by 1 pp. in 2023 for all countries. Moreover, a risk premium is added for those countries with a debt-to-GDP ratio exceeding 90% of GDP in 2022, in line with the findings in Pamies et al. (2021). ([16])

3. **The sensitivity test on nominal exchange rate** applies a shock – equal to the maximum annual change in the country's exchange rate observed over the last 10 years – for the first two years of the forecast horizon (2023 and 2024), after which the baseline assumption prevails.

([16]) The risk premium is equal to 0.06 times the excess of the 2022 debt level over 90%, in those countries where debt exceeded 90% of GDP in 2022. This is based on Pamies, S., Carnot, N. and Patarau, A. (2021), Do fundamentals explain differences between euro area sovereign interest rates?, European Economy Discussion Paper, No. 141.

1. SHORT-TERM FISCAL SUSTAINABILITY ANALYSIS

Main takeaways

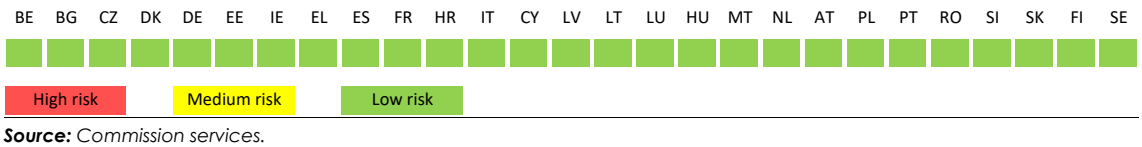
Short-term fiscal sustainability risks are overall considered to be low thanks to improved public finances and unchanged macroeconomic imbalances in Member States. *According to the early-warning indicator used by the European Commission, the S0 indicator, all countries have values of S0 below its critical threshold indicating overall low risks of fiscal stress in 2023. Short-term fiscal sustainability risks declined compared with previous years. They were considered high in two countries in the Fiscal Sustainability Report 2021 and in seventeen countries during the global financial crisis. In most Member States, fiscal variables improved in 2022 compared to 2021. At the same time, the outlook on macroeconomic imbalances across the EU (as captured by the S0 sub-index of financial-competitiveness variables) resembled, in 2022, the results of the previous year.*

Government gross financing needs, an important predictor for short-term fiscal sustainability risks, are estimated to have fallen in 2022, but to have remained sizeable in six Member States. *Gross financing needs for the EU as a whole are estimated to have declined from around 22% of GDP in 2020 to 19% in 2021 and 17% in 2022. They are expected to remain stable over the forecast horizon, also thanks to the NextGenerationEU package and despite the monetary tightening of many central banks in the EU. Nevertheless, gross financing needs are expected to have remained sizeable in six Member States in 2022 (Italy, France, Spain, Belgium, Austria and Germany). Higher government deficits and debt redemptions are the main drivers of gross financing needs.*

However, the short-term outlook is surrounded by a high degree of uncertainty, in particular due to the effects of Russia's war of aggression against Ukraine and the energy shock*. In 2022, the EU economy has proved surprisingly resilient benefitting from strong growth momentum from 2021. However, the EU economy is currently at a turning point and is expected to grow only slowly in 2023. The rising interest rates are already leading to increased interest spending and the ECB and most EU central banks are expected to keep hiking policy rates throughout 2023.*

An analysis of the ease of (re-)financing government debt, based on different indicators of financial markets' perceptions of sovereign risk, points to a certain degree of uncertainty*. Sovereign yields have recently increased in the EU, following the sharp increase in inflation and the tightening of monetary policies. This has been particularly the case in some high-debt countries. This represents a significant change in financing conditions compared with past years. At the same time, in many Member States, interest rates are expected to feed only gradually into the government debt burden, as debt maturities have been lengthened over time. The ECB indicator of sovereign bond markets' stress (SovCISS indicator) also shows that stress in euro area sovereign debt markets has increased. The sovereign ratings remain nonetheless on average high and stable across the EU, though some deteriorations are observed in a few Member States.*

Table 1.1: **Overview of overall short-term risk classification**



Source: *Commission services.*

1.1. SHORT-TERM FISCAL SUSTAINABILITY INDICATOR: THE S0 INDICATOR

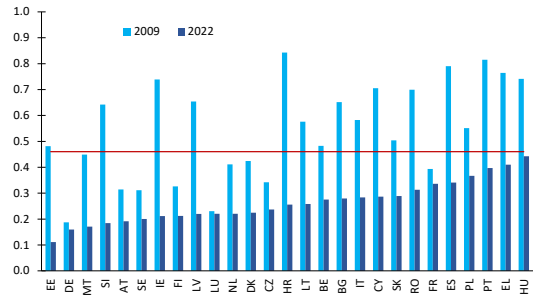
Short-term fiscal sustainability risks are assessed with the S0 indicator. The S0 is a composite indicator of macroeconomic, fiscal and financial variables to detect short-term risks of fiscal stress. S0 is based on a wide range of variables that have proven to perform well in the past in detecting situations of upcoming fiscal stress (see Box 1.1 for a detailed description). As such, S0 differs in nature from the fiscal indicators S1 and S2 presented in Chapter 3, as well as from financial market indicators of sovereign risk presented in section 1.3.

Short-term fiscal sustainability risks are overall considered to be low in all EU countries, thanks to improved public finances and unchanged macroeconomic imbalances compared to 2021. According to the early-warning indicator used by the European Commission, the S0 indicator, all countries have values of S0 below its critical threshold indicating overall low risks of fiscal stress in 2023. These results are driven by both fiscal and financial-competitiveness variables (see Graph 1.1 for the results). ([19])

Short-term fiscal sustainability risks declined compared to previous years. In 2009, S0 flagged short-term risks of fiscal stress in seventeen countries, notably due to severe macroeconomic imbalances. In the Fiscal Sustainability Report 2021, short-term fiscal risks were identified in Greece and Cyprus. ([20]) Though, the expansionary monetary policy stance until 2022 together with decisive EU actions, including the adoption of NextGenerationEU in 2020, ([21]) contributed to stabilising sovereign financing conditions and lessened risks of short-term fiscal stress.

However, the risk assessment is subject to a high degree of uncertainty. In 2022, the EU economy has proved surprisingly resilient in particular thanks to strong growth momentum from 2021. However, the EU economy is currently at a turning point. In particular, the effects of the Ukraine war and the energy shock are rippling on both the macroeconomic and fiscal side. As a consequence, the S0 indicator identifies some vulnerabilities in the short term, notably in countries with sizeable government gross financing needs and/or aggravated macroeconomic imbalances (see more details below and in section 1.2).

Graph 1.1: **The S0 indicator for EU countries (2009 and 2022)**



For more methodological explanations, including on the horizontal line / risk threshold, see Box 1.1 and Berti et al. (2012) and Pamies Sumner and Berti (2017).
Source: Commission services.

The first thematic sub-index of S0 points to some vulnerabilities on the fiscal side in seven countries (see Graph 1.2). These countries include Italy, Belgium, France, Portugal, Spain, Austria and Hungary. Fiscal vulnerabilities can be explained by the deteriorated fiscal positions in some Member States. The persistent inflationary pressure has contributed to increased interest spending. In addition, the discretionary fiscal measures to shelter households, workers and firms from the impact of war and high energy prices are already weighing on budget deficits. In some Member States, the weakened fiscal balances further increased already high levels of government debt (e.g. Belgium, France, Spain, Greece and Italy) (see Table 1.2). As a result, government gross financing needs were still considered large in six countries in 2022 (Italy, France, Spain, Belgium, Austria and Germany). However, the lengthening of average debt maturities over the past years mitigate short-term risks of fiscal stress, with a ratio of short-term debt

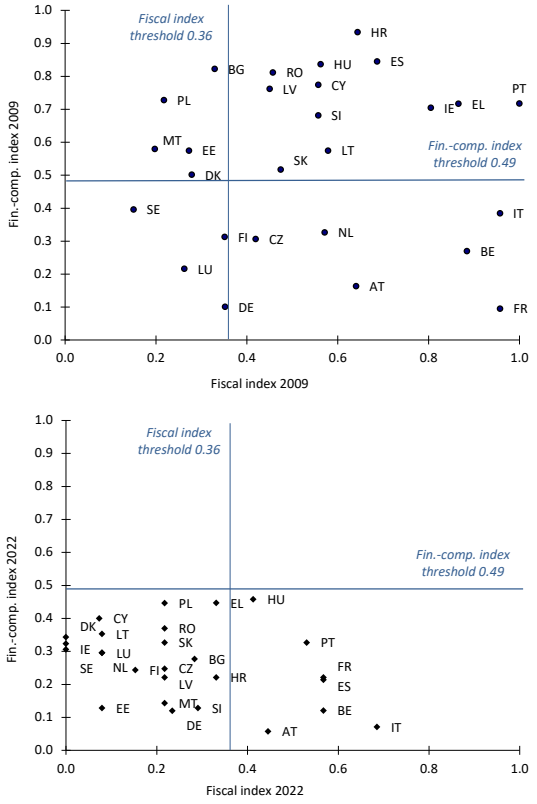
([19]) For conceptual aspects of the S0 indicator, see Box 1.1, Berti, K., Salto, M. and Lequien M. (2012), An early-detection index of fiscal stress for EU countries, *European Economy Economic Paper*, No. 475, and Pamies Sumner, S. and Berti, K. (2017), A complementary tool to monitor fiscal stress in European economies, *European Commission Discussion Paper*, No. 49.

([20]) See European Commission (2022), Fiscal Sustainability Report 2021, *European Economy Institutional Paper*, No. 171.

([21]) Earlier decisive actions include the creation of the SURE in 2020, as well as the activation of the ESM Pandemic Crisis Support facility.

(as a share of GDP) above its critical threshold only in few cases (Italy and Portugal). Moreover, despite recent increases, government interest payments and budgetary balances are still contained in 2022 compared with the developments observed during the Global Financial Crisis in several countries.

Graph 1.2: **Fiscal and financial-competitiveness sub-indices (2009 and 2022)**



(1) For more methodological explanations, see Box 1.1 and Berti, K., Salto, M. and M. Lequien (2012), An early detection index of fiscal stress for EU countries, European Economy – Economic Paper, 475; Pamies Sumner, S. and K. Berti (2017), A complementary tool to monitor fiscal stress in European economies, European Commission Discussion Paper, 49.
Source: Commission services.

The second thematic sub-index suggests limited vulnerabilities coming from the financial-competitiveness side (see Graph 1.2). In all countries, the aggregate financial-competitiveness sub-index is below its critical threshold, suggesting no short-term vulnerabilities of private and external positions. The situation significantly improved compared with 2009 (see Graph 1.2). However, some variables of this sub-index still points to vulnerabilities, namely the current account deficit, the large negative net international investment position, the low level of households' saving rate, the short-term debt of households and non-financial corporations, the private debt, as well as nominal unit labour costs (see Table 1.3).

Table 1.2: **Fiscal variables used in the S0 indicator (2022)**

	Headline balance (%GDP)	Primary balance (%GDP)	Cycl. adj. balance (%GDP)	Stabil. primary balance (%GDP)	Gross debt (%GDP)	Change gross debt (%GDP)	Short-term debt (%GDP)	Net debt (%GDP)	Gross financing needs (%GDP)	Interest-rate growth differential	Change in govt. expend. (%GDP)	Change in govt. consump. (%GDP)
BE	-5.2	-3.7	-5.6	-8.2	106.2	-3.0	8.0	90.6	19.9	-8.2	-1.3	0.0
BG	-3.4	-2.9	-3.8	-2.8	22.5	-1.5	0.0	13.9	3.5	-13.6	3.1	-0.2
CZ	-4.3	-3.3	-3.9	-3.4	42.9	0.9	1.1	27.4	9.2	-9.0	-1.3	-1.1
DK	1.8	2.3	1.6	-1.6	33.7	-3.0	4.8	9.0	8.2	-4.7	-2.6	-0.7
DE	-2.3	-1.7	-2.3	-3.9	67.4	-1.2	8.3	47.7	17.1	-6.0	-1.8	-0.2
EE	-2.3	-2.2	-1.6	-2.1	18.7	1.1	1.5	7.1	4.6	-13.6	-1.1	-0.5
IE	0.2	0.9	-2.5	-7.9	44.7	-10.6	7.3	42.8	3.6	-16.9	-2.7	-1.1
EL	-4.1	-1.6	-3.1	-23.7	171.1	-23.4	10.8	:	15.3	-14.1	-3.1	-2.0
ES	-4.6	-2.4	-3.7	-6.7	114.0	-4.3	8.1	99.1	21.0	-6.2	-1.9	-1.0
FR	-5.0	-3.2	-5.1	-4.0	111.7	-1.2	11.5	100.3	22.9	-3.8	-1.1	-0.5
HR	-1.6	-0.3	-3.2	-7.0	70.0	-8.4	4.5	:	10.6	-10.0	-1.3	-0.6
IT	-5.1	-1.1	-5.6	-6.0	144.6	-5.7	19.7	135.4	23.2	-4.3	-1.3	0.0
CY	1.1	2.6	-0.7	-8.1	89.6	-11.5	1.8	49.5	8.4	-8.8	-2.9	-0.2
LV	-7.1	-6.6	-6.9	-4.5	42.4	-1.2	1.3	36.4	5.6	-11.7	-0.6	-1.4
LT	-1.9	-1.6	-1.8	-6.8	38.0	-5.7	0.2	38.0	4.8	-18.7	0.1	-0.5
LU	-0.1	0.1	0.2	-1.5	24.3	-0.3	0.5	-7.6	3.1	-6.6	0.4	0.1
HU	-6.2	-3.2	-6.8	-7.2	76.4	-0.5	4.6	67.9	15.6	-10.8	0.9	-0.4
MT	-6.0	-4.9	-6.0	-4.5	57.4	1.1	8.0	50.0	13.0	-8.8	-1.7	-0.1
NL	-1.1	-0.5	-2.1	-3.4	50.3	-2.1	4.2	39.5	12.2	-7.1	-1.8	-0.7
AT	-3.4	-2.3	-4.1	-7.0	78.5	-3.8	5.9	58.2	18.0	-9.5	-3.7	-1.1
PL	-4.8	-3.1	-5.3	-6.2	51.3	-2.4	0.6	35.7	9.8	-13.5	-0.1	-0.7
PT	-1.9	0.2	-2.8	-9.7	115.9	-9.6	19.5	108.3	12.0	-8.5	-1.9	-1.1
RO	-6.5	-4.7	-6.3	-5.6	47.9	-1.0	2.5	41.0	10.8	-13.5	-0.3	-1.5
SI	-3.6	-2.5	-6.1	-7.6	69.9	-4.5	1.6	45.2	14.2	-11.5	-2.7	-2.1
SK	-4.2	-3.2	-4.3	-4.4	59.6	-2.6	2.2	50.6	4.3	-7.7	-1.4	-0.6
FI	-1.4	-0.8	-1.1	-4.6	70.7	-1.6	7.1	34.3	15.5	-6.9	-2.0	-0.8
SE	0.2	0.6	-0.1	-2.8	32.1	-4.2	8.9	7.6	7.5	-8.4	-0.6	-0.9
Threshold	-9.6	0.2	-2.5	2.3	68.4	8.1	13.2	59.5	15.9	4.8	1.9	0.6
Safety	>	>	>	<	<	<	<	<	<	<	<	<

Source: Commission services.

Table 1.3: **Financial-competitiveness variables used in the S0 indicator (2022)**

	Yield curve	Real GDP growth	GDP per capita (PPP, USD)	NIIP (t-1)	HH net savings (%GDP, t-1)	Private debt (%GDP, t-1)	Private credit flow (%GDP, t-1)	Short debt NFC (%GDP, t-1)	Short debt HH (%GDP, t-1)	construc-tion (% value added, t-1)	Current account (%GDP, t-1)	Change in REER (t-1)	Change in nom. ULC (t-1)
BE	1.5	2.8	84.2	59.9	5.6	169.0	3.8	23.4	1.3	5.4	0.5	-1.3	5.4
BG	0.2	3.1	41.2	-18.4	:	84.4	4.4	11.7	1.5	3.8	0.5	7.3	16.4
CZ	-1.9	2.5	62.4	-15.6	8.0	78.8	2.9	12.5	0.9	5.6	0.5	0.7	13.9
DK	1.0	3.0	93.8	77.0	1.5	214.7	12.3	36.5	2.3	5.6	8.5	3.7	6.1
DE	1.0	1.6	83.1	70.7	8.8	120.4	5.7	16.8	1.5	5.5	7.3	-1.6	7.4
EE	1.9	-0.1	57.0	-13.0	3.3	95.3	6.5	7.9	0.7	6.7	-0.1	-1.0	10.7
IE	1.6	7.9	161.7	-145.5	6.0	168.1	2.6	17.7	0.4	2.2	-4.2	-6.1	-7.9
EL	3.3	6.0	46.7	-171.9	-2.1	120.7	-0.1	8.7	3.5	1.8	-5.0	-2.7	4.0
ES	2.0	4.5	59.8	-71.5	5.9	139.1	2.5	7.2	2.7	5.6	1.2	-0.3	12.3
FR	1.5	2.6	73.0	-32.1	7.7	167.8	6.5	27.7	1.3	5.7	-0.3	0.0	4.6
HR	2.5	6.0	52.0	-35.1	3.7	86.9	3.0	3.9	2.5	6.0	1.8	-3.2	8.2
IT	2.9	3.8	67.2	8.1	4.7	113.5	3.3	11.7	2.6	5.0	3.4	-1.8	4.6
CY	2.7	5.6	63.8	-117.8	3.1	248.4	4.3	14.2	3.6	6.2	-7.5	-5.4	4.1
LV	1.9	1.9	50.8	-27.4	3.6	58.0	0.9	4.9	1.1	5.5	-0.7	3.9	14.5
LT	0.3	2.5	62.0	-7.4	1.3	53.9	5.9	4.4	0.5	7.1	4.0	-4.6	19.2
LU	1.5	1.5	185.4	30.6	4.3	340.6	53.9	72.1	1.5	5.8	4.2	5.2	11.2
HU	-0.9	5.5	54.5	-53.1	7.2	80.5	12.7	11.5	1.9	6.1	-1.9	-5.2	12.4
MT	2.1	5.7	70.3	52.8	:	131.8	9.4	10.3	2.7	4.3	-0.8	-1.8	12.9
NL	1.2	4.6	93.4	93.0	9.0	229.3	11.7	34.9	1.6	5.3	6.4	-1.2	11.2
AT	1.5	4.6	86.1	14.7	6.8	129.7	7.4	10.9	2.1	7.2	1.9	-2.2	9.9
PL	0.1	4.0	53.6	-39.5	0.4	71.6	4.0	6.9	1.8	6.9	0.3	1.4	9.9
PT	2.0	6.6	54.9	-94.7	-0.5	156.9	4.0	13.3	2.1	4.8	-0.6	-2.5	12.5
RO	1.9	5.8	53.4	-47.2	:	48.1	3.8	8.7	0.7	7.3	-5.7	0.4	14.4
SI	1.6	6.2	65.7	-6.8	7.0	66.4	3.5	7.5	1.8	6.2	5.8	-3.2	12.8
SK	1.8	1.9	47.8	-61.0	2.0	95.0	5.5	12.0	1.3	6.0	-1.8	-3.4	14.1
FI	1.5	2.3	78.6	-1.4	1.1	150.1	6.1	15.2	3.7	7.7	0.3	-1.8	6.0
SE	0.7	2.9	87.1	21.2	8.0	215.2	16.6	38.5	15.5	6.7	5.6	-2.6	5.5
Threshold	0.6	-0.7	72.7	-19.8	2.6	164.7	11.7	15.4	2.9	7.5	-2.5	9.7	7.0
Safety	>	>	>	>	>	<	<	<	<	<	>	<	<

(1) Variables indicated as "t-1" are taken in lagged values.
Source: Commission services.

1.2. SHORT-TERM GROSS FINANCING NEEDS

Government gross financing needs are an important predictor of fiscal stress events, which warrants a closer examination. While the debt stock captures solvency risks, gross financing needs mainly inform about the liquidity of government finances in the short to medium term (see Box 1.2 for more detailed information). Given the strong predicting power of GFN for short-term fiscal risks, this section provides a closer examination of GFN results.

The gross financing needs in all EU countries soared in 2020 as a result of the COVID-19 crisis. The COVID-19 crisis highlighted the importance of GFN for the analysis of short-term fiscal risks. Subsequent headwinds to public finances still warrant its close monitoring. Gross financing requirements increased by some 10 pps. of GDP in the EU/EA on average in 2020 compared with the previous year. This upsurge happened due to the concurrent effects of (i) very sizeable fiscal stimulus and liquidity support governments provided to different economic agents, (ii) the need to roll over large amounts of existing debt and (iii) the toll the recession took on growth. Specifically, government deficits and, in some cases, other net debt-creating flows widened as a result of automatic stabilisers and following discretionary measures to support firms and households during the pandemic.

GFN in the EU and the EA as a whole gradually declined in 2021 and 2022. In 2021, aggregate gross financing needs for the EU/EA have receded by about 3.5 / 3 pps. of GDP compared to 2020 to 18.6% / 20.3% of GDP. GFN are estimated to have dropped further in 2022 to 17.1% / 18.5% of GDP, respectively. They are expected to remain fairly stable until 2024 (see Table 1.4).

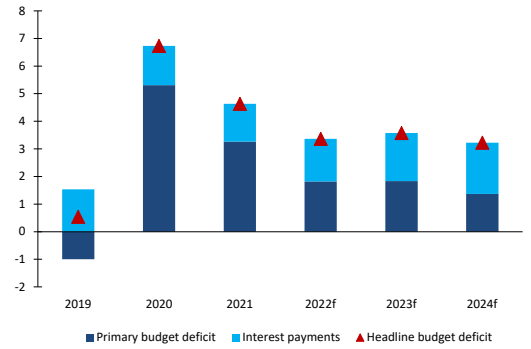
Table 1.4: **Gross financing needs (% of GDP, 2019-2024)**

	2019	2020	2021	2022	2023	2024
BE	15.6	23.5	20.2	19.9	20.5	19.5
DE	10.9	20.1	18.7	17.1	16.5	16.1
EE	1.3	10.5	2.8	4.6	3.5	5.1
IE	5.7	12.1	5.9	3.6	4.3	4.8
EL	16.3	19.7	20.6	15.3	11.0	11.6
ES	16.6	27.8	24.8	21.0	20.5	20.6
FR	16.7	28.3	24.8	22.9	23.2	23.4
IT	19.8	30.0	25.5	23.2	23.0	23.0
CY	5.8	25.5	6.3	8.4	8.5	6.5
LV	4.5	9.1	10.0	5.6	6.0	4.5
LT	6.1	15.3	6.0	4.8	9.6	4.4
LU	3.1	7.4	2.7	3.1	5.9	4.7
MT	5.3	16.1	15.8	13.0	13.0	11.6
NL	7.6	14.1	13.0	12.2	15.0	14.3
AT	8.7	18.6	16.3	18.0	16.2	15.1
PT	10.9	20.8	12.3	12.0	9.9	9.6
SI	6.9	20.8	13.5	14.2	14.1	12.5
SK	3.7	14.2	8.0	4.3	6.1	5.5
FI	8.3	19.7	12.4	15.5	16.1	16.5
EA	**13.7**	**23.3**	**20.3**	**18.5**	**18.4**	**18.2**
BG	0.5	5.5	3.2	3.5	4.0	5.1
CZ	5.3	10.7	10.9	9.2	8.6	7.5
DK	6.4	14.6	7.7	8.2	6.7	6.8
HR	14.0	21.4	13.2	10.6	12.2	13.6
HU	18.1	27.0	17.1	15.6	13.6	14.4
PL	4.6	15.6	7.6	9.8	11.2	10.2
RO	7.6	15.7	10.6	10.8	9.5	9.8
SE	5.7	12.6	8.9	7.5	6.1	6.0
EU	**12.7**	**22.1**	**18.6**	**17.1**	**16.9**	**16.7**

(1) GFN estimates / forecasts are calculated as the sum of the budgetary deficit, redemption of main debt instruments (securities and loan principal repayments), as well as stock-flow adjustments. (2) For post-programme surveillance countries (such as EL, IE, CY and PT), figures take into account official loans' repayment schedule. (3) The threshold of around 16% of GDP is considered as signalling risks based on the signalling approach (see section 2.1).
Source: Ameco, ECB, Eurostat, ECFIN desks.

The decline of GFN in recent years can be mostly explained by decreasing budget deficits. In 2021 and 2022, (primary) fiscal deficits declined markedly compared to pandemic levels (Graph 1.3). Yet, these headline deficits reflect higher government spending in response to the food and energy crises, as governments are implementing support measures such as price subsidies, tax cuts, and cash transfers, to support households. Interest expenditure, on the other hand, remained rather stable relative to GDP in recent years, but is projected to rise over the coming years as borrowing costs pick up (see Graph 1.3).

Graph 1.3: **Government budget deficit and components (% of GDP, EU, 2019-2024)**



Source: Commission 2022 autumn forecast.

GFN declined in most countries in 2022. In 2022, GFN are estimated to have fallen further compared to 2021 in most countries; in some cases fairly large drops of 3-5 pps. of GDP are recorded (Greece, Latvia, Spain, Slovakia and Malta). In several countries (Finland, Poland, Cyprus, Estonia, Austria, Slovenia, Denmark, Luxembourg, Bulgaria and Romania), GFN in 2022 are estimated to exceed their 2021 levels, but in half of these cases the increases are rather small (see Table 1.4). Larger increases, of around 2-3 pps. of GDP, are estimated for Finland, Poland, Cyprus and Estonia, where GFN levels would nevertheless remain below the threshold. In Austria, an increase of 1.7 pps. is also associated to a GFN level exceeding the threshold (see next paragraph).

However, short-term GFN are estimated to remain sizeable in six EU countries in 2022 (see Graph 1.4). GFN are estimated to remain at levels above the 16% of GDP critical threshold in six countries (Italy, France, Spain, Belgium, Austria and Germany). GFN highest estimated levels range between 20-23% of GDP in Belgium, Spain, France and Italy. GFN are more limited in Germany and Austria, where GFN would reach about 17%-18% of GDP, respectively. In all of these six countries GFN were also close to or above the critical threshold in 2021.

Graph 1.4: **Short-term gross financing needs (% of GDP, 2021 and 2022)**

(1) GFN 2021 and 2022 figures are calculated as per Table 1 in Box 1.2. The risk threshold of around 16% of GDP has been derived based on the signalling approach (see section 2.1).
(2) Blue quadrants depict countries where gross financing needs exceeded this threshold in 2021 and /or 2022.
Source: Ameco, ECB, Eurostat, ECFIN desks.

The key drivers for gross financing needs in 2022 in most countries were debt redemptions and budget deficits, while stock-flow adjustments only mattered for some countries. Debt redemptions represent the key driver of GFN in almost all countries. Following the outbreak of the COVID-19 pandemic, government debt increased in most countries. In this context, the need to fund and roll over large amounts of maturing debt (debt redemptions) increased GFN. Additionally, headline budget deficits continued to increase GFN substantially in 2022 in nearly all EU countries and in particular in Latvia, Romania, Hungary, Malta, Belgium, Italy, France, Poland, Spain, Czechia, Slovakia and Greece. Finally, stock-flow adjustments (SFA) played a minor role for the EU on average, but mattered for some countries (see Table 1.5.). In many countries, SFA had a significant impact on GFN in crisis periods, for various reasons such as tax deferrals granted by governments (larger cash-accrual differences) or when the accumulation or drawdown of cash deposits (government financial assets).([22])

([22]) In countries such as Luxembourg and Finland, SFAs have been regularly positive as surpluses of public pension funds have been used for net acquisitions of financial assets rather than to reduce public debt (see Box I.2.3 in the FSR 2021 for more information on these cases). For more details on SFA components in a crisis, see European Commission (2022), Fiscal Sustainability Report 2021, Part II: Special issue 3. 'r-g' differentials: latest

Table 1.5: **Gross financing needs by components (% of GDP, 2022 estimations)**

	Total	Components		
		Budget deficit	Maturing debt	SFA
BE	19.9	5.2	13.2	1.5
DE	17.1	2.3	13.9	0.8
EE	4.6	2.3	1.3	1.0
IE	3.6	-0.2	5.6	-1.9
EL	15.3	4.1	12.5	-1.3
ES	21.0	4.6	16.3	0.0
FR	22.9	5.0	18.6	-0.7
IT	23.2	5.1	19.0	-0.8
CY	8.4	-1.1	10.3	-0.8
LV	5.6	7.1	1.8	-3.3
LT	4.8	1.9	3.4	-0.5
LU	3.1	0.1	1.7	1.3
MT	13.0	6.0	6.3	0.6
NL	12.2	1.1	10.3	0.8
AT	18.0	3.4	13.9	0.7
PT	12.0	1.9	9.8	0.2
SI	14.2	3.6	10.1	0.6
SK	4.3	4.2	1.7	-1.6
FI	15.5	1.4	12.3	1.8
EA	**18.6**	**3.5**	**15.0**	**0.1**
BG	3.5	3.4	1.7	-1.6
CZ	9.2	4.3	3.7	1.2
DK	8.2	-1.8	9.0	0.9
HR	10.6	1.6	11.2	-2.1
HU	15.6	6.3	8.7	0.6
PL	9.8	4.8	4.9	0.0
RO	10.8	6.6	4.9	-0.7
SE	7.5	-0.2	9.1	-1.4
EU-27	**17.0**	**3.4**	**13.7**	**0.0**

(1) See notes to Table 1.4.
Source: Ameco, ECB, Eurostat, ECFIN desks.

In 2023 and 2024, gross financing needs are expected to be broadly stable compared to 2022, and to remain fairly high in seven EU countries. GFN are expected to remain above 16% of GDP in 2023 in seven countries (France, Italy, Spain, Belgium, Germany, Austria and Finland), with values above 20% in France, Italy, Spain and Belgium (see Table 1.4). They should remain sizeable due to high deficits in 2023, as well as significant debt amortisations falling due (see GFN breakdown graphs in the statistical country annexes). Compared to 2020, 2023-24 GFN are projected to decline or remain stable in all cases but the Netherlands.

A close monitoring of financing needs and gaps remains key, in particular due to strained public finances and withdrawing monetary policy support. The EU initiatives and the ECB's expansionary monetary policy stance during the COVID-19 pandemic contributed to stabilising sovereign financing conditions. During 2022, most governments continued to access markets relatively smoothly (see Section 1.3). Eurosystem asset purchases continued in the first half of 2022, helping preserve favourable financing conditions for the euro area governments. However, these purchases were gradually phased out by July 2023. Looking at highly-indebted countries, purchases of euro area government bonds under the Pandemic Emergency Purchase Programme (PEPP) and Asset Purchase Programmes (APP) amounted to 18% of GFN in Portugal, 12% of GFN in Cyprus, 8-9% of GFN in Italy, Spain, Greece, Belgium and 6% of GFN in France in 2022 (see Table 1.6). ([23]) While the level of GFN in EUR bn. will generally increase in 2023, the Eurosystem no longer conducts net asset purchases and will gradually unwind its APP portfolio.

As the ECB is expected to further tighten its monetary policy in 2023, the financing costs of the government are also expected to gradually increase further. Following the end of net asset purchases, the ECB has increased its policy rates by 250 bps. Furthermore, at its December 2022 meeting, the ECB announced that further interest rate increases would be needed in order to reach levels that are sufficiently restrictive to ensure a timely return of inflation to the 2% medium-term target. Market expectations about the future path of the ECB policy rate are consistent with about 150 bps. of additional interest rate hikes in the next six months, which would put the ECB deposit facility rate ([24]) as high as 3.5%. This should translate into higher long-term market interest rates and therefore also possibly higher financing costs for euro area governments. Furthermore, the ECB will also start to reduce its APP securities portfolio holdings at a predictable pace in March 2023, as the ECB would not reinvest in full all of the principal payments from maturing securities. The decline in APP securities holdings will amount to EUR 15bn per month on average until the end of

developments and implications for public debt sustainability, Institutional Paper 171, 25 April.

([23]) These refer only to net asset purchases (new investments compared to the existing portfolio) and so do not take into account reinvestments of maturing securities held by the Eurosystem. For this reason, net asset purchases may be negative for some countries, indicating that the existing Eurosystem portfolio of bonds issued by a specific government is actually decreasing.

([24]) In the current context of high excess liquidity in the euro area banking system, the ECB deposit facility rate has become the de facto ECB policy rate.

Table 1.6: **Gross financing needs and possible total acquisitions of sovereign bonds by the Eurosystem (2022 estimates)**

	2022			2023
	GFNs (EUR bn)	Eurosystem public sector asset purchases under APP and PEPP		GFNs (EUR bn)
		EUR bn	% of GFN	
BE	109.6	8.3	7.6	118.5
DE	657.9	61.3	9.3	676.7
EE	1.7	0.0	2.2	1.3
IE	18.0	2.5	13.8	23.5
EL	32.0	2.6	8.1	24.6
ES	273.7	23.5	8.6	281.7
FR	604.0	36.4	6.0	643.8
IT	443.2	40.0	9.0	454.5
CY	2.2	0.3	11.9	2.4
LV	2.1	0.6	30.4	2.4
LT	3.2	0.6	17.6	7.0
LU	2.4	-0.2	-7.0	4.8
MT	2.1	0.2	7.1	2.3
NL	112.8	8.2	7.3	146.7
AT	81.1	7.8	9.6	77.6
PT	28.4	5.2	18.4	24.8
SI	8.4	0.7	8.3	8.9
SK	4.6	1.7	36.2	7.4
FI	42.1	4.5	10.7	45.4

(1) The cut-off date for this table is 21 December 2022. (2) These estimates are based on cumulative net asset purchases (excluding reinvestments) conducted under the Asset Purchase Programme (APP) and the Pandemic Emergency Purchase Programme (PEPP), as released by the ECB, as of November 2022. (3) Net asset purchases under the PEPP are based on outturn data between December 2021 and November 2022 because the ECB released the data for December 2021 and January 2022 together. (4) The ECB stopped conducting net asset purchases under the PEPP at the end of March 2022 and discontinued net asset purchases under the APP on 1st July 2022. Hence, no net asset purchases are estimated for 2023. (5) GFN estimates are calculated as previously specified in this section.
Source: Commission services based on ECB data.

Q2 2023 and the subsequent pace of the decline will be determined over time. At the same time, the ECB continues to reinvest the maturing securities purchased under the PEPP, which may still cover part of euro area countries GFN in 2023. The ECB has also used the flexibility of the PEPP reinvestments with a view to countering risks to the monetary policy transmission mechanism related to the pandemic. Moreover, given the long maturity of public debts in the euro area, higher yields will increase interest expenditure only gradually.

Looking ahead, some EU initiatives such as the NextGenerationEU should continue to contribute preserving favourable financing conditions for EU sovereigns. Indeed, EU countries are currently drawing down RRF funds, and will do so until the end of the facility in 2026.

1.3. SOVEREIGN FINANCING CONDITIONS

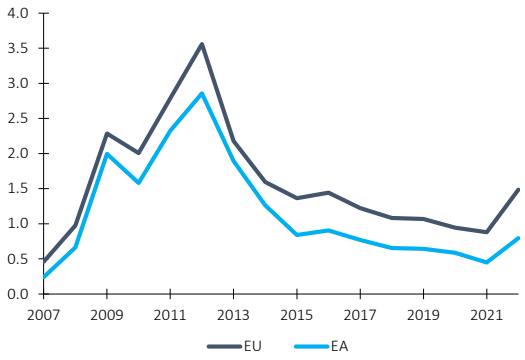
This section provides an analysis of the ease of (re-)financing government debt, based on different indicators of financial markets' perceptions of sovereign risk. Such information notably allows to identify early on signs of sustainability risks over the short term. In practice, high frequency financial data allows monitoring emergence of potentially self-reinforcing adverse fiscal sustainability developments. ([25]) While assessing the nature of such developments in real-time calls for caution, financial data provide an

([25]) For discussion of the market expectations on sovereign debt default and risks of self-fulfilling crisis channel, see Calvo G. (1988), Servicing the public debt: The role of expectations, *American Economic Review*, 78(4), 647-661. For an application of the EU sovereign crisis event see Miller, M., and Zhang, L. (2014), Saving the euro: Self-fulfilling crisis and the "Draghi Put", in: Stiglitz, J.E. and Heymann, D. (eds.), Life after debt. International Economic Association Series. Palgrave Macmillan, London.

important source of information to monitor market's perception, a driver of short-term debt dynamics and, potentially, of self-reinforcing debt dynamics.

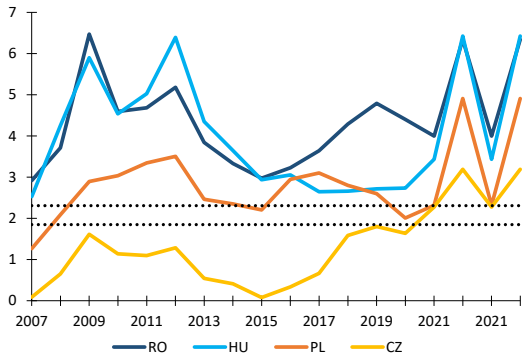
Sovereign yields spreads have increased in the EU in 2022, following the sharp increase in inflation and the tightening of monetary policies (see Graph 1.5). In this context, some countries face significantly higher financing costs. This is particularly true for some non-euro area countries (Hungary, Romania, Poland, and the Czech Republic – see Graph 1.6). Other countries, such as Italy and Spain (Graph 1.7) have also experienced a significant increase, although relatively more moderate. This represents a notable change in financing conditions compared with past years. Nevertheless, in many countries, interest rates are expected to feed only gradually into the government debt burden, as debt maturities have been lengthened over time. Moreover, financing sources remain relatively stable, with a diversified and large investor base.

Graph 1.5: **10-year government bond yield spreads vs. the German bund (EU and EA aggregates)**



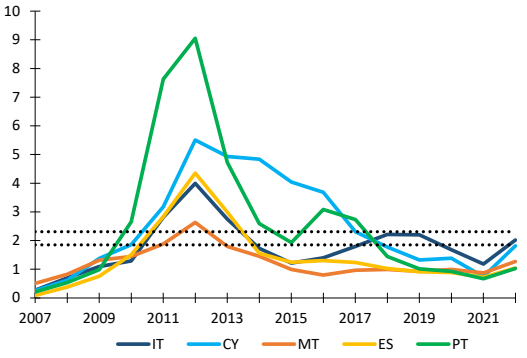
(1) Yield spreads are as of December 2022.
(2) Aggregates represent unweighted averages.
Source: Commission services based on ECB LTIR database.

Graph 1.6: **10-year government bond yield spreads vs. the German bund (selected non-EA countries)**



(1) Countries are those whose spreads are (or have recently been) above the lower risk threshold: 184.8 bps. Upper threshold: 231 bps.
Source: Commission services based on ECB LTIR database.

Graph 1.7: **10-year government bond yield spreads vs. the German bund (selected EA countries)**



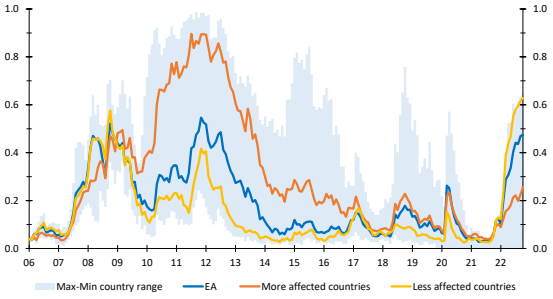
(1) Countries are those whose spreads are (or have recently been) above the lower risk threshold: 184.8 bps. Upper threshold: 231 bps.
Source: Commission services based on ECB LTIR database.

The Composite Indicator of Systemic Sovereign Stress (SovCISS) indicates that stress in euro area sovereign debt markets has increased (see Chart I.1.8). ([26]) This indicator of systemic stress for euro area sovereign bond markets currently posts a higher average level and a relatively wider gap between countries with the lowest and the highest score, compared to early 2022. The increase in the gap between the minimum and the

([26]) The SovCISS (Composite Indicator of Systemic Sovereign Stress) measures the level of stress in euro area sovereign bond markets, following the CISS (Composite Indicator of Systemic Stress) methodology developed in Hollo et al. (2012). In the SovCISS, stress symptoms are measured along three dimensions: (i) risk spreads; (ii) yield volatilities; and (iii) bid-ask spreads. For details, see Garcia-de-Andoain, C. and Kremer, M. (2018), Beyond spreads: measuring sovereign market stress in the euro area, *ECB Working Paper Series*, No. 2185.

maximum (i.e. the country range) is mostly driven by a surge in the indicator as of March 2022, which has affected countries to a different extent.

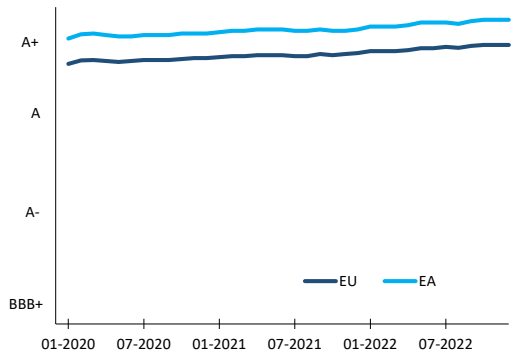
Graph 1.8: **Composite indicator of systemic stress (SovCISS) in euro area sovereign bond markets**



(1) The SovCISS focuses on stress in sovereign bond markets. It is available for the euro area and for 11 euro area countries (AT, BE, FI, FR, DE, EL, IE, IT, NL, PT, ES). Countries more affected by the crisis include EL, IE, IT, PT, ES. Less affected countries include AT, BE, FI, FR, DE, NL.
Source: Commission services based on ECB data.

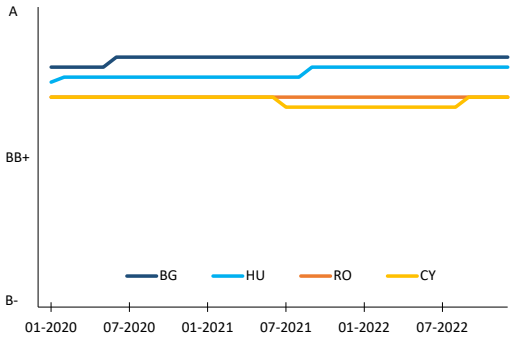
The sovereign ratings for the EU and EA remain high on average, but differences exist across countries. The relatively high ratings for the EU and EA as a whole reflect stable or improving ratings in most countries (see Graph 1.9). At the same time, ratings remain relatively low in some countries (see Graph 1.10, Table 1.7), including in some high-debt countries (see Graph 1.11).

Graph 1.9: **Sovereign debt ratings (EU and EA aggregates)**



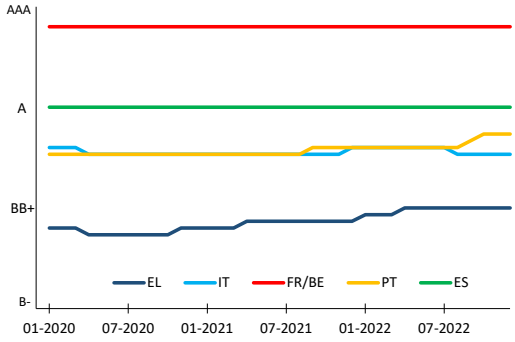
(1) Ratings are computed as simple average (using an alphanumeric conversion table) of long-term foreign currency ratings, assigned by the major rating agencies.
Source: Commission services based on Moody's, S&P and Fitch.

Graph 1.10: **Four Member States with the lowest ratings in the EU**



(1) Ratings are computed as simple average (using an alphanumeric conversion table) of long-term foreign currency ratings, assigned by the major rating agencies.
Source: Commission services based on Moody's, S&P and Fitch.

Graph 1.11: **Ratings of Member States with debt-to-GDP ratios exceeding 100%**



(1) Ratings are computed as simple average (using an alphanumeric conversion table) of long-term foreign currency ratings, assigned by the major rating agencies.
Source: Commission services based on Moody's, S&P and Fitch.

Table 1.7: **Long-term foreign currency sovereign ratings (at 9 December 2022)**

	Moody's			S&P			Fitch		
	Rating	Since	Outlook	Rating	Since	Outlook	Rating	Since	Outlook
BE	Aa3	07/03/2014	STABLE	AA	28/02/2014	STABLE	AA-	24/09/2021	STABLE
BG	Baa1	09/10/2020	STABLE	BBB	29/05/2020	STABLE	BBB	19/02/2021	POS
CZ	Aa3	05/08/2022	NEG	AA-	24/08/2011	STABLE	AA-	06/05/2022	NEG
DK	Aaa	23/08/1999	STABLE	AAA	27/02/2001	STABLE	AAA	10/11/2003	STABLE
DE	Aaa	28/02/2014	STABLE	AAA	13/01/2012	STABLE	AAA	21/11/2011	STABLE
EE	A1	31/03/2010	STABLE	AA-	31/03/2022	STABLE	AA-	19/08/2022	NEG
IE	A1	06/05/2022	POS	AA-	18/09/2022	POS	AA-	28/01/2022	STABLE
EL	Ba3	06/11/2020	STABLE	BB+	22/04/2022	STABLE	BB	14/01/2022	POS
ES	Baa1	13/04/2018	STABLE	A	18/03/2022	STABLE	A-	19/01/2018	STABLE
FR	Aa2	21/02/2020	STABLE	AA	02/12/2022	NEG	AA	15/05/2020	NEG
HR	Baa2	15/07/2022	STABLE	BBB+	14/07/2022	STABLE	BBB+	13/07/2022	STABLE
IT	Baa3	05/08/2022	NEG	BBB	26/07/2022	STABLE	BBB	03/12/2021	STABLE
CY	Ba1	19/08/2022	POS	BBB	02/09/2022	STABLE	BBB-	03/04/2020	STABLE
LV	A3	13/02/2015	STABLE	A+	21/02/2020	STABLE	A-	09/08/2020	STABLE
LT	A2	12/02/2021	STABLE	A+	02/12/2022	NEG	A	31/01/2020	STABLE
LU	Aaa	28/02/2014	STABLE	AAA	14/01/2013	STABLE	AAA	21/09/2000	STABLE
HU	Baa2	24/09/2021	STABLE	BBB	12/08/2022	NEG	BBB	22/02/2019	STABLE
MT	A2	18/09/2022	STABLE	A-	13/03/2020	STABLE	A+	17/04/2020	STABLE
NL	Aaa	07/03/2014	STABLE	AAA	20/11/2015	STABLE	AAA	11/07/2014	STABLE
AT	Aa1	24/06/2016	STABLE	AA+	26/08/2022	STABLE	AA+	07/10/2022	NEG
PL	A2	12/05/2017	STABLE	A-	12/10/2018	STABLE	A-	23/08/2013	STABLE
PT	Baa2	17/09/2021	STABLE	BBB+	09/09/2022	STABLE	BBB+	28/10/2022	STABLE
RO	Baa3	18/10/2021	STABLE	BBB-	16/04/2021	STABLE	BBB-	17/04/2020	NEG
SI	A3	02/10/2020	STABLE	AA-	14/06/2019	STABLE	A	19/07/2019	STABLE
SK	A2	05/08/2022	NEG	A+	20/05/2022	NEG	A	19/08/2022	NEG
FI	Aa1	03/06/2016	STABLE	AA+	16/09/2016	STABLE	AA+	24/01/2020	STABLE
SE	Aaa	04/04/2002	STABLE	AAA	16/02/2004	STABLE	AAA	08/03/2004	STABLE

Source: Commission services based on Moody's, S&P and Fitch.

Box 1.1: **S0 indicator: conceptual elements**

The S0 indicator allows an identification of risks of potential fiscal stress in the upcoming year, based on a number of fiscal and structural variables. S0 is more precisely an early - detection indicator of fiscal stress over a one year horizon. ([1]) Fiscal stress designates situations ranging from a credit event, a request of large official financing, to an implicit domestic government default (when high inflation) and a loss of market confidence (the latter has been the most common situation of fiscal stress during the global financial crisis in the case of European countries. ([2])

The S0 indicator is a composite indicator of fiscal stress stemming from fiscal variables and structural features of the economy. It is based on a wide range of variables that have proven to perform well in the past in detecting situations of upcoming fiscal stress. Thus, unlike the traditional medium- and long-term fiscal sustainability indicators (the S1 and S2 indicators presented in Chapters 2 and 3), the S0 indicator is not a fiscal gap indicator (i.e. it does not quantify the required fiscal adjustment to ensure sustainable public finances over a specific time horizon). The S0 indicator is neither a financial market - based indicator of sovereign risk (see section 1.3 for an analysis of the latter).

More precisely, the measurement of S0 is based on 25 fiscal and financial-competitiveness variables. Table 1 provides the list of the 12 fiscal and 13 financial-competitiveness variables that are used to construct the S0 indicator. This reflects the existing rich evidence, also from recent experience in the EU, of the role played by developments in the financial sector and the competitiveness of the economy in generating fiscal risks. ([3])

The S0 indicator is computed based on an empirical method, the so-called signalling approach. This method involves setting out endogenously critical risk thresholds, by analysing the behaviour of a large number of variables ahead of past fiscal stress events. More precisely, these critical thresholds are determined for each individual variable entering the S0 indicator, by minimising the proportion of missed crises and false alarms (or by maximising the 'signalling power'). Then, S0 is computed as the weighted proportion of variables that have reached their critical thresholds, with weights given by their 'signalling power', and the critical threshold for S0 itself endogenously derived. The same method applies for the two thematic sub-indices that reflect either the fiscal or the financial-competitiveness sides of the economy. The higher the proportion of individual variables with values at or above their specific threshold, the higher the value of S0 (and the sub-indices). The predictive performance of the S0 indicator fares well compared to other studies. ([4])

([1]) See Berti, K., Salto, M., and Lequien M. (2012), An early-detection index of fiscal stress for EU countries, *European Economy Economic Paper*, No. 475.

([2]) See Pamies Sumner, S., and Berti, K. (2017), A complementary tool to monitor fiscal stress in European economies, *European Commission Discussion Paper*, No. 49.

([3]) See Cerovic, S., Gerling, K., Hodge, A., and Medas, P. (2018), Predicting Fiscal Crises, *IMF Working paper*, No. 18 / 181; Pamies Sumner, S., and Berti, K. (2017), A complementary tool to monitor fiscal stress in European economies, *European Commission Discussion Paper*, No. 49; Bruns, M., and Poghosyan, T. (2016), Leading indicators of Fiscal distress: Evidence from the extreme bound analysis, *IMF Working Paper*, No. 16/28; Berti, K., Salto, M. and Lequien, M. (2012), An early-detection index of fiscal stress for EU countries, *European Economy Economic Paper*, No. 475.

([4]) See Cerovic, S., Gerling, K., Hodge, A., and Medas, P. (2018), Predicting Fiscal Crises, *IMF Working paper*, No. 18 / 181.

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Box (continued)

S0's identification of short-term fiscal risks is threefold. First, S0 is a measure of overall short-term risks to fiscal sustainability. Secondly, the fiscal and financial-competitiveness sub-indices help identifying vulnerabilities coming from one of the two thematic areas, though not necessarily at the aggregate level. Additionally, they also give insights into specific areas for those countries where high values of S0 already flag overall sustainability risks. Finally, individual variables of S0 allow for identifying specific sources of vulnerability. Overall, this detailed identification of sources of short-term fiscal risk enables identifying precise areas calling for policy action at the Member State and/or the Union level.

The interpretation of risk assessment results based on the S0 analysis should be made with some caution:

- First, although the framework described above is rather comprehensive, additional dimensions that are relevant for the analysis of short-term sustainability risks are necessarily left aside. For instance, factors of a more qualitative nature or variables for which data availability is limited are not reflected by S0.

- Then, the S0 indicator is based on yearly outturn values of the different variables, and, for several variables, on values for the ongoing year. This reflects the fiscal stress identification approach underpinning the S0 indicator (whereby the build-up of fiscal and structural imbalances in the past and current years can lead to fiscal stress in the next year). While it allows complementing the traditional forward-looking perspective of the DSA, it can present some limitations in cases where real-time or foreseen developments change rapidly. ([5])

- Last, a high short-term risk signal, as highlighted by S0, does not mean that fiscal stress is inevitable (it is not a prediction), but rather that there are significant vulnerabilities that need to be addressed by appropriate policy responses.

Hence, a broader analysis of country-specific contexts should supplement the interpretation of S0 results.

([5]) For example, the announcement of the NGEU/RRF is deemed to have contributed to mitigate short-term risks, while not being fully reflected yet in outturn or current year data.

(Continued on the next page)

Box (continued)

Table 1: **Thresholds and signalling power of S0 indicator, fiscal and financial-competitiveness sub-indices and individual variables**

Variables	safety	threshold	signalling power	type I error	type II error	crisis number	no-crisis number
Headline gov. balance, % GDP	>	-9.61	0.07	0.04	0.89	44	1080
Primary govt. balance, % GDP	>	0.23	0.13	0.47	0.40	43	1058
Cyclically-adjusted govt. balance, % GDP	>	-2.50	0.23	0.52	0.25	40	981
Stabilising primary balance, % GDP	<	2.34	0.08	0.13	0.79	38	983
Gross debt, % GDP	<	68.44	0.12	0.23	0.65	40	1047
Change in gross debt, % GDP	<	8.06	0.12	0.06	0.82	39	1018
Short-term govt. debt, % GDP	<	13.20	0.20	0.14	0.67	21	430
Net debt, % GDP	<	59.51	0.20	0.18	0.62	26	586
Gross financing needs, % GDP	<	15.95	0.26	0.24	0.50	26	621
Interest rate-growth differential	<	4.80	0.08	0.11	0.82	38	977
Change in govt. expenditure, % GDP	<	1.90	0.11	0.13	0.76	41	1051
Change in govt. consumption expend., % GDP	<	0.61	0.07	0.17	0.76	38	972
Fiscal index	<	0.36	0.28	0.30	0.42	45	1083
Net international investment position, % GDP (t-1)	>	-19.80	0.29	0.47	0.24	25	500
Net savings of households, % GDP (t-1)	>	2.61	0.33	0.42	0.25	28	699
Private sector debt, % GDP (t-1)	<	164.70	0.18	0.22	0.60	20	418
Private sector credit flow, % GDP (t-1)	<	11.70	0.37	0.28	0.35	20	409
Short-term NFC debt, % GDP (t-1)	<	15.40	0.20	0.54	0.26	19	403
Short-term HH debt, % GDP (t-1)	<	2.90	0.21	0.52	0.26	19	403
Construction, % value added (t-1)	<	7.46	0.22	0.27	0.51	43	1006
Current account, 3-year backward MA, % GDP (t-1)	>	-2.50	0.34	0.35	0.31	42	983
Change (3 years) of REER based on export deflator, 37 co	<	9.67	0.11	0.18	0.71	24	460
Change (3 years) in nominal ULC (t-1)	<	7.00	0.18	0.64	0.18	38	967
Yield curve	>	0.59	0.37	0.34	0.29	35	813
Real GDP growth	>	-0.67	0.10	0.09	0.81	48	1124
GDP per capita in PPP, % of US level	>	72.70	0.22	0.44	0.33	51	1129
Financial-competitiveness index	<	0.49	0.55	0.32	0.13	52	1158
Overall S0 index	<	0.46	0.55	0.22	0.23	52	1158

(1) Variables indicated as "t-1" are taken in lagged values. (2) The signalling power is defined as (1 - type I error - type II error). See Annex A4 for more details.
Source: Commission services.

Box 1.2: Gross financing needs: definition and measurement

Gross financing needs (GFN) are primarily a flow concept informing about the liquidity of government finances in the short to medium term, while debt stock indicators capture solvency risks. ([1]) A given debt stock may be associated to very different schedules of repayment flows and thus financing needs, depending on the specific borrowing terms, such as term-to-maturity structure, amortisation schedules for principal and interest.

Gross financing needs are usually defined as the flow of payments or financing obligations the government faces to service its debt and cover its budget deficit, if any, over the next period, i.e.:

GFN = Headline deficit +
+ debt redemptions + SFA
or
GFN = Primary deficit + interest payments +
+ debt redemptions + SFA

GFN also include stock-flow adjustments to capture changes in a government's balance sheet that affect gross government debt not the budget deficit. SFA are net debt-creating flows that comprise three categories: (i) Other debt creating / reducing flows (ODF), essentially 'below the line' items (not affecting the deficit) constituting a net acquisition of financial assets, ([2]) (ii) the cash-accrual difference ([3]) to the ESA fiscal deficit, since the latter is accounted on an accrual basis and (iii) other adjustments and discrepancies. ([4])

GFN may be measured using different data sources and approaches, in both backward- and forward-looking manner. Contrary to government debt, which is an indicator well defined in the EU and measured by national statisticians using harmonised definitions set by Eurostat, GFN is an indicator built for practical or analytical purposes, which falls outside of the scope of government finance statistics. ([5]) For outturn data, such as the GFN used under S0, different sources exist to estimate GFN components, among them national statistical institutes (NSIs), national central banks (NCBs), national authorities (ministries), debt management offices (DMOs) or large data providers such as Bloomberg. For forward-looking data, a few institutions provide GFN projections, among them the European Commission and the IMF. ([6])

Therefore, GFN are versatile metrics, useful for a variety of analytical purposes. GFN estimates are a particularly valuable concept in the case of programme countries or more generally in a crisis context, to define accurately the financing requirements and the necessary sources to cover those needs, including when calibrating the size of the programme. They are also useful in regular fiscal

([1]) GFN' mixed nature notably in terms of potential adjustments from contingent liabilities' realisations or variation of assets makes it also informative about solvency-related risks.

([2]) Examples: *(i)* cash / deposits (e.g. accumulation/draw-down), *(ii)* equity (nationalisation/privatisation, below-the-line financial sector recapitalisations), *(iii)* other financial assets (e.g. participation in a common financial instrument at EU level).

([3]) The cash-accrual adjustment (or difference) to the ESA fiscal deficit commonly includes *(i)* the difference between interest paid (+) and accrued (-), e.g. deferred interest payments on certain (official) loans, *(ii)* changes in accounts payable (e.g. tax refunds not yet settled, trade credits granted by government suppliers, grants received from the EU but not yet paid to the final beneficiary, prepayments for mobile phone licences) or *(iii)* accounts receivable (e.g. tax receivable, military receivable, revenue from EU (structural) funds that is not yet received / disbursed, healthcare expenditure claw-back) or changes in arrears or clearance of called guarantees (applicable for instance when called guarantees accrue to year t, but will be paid only in the subsequent year(s)).

([4]) include valuation effects, statistical discrepancies and other changes in volumes due to reclassification of units, all of which affect debt (and gross financing needs) ex-post.

([5]) See for example Eurostat, ESA 2010, "Chapter 20 – The government accounts", where no mention is made of this indicator.

([6]) The ESM (Gabriele, C., Erce, A., Athanasopoulou, M., and Rojas, J. (2017), Debt stocks meet gross financing needs: a flow perspective into sustainability, *ESM Working paper series*, No. 24).

(Continued on the next page)

Box (continued)

surveillance to monitor potential market roll-over risks in the short to medium term.

International institutions and creditors are paying increased attention to GFN in their appraisal of fiscal risks. The same institution may use multiple GFN definitions, depending on the analytical purpose. Different financial instruments may be considered under the universe of GFN. Experts generally agree that a broader definition of GFN flows, mirroring the components of Maastricht debt stocks, seems appropriate. Such a definition would include currency and deposits, debt securities and loans, but the scope may vary depending on the purpose of the analysis.

In the Commission's Fiscal Sustainability Reports and Debt Sustainability Monitors, GFN are regularly examined in the short- and medium-term fiscal sustainability chapters. For the medium-term, Chapter 3.3 shows GFN projections up to T+10.

Similarly to the DSM 2020 and the FSR 2021, for the purpose of short-term analysis performed through S0, GFN are gauged like the medium-term measure, to evaluate all liquidity pressures EU countries are currently facing (see Table 1). Specifically, to reflect all needs that require market financing, short-term GFN are computed to include the redemption of all loans (official and commercial) reaching maturity, as well as other net debt-creating flows (stock-flow adjustments).

Table 1: **GFN definition - components and debt instruments included**

	Balance sheet items (liabilities) under government debt	Components and debt instruments included in the GFN definition
Budget (headline) deficit		x
Maturing debt	Currency and deposits	
	Debt securities	x
	Commercial loans	x
	Official loans	x
Stock-flow adjustments		x

(1) Similarly to the DSM 2020 and the FSR 2021, in this report, short and medium-term GFN are calculated in the same way, based on the definition previously used for medium-term GFN (see DSM 2019). (2) Consolidated data. (3) SFA are defined as described in the text.
Source: Commission services.

Looking ahead, a few approaches could help improve GFN estimates. Improved practices such as monitoring fiscal deficits in cash terms, identifying more accurately other debt creating / reducing flows of the stock-flow adjustment (SFA), and cooperating with national DMOs to follow more closely debt redemption and issuance plans could significantly improve GFN estimates, in real time.

2. MEDIUM-TERM FISCAL SUSTAINABILITY ANALYSIS

Main takeaways

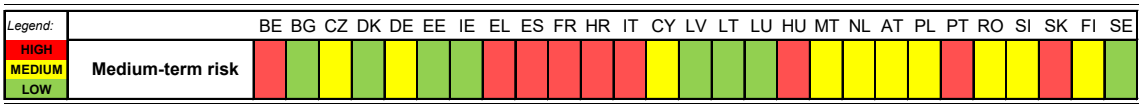
The analysis of medium-term fiscal sustainability risks relies on the Commission's comprehensive debt sustainability analysis (DSA) toolkit*. In line with the orientations for a reformed EU economic governance framework put forward by the European Commission on 9 November 2022, the risk assessment entirely relies on the DSA, while the S1 indicator becomes a long-term indicator, as discussed in Chapter 3. The DSA combines deterministic debt projections up to 2033 with stochastic projections covering a wide range of possible shocks. The projections include the impact of ageing-related expenditure. They consider alternative scenarios to the 'no-fiscal-policy-change' baseline, such as reverting to past fiscal behaviour, implementing only part of the forecast structural adjustment, benefiting from a less favourable interest-growth rate ('r-g') differential, and facing temporary turmoil on financial markets. This is complemented by an assessment of liquidity challenges based on government's gross financing needs.*

In the EU as a whole, at unchanged fiscal policy, the debt-to-GDP ratio is projected to decline slightly until the late 2020s, when the rising cost of ageing and a gradually less favourable snowball effect (combining the impact of interest payments and nominal growth on debt dynamics) would reverse the trend*. In the baseline, the 'r-g' differential is assumed to remain only slightly negative by 2033, after increasing throughout the projection period. By the end of the projection horizon, it will therefore only marginally dampen the increasing pressure from ageing costs on public finances. An alternative scenario shows that debt could nearly fall back to its pre-crisis level by 2031 (before increasing again) if the structural primary deficit converged back to the balanced position observed on average in the past 15 years. Conversely, a more limited fiscal adjustment, a less favourable 'r-g' differential or temporary financial stress would worsen the debt dynamics.*

The stochastic projections point to significant uncertainty around the baseline. *With an 80% probability, debt will lie between 80% and 102% in the euro area as a whole by 2027, coming below the 2022 level with a 67% probability. In 2027, the debt ratio could stand above or below 90% with equal probability. High uncertainty in some countries reflects historically volatile macro-financial and fiscal conditions.*

Overall, nine Member States are found to be at high medium-term fiscal sustainability risk, 10 at medium risk and eight at low risk. *The high-risk classification is mainly driven by high and/or increasing debt ratios under the no policy change baseline scenario (Belgium, Greece, France, Italy and Portugal), along with elevated uncertainty surrounding the baseline projections, as highlighted by the stochastic analysis (Slovakia) and by vulnerability to more adverse assumptions (Spain, Croatia and Hungary), in particular in case of less favourable macro-financial conditions (Croatia) or a weaker fiscal position (Hungary). Projected financing needs suggest that countries with the highest debt ratios could also be potentially exposed to liquidity challenges.*

Table 2.1: **Overview of the medium-term risk classification**



Source: European Commission.

This chapter assesses fiscal sustainability risks over the medium term, based on the Commission's comprehensive analytical framework. This report entirely relies on the debt sustainability analysis (DSA) to assess medium-term fiscal sustainability challenges. Unlike in the 2021 Fiscal Sustainability Report (FSR), the assessment no longer combines the DSA and the S1 indicator, which now underpins the assessment of long-term sustainability risks (see Chapter 3). The DSA alone captures medium-term challenges in a comprehensive way. First, the DSA includes the impact of ageing-related costs. Second, it considers both favourable and adverse scenarios in addition to the baseline. Third, it accounts for uncertainty by simulating a wide range of possible shocks. Last but not least, it takes into account the plausibility of projected debt paths and the feasibility of additional fiscal consolidation measures, if needed.

This chapter is organised as follows. Going through the various elements of the DSA toolkit, the chapter starts with a baseline for debt trajectories over the next 10 years, along with a set of additional deterministic debt projections underpinned by alternative assumptions (Section 2.1). To assess how a broad range of possible shocks could affect debt in the coming years, the DSA also crucially relies on stochastic debt projections, highlighting the uncertainty around the baseline (Section 2.2). Finally, the DSA is complemented by projections of governments' gross financing needs over the next decade, which provide information on potential liquidity risks (Section 2.3). The chapter concludes with an overall assessment of medium-term fiscal risks and a comparison with the 2021 FSR (Section 2.4).

2.1. DETERMINISTIC GOVERNMENT DEBT PROJECTIONS

The first component of the DSA consists in a set of deterministic projections based on various scenarios. Each deterministic projection provides a single path for debt until 2033 under certain assumptions for budgetary, macroeconomic and financial variables. In addition to the baseline, four other scenarios are taken into account for the medium-term risk classification. These are the 'historical structural primary balance (SPB)', 'lower SPB', 'adverse interest-growth rate differential (r-g)' and 'financial stress' scenarios. They highlight the impact on debt of alternative assumptions for fiscal policy, real GDP growth and interest rates (Table 2.2). Finally, an additional policy scenario – the 'stability and convergence programmes' (SCP) scenario – also informs the overall assessment, although only in a qualitative manner.

Table 2.2: **Debt projections in the deterministic scenarios**

	Baseline 2022	Baseline 2033	Difference to the baseline in 2033 (pps. of GDP): 'Historical SPB' scenario	'Lower SPB' scenario	'Adverse r-g' scenario	'Financial stress' scenario
BE	106.2	121.6	-15.1	5.9	8.9	1.5
BG	22.5	40.3	-13.6	5.3	2.5	0.2
CZ	42.9	52.2	0.5	8.6	4.0	0.4
DK	33.7	16.3	-3.3	1.7	2.0	0.2
DE	67.4	70.3	-17.1	0.0	5.5	0.5
EE	18.7	33.6	-8.2	0.5	2.1	0.2
IE	44.7	25.3	16.7	11.0	2.2	0.1
EL	171.1	125.4	-10.0	19.1	9.1	1.1
ES	114.0	112.4	0.0	2.2	9.3	2.0
FR	111.7	121.1	-1.3	6.0	9.6	1.8
HR	70.0	84.9	-8.7	0.7	6.6	0.4
IT	144.6	155.9	-13.6	8.6	13.3	4.8
CY	89.6	45.4	5.2	6.9	4.8	0.3
LV	42.4	36.9	9.7	29.1	3.0	0.3
LT	38.0	39.6	7.0	3.6	3.0	0.2
LU	24.3	23.5	-7.6	-0.2	1.8	0.1
HU	76.4	81.5	-7.4	14.8	6.8	0.7
MT	57.4	63.4	-14.4	9.7	4.6	0.4
NL	50.3	70.4	-15.6	2.9	4.8	0.3
AT	78.5	74.4	-4.8	10.4	6.0	0.6
PL	51.3	69.0	4.4	11.6	5.5	0.5
PT	115.9	94.3	7.0	9.7	8.1	1.7
RO	47.9	62.8	4.2	12.5	4.6	0.4
SI	69.9	79.3	-6.0	9.4	5.8	0.5
SK	59.6	82.6	-7.4	-0.6	4.8	0.2
FI	70.7	71.5	-6.8	0.6	5.4	0.4
SE	32.1	10.9	1.9	4.6	1.4	0.1
EU	86.0	87.6	-6.7	5.3	7.0	1.4
EA	93.6	95.9	-8.4	4.5	7.7	1.6

Source: Commission services.

The deterministic projections feed into the medium-term risk classification using the debt level in 2033, the debt trajectory and the available 'fiscal consolidation space'. While a high level of debt is an obvious source of vulnerability, it is only a crude indicator of sustainability. That is why the risk classification relies on two more criteria in addition to the debt level. One is the path followed by debt over the coming decade. The other one is the 'fiscal consolidation space'. This space is measured by how often more stringent fiscal positions than assumed in a given scenario were observed in the past in the country under consideration – technically, this consists in looking at the percentile rank of the projected structural primary balance (SPB) within the distribution of SPBs observed in the past in the country. This gives an indication of whether the country has plausible

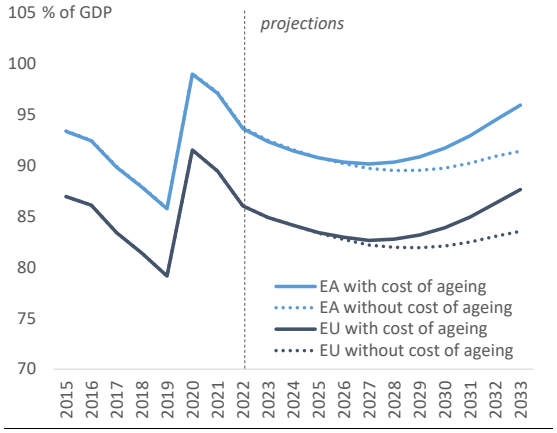
fiscal room for manoeuvre to take corrective measures if necessary. Therefore a high level of debt or an increasing debt path in the baseline do not necessarily imply high sustainability risks, as long as the government has available 'consolidation space' to rein in debt ([27]). The decision tree applied along these three criteria is described more closely in Annex A4.

This section focuses on the economic reading and main results of each scenario. It explains why the selected scenarios are relevant in the current context, and it discusses the results both for the aggregate level and across countries. Box 1 in the introduction of this report includes further technical information on the underlying assumptions, and detailed projection tables can be found in the statistical annex.

2.1.1. Baseline: no fiscal policy change

The baseline for the medium-term debt projections assumes that structural primary budgetary positions remain at their 2024 level until 2033, except for the impact of ageing-related costs. The 2024 level is the one expected in the Commission 2022 autumn forecast (for the EU as a whole, an SPB of -1.1% of GDP), which includes the impact until 2024 of policy measures adopted by end October 2022 ([28]). As from 2025, the projections do not incorporate any new measures, and the SPB is only affected by changes in the cost of ageing as projected in the 2021 Ageing Report ([29]) (for the EU as a whole, the overall SPB including the impact of ageing costs is projected to gradually decline to -2.0% by 2033, see Annex A1). Therefore, the baseline highlights what would happen in the absence of new measures, as a benchmark.

Graph 2.1: **Gross government debt baseline projections, EU and euro area**



Source: Commission services.

The baseline points to a slight decline of the EU debt ratio until the late 2020s, when the rising cost of ageing and a less favourable snowball effect would reverse the trend. The projected debt for the euro area as a whole follows a parallel path (Graph 2.1). The impact of the cost of ageing in the EU is visible in the worsening primary deficit (Graph 2.2). Moreover, interest expenditure is set to increase over the medium term, while the debt-reducing impact of nominal GDP growth would weaken. This is expected to result in a gradually less favourable snowball effect ([30]) over the projection horizon, especially compared with the record low levels of 2021-2022. The snowball effect would therefore only slightly dampen the increase in debt by the end of the projection horizon ([31]).

([27]) This is in line with the definition of debt sustainability risks used by the IMF, the ECB and the Commission. Debt is deemed unsustainable only in cases when there is *no politically and economically feasible fiscal path that can at least stabilise debt over the medium term* (under the baseline and realistic shock scenarios), keeping rollover risk at an acceptably low level while preserving potential growth.

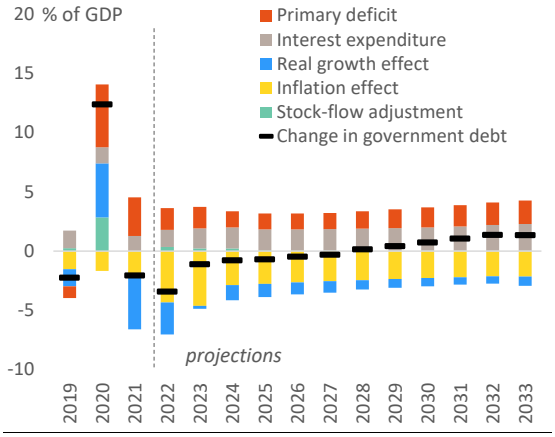
([28]) GDP growth over 10 years is projected in line with the EU commonly agreed methodology. It incorporates to a large extent the expected favourable impact of NextGenerationEU, both in the short-term forecast up to 2024 and in its T+10 extension through persistence effects. The expected impact of structural reforms is reflected insofar as these reforms have already been legislated or are certain and known in sufficient detail.

([29]) See https://ec.europa.eu/info/sites/default/files/economy-finance/ip148_en.pdf.

([30]) The snowball effect, which is closely related to the interest-growth rate differential, represents the combined impact of interest expenditure, inflation and real GDP growth on debt dynamics.

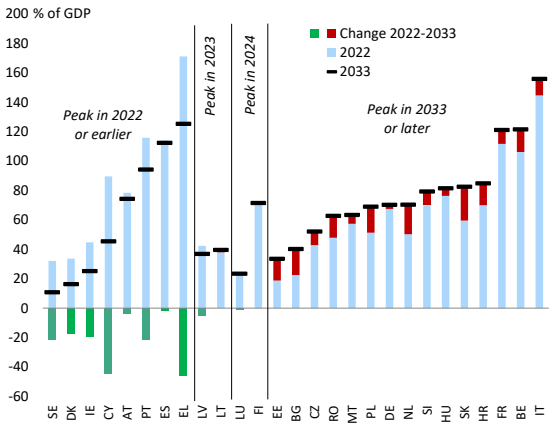
([31]) For further details on the breakdown of the change in debt, see the statistical annex.

Graph 2.2: **Drivers of the change in debt under the baseline, EU**



Source: Commission services.

Graph 2.3: **Gross government debt projections for EU Member States under the baseline (2022-2033)**

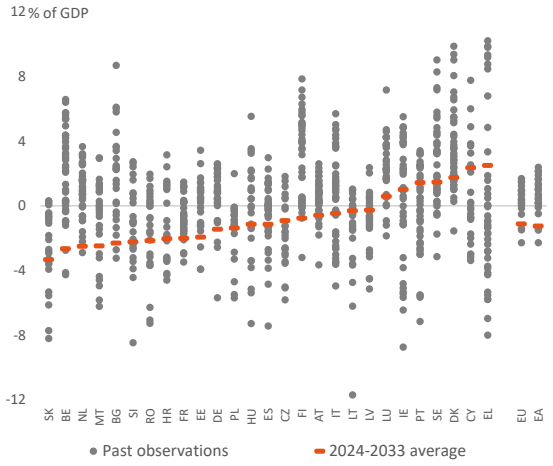


Source: Commission services.

The projected debt paths of individual Member States show contrasted situations. In 12 countries, the debt ratio projected for 2033 is at or below the level of 2022 (Graph 2.3). In most of these countries, debt started declining after the peak of 2020-2021, or is expected to do so by 2024 at the latest, before either broadly stabilising or declining further over the medium term. In Austria, Greece, Spain, Lithuania and Luxembourg, however, debt would increase again in the last years of the projection period ([32]). In the remaining 15 Member States, at unchanged policies, debt is projected to increase overall between 2022 and 2033, in some cases starting from a high level (e.g. Italy, Belgium and France).

The debt paths envisaged in the baseline rely on low SPB levels by historical standards, suggesting sizeable fiscal consolidation space in most countries. This can be seen by plotting the projected SPB level (before cost of ageing) against country-specific SPB values observed in the last decades (Graph 2.4). As most countries have often recorded higher SPBs than the level assumed in the baseline, they can realistically aim to move again towards such higher levels in the coming decade, improving the debt dynamic compared to the baseline.

Graph 2.4: **Structural primary balance projected under the baseline and past observations**



Notes: (1) The 2024-2033 average is the value in the baseline before cost of ageing. (2) In this graph, past observations start at the earliest in 1980, depending on the country, and end in 2021.
Source: Commission services.

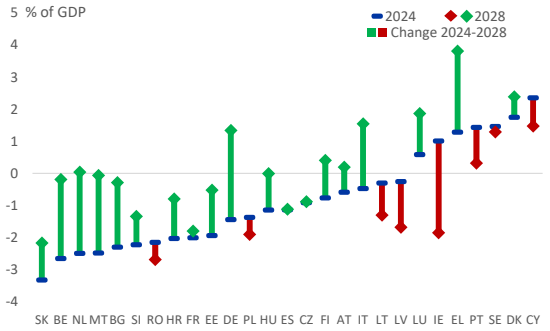
2.1.2. Policy scenario: historical structural primary balance

The first alternative scenario assumes a change in fiscal policy over the medium term – namely that the SPB will gradually converge to its average past value. This scenario illustrates the prospect of countries reverting to past fiscal behaviour instead of keeping the SPB at its 2024 level. More specifically, by 2028, each country's SPB would reach the average value observed in the country over the past 15 years, i.e. in 2007-2021 (Graph 2.5). For most Member States, this implies a tightening compared to the level forecast for 2024, although by 2028 there would still be a

([32]) In the case of Greece, the debt ratio is expected to fall until 2032 but to increase by 7 pps. of GDP in 2033, due to the capitalisation of the deferred interest payments on the European Financial Stability Facility loans.

structural primary deficit, in some cases large, in half of the Member States.

Graph 2.5: **'Historical SPB' scenario: structural primary balance in 2024 and 2028**

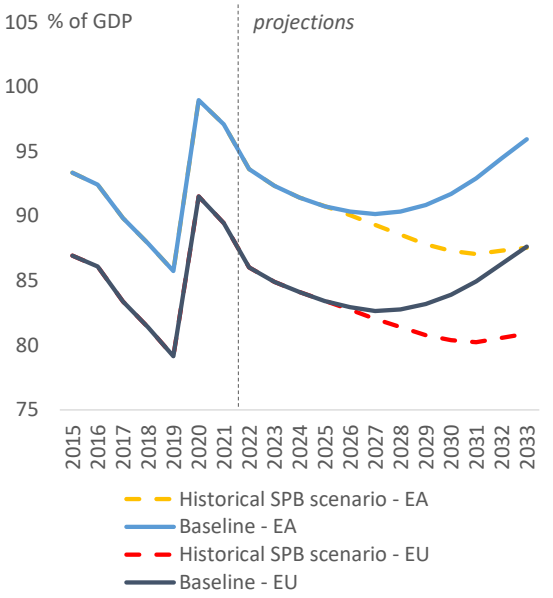


Note: The 'historical SPB' scenario assumes that the SPB gradually converges, from 2025 to 2028, to the SPB observed on average in 2007-2021.
Source: Commission services.

Reverting to past structural positions would maintain EU debt on a downward path throughout the 2020s, but not beyond. For the EU as a whole, this would mean that the SPB would improve from a deficit of 1.1% in 2024 to a balanced SPB by 2028. This would bring debt nearly back to its pre-pandemic level by 2031; however, the gradually less favourable snowball effect and the increasing cost of ageing would lead to a new increase in debt as from 2032 (Graph 2.6). The same would happen in the euro area if the structural primary deficit of 1.3% in 2024 gradually improved by 2028 to the historical standard, a marginal surplus of 0.1% of GDP.

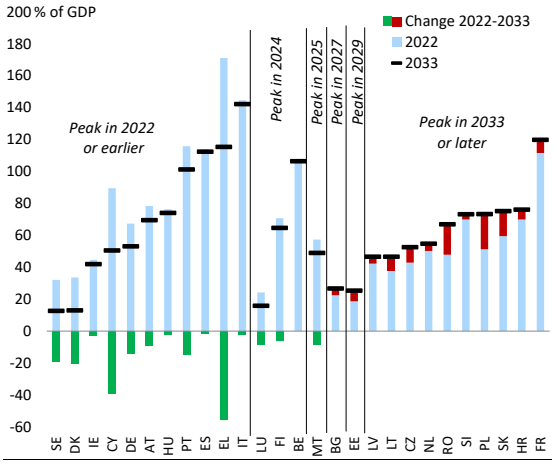
At the country level, the 'historical SPB' scenario generally leads to lower debt levels by 2033 compared with the baseline. In most of the 8 countries where this scenario implies a loosening compared with the baseline (Ireland, Cyprus, Latvia, Lithuania, Poland, Portugal, Romania and Sweden), debt would remain relatively low in 2033; the main exception is Portugal, where debt would stand at a high level (Graph 2.7). In the other countries, debt would decline more and/or peak earlier, or at least not increase as much as in the baseline. The improvement in the debt path compared with the baseline is particularly noticeable for Belgium, Bulgaria, Germany, Italy, Malta and the Netherlands.

Graph 2.6: **Debt projections: 'historical SPB' scenario vs. baseline, EU and euro area**



Note: The 'historical SPB' scenario assumes that the SPB gradually converges, from 2025 to 2028, to the SPB observed on average in 2007-2021. The SPB then remains constant, except for the impact of the cost of ageing.
Source: Commission services.

Graph 2.7: **Gross government debt projections under the 'historical SPB' scenario**



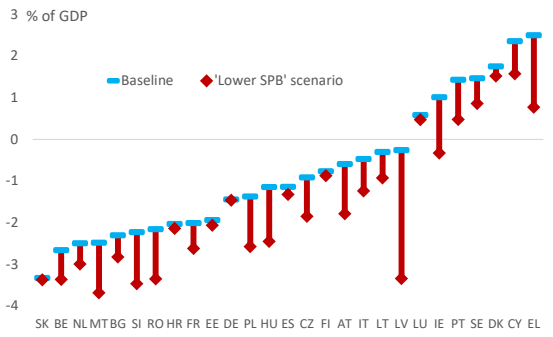
Source: Commission services.

2.1.3. Policy scenario: lower structural primary balance

The 'lower SPB' scenario assumes, for 2023 and 2024, less fiscal consolidation (or more fiscal expansion) than in the baseline, implying a negative level shift. As in the baseline, this scenario keeps the SPB unchanged as from 2024, but at a lower level than in the baseline (Graph 2.8). For the countries in which the Commission 2022 autumn forecast expects the SPB to tighten overall in 2023 and 2024, this scenario assumes that only half of the adjustment is delivered – and for the countries where the SPB is expected to deteriorate overall over these two years, the scenario assumes a 50% larger fall. This would be the case, for instance, if some governments decided to keep support measures in place for longer than expected.

A smaller consolidation by 2024 than expected in the Commission 2022 autumn forecast, followed by no consolidation, would imply a more rapid increase in EU debt over the medium term. The same holds for the euro area (Graph 2.9). In both cases, debt would be about 5 pps. of GDP higher than in the baseline by 2033, reaching around 93% of GDP in the EU as a whole.

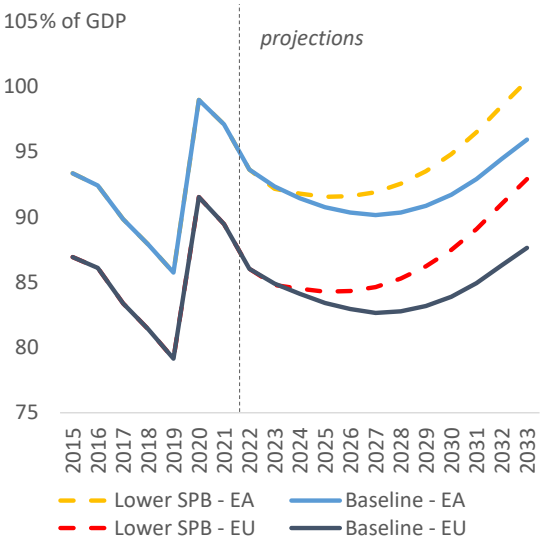
Graph 2.8: **Structural primary balance in 2024-2023 in the baseline and the 'lower SPB' scenario**



Note: The 'lower SPB' scenario assumes a 50% smaller consolidation (or 50% larger deterioration) in the SPB in 2023 and 2024 than in the Commission 2022 autumn forecast. The SPB then remains constant as from 2024, except for the impact of the cost of ageing.
Source: Commission services.

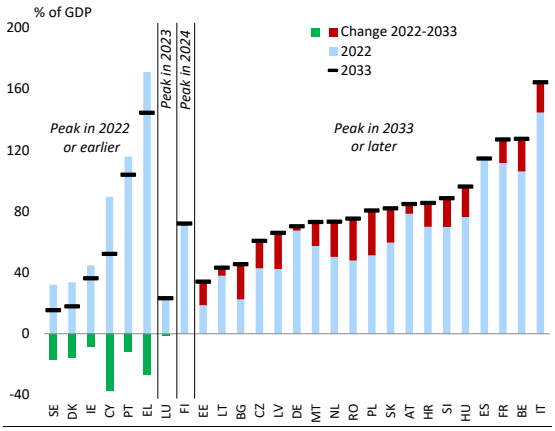
Under this scenario, debt in 2033 would exceed its 2022 level in a majority of Member States. The largest debt increases from 2022 to 2033 would be recorded in Bulgaria, Latvia, the Netherlands, Poland and Romania (Graph 2.10). Among the countries with highest debt levels, the debt increase would be sizeably larger than in the baseline for Italy, and debt would decline markedly less in Greece and Portugal.

Graph 2.9: **Debt projections: 'lower SPB' scenario vs. baseline, EU and euro area**



Note: The 'lower SPB' scenario assumes a 50% smaller consolidation (or 50% larger deterioration) in the SPB in 2023 and 2024 than in the Commission 2022 autumn forecast. The SPB then remains constant as from 2024, except for the impact of the cost of ageing.
Source: Commission services.

Graph 2.10: **Gross government debt projections under the 'lower SPB' scenario**



Source: Commission services.

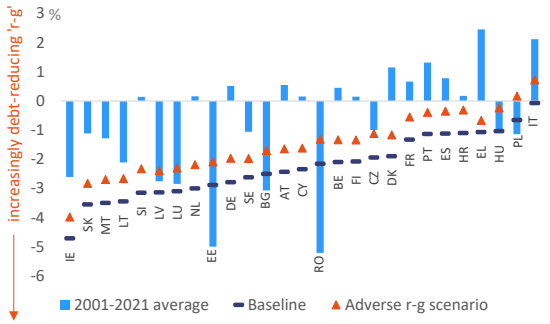
2.1.4. Stress test: adverse 'r-g' differential

This scenario captures risks related to a reversal or a reduction of the currently still favourable interest-growth rate differential. It is motivated by the fact that the 'r-g' differential assumed in the baseline, although increasing over the projection period, remains in most cases below historical averages (Graph 2.11). Stress-testing this differential is therefore important to assess the consequences for debt sustainability risks of a possible larger correction of 'r-g'. To do so, the difference between *market* interest rates and nominal GDP growth is permanently increased by 1 pp. compared to the baseline ([33]). Depending on the debt structure and gross financing needs, this shock gradually translates into a higher 'r-g' differential where r is the *implicit* interest rate. This diminishes the debt-reducing impact of the snowball effect, or reinforces its debt-increasing impact in those countries where 'r-g' is already projected to turn positive during the next decade (Czechia, Italy, Hungary, Poland and Romania).

Both on aggregate and in individual countries, this scenario has adverse implications for debt developments. Debt would decline only marginally in the first years of the projection period, and it would grow faster than in the baseline in the outer years (Graph 2.12). At the country level, debt would exceed its 2022 level by 2033 in more countries than in the baseline, with particularly large effects in Italy, Greece, France and Spain (Graph 2.13).

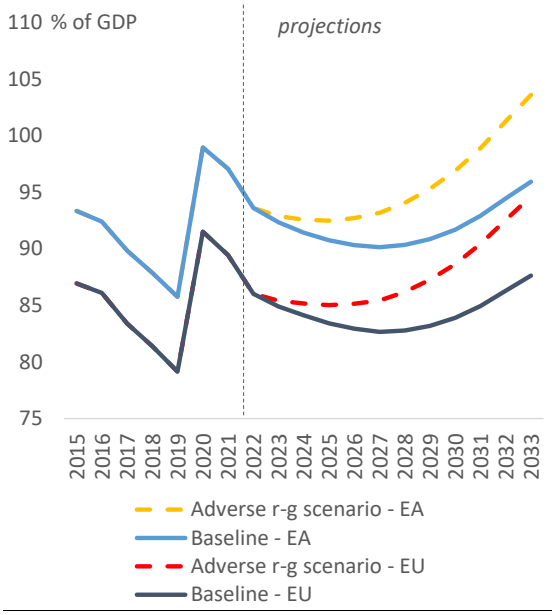
([33]) The same shock is applied to both short-term and long-term market rates.

Graph 2.11: **Interest-growth rate differential in the baseline and the 'adverse r-g' scenario, 2023-2033 averages**



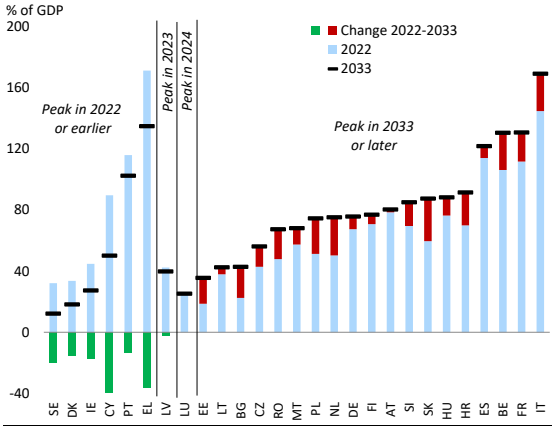
Note: The 'adverse r-g' scenario assumes that the differential between the market interest rate and nominal GDP growth is permanently 1 pp. higher than in the baseline from 2023 to 2033. This graph shows the impact on the differential between the implicit interest rate and nominal GDP growth, taking into account the debt maturity structure.
Source: Commission services.

Graph 2.12: **Debt projections: 'adverse r-g' scenario vs. baseline, EU and euro area**



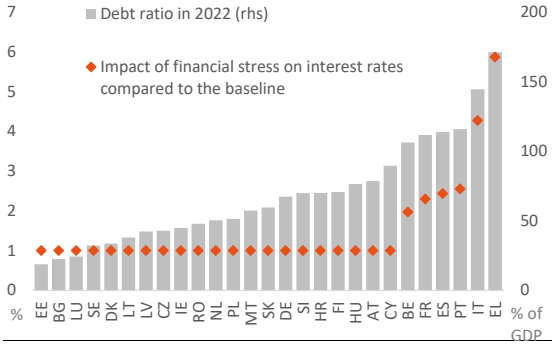
Note: The 'adverse r-g' scenario assumes that the interest-growth rate differential is permanently 1 pp. higher than in the baseline from 2023 to 2033.
Source: Commission services.

Graph 2.13: **Gross government debt projections under the 'adverse r-g' scenario**



Source: Commission services.

Graph 2.14: **Impact of the 'financial stress' scenario on interest rates in 2023**



Notes: The 'financial stress' scenario assumes that the interest rate is temporarily raised by 1 pp., plus a risk premium in countries where debt exceeded 90% of GDP in 2022 (90% being the upper debt threshold used to identify high risk in the DSA classification). The risk premium is equal to 0.06 times the excess of debt over 90% of GDP.
Source: Commission services.

2.1.5. Stress test: financial stress

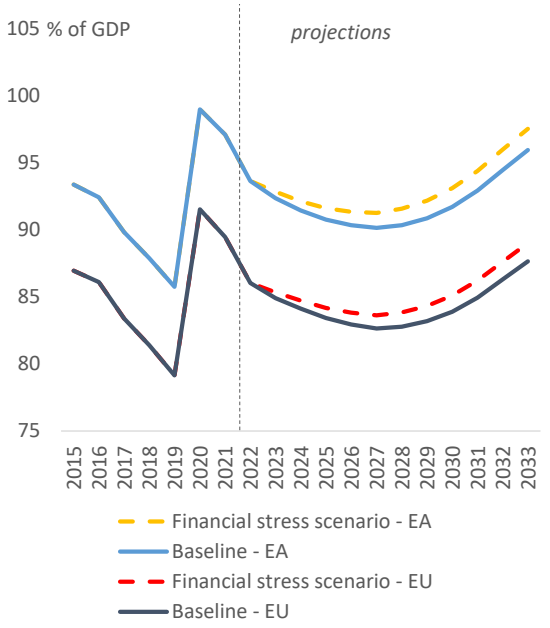
This scenario aims to capture risks linked to stylised temporary turmoil on financial markets. Under this scenario, a one-year shock affects market interest rates in 2023 ([34]). Furthermore, the scenario assumes that financial turmoil hits high-debt countries harder: while a flat 1 pp. interest rate hike applies to all countries, it is augmented by a 'risk premium' for highly indebted countries ([35]) (Graph 2.14).

Despite its temporary nature, the shock on interest rates has a persistent, albeit limited, adverse impact on debt dynamics. As can be seen for the EU and euro area as a whole, the debt path would be only slightly above the baseline, by less than 2 pps. of GDP by 2033 (Graph 2.15). The initial impact on debt would be limited, as the higher interest rates would only affect newly issued debt. The gap would, however, be persistent and increase over time, as the shock would keep affecting the service of debt newly issued in 2023 and make higher interest payments generate in turn new debt each year, compared with the baseline. This scenario would also have a non-negligible impact on gross financing needs, in particular in the year after the shock, when the higher rates on newly issued debt would start affecting interest payments (see Annex A2).

([34]) The same shock is applied to both short-term and long-term market rates.

([35]) The risk premium is equal to 0.06 times the excess of debt over 90% of GDP based on Pamies, S., Carnot, N., and Patarau, A (2021), Do fundamentals explain differences between euro area sovereign interest rates?, *European Economy Discussion Paper*, No. 141; see also Box 1 in the introduction for more details.

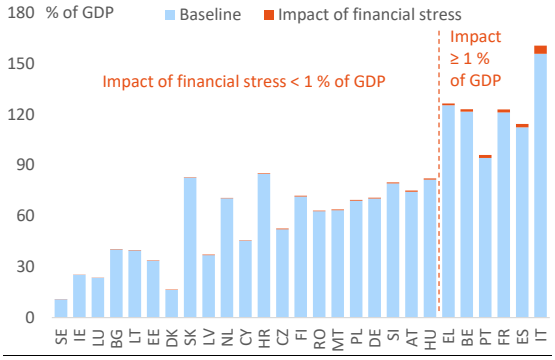
Graph 2.15: **Debt projections: 'financial stress' scenario vs. baseline, EU and euro area**



Note: The 'financial stress' scenario assumes that, in 2023, market interest rates are temporarily raised by 1 pp., plus a risk premium in countries where debt exceeded 90% of GDP in 2022 (90% being the upper debt threshold used to identify high risk in the DSA classification).
Source: Commission services.

The impact of the simulated financial stress is concentrated in high-debt Member States. The 'financial stress' scenario increases debt by more than 1 pp. of GDP by 2033 in only 6 countries, namely those with the highest projected debt ratios for 2033 in the baseline – Belgium, Greece, Spain, France, Italy and Portugal (Graph 2.16). This is because higher interest rates affect interest payments more strongly if they apply to a high debt, and this effect is exacerbated by the assumption that high-debt countries get larger shocks on interest rates. To a lesser extent, the sensitivity of individual countries to the interest shock also depends on the maturity of their debt, because a shorter maturity implies that the shock on the market rate is more rapidly transmitted to the implicit interest rate. Finally, the impact is also affected by gross financing needs.

Graph 2.16: **Gross government debt projections for 2033, 'financial stress' scenario vs. baseline**



Note: Countries are ranked by increasing impact of financial stress.
Source: Commission services.

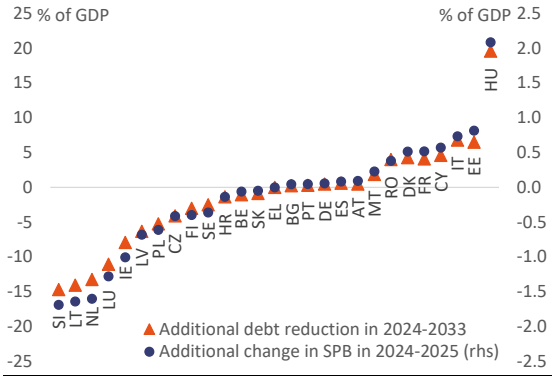
2.1.6. Additional scenarios

Two more scenarios provide additional information that qualifies debt sustainability risks, although without affecting the risk classification. The first one is a policy scenario: the 'SCP' scenario, as described below. The other one is a stress test, namely the 'exchange rate' scenario, which is mostly relevant for non-euro area countries and is therefore not discussed in detail in this chapter. Its assumptions are described in Box 1 in the introduction of this report, and its outcome can be found in the country fiches in the statistical annex (see Annex A2).

The 'SCP' scenario assumes that governments fully implement their medium-term budgetary plans. The Commission 2022 autumn forecast – which underpins the first years of the baseline – incorporates government plans, but only to the extent that they have already translated into adopted measures. This usually implies more limited developments than those presented by governments in their SCPs. To assess the full impact of government plans, this scenario uses only the year 2023 of the Commission forecast as a basis and modifies the fiscal policy assumptions as from 2024. For 2024 and 2025, it assumes that governments implement their fiscal plans fully in line with their 2022 SCPs. The SPB is then assumed to remain unchanged at its 2025 level, except for the impact of the cost of ageing ([36]).

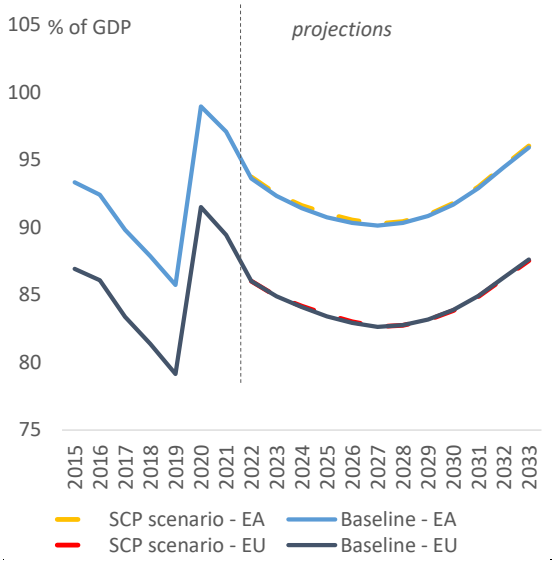
([36]) This scenario was run based on the Commission 2022 spring forecast.

Graph 2.17: **Structural adjustment and debt projections, 'SCP' scenario vs. baseline**



Note: The blue dots show by how much SPBs would improve compared to the baseline if governments fully implemented their medium-term budgetary plans in 2024 and 2025. The red triangles show the impact in terms of additional debt reduction compared to the baseline up to 2033.
Source: Commission services.

Graph 2.18: **Debt projections: 'SCP scenario' vs. baseline, EU and euro area**



Note: The 'SCP' scenario assumes that Member States implement in 2024 and 2025 the budgetary measures described in their 2022 stability and convergence programmes, and that as from 2026 the SPB is only affected by the cost of ageing.
Source: Commission services.

Fully implementing governments' own medium-term budgetary plans would not have a visible impact on aggregate debt paths compared with the baseline. For half of the countries, the SCPs imply higher SPBs than in the baseline and therefore lower debt levels by 2033. This would be the case for some high-risk countries such as Hungary, Italy and France. For the other half, it is the opposite (Graph 2.17). As a result, although adhering to the SCPs would affect national debt paths, these changes would offset each other on aggregate, and debt in the EU as a whole would follow broadly the same path as under the baseline (Graph 2.18).

2.2. STOCHASTIC GOVERNMENT DEBT PROJECTIONS

Stochastic debt projections account for wide-ranging uncertainty around the baseline. Unlike deterministic projections, the outcome of stochastic projections is not a single debt path under a specific scenario, but a distribution of debt paths resulting from a wide set of shocks. These projections aim to show the impact on debt dynamics of numerous possible shocks affecting governments' budgetary positions, economic growth, interest rates and exchange rates compared to the baseline ([37]). The shocks, applied in up to 2000 different simulations, are calibrated to capture country-specific conditions, namely the volatility observed over the past and the correlation between the different variables.

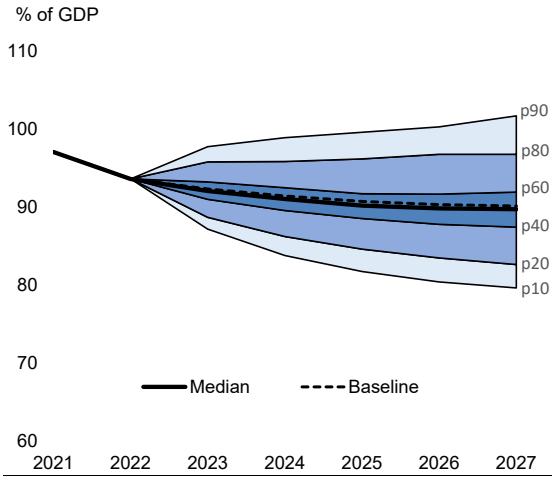
The results of stochastic projections are shown in a fan chart around the baseline. The cone covers 80% of all simulated debt paths over a 5-year horizon, with the lower and upper limits representing respectively the 10th and 90th percentiles of the distribution. This means that, if future shocks follow the same pattern as in the past, there is an 80% probability that debt will actually lie within that cone in the next 5 years. The chart excludes the debt paths derived from the 20% most extreme shocks, or 'tail events'. The different shades within the cone represent different portions of the overall distribution of debt paths.

The stochastic projections point to significant uncertainty over the debt trajectory in the euro area. For 2027, they suggest that, with an 80% probability, the euro area debt ratio will lie between 80% and 102% of GDP, a range of 22 pps. (Graph 2.19). The median debt ratio for

([37]) The methodology for stochastic debt projections is presented in Annex A7 of this report, and in Berti, K. (2013), Stochastic public debt projections using the historical variancecovariance matrix approach for EU countries, *European Economy — Economic Paper,* No. 480.

2027 is estimated at 90% of GDP, i.e. there is an equal probability that debt will be higher or lower than that level. Moreover, while the baseline points to a decline in the debt ratio over the next 5 years, the stochastic projections suggest with a 33% probability that debt might actually be higher in 2027 than it was in 2022.

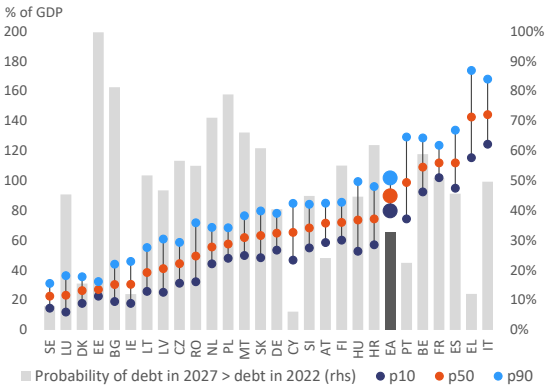
Graph 2.19: **Stochastic debt projections, euro area, 2022-2027**



Source: Commission services.

The degree of uncertainty varies greatly across countries. The results for individual countries are summarised in Graph 2.20. On the one hand, they indicate very low uncertainty for Estonia, where the debt ratio is likely to lie within a narrow range of 22% to 32% of GDP in 2027; moreover, debt in Estonia is clearly projected to increase, as indicated by the very high probability of debt in 2027 exceeding the 2022 level. At the other end of the spectrum, uncertainty appears to be particularly elevated for Greece, Hungary and Portugal: in Hungary, for instance, debt could lie anywhere between 50% and 100% of GDP by 2027, and there is a nearly equal chance that debt will increase or decrease from its current level. Such uncertainty around the baseline reflects a high historical volatility of macro-financial and fiscal conditions.

Graph 2.20: **Stochastic debt projections for EU Member States**



Notes: How to read this graph: for each country, there is an 80% probability that debt in 2027 will lie between the dark blue dot (the 10th percentile of the debt distribution) and the pale blue dot (the 90th percentile). The more these two points are distant, the higher the uncertainty. The median debt level in 2027 is indicated by the red dot. The grey bars indicate the probability with which debt will be higher in 2027 than it was in 2022.
Source: Commission services.

2.3. MEDIUM-TERM GOVERNMENT GROSS FINANCING NEEDS

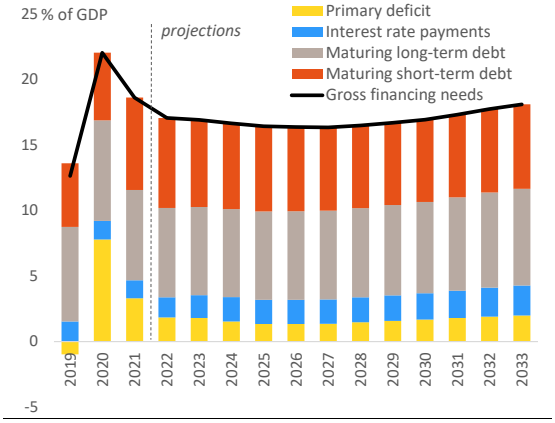
Projected gross financing needs (GFN) over the medium term serve as a measure of governments' upcoming liquidity challenges. While debt is a stock, GFN are a flow metric that provides complementary information. The projected trajectory of GFN indicates to what extent governments may need to use financial markets over the coming years to finance deficits or stock-flow adjustments, repay or roll over maturing debt and service their debt ([38]). Elevated GFN projections therefore suggest a higher vulnerability with regard to liquidity risks.

GFN in the EU are projected to remain above pre-pandemic level and rise mildly in the coming decade. Over the period 2024-2033, GFN should average 17% of GDP, 4 pps. above their 2019 level (Graph 2.21). The slowly upward trajectory projected for the next 10 years is driven by three trends. First, the need to amortise a slightly larger amount of long-term debt. Second, a rebound in primary deficits as from the late 2020s, reflecting mainly higher ageing-related

([38]) For a more elaborate description of GFN and their use for the assessment of short-term sustainability risks, see Chapter 1.

expenditure. And third, a gradual increase in interest payments, getting back by 2033 to their 2010s average of 2.3% of GDP. On the other hand, maturing short-term debt should broadly stabilise at around 6% of GDP, reflecting the recent lengthening of debt maturities.

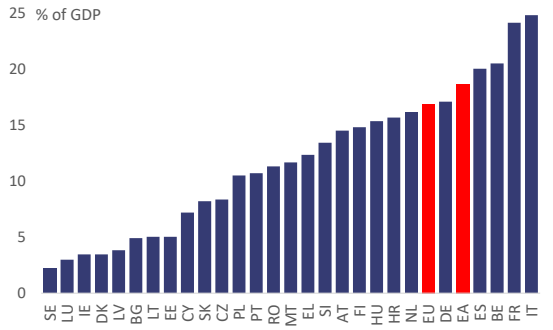
Graph 2.21: **General government gross financing needs and their drivers, baseline, EU**



Source: Commission services.

The GFN projections indicate larger liquidity challenges in high-debt Member States than the euro area average. In 4 euro area countries (Belgium, Spain, France and Italy), GFN are projected to exceed 20% of GDP on average between 2024 and 2033 under the baseline, above the euro area average of about 19% of GDP (Graph 2.22). As these countries are also projected to have high and increasing debt ratios, their potential vulnerability to liquidity risks adds to sustainability challenges. By contrast, for the 8 Member States with the lowest projected debt levels for 2033 under the baseline (Bulgaria, Denmark, Estonia, Ireland, Lithuania, Luxembourg, Latvia and Sweden), GFN would be limited to 5% of GDP at most.

Graph 2.22: **General government gross financing needs under the baseline, 2024-2033 average**



Source: Commission services.

2.4. OVERALL MEDIUM-TERM RISKS

2.4.1. Overall medium-term risk classification

This report entirely relies on the DSA to assess medium-term sustainability challenges. Unlike in the 2021 FSR, the assessment no longer combines the DSA and the S1 indicator – the latter now underpins the assessment of long-term sustainability risks (see Chapter 3 and Box 3.1). As discussed above, the DSA captures medium-term challenges in a comprehensive way, as it includes the impact of ageing-related costs, alternative scenarios and a wide range of possible shocks. Moreover, it takes into account not only projected debt paths but also their feasibility in light of past practice. These are the reasons why the Commission proposed, on 9 November 2022, to use the DSA risk classification as a basis for defining medium-term fiscal requirements under a reformed EU governance framework ([39]).

To establish the medium-term risk classification, decision trees extract risk signals from the deterministic and stochastic DSA projections. For the deterministic projections, the projected debt level in 10 years' time provides the starting point; however, the risk category derived from the debt level can be notched up or down, depending on the debt path and the available 'fiscal consolidation space'. Furthermore, when the stochastic projections point to medium or high risk, this can notch up the preliminary low or medium risk signal provided by the baseline (along

([39]) European Commission (2022), Communication on orientations for a reform of the EU economic governance framework, COM(2022) 583 final.

with additional scenarios and stress tests). However, neither stochastic projections nor additional scenarios and stress tests can notch *down* the risk signal resulting from the baseline (see Annex A4 for further details on the decision trees).

Based on this approach, 9 EU countries are deemed at high fiscal sustainability risk over the medium term. These are Belgium, Greece, Spain, France, Croatia, Italy, Hungary, Portugal and Slovakia (Table 2.6). In the case of France and Italy, every component of the DSA (i.e. the baseline and other deterministic scenarios, and the stochastic projections) points to high risk, mainly because their debts are well above 90% of GDP and increasing under most scenarios – a trend also largely confirmed by the stochastic projections. Belgium is in a similar situation, except that the country's very high debt would decline if the SPB increased back to historical standards. For Greece and Portugal, all scenarios indicate high risk because of the very high (although declining) debt level and the rather ambitious fiscal assumptions ([40]). For the four last countries, the baseline points to medium risk, but other vulnerabilities put them at high risk: Spain because of its very high debt and the sensitivity of the debt path, which would exceed the 2022 debt level by 2033 under adverse assumptions; Croatia because its debt is likely to increase in the next 5 years and would exceed 90% of GDP by the end of the projection period under a less favourable 'r-g' differential; Hungary because a weaker fiscal position than assumed in the baseline could raise its debt beyond 90% of GDP; and Slovakia because its large structural primary deficit is likely to maintain debt on an increasing path in the next 5 years.

In 10 other countries, medium-term risks are deemed medium. These are Czechia, Germany, Cyprus, Malta, the Netherlands, Austria, Poland, Romania, Slovenia and Finland. Among these countries, in Czechia**,** debt is projected to be on an increasing trend remaining below 60% of GDP under most scenarios, but with only moderate policy room for corrective measures if needed. In Germany, Malta, the Netherlands, Poland, Romania and Slovenia, debt is also on an increasing trend, but projected to exceed 60% of GDP both at unchanged policies and under some alternative scenarios; moreover, the stochastic projections point to significant uncertainty in the case of Romania and a risk that debt does not stabilise in the first five years of the projections in Slovenia. For Austria and Finland, debt would decline under the baseline but be vulnerable to adverse conditions, under which debt could increase well above 60% of GDP; for Finland, the classification also reflects the risk that debt will not decline by 2027. Finally, despite its downward debt trend, Cyprus is deemed at medium risk because the stochastic projections point to large uncertainty.

Finally, the remaining 8 Member States are found to be at low risk over the medium term. These are Bulgaria, Denmark, Estonia, Ireland, Latvia, Lithuania, Luxembourg and Sweden. In these countries, both the baseline and the stochastic projections point to low risk. This classification is not modified by the few sources of vulnerability. In particular, Latvia's debt would remain above 60% of GDP by 2033 if the consolidation forecast for 2023-2024 did not materialise, and Estonia's debt is on an upward path – but starting from an extremely low level.

([40]) However, the fiscal assumptions for Greece appear plausible considering that the country recorded an average structural primary surplus of 3.8% of GDP over the last 15 years.

2.4.2. Comparison with the 2021 FSR results

Debt projections

While most debt levels are initially lower than in the 2021 FSR, over the medium term nearly half of the Member States are projected to reach higher debt levels than projected in the FSR. In all but three countries (namely, Poland, Finland and Luxembourg), the debt levels expected for 2023 in the Commission 2022 autumn forecast are lower than in the 2021 FSR. This is mainly due to the stronger-than-expected recovery in 2021, the higher-than-expected inflation in 2022 and the higher inflation expectations for 2023 (Table 2.3). For the EU as a whole, the 2023 debt was revised downwards by more than 4 pps. of GDP. A large part of this revision is projected to carry over until 2032, when the difference in debt level between the two reports still amounts to 3 pps. of GDP for the EU. However, this masks two groups of countries: in a small majority of countries, the initial revision is projected to be preserved and even amplified over the medium term, while 12 countries are projected to see their debt increase compared with the FSR.

Table 2.3: **Baseline debt projections in the 2021 FSR and the 2022 DSM**

	Debt (Commission T+2 forecast) 2023			Debt (baseline projections) 2032		
	2021 FSR	2022 DSM		2021 FSR	2022 DSM	
BE	114.6	107.9	-6.7	133.6	118.7	-14.9
BG	26.8	23.6	-3.2	36.4	38.4	2.0
CZ	46.3	44.2	-2.1	67.1	50.3	-16.8
DK	38.0	32.8	-5.2	15.6	17.8	2.2
DE	68.1	66.3	-1.9	61.6	68.8	7.2
EE	21.4	19.3	-2.1	25.7	32.5	6.9
IE	51.1	41.2	-9.9	45.7	25.3	-20.4
EL	192.1	161.9	-30.1	154.7	118.0	-36.7
ES	116.9	112.5	-4.4	126.1	112.1	-14.0
FR	112.9	110.8	-2.0	122.3	119.4	-2.9
HR	77.9	67.2	-10.7	76.7	82.8	6.1
IT	151.0	143.6	-7.4	161.6	153.0	-8.6
CY	93.4	84.0	-9.4	77.8	48.2	-29.6
LV	49.8	44.0	-5.7	48.8	37.3	-11.4
LT	46.0	41.0	-4.9	39.4	38.9	-0.5
LU	25.4	26.0	0.6	18.2	23.0	4.8
HU	76.4	75.2	-1.2	68.1	79.4	11.3
MT	63.6	59.9	-3.7	73.2	62.9	-10.3
NL	56.1	52.4	-3.7	62.8	67.1	4.3
AT	77.6	76.6	-1.0	76.3	73.3	-3.0
PL	49.5	52.9	3.4	48.3	66.8	18.5
PT	122.7	109.1	-13.6	126.2	94.3	-32.0
RO	53.2	47.3	-5.8	76.9	59.4	-17.5
SI	76.0	69.6	-6.5	95.2	76.3	-18.9
SK	59.1	57.4	-1.7	72.2	78.5	6.3
FI	71.0	72.0	1.0	63.9	71.6	7.7
SE	31.2	29.4	-1.8	11.2	12.7	1.5
EU	89.1	84.9	-4.2	89.2	86.3	-2.9
EA	97.0	92.3	-4.7	99.0	94.5	-4.5

Source: Commission services.

Several factors explain the revisions in debt paths, including weaker potential growth and less favourable financing conditions expected over the medium term, leading to a less favourable snowball effect. For most countries and on aggregate, the potential growth outlook has been revised downwards, while financing conditions have substantially tightened, entailing an upward revision of the 'r-g' differential (Table 2.4). These more adverse assumptions highlight uncertainty, as well as the protracted impact of the pandemic and of Russia's war of aggression against Ukraine on economic activity and the tightening of monetary policy in a context of higher inflation. These factors play a particularly strong role in Poland, Estonia and Hungary. On the other hand, the largest downward revisions to debt paths (e.g. for Greece, Portugal, Cyprus and Ireland, all by more than 20 pps. of GDP) are accompanied by stronger assumed SPB positions over the medium term, in most cases along with unchanged or slightly more favourable assumptions for potential growth and the 'r-g' differential.

Table 2.4: **Main baseline assumptions in the 2021 FSR and the 2022 DSM (2024-2032 averages)**

	Structural primary balance			Potential growth			Nominal implicit interest rate			'r-g' differential		
	2021 FSR	2022 DSM		2021 FSR	2022 DSM		2021 FSR	2022 DSM		2021 FSR	2022 DSM	
BE	-3.6	-2.7	0.9	1.0	1.1	0.1	1.0	1.9	0.9	-1.9	-2.1	-0.2
BG	-1.9	-2.3	-0.4	1.6	1.7	0.1	1.9	2.2	0.3	-2.2	-2.6	-0.4
CZ	-3.1	-0.9	2.2	1.7	1.5	-0.3	2.0	3.5	1.5	-1.9	-1.8	0.1
DK	2.5	1.7	-0.7	1.4	0.8	-0.6	1.3	1.7	0.4	-2.1	-1.8	0.3
DE	-0.4	-1.4	-1.1	1.0	0.7	-0.3	0.4	1.3	0.9	-2.5	-2.7	-0.1
EE	-1.8	-1.9	-0.2	2.9	1.9	-1.0	0.5	2.3	1.8	-4.7	-2.6	2.0
IE	-0.5	1.0	1.5	3.6	3.6	0.0	1.3	2.0	0.7	-3.9	-4.8	-0.8
EL	0.5	2.5	2.0	1.3	0.8	-0.4	1.2	2.5	1.3	-1.3	-0.9	0.4
ES	-2.5	-1.1	1.4	0.9	0.6	-0.2	1.5	2.2	0.7	-0.9	-1.0	-0.1
FR	-2.9	-2.0	0.9	0.9	0.5	-0.4	0.8	2.5	1.7	-1.8	-1.2	0.6
HR	-1.4	-2.0	-0.7	1.4	0.8	-0.6	1.4	2.3	0.9	-1.8	-0.7	1.1
IT	-2.1	-0.5	1.6	1.0	0.7	-0.4	1.8	3.1	1.3	-0.9	-0.1	0.9
CY	-0.2	2.4	2.6	2.0	2.0	0.0	1.2	2.1	0.8	-2.2	-2.3	0.0
LV	-1.6	-0.3	1.3	1.8	1.4	-0.5	0.9	1.6	0.7	-2.9	-3.2	-0.2
LT	-0.4	-0.3	0.1	2.2	2.1	-0.1	0.7	1.6	0.9	-3.6	-3.1	0.5
LU	0.8	0.6	-0.3	2.1	1.6	-0.5	0.5	1.4	0.9	-3.8	-3.1	0.7
HU	-1.3	-1.1	0.2	2.9	2.2	-0.7	3.5	5.7	2.2	-2.8	-0.8	2.0
MT	-3.3	-2.5	0.8	2.6	3.1	0.5	1.5	2.4	0.9	-3.0	-3.5	-0.5
NL	-1.2	-2.5	-1.3	0.7	1.0	0.3	0.4	1.3	0.9	-2.0	-3.0	-1.0
AT	-0.8	-0.6	0.2	1.2	1.0	-0.2	0.9	1.8	0.8	-2.2	-2.3	-0.1
PL	-1.4	-1.4	0.0	2.9	2.0	-0.9	2.2	6.0	3.8	-3.3	-0.4	2.9
PT	-0.8	1.4	2.2	0.8	1.0	0.2	1.6	2.5	0.9	-0.9	-0.9	0.0
RO	-4.2	-2.2	2.1	2.8	2.0	-0.8	4.5	6.6	2.1	-2.0	-2.0	0.0
SI	-4.3	-2.2	2.1	2.8	2.2	-0.6	1.1	2.0	0.8	-3.3	-3.1	0.2
SK	-2.5	-3.3	-0.8	2.6	1.4	-1.2	1.5	2.2	0.7	-3.0	-3.0	0.1
FI	-0.7	-0.8	0.0	1.2	1.0	-0.2	0.5	1.4	0.9	-2.8	-2.0	0.8
SE	1.5	1.5	0.0	1.7	1.5	-0.2	0.6	1.3	0.7	-3.0	-2.5	0.5
EU	-1.4	-1.1	0.3	1.2	1.0	-0.1	1.1	2.3	1.2	-2.1	-1.8	0.3
EA	-1.6	-1.3	0.3	1.0	0.9	-0.1	0.9	2.0	1.1	-2.0	-1.9	0.1

Source: Commission services.

Overall risk classification

While the number of countries at low risk over the medium term is unchanged compared with the 2021 FSR, two more countries are at medium risk and two less are at high risk. The new medium-term classification shows two movements that exactly offset each other between the low- and medium-risk categories: a less favourable risk assessment for Poland, and an opposite move for Bulgaria (Table 2.5). Moreover, three countries exit the high-risk category (Malta, Romania and Slovenia), while Hungary joins it.

The worsened risk classifications reflect less favourable macro-financial outlooks or fiscal assumptions than in the 2021 FSR, while the improved classifications mainly result from more favourable fiscal assumptions. Poland and Hungary move to a worse risk category because the weaker potential growth outlook and the tightened financing conditions weigh on their debt dynamics (see Table 2.4). On the other hand, the classification for Bulgaria improves to low risk because the stochastic projections no longer flag high uncertainty. Malta and Slovenia exit the high-risk category as, with improved SPB assumptions (and growth assumptions for Malta) over the medium term, their debts are no longer projected to exceed 90% of GDP under any of the scenarios. Finally, Romania was classified at high risk in the 2021 FSR because of the S1 indicator, but that indicator is now used for the long-term risk assessment – and it would in any case have dropped below the high-risk threshold, based on the forecast of an improved SPB in 2024, after the withdrawal of support measures.

Table 2.5: **Overall medium-term risk classifications in the 2021 FSR and the 2022 DSM**

2021 FSR \ 2022 DSM	low	medium	high
low	DK, EE, IE, LV, LT, LU, SE	**PL**	
medium	**BG**	CZ, DE, CY, NL, AT, FI	**HU**
high		**MT, RO, SI**	BE, EL, ES, FR, HR, IT, PT, SK

Note: The countries in bold have changed classifications between the two reports.
Source: Commission services.

Table 2.6: **Heat map of medium-term fiscal sustainability risks in EU countries**

	Heat map for medium-term risks in the EU countries - Debt sustainability analysis (DSA)																											
	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Baseline (no-fiscal-policy-change scenario)	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	121.6	40.3	52.2	16.3	70.3	33.6	25.3	125.4	112.4	121.1	84.9	155.9	45.4	36.9	39.6	23.5	81.5	63.4	70.4	74.4	69.0	94.3	62.8	79.3	82.6	71.5	10.9
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2022	2033	2033	2033	2022	2023	2023	2024	2033	2033	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
Stochastic projections	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW
Probability of debt in 2027 > debt in 2022	59%	81%	57%	16%	40%	100%	12.0%	12%	46%	51%	62%	50%	6%	47%	52%	45%	45%	66%	71%	24%	79%	22%	55%	45%	61%	55.1%	8%
Difference between the 10th and 90th percentile in 2027 (p.p. of GDP)	36.2	25.0	27.3	17.9	24.7	9.7	28.1	58.4	38.9	21.7	39.0	43.651	38.1	35.8	29.3	24.3	46.7	26.7	24.4	26.4	20.4	55.0	39.6	29.2	31.3	25.4	16.6
'Historical SPB' scenario	MEDIUM	LOW	MEDIUM	LOW	LOW	LOW	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	106.5	26.7	52.7	13.0	53.1	25.4	42.0	115.4	112.5	119.8	76.2	142.2	50.6	46.6	46.7	15.9	74.1	49.0	54.8	69.5	73.4	101.3	67.0	73.3	75.2	64.7	12.7
Debt peak year	2024	2027	2033	2022	2022	2029	2022	2022	2022	2033	2033	2022	2022	2033	2033	2024	2022	2025	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	88%	90%	35%	69%	53%	77%	80%	21%	77%	91%	53%	46%	30%	73%	61%	79%	59%	52%	90%	85%	86%	41%	82%	66%	55%	86%	61%
'Adverse r-g' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	LOW	LOW	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW
Debt level (2033)	130.5	42.8	56.2	18.3	75.8	35.7	27.5	134.5	121.7	130.7	91.5	169.1	50.2	39.9	42.6	25.3	88.3	68.1	75.2	80.3	74.5	102.4	67.4	85.1	87.4	76.9	12.3
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2023	2033	2024	2033	2033	2033	2033	2033	2022	2033	2033	2033	2033	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
'Financial stress' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	123.1	40.5	52.6	16.6	70.8	33.8	25.4	126.5	114.4	123.0	85.3	160.6	45.7	37.2	39.9	23.6	82.2	63.9	70.7	75.0	69.5	96.0	63.2	79.8	82.9	71.9	11.0
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2023	2023	2024	2033	2033	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
'Lower SPB' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	MEDIUM	HIGH	LOW	MEDIUM	LOW	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	127.5	45.6	60.8	18.0	70.3	34.1	36.3	144.5	114.6	127.1	85.6	164.4	52.3	66.0	43.2	23.3	96.3	73.2	73.4	84.8	80.6	104.0	75.3	88.7	82.1	72.1	15.5
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2033	2033	2023	2033	2033	2033	2033	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	100%	100%	53%	76%	89%	94%	70%	39%	78%	97%	59%	71%	30%	93%	55%	85%	74%	86%	100%	100%	90%	44%	86%	93%	61%	97%	72%
Overall MEDIUM-TERM risk category	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW

Source: European Commission.

3. LONG-TERM FISCAL SUSTAINABILITY ANALYSIS

Main takeaways

The new long-term risk classification is based on two complementary fiscal gap indicators that show the fiscal effort required to achieve two specific long-term fiscal goals*. The S2 indicator measures the fiscal effort needed to stabilise public debt over the long term. The revised S1 indicator measures the fiscal effort required to bring the government debt-to-GDP ratio to 60% in 2070, hence capturing vulnerabilities due to high debt levels. The methodological approach differs from the Fiscal Sustainability Report 2021, which determined long-term fiscal risks based on the S2 indicator and the DSA results. The revised S1 indicator provides a better long-term complement to the S2 indicator, as based on a similar time horizon (see Box 3.1).*

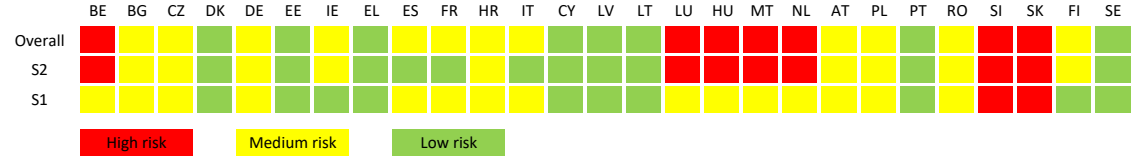
Combining the S2 and S1 results, the overall long-term fiscal sustainability risks are considered to be high in seven Member States. *The driving factor behind the high-risk assessment is the S2 indicator and largely reflects increasing ageing costs. The latter is due to the significant projected increase in pension spending (largest component in Luxembourg, Hungary, Malta, Slovenia and Slovakia), as well as in healthcare and/or long-term care spending (largest component in Belgium and the Netherlands).*

The overall long-term fiscal sustainability risks are considered to be medium in twelve Member States. *The driving factor behind this risk assessment is generally the S2 indicator, reflecting projected increases in ageing costs (largest component in Czechia, Germany, Ireland, Austria and Finland) and/or an unfavourable initial budgetary position (largest component in Bulgaria, Croatia, Poland and Romania). Only in the cases of Spain, France and Italy, the overall risk classification is modified by the S1 indicator, with a significant fiscal effort needed to reduce the debt-to-GDP ratio from current high levels to 60% by 2070.*

The overall long-term fiscal sustainability risks are considered to be low in eight Member States*. This reflects either the expected reducing long-term impact of past pension reforms (as in Greece and Portugal) and/or the favourable initial budgetary position (as in Denmark, Estonia, Latvia, Lithuania and Sweden in terms of debt level, or Cyprus in terms of structural primary balance).*

Compared to the 2021 Fiscal Sustainability Report, long-term risks remained unchanged in twenty Member States, are higher in one Member State and lower in six Member States. *For the Netherlands, long-term risks are now high compared to medium in 2021 due to a less favourable initial budgetary position. The lower long-term risk classifications are due to an improvement of the value of the S2 indicator (Czechia, Spain and Italy), capturing a more favourable initial budgetary position, and/or reflect the methodological change using the revised S1 instead of the DSA as a complementary indicator to the S2 in the overall risk classification (for Greece, Cyprus and Portugal). However, the more favourable assessment for these countries is conditional to them maintaining the comfortable structural primary balance expected in 2024 over the long term.*

Table 3.1: **Overview of overall long-term risk classifications, S2 and S1**



Source: Commission services.

This chapter assesses fiscal sustainability risks over the long term. The assessment is based on two complementary fiscal gap indicators that show the upfront fiscal adjustment required to achieve two specific long-term fiscal goals:

- the *S2 indicator* measures the fiscal effort required to stabilise government debt in the long term;
- the *S1 indicator* measures the fiscal effort required to bring the government debt-to-GDP ratio to 60% by 2070.

This approach differs from the one used in the 2021 Fiscal Sustainability Report, which assessed long-term risks based on the S2 indicator and the DSA. The time horizon of the S1 indicator has been extended so that it now provides a better complement to the S2 signal than the medium-term-oriented DSA. These methodological revisions and the rationale behind them are discussed in Box 3.1 at the end of this chapter.

The Chapter is structured as follows. Section 3.1 describes the results for the S2 indicator, Section 3.2 focuses on the findings of the S1 indicator, before Section 3.3 concludes with the overall risk classification.

3.1. THE S2 INDICATOR

S2 – baseline

The S2 indicator measures the permanent adjustment of the structural primary balance (SPB) in 2024 that would be required to stabilise public debt over the long term. It consists of two components, namely (i) the 'initial budgetary position', which measures the gap between the initial SPB and the debt-stabilising structural primary balance and (ii) the future ageing costs.

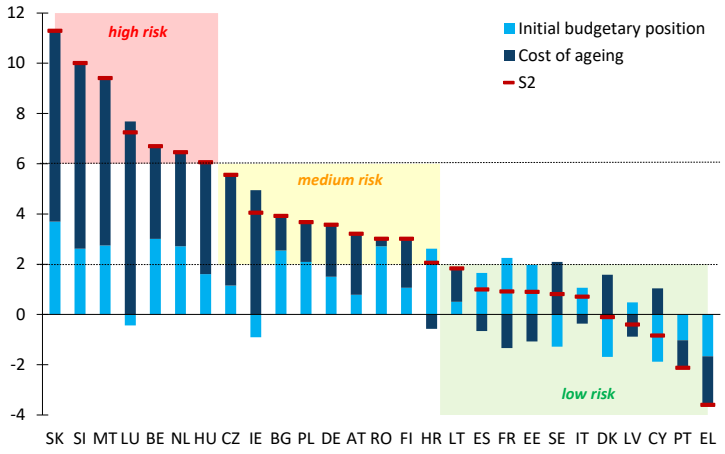
The S2 indicator identifies seven Member States as having high fiscal risk in the long term (see Graph 3.1, Table 3.1)**.** Member States are considered at high risk if an overall adjustment of at least 6 pps. of GDP would be needed to stabilise debt in the long term. For Slovakia and Slovenia the required adjustment is estimated to exceed 10 pps. of GDP. For Malta, Luxembourg, Belgium, the Netherlands and Hungary the S2 implies an adjustment between 6.1 and 9.4 pps. of GDP.

Based on the S2, nine Member States are considered to face medium fiscal risks in the long term. Member States are considered at medium risk if an overall adjustment between 2 and 6 pps. of GDP would be needed to stabilise debt in the long term. The S2 indicator points to medium risks in Czechia, Ireland, Bulgaria, Poland, Germany, Austria, Romania, Finland, and Croatia.

The S2 signals low fiscal risks for eleven countries in the long term. Member States are considered at low risk if an overall adjustment below 2 pps. of GDP would be needed to stabilise debt in the long term. According to the S2 indicator, the following countries are considered at low risk: Lithuania, Spain, France, Estonia, Sweden, Italy, Denmark, Latvia, Cyprus, Portugal and Greece.

For a majority of countries, both the initial budgetary position and the projected ageing costs matter for the S2 indicator. The 'initial budgetary position' measures the gap between the initial SPB and the debt-stabilising structural primary balance. It thus ignores future ageing costs, which are measured separately. The sum of initial budgetary position and the projected ageing costs determines the overall S2 value. In all Member States except for Greece and Portugal, a fiscal adjustment is required based on at least one of the two components. In Denmark, Ireland, Greece, Cyprus, Luxembourg, Portugal and Sweden, the initial budgetary position is negative, which means that the structural primary balance could deteriorate without destabilising the debt ratio – not accounting for any ageing costs (see Table 3.1). In Estonia, Greece, Spain, France, Croatia, Italy, Latvia and Portugal, the projected ageing costs are negative, i.e. declining, which implies that a lower fiscal adjustment is feasible to stabilise debt all else being equal.

Graph 3.1: **S2 – baseline (pps. of GDP)**



Source: Commission services.

For the EU as a whole, both the unfavourable initial budgetary position and the ageing costs are important drivers of the S2 indicator. In the EU as a whole, S2 indicates that an average fiscal adjustment of 2.7 pps. of GDP would be required to stabilise debt in the long term. The initial budgetary situation necessitates an adjustment of 1.4 pps. of GDP, while ageing costs add another 1.3 pps. to the sustainability gap.

For high-risk countries, ageing costs are the main determinant of the S2. For Slovakia, Luxembourg, Slovenia and Malta, the ageing component exceeds 6 pps. of GDP, meaning that ageing costs alone suffice to put these countries in the high-risk category. The projected increase in ageing costs in those countries mainly stems from pension expenditure and, to a lesser extent, from healthcare and long-term care expenditure (see Table 3.2).

Table 3.2: **S2 – breakdown (pps. of GDP)**

	S2	S2 components					
		Initial budgetary position	Cost of ageing	Cost of ageing components			
				Pen-sions*	Health-care	Long-term care	Edu-cation
BE	6.7	3.0	3.7	1.6	0.5	1.9	-0.2
BG	3.9	2.5	1.4	0.8	0.2	0.1	0.3
CZ	5.5	1.1	4.4	1.9	0.7	1.3	0.4
DK	-0.1	-1.7	1.6	-1.5	0.6	2.8	-0.3
DE	3.6	1.5	2.1	1.0	0.4	0.1	0.5
EE	0.9	2.0	-1.1	-1.7	0.6	0.3	-0.3
IE	4.0	-0.9	4.9	2.3	1.2	1.6	-0.1
EL	-3.6	-1.7	-1.9	-2.1	0.6	0.0	-0.5
ES	1.0	1.7	-0.7	-2.0	1.1	0.6	-0.4
FR	0.9	2.2	-1.3	-2.2	0.6	0.7	-0.4
HR	2.0	2.6	-0.6	-1.1	0.5	0.1	-0.1
IT	0.7	1.1	-0.4	-1.7	0.8	0.8	-0.3
CY	-0.8	-1.9	1.0	0.9	0.3	0.2	-0.4
LV	-0.4	0.5	-0.9	-1.1	0.2	0.1	-0.1
LT	1.8	0.5	1.3	0.2	0.5	0.6	0.0
LU	7.2	-0.4	7.7	6.0	0.9	1.2	-0.4
HU	6.1	1.6	4.5	3.2	0.6	0.5	0.1
MT	9.4	2.7	6.7	3.1	2.2	1.4	-0.1
NL	6.5	2.7	3.7	1.1	0.6	2.1	-0.1
AT	3.2	0.8	2.4	-0.1	1.0	1.5	0.0
PL	3.7	2.1	1.6	-0.7	1.2	1.2	0.0
PT	-2.1	-1.0	-1.1	-2.9	1.3	0.4	0.2
RO	3.0	2.7	0.3	-0.7	0.7	0.3	-0.1
SI	10.0	2.6	7.4	5.4	1.0	1.0	0.1
SK	11.3	3.7	7.6	4.1	1.6	1.6	0.4
FI	3.0	1.1	1.9	0.5	0.6	1.6	-0.8
SE	0.8	-1.3	2.1	0.0	0.6	1.8	-0.4
EU	2.7	1.4	1.3	-0.2	0.7	0.9	-0.1
EA	2.7	1.5	1.2	-0.2	0.7	0.8	-0.1

* net of taxes on pensions and compulsory social security contributions paid by pensioners

Source: Commission services.

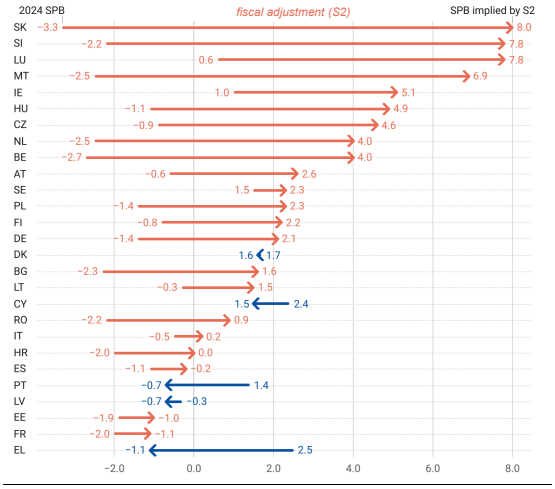
S2 – implied structural primary balance

In most countries a significant improvement of the SPB would be needed to stabilise the debt ratio in the long term. The required SPB to stabilise the debt ratio in the long term can be calculated as the sum of the structural primary balance in 2024 – the end of the forecast period – and the fiscal adjustment required to stabilise the debt ratio in the long term as measured by S2. As shown in Graph 3.2, to stabilise debt in the long run an improvement of the SPB of around 8 pps. of GDP would be needed for Slovakia, Slovenia and Luxembourg, of about 7 pps. for Malta and of around 4-5 pps. of GDP in the cases of Ireland, Hungary, Czechia, the Netherlands and Belgium.

For many Member States, the S2 indicator implies particularly demanding fiscal positions compared with historical evidence. A comparison with past fiscal performance gives an idea about the plausibility of effectively achieving the required SPBs. The required SPB can be compared with the distribution of available SPBs for each country since 1980. ([41]) This allows assessing how realistic the required fiscal position is, relative to actual past performance. In particular, it identifies the cases where the S2 implies an SPB that would be challenging to sustain in the long term, assuming this required SPB can be achieved in the first place. Graph 3.3 orders the required SPBs according to their percentile ranks. It shows that the required SPB has never been achieved in Slovakia, Slovenia, Poland, Austria, the Netherlands, Malta, Luxembourg, Lithuania and Czechia. In Hungary, Ireland, the SPB implied by S2 was reached only occasionally; in Romania and Germany, at most a couple of times over the past three decades; in Belgium, Croatia and Cyprus about one third of the time.

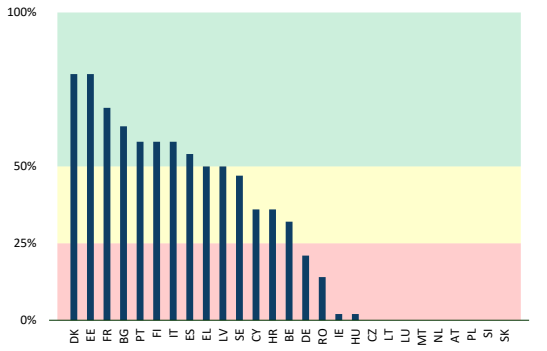
([41]) For some countries, data are not available for the entire period since 1980.

Graph 3.2: **S2 – required structural primary balance (% of GDP)**



Source: Commission services.

Graph 3.3: **S2 – plausibility of the required structural primary balance (% of cases achieved in the past)**

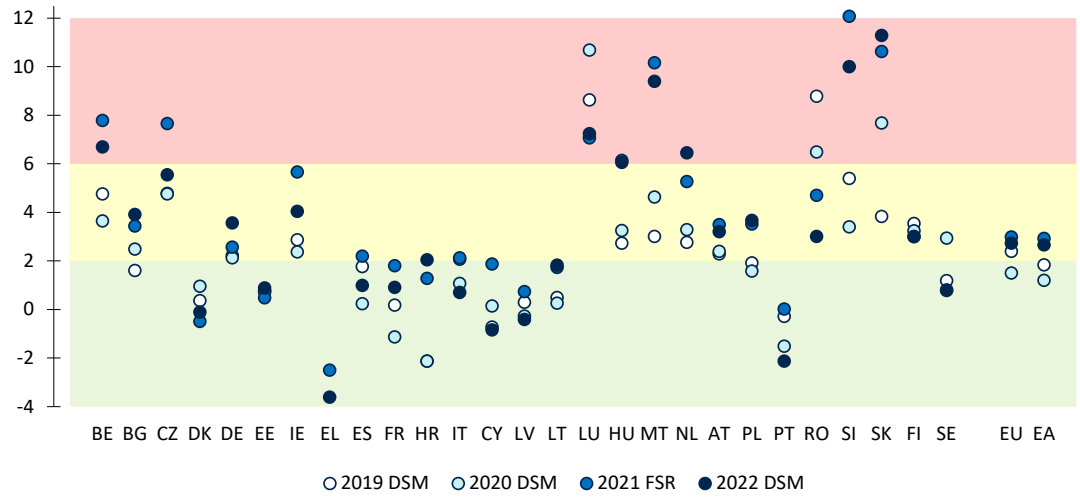


Based on available SPBs since 1980.
Source: Commission services.

S2 – comparison with previous results

For the EU on average, the S2 indicator has declined compared with last year, but increased compared with the years before. Graph 3.4 compares the latest S2 with those in the 2019 and 2020 Debt Sustainability Monitors (DSM) and in the 2021 Fiscal Sustainability Report. The latest S2 values are for the EU on average higher than in 2019 (+0.3 pp. of GDP) and 2020 (+ 1.2 pps. of GDP), but slightly lower than in 2021 (-0.3 pp. of GDP). Compared to the 2021 FSR, the largest negative differences are recorded in Cyprus, Czechia, Portugal, Slovenia, Romania, Greece, Ireland and Italy. The Member States that recorded a higher S2 compared to the 2021 FSR are the

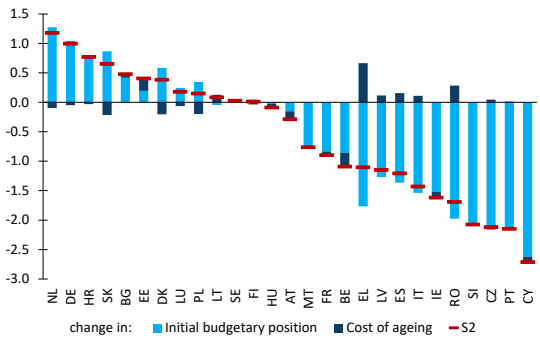
Graph 3.4: **S2 – comparison across recent Commission forecasts**



• No S2 indicator was calculated for EL in the 2019 and 2020 DSMs;
• 2019 DSM: Commission 2019 autumn forecast & 2018 Ageing Report (ageing costs 2022-2070);
• 2020 DSM: Commission 2020 autumn forecast & 2018 Ageing Report (updated for HR, IT, RO & SK to reflect pension reforms; ageing costs included once the pre-crisis SPB was projected to be reached);
• 2021 FSR: Commission 2021 autumn forecast & 2021 Ageing Report (ageing costs 2024-2070).
Source: Commission services.

Netherlands, Germany, Slovakia and Croatia. The S2 risk classification ranges from medium – in the 2021 FSR – to high for the Netherlands and from low to medium for Croatia. For the remaining Member States, the classification either improves, i.e. for Czechia (high to medium) and for Spain and Italy (medium to low), or remains stable.

Graph 3.5: **S2 – difference to 2021 FSR (pps. of GDP)**



Source: Commission services.

The decrease in the S2 in several countries compared to previous year is mainly due to an improvement of the initial budgetary position, i.e. a more favourable structural primary balance. The 2021 FSR was based on the Commission 2021 autumn forecast and on the projections from the 2021 Ageing Report ageing projections. Graph 3.5 provides a comparison with the S2 calculated in the 2021 FSR, including a breakdown of the difference between the initial budgetary position and ageing costs. It shows that the SPB is the key driver behind the changes in the S2, causing the S2 to increase in about half of the Member States and decrease in the others. In absolute terms, the more favourable SPB for Cyprus, Czechia, Portugal, Slovenia, Romania, Greece, Ireland and Italy reduced the S2 by between 1.5 pps. and 2.5 pps. of GDP.

S2 – sensitivity analysis

Since the S2 indicator is sensitive to changes in key assumptions, four sensitivity scenarios were run. Long-term fiscal projections are surrounded by uncertainty. This uncertainty can be assessed by comparing the baseline results with alternative scenarios. Four such scenarios are considered. Box 3.2 provides the technical assumptions for each of these scenarios, as well as the detailed results. Graph 3.6 presents the results in terms of deviation from the baseline.

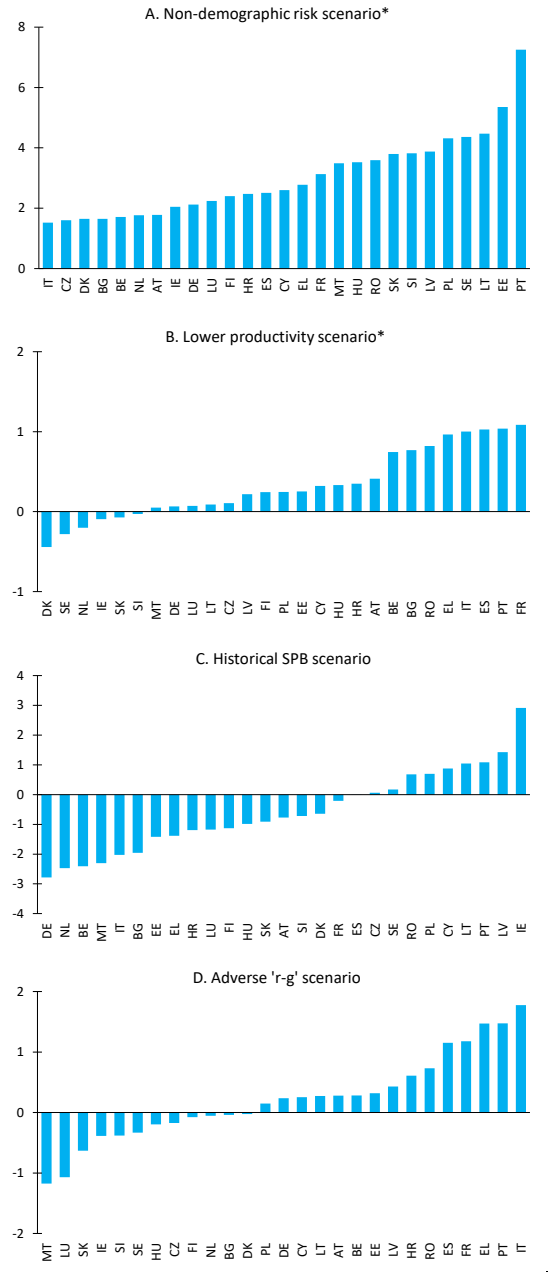
- The **non-demographic risk scenario** adjusts the healthcare and long-term care expenditure projections for possible developments in non-demographic factors such as technological

progress and convergence process. Under this scenario, the S2 would be considerably higher in all Member States (see Graph 3.6-A). For Portugal, Estonia, Lithuania, Sweden and Poland, the S2 would be at least 4 pps. of GDP higher than the baseline result. Compared to the baseline, six additional countries are considered at high risk, namely Czechia, Estonia, Ireland, Lithuania, Poland, and Romania. Moreover, Spain, France, Italy, Latvia, Portugal and Sweden are considered at medium risk compared to low risk in the baseline.

- The **lower productivity scenario** determines the S2 value in case ageing cost projections are based on lower-than-assumed productivity growth. For a majority of countries, the S2 value would be limitedly affected by such scenario (see Graph 3.6-B), with the impact notably reflecting pension benefit indexation rules. For most countries, this scenario would increase the S2 indicator. The adverse impact of lower productivity is highest in France, Portugal, Spain Italy and Greece (around 1 pp. of GDP higher than in the baseline).

- The **historical SPB scenario** assumes that the SPB converges to its historical average level, thus improving the initial budgetary position when the SPB forecast for 2024 is below the historical average, as is the case for most countries. Convergence to past fiscal performance significantly reduces the fiscal effort required to stabilise debt over time (see Graph 3.6-C). For Germany, the Netherlands, Belgium, Malta, Italy and Bulgaria the S2 is around 2 pps. of GDP lower than in the baseline. Under this scenario, the risk classification would deteriorate in some countries, namely from low to medium risk in Lithuania and from medium to high risk in Ireland. At the same time, the risk classification would improve in several countries, namely from high to medium risk in Belgium, Hungary and the Netherlands and from medium to low risk in Bulgaria, Germany, Croatia and Finland.

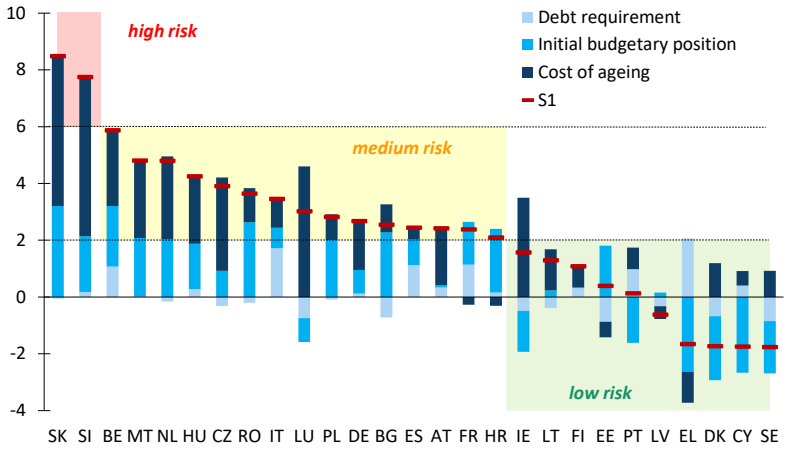
Graph 3.6: **S2 – sensitivity analysis (deviations from baseline in pps. of GDP)**



*2021 Ageing Report scenario; see Box 3.2.
Source: Commission services.

The **adverse 'r-g' scenario** assumes a 1 pp. higher difference between interest rates and GDP growth. This implies a less favourable snowball effect and, especially for countries with high debt stocks, a higher required fiscal adjustment to stabilise the debt ratio. Italy, Portugal, Greece, France and Spain would be the most affected if the interest-rate growth differential were indeed to widen (see

Graph 3.7: **S1 – baseline (pps. of GDP)**



Source: Commission services.

Graph 3.6-D). Their S2 value would go up by more than 1 pp. of GDP since a larger improvement in the SPB would be needed to counteract the impact on the debt ratio of a higher r-g. Under this scenario, Spain, Italy, France and Latvia move from low to medium risk, while Hungary moves from high to medium risk.

3.2. THE S1 INDICATOR

S1 – baseline

The new S1 indicator measures the permanent fiscal effort needed in 2024 to bring the debt-to-GDP to 60% by 2070. The S1 indicator consists of three components, namely (i) the 'initial budgetary position', which measures the gap between the 2024 SPB and the debt-stabilising structural primary balance, (ii) the debt requirement, which is related to the distance of the current debt-to-GDP ratio to the 60% reference value and (iii) the future ageing costs.

According to the S1 indicator, two Member States are identified as having high risks in the long term. Member States are considered at high risk if an overall adjustment of more than 6 pps. of GDP would be needed to bring debt to 60% of GDP by 2070. The two high risk countries are Slovakia and Slovenia with an adjustment requirement of around 8 pps. of GDP (see Graph 3.7).

The S1 indicator signals medium fiscal risk for fifteen Member in the long term. Member States are considered at medium risk if an overall adjustment between 2 and 6 pps. of GDP would be needed to bring debt back to 60% of GDP by 2070. The following 14 countries fall in the medium risk category: Belgium, Malta, the Netherlands, Hungary, Czechia, Romania, Italy, Luxembourg, Poland, Germany, Bulgaria, Spain, Austria, France and Croatia.

Ten Member States are considered to have low fiscal risks in the long term according to the S1 indicator. Member States are considered at medium risk if an overall adjustment below 2 pps. of GDP would be needed to bring debt to 60% of GDP by 2070. According to the S1 indicator, the low risk countries are: Ireland, Lithuania, Finland, Estonia, Portugal, Latvia, Greece, Denmark, Cyprus and Sweden.

For the EU as a whole, the S1 is driven in particular by ageing costs followed by the initial budgetary position and the debt requirement. Table 3.3 breaks down the overall S1 value into its three components. For the EU as a whole, the average S2 of 2.6 pps. of GDP is composed of (i) 1.3 pps. of GDP to absorb the budgetary impact of rising ageing costs – in particular healthcare and long-term care expenditure –, (ii) 0.8 pp. to close the gap between the 2024 SPB and the debt-stabilising structural primary balance and (iii) 0.6 pp. to bring government debt down from an

expected 84.1% of GDP in 2024 to 60% in 2070. This average hides important country differences.

Table 3.3: **S1 – breakdown (pps. of GDP)**

	S1	S1 components						
		Initial budgetary position	Debt require-ment	Cost of ageing	Cost of ageing components			
					Pen-sions*	Health-care	Long-term care	Edu-cation
BE	5.9	2.1	1.1	2.7	1.4	0.4	1.1	-0.2
BG	2.5	2.3	-0.7	1.0	0.5	0.2	0.1	0.2
CZ	3.9	0.9	-0.3	3.3	1.6	0.6	0.8	0.3
DK	-1.7	-2.3	-0.7	1.2	-1.1	0.5	2.0	-0.2
DE	2.7	0.8	0.1	1.7	0.9	0.3	0.2	0.4
EE	0.4	1.8	-0.9	-0.5	-1.0	0.5	0.2	-0.2
IE	1.6	-1.4	-0.5	3.5	1.9	0.8	0.9	-0.1
EL	-1.7	-2.6	2.1	-1.1	-1.2	0.5	0.0	-0.4
ES	2.4	0.9	1.1	0.4	-0.5	0.9	0.4	-0.4
FR	2.4	1.5	1.1	-0.3	-0.9	0.5	0.4	-0.3
HR	2.1	2.2	0.2	-0.3	-0.6	0.4	0.1	-0.2
IT	3.5	0.7	1.7	1.0	0.0	0.7	0.6	-0.2
CY	-1.7	-2.7	0.4	0.5	0.6	0.2	0.1	-0.4
LV	-0.6	0.2	-0.3	-0.5	-0.7	0.3	0.1	-0.1
LT	1.3	0.2	-0.4	1.5	0.6	0.4	0.4	0.0
LU	3.0	-0.8	-0.7	4.6	3.7	0.6	0.7	-0.4
HU	4.2	1.6	0.3	2.4	1.7	0.5	0.3	0.0
MT	4.8	2.1	0.0	2.7	1.1	1.2	0.7	-0.3
NL	4.8	2.0	-0.2	2.9	0.9	0.5	1.6	-0.1
AT	2.4	0.1	0.3	2.0	0.3	0.7	1.0	0.0
PL	2.8	2.0	-0.1	0.9	-0.6	0.8	0.7	-0.1
PT	0.1	-1.6	1.0	0.8	-0.7	1.1	0.3	0.1
RO	3.6	2.6	-0.2	1.2	0.5	0.6	0.2	-0.1
SI	7.7	2.0	0.2	5.6	4.1	0.8	0.6	0.0
SK	8.5	3.2	-0.1	5.3	2.9	1.2	0.9	0.3
FI	1.1	0.0	0.3	0.7	-0.1	0.4	1.1	-0.7
SE	-1.8	-1.8	-0.8	0.9	-0.2	0.4	1.1	-0.4
EU	2.6	0.8	0.5	1.3	0.2	0.5	0.6	-0.1
EA	2.8	0.9	0.7	1.3	0.3	0.5	0.5	-0.1

* net of taxes on pensions and compulsory social security contributions paid by pensioners
Source: Commission services.

As for S2, for most countries and in particular for those with the highest S1 values, ageing costs are the main determinant of S1. In sixteen countries, the increase in ageing costs by 2070 is the main driver of the S1 indicator. A high ageing cost contribution is primarily driven by rising pension expenditure (e.g. for Slovenia, Luxembourg, Slovakia, Ireland and Czechia), though higher spending for healthcare and long-term care also play a role. In fact, healthcare and long-term care spending are estimated to push up S1 for all Member States, while falling pension expenditure reduces the sustainability gap in several cases, reflecting past pension reforms.

In most Member States, the unfavourable budgetary position also increases the S1 indicator. The unfavourable budgetary position in 2024 causes debt to increase in 20 Member States in 2024. Bridging the gap with the debt-stabilising SPB requires an improvement of the SPB of about 2-3 pps. of GDP in Slovakia, Romania, Bulgaria, Croatia, Malta, Slovenia and the Netherlands Seven countries can allow their SPB to deteriorate to a varying extent before debt stabilises all else being equal.

The government debt ratio in 2024 exceeding the 60% threshold further leads to an increase in the S1 in about half of the countries. Since the S1 indicator requires debt ratios to converge to 60% of GDP, the larger the gap to this mark, the larger the required fiscal adjustment. For countries below the 60% mark, the required effort is negative, i.e. a deterioration of the SPB is compatible with reaching the 60% of GDP target. On the other hand, countries with debt above 60% of GDP in 2024 need to improve their SPB. Projected debt ratios for 2024 range from 156.9% of GDP for Greece to 21.9% for Estonia. As a result, they have the largest and smallest debt requirement contributions to S1, 2.1 pps. and -0.9 pp. of GDP respectively (see Table 3.3). Debt convergence requires a fiscal adjustment of 1-2 pps. of GDP in Italy, Portugal, Spain, Belgium and France, which, together with Greece, have the highest projected debt for 2024.

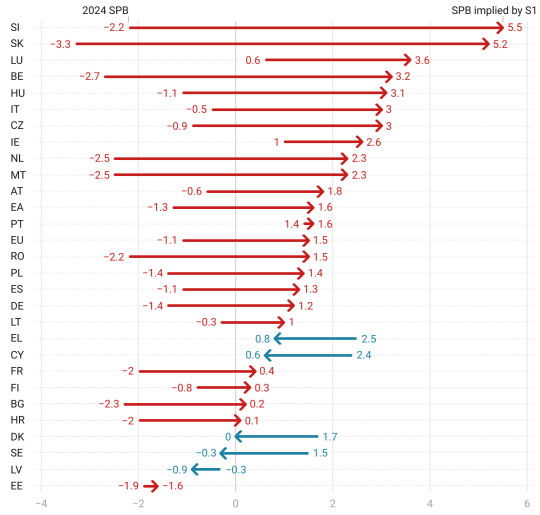
S1 – implied structural primary balance

The S1 adjustment determines the SPB required for convergence towards a debt-to-GDP ratio of 60% in 2070. This required SPB is the sum of the structural primary balance in 2024 – the end of the forecast period – and the S1 value. An SPB of more than 5% of GDP would be needed in Slovenia and Slovakia to bring government debt to 60% of GDP (see Graph 3.8). For Luxembourg, Belgium, Hungary, Italy, Czechia and Ireland the required SPB amounts to about 2.5-3.5% of GDP.

The percentile rank of the required SPB gives an indication of the plausibility of the fiscal adjustment implied by S1. The required SPB can be benchmarked against the distribution of available SPBs for each country since 1980. ([42]) This allows assessing how realistic the required fiscal position is relative to past performance. Graph 3.9 orders the required SPBs according to their percentile ranks. The required SPB has never been achieved and sustained in Slovakia, Portugal, Italy, France and Spain. In Poland, Slovenia, Greece, Hungary, Austria and Belgium, the SPB implied by S1 was achieved less than 25% of the time during the past three decades.

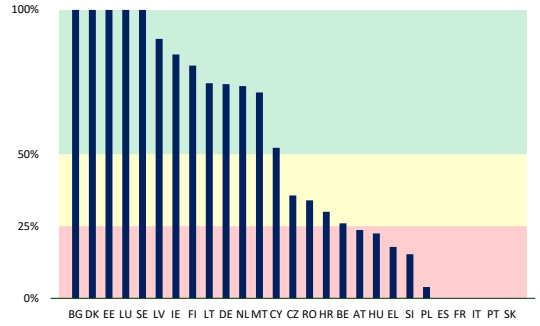
([42]) For some countries, data are not available for the entire period since 1980.

Graph 3.8: **S1 – required structural primary balance (% of GDP)**



Source: Commission services.

Graph 3.9: **S1 – plausibility of the required structural primary balance (% of cases achieved in the past)**



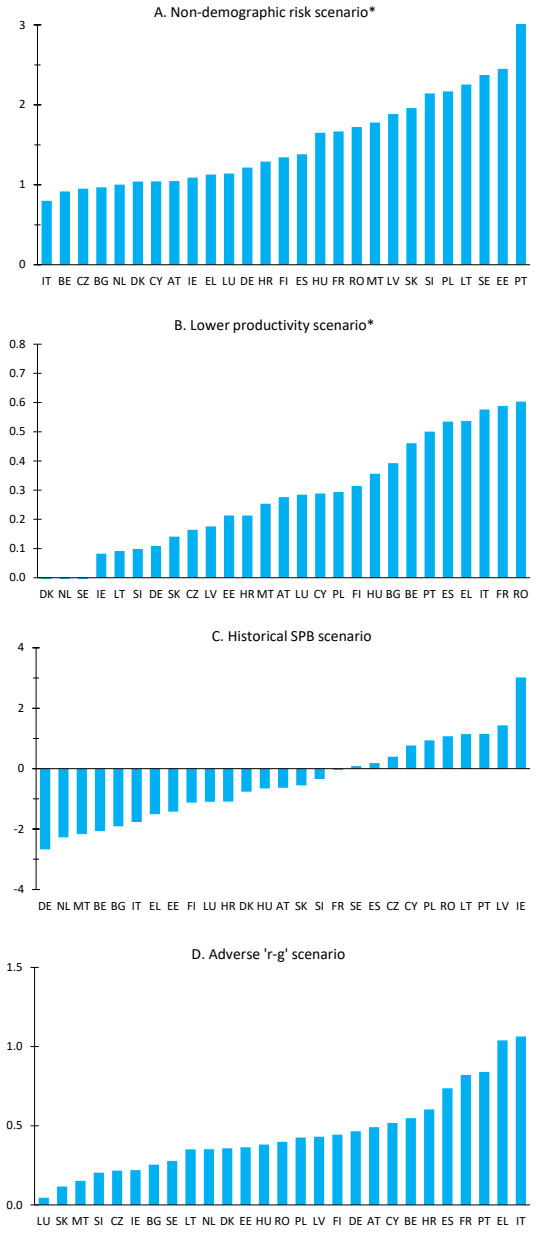
Based on available SPBs in 1980-2021.
Source: Commission services.

S1 – sensitivity analysis

Since the S1 indicator is sensitive to changes in key assumptions, four sensitivity scenarios were run. The same scenarios as for the S2 indicator are considered (see definitions in the previous section and in Box 3.2). Graph 3.10 presents the results in terms of deviations from the baseline.

- Under the **non-demographic risk scenario**, the S1 is about 1-3 pps. of GDP higher for all Member States (see Graph 3.10-A). The biggest differences are for Portugal, Estonia, Sweden, Lithuania, Poland and Slovenia with an S1 of at least 2 pps. above the baseline value. Belgium and Malta are considered at high fiscal risk under this scenario. The risk category moves from low to medium for Estonia, Ireland, Lithuania, Portugal and Finland. It would move from medium to high for Belgium and Malta.

Graph 3.10: **S1 – sensitivity analyses (deviations from baseline in pps. of GDP)**



*2021 Ageing Report scenario; see also Box 3.2.
Source: Commission services.

- Under the **lower productivity scenario**, the S1 does not change much compared to the baseline assumptions (see Graph 3.10-B). For Romania,

France, Italy, Greece and Spain, the S1 indicator is at least 0.5 pp. of GDP higher than in the baseline. Only for Belgium the long-term fiscal risk categorisation changes, going from medium to high risk.

- Under the **historical SPB scenario**, the budgetary position generally improves, considering that for most countries the SPB forecast for 2024 is below the historical average. As a consequence, this lowers the S1. If a repeat of past fiscal performance were assumed, the fiscal effort to reduce the debt ratio to 60% of GDP would fall by around 2 pps. of GDP in Germany, the Netherlands, Malta, Belgium, Bulgaria and Italy (see Graph 3.10-C). As regards the S1 risk classification, Bulgaria, Germany Croatia, Italy, Luxembourg and Austria would go from medium to low risk. Ireland and Lithuania would make the opposite move considering that moving to the historical SPB implies a deterioration of the fiscal position forecast for 2024.

- Under the **adverse 'r-g' scenario**, a less favourable snowball effect is assumed so that a higher fiscal adjustment is needed to push the debt ratio towards the 60% mark, in particular for countries with current high debt ratios. Italy, Greece, Portugal, France and Spain would be the most affected by a higher interest-growth rate differential (see Graph 3.10-D). Their S1 value would go up by around 1 pp. of GDP because a larger improvement in the SPB would be needed to offset the increase in the debt ratio caused by a higher 'r-g'. Under this scenario, Belgium would be at high instead of medium risk country.

3.3. OVERALL LONG-TERM FISCAL SUSTAINABILITY RISKS

The overall long-term fiscal sustainability risks are assessed based on both the S2 and S1 indicator. As discussed in Box 3.1, the S2 indicator provides the starting point for the overall assessment of long-term fiscal risks. In addition, the S1 indicator, capturing vulnerabilities due to high debt levels, might lead to a one-notch deterioration of the risk classification. Table 3.4 shows the risk classifications based on both indicators separately and provides the overall long-term risk classification.

- **Seven Member States have high fiscal sustainability risks in the long term** (Belgium, Luxembourg, Hungary, Malta, the Netherlands, Slovenia and Slovakia). The driving factor behind this risk assessment for all countries is the S2 indicator, and largely reflects increasing ageing costs. The latter is due to the significant projected increase in pension spending (largest component in Luxembourg, Hungary, Malta, Slovenia and Slovakia), as well as in health care and/or long-term care spending (largest component in Belgium and the Netherlands).

- **Twelve Member States face medium fiscal sustainability risks in the long term** (Bulgaria, Czechia, Germany, Ireland, Spain, France, Croatia, Italy, Austria, Poland, Romania and Finland). The driving factor behind this risk assessment is generally the S2 indicator, reflecting projected increases in ageing costs (largest component in Czechia, Germany, Ireland, Austria and Finland) and/or an unfavourable initial budgetary position (largest component in Bulgaria, Croatia, Poland and Romania). Only in the cases of Spain, France and Italy, the overall risk classification is modified by the S1 indicator, which causes a deterioration of the overall risk classification from low to medium risk over the long term, given debt vulnerabilities captured by the S1 indicator.

- **Eight Member States have low fiscal sustainability risks in the long term** (Denmark, Estonia, Greece, Cyprus, Latvia, Lithuania, Portugal and Sweden). This reflects either the expected favourable long-term impact of past pension reforms (as in Greece and Portugal) and / or the favourable initial budgetary position (as in Denmark, Estonia, Latvia, Lithuania and Sweden in terms of debt level, or Cyprus in terms of structural primary balance).

Table 3.4: **Overall long-term risk classification, S2 and S1**

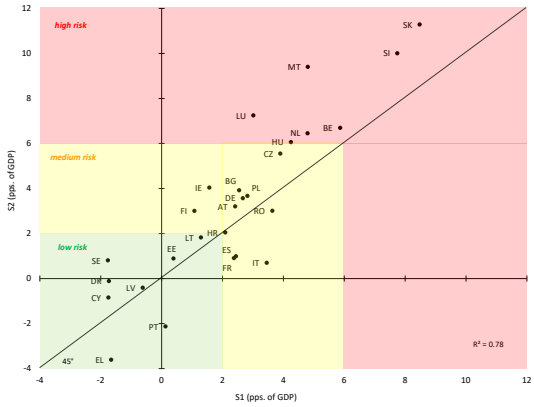
	Overall	S2	S1
BE	HIGH	HIGH	MEDIUM
BG	MEDIUM	MEDIUM	MEDIUM
CZ	MEDIUM	MEDIUM	MEDIUM
DK	LOW	LOW	LOW
DE	MEDIUM	MEDIUM	MEDIUM
EE	LOW	LOW	LOW
IE	MEDIUM	MEDIUM	LOW
EL	LOW	LOW	LOW
ES	MEDIUM	LOW	MEDIUM
FR	MEDIUM	LOW	MEDIUM
HR	MEDIUM	MEDIUM	MEDIUM
IT	MEDIUM	LOW	MEDIUM
CY	LOW	LOW	LOW
LV	LOW	LOW	LOW
LT	LOW	LOW	LOW
LU	HIGH	HIGH	MEDIUM
HU	HIGH	HIGH	MEDIUM
MT	HIGH	HIGH	MEDIUM
NL	HIGH	HIGH	MEDIUM
AT	MEDIUM	MEDIUM	MEDIUM
PL	MEDIUM	MEDIUM	MEDIUM
PT	LOW	LOW	LOW
RO	MEDIUM	MEDIUM	MEDIUM
SI	HIGH	HIGH	HIGH
SK	HIGH	HIGH	HIGH
FI	MEDIUM	MEDIUM	LOW
SE	LOW	LOW	LOW

Source: Commission services.

In most cases, the S1 indicator confirms the conclusion derived from the S2 indicator alone. The S2 and S1 indicators show a high correlation despite capturing somewhat different targets: debt stabilisation over the long term – irrespective of the debt level – versus debt convergence to the 60% of GDP reference threshold (see Graph 3.11). ([43]) S1 and S2 depend on present values which are calculated over different periods. Anything that weighs on public finances over an infinite horizon, rather than only until 2070, will imply a larger present value. In the case of Belgium, for instance, the cost of ageing is projected to be higher in 2070 than it is now. If we assume that that high level does not stop in 2070 but continues over an infinite horizon (as we do to calculate S2), the present value of this 'eternal' high cost is larger. The same holds for interest expenditure, implying that stabilising a high debt over an infinite horizon is more demanding than over around 50 years, hence a higher initial budgetary position (see also Box 3.1). As a result, the signals provided by both indicators are identical for 17 countries. In ten cases, the risk classification based on S1 differs from that based on S2. In 24 cases, the S2 signal determines the overall long-term risk classification. Only in the cases of Spain, France and Italy, the overall risk classification is modified by the S1 indicator.

([43]) The correlation between S1 and S2, as measured by the R squared value, amounts to 0.78 (see Graph 3.11).

Graph 3.11: **Relationship between S2 and S1**



Source: Commission services.

Compared to the FSR 2021, overall long-term fiscal sustainability risks … :

- ***remained unchanged in twenty countries*** (see Table 3.5 for a comparison).

- ***increased in one country.*** *For the Netherlands, long-term* risks are now high, compared to medium in the FSR 2021. This deterioration is driven by a worsening of the S2 indicator due to more unfavourable initial budgetary position.

- ***declined in six countries***. There are two reasons for these changes: First, an improvement of the value of the S2 indicator (Czechia, Spain and Italy), capturing a more favourable initial budgetary position. Second, the methodological change using the revised S1 instead of the DSA as a complementary indicator to the S2 in the overall risk classification (for Greece, Cyprus and Portugal) (see Box 3.1). However, the more favourable assessment for these countries is conditional to them maintaining the comfortable structural primary balance expected in 2024 over the long term.

Table 3.5: **Overall long-term risk classifications in the 2021 FSR and the 2022 DSM**

2021 FSR \ 2022 DSM	Low	Medium	High
Low	DK, EE, LV, LT, SE		
Medium	**EL, CY, PT**	BG, DE, HR, IE, FR, AT, PL, RO, FI	**NL**
High		**CZ, ES, IT**	BE, LU, HU, MT, SI, SK

Note: The risk classification of countries in bold and green/red has improved/deteriorated compared to the 2021 FSR.
Source: Commission services.

Box 3.1: Methodology behind the long-term fiscal sustainability analysis

This box explains the methodology behind the Commission's long-term fiscal sustainability analysis. Long-term fiscal sustainability relates to the achievement of governments' intertemporal budget constraint. This constraint, also known as the solvency condition, refers to a country's capacity to meet its net debt obligations through future primary surpluses. Other things being equal, the higher the projected cost of ageing, the more difficult it is to fulfil the intertemporal budget constraint, as higher revenue – in present terms – is required to cover these costs, in addition to the other non-interest expenditure and debt service.

The fiscal sustainability challenges that arise from demographic ageing in the EU have been monitored for several decades. Since the early 2000s, the Commission and the Economic Policy Committee prepare on a regular basis long-term budgetary projections. The 2021 Ageing Report, published in May 2021, provides the latest update of these projections, covering the period up to 2070. To account for these ageing costs, a long-term fiscal gap indicator was introduced in the 2006 Fiscal Sustainability Report, the 'S2 fiscal sustainability indicator'. The S1 indicator also factors in future ageing costs as well as the EU fiscal rules' debt anchor. Together they determine the long-term risk classification.

The box is structured as follows. First, it describes the methodology of the S2 indicator. Second, it presents a revised S1 indicator, which is used as a complement to the S2 indicator. It also explains why the revised S1 indicator is used as a complement instead of the Commission's debt sustainability analysis (DSA) for the assessment of long-term sustainability risks, and why the DSA alone provides a sufficiently comprehensive assessment of medium-term risks. Finally, for transparency, it compares the long-term risk classification obtained with the new with the previous methodology.

The S2 indicator

The S2 indicator is the central element of the long-term sustainability analysis. It is based on the infinite version of the government budget constraint. More specifically,

- this fiscal sustainability gap indicator shows the immediate and permanent adjustment to the current structural primary balance – subsequently kept constant at the adjusted value forever – that is required to stabilise the debt-to-GDP ratio over the infinite horizon; ([1])
- this upfront adjustment is assumed to take place in 2025, i.e. the first projection year after the Commission 2022 autumn forecast;
- the 2024 structural primary balance – the primary balance adjusted for the cycle and one-off fiscal measures – as provided by the Commission 2022 autumn forecast serves as starting point, providing a proxy for the 'no-fiscal policy change' assumption;
- ageing costs as projected in the 2021 Ageing Report are accounted for as from 2025 onwards, as this change in (net) expenditure affects the structural primary balance; ([2])
- beyond the T+10 horizon, interest rate assumptions and GDP projections are from the 2021 Ageing Report. Over the long term, a progressive normalisation of financing conditions is assumed, with the `r-g' differential stabilising at around 0.5 pp. for the EU.
- the following thresholds are used to assess the scale of the sustainability challenge: if the S2 value (in percentage points of GDP) is lower than 2, the country is assigned 'low risk'; if S2 is between 2 and 6, the country is assigned 'medium risk'; and if S2 is above 6, the country is assigned 'high risk'. These threshold values are identical to those applied in earlier reports.

S2's focus on the intertemporal budget constraint remains relevant for several reasons. First, the interest-rate growth differential has increased in recent years, putting upward pressure on public finances; Second, ageing costs are projected to

([1]) See Annex A8 for the precise calculation of the S2 and S1 indicators.

([2]) The S2 and S1 indicators include pension expenditure net of taxes on pensions and compulsory social security contributions paid by pensioners, as well as health care, long-term care and education expenditure.

(Continued on the next page)

Box (continued)

increase in many countries, putting permanent pressure on the primary balance. Finally, the current historically high level of debt, after a succession of crises, and future structural headwinds confirm the relevance of assessing fiscal sustainability challenges also over the long-term .

At the same time, S2 measures the size of long-term fiscal imbalances without relying on a specific debt target. The intertemporal budget constraint implies that public debt stabilises in the long term, in the sense that future structural primary balances cover future debt servicing and ageing costs. It says nothing about the level at which this stabilisation takes place, thus ignoring risks linked to high debt levels. The adjustment implied by the S2 indicator might in fact lead to debt stabilising at (very) high levels. As a result, based solely on S2, some countries might be deemed on a sustainable long-term path despite their debt ratios stabilising at a high levels. ([3])

To address this shortcoming, in previous reports the S2 indicator was qualified by the DSA results to assess the overall long-term fiscal sustainability challenges. The S2 indicator provides an important, although partial signal for the assessment of long-term fiscal risks. It measures the permanent fiscal adjustment that is required to prevent debt from embarking on an ever-increasing path, accounting for projected ageing costs. However, the S2 indicator does not impose any restriction on the level at which debt stabilises. This is why, in previous reports, the DSA results were used to complement the S2 signal and account for risks stemming from high debt levels.

The revised S1 indicator

This report combines the S2 indicator with a revised S1 indicator instead of the DSA. The Commission DSA's horizon is limited to 10 years beyond the current year – 2033 in this report. This medium-term horizon contrasts with S2's long-term (infinite) horizon. For this reason, it is preferable to complement S2 with the S1 indicator, which has a similar (long-term) horizon. In its previous design, the S1 indicator measured the fiscal effort needed to converge to a debt target of 60% of GDP in 15 years beyond the horizon of the Commission forecast – which would have been by 2039 in this report. To shift the focus to the long term, the target date in this report is postponed to 2070, the last year for which projections of the budgetary cost of population ageing are available, based on the 2021 Ageing Report. For closer consistency with the S2 indicator, two additional changes were introduced. First, the fiscal adjustment is no longer measured as a cumulated effort over 5 years but as an immediate and permanent one-off adjustment, as is done for S2. Second, the revised S1 indicator uses the same thresholds as S2 to delimitate the low, medium and high risk categories, namely below 2 pps. of GDP, between 2 pps. and 6 pps. of GDP, and above 6 pps. of GDP, respectively.

S1 is a fiscal gap indicator that relies on a finite version of the budget constraint, imposing convergence to a debt target of 60% of GDP. More specifically,

- S1 measures the upfront fiscal adjustment to the structural primary balance required to reach a debt-to-GDP ratio of 60% in 2070, the end-point of the latest Ageing Report projections;
- this upfront adjustment is assumed to take place in 2025, i.e. the first projection year after the Commission 2022 autumn forecast;
- in past Fiscal Sustainability Reports and Debt Sustainability Monitors, when the S1 indicator informed the medium-term risk classification, the 60% target was to be reached after 15 years and the adjustment was spread over 5 years. In fact, the revised S1 indicator implies a return to the approach used in the 2006 and 2009 Fiscal Sustainability Reports, when the 60% target was to be reached in the long term;
- as done for the S2 indicator, the 2024 structural primary balance as provided by the Commission 2022 autumn forecast serves as starting point;

([3]) For a detailed discussion of the strengths and shortcomings of the S2 indicator, see Box 3.2 in European Commission (2018), Debt Sustainability Monitor 2017, European Economy, Institutional Paper 71.

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Box (continued)

– as done for the S2 indicator, ageing costs are explicitly accounted for as of 2025, i.e. beyond the Commission 2022 autumn forecast;

– in terms of risk signal, the S1 thresholds have been aligned with the S2 thresholds, i.e. if the S1 value (in percentage points of GDP) is lower than 2, the country is assigned 'low risk'; if S1 is between 2 and 6, the country is assigned 'medium risk'; and if S1 is above 6, the country is assigned 'high risk'.

While the S1 and S2 are both fiscal gap indicators that measure the required fiscal effort to achieve long-term fiscal goals, two differences exist. First, the components of S1 and S2 differ. Both indicators have two components in common, namely the initial budgetary position and the cost of ageing. However, in the case of S1 the "debt requirement" is the third requirement. For a high-debt country, everything else unchanged, that third component is positive and would imply that S1 > S2. Second, S1 and S2 depend on present values which are calculated over different periods. Anything that weighs on public finances over an infinite horizon, rather than only until 2070, will imply a larger present value. In the case of Belgium, for instance, the cost of ageing is projected to be higher in 2070 than it is now. If we assume that that high level does not stop in 2070 but continues over an infinite horizon (as we do to calculate S2), the present value of this 'eternal' high cost is larger. The same holds for interest expenditure, implying that stabilising a high debt over an infinite horizon is more demanding than over around 50 years, hence a higher IBP.

Overall long-term risk classification

The overall long-term risk classification is based on the S2 complemented by the revised S1 indicators. Table 1 shows how S2 and S1 indicators combine into the overall long-term risk classification. As with the DSA before, the S1 signal can worsen the outcome based on S2 by one notch, but it can never improve the S2 results.

Conclusion

This report introduces a new assessment of overall long-term risk based on two complementary fiscal gap indicators. The S1 indicator provides an anchor to the 60% of GDP Treaty reference value, an element that the S2 indicator disregards. Redesigning the S1 indicator as a companion to the S2 indicator implies returning to the approach used in the 2006 and 2009 Fiscal Sustainability Reports, when the 60% of GDP target was meant to be reached in the long term. This new approach, announced in the 2021 Fiscal Sustainability Report, is deemed preferable to complementing the S2 results with the DSA, with the use of two indicators with similar time horizons.

As a consequence of this new approach, the medium-term risk assessment fully relies on the DSA. As explained in Chapter 2, the DSA is well equipped to be the sole determinant of the medium-term risk classification. It captures medium-term challenges in a comprehensive way, as it includes the impact of ageing-related costs, alternative scenarios and a wide range of possible shocks. Moreover, it takes into account not only projected debt paths but also their feasibility in light of past practice. This also simplifies the framework, as the DSA is now fully and exclusively associated with the medium term (see Graph 1).

Compared with the 2021 FSR approach, the revised approach changes the overall long-term risk classification for only 4 countries. These are Greece, Croatia, Cyprus and Portugal, which all move to a lower risk category. Moreover, compared with an approach solely based on the S2 indicator, the combined use of S2 and the revised S1 indicator affects the risk category (for the worst) only in three cases, namely Spain, France and Italy. This rightly reflects the high debt level and the gap to the 60% of GDP threshold in these cases. For other countries, the long-term risk category is only driven by the S2 results (see Table 2).

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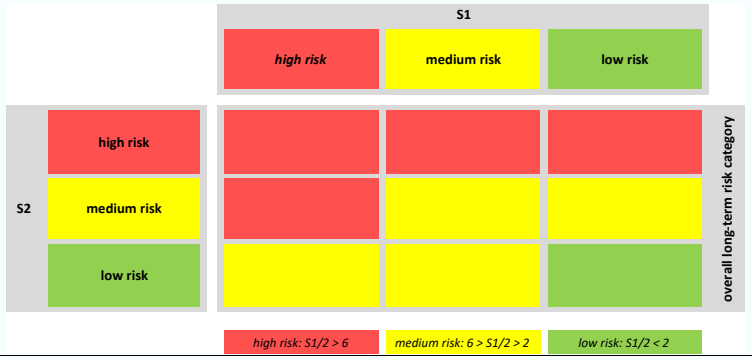
Box (continued)

Table 1: **Determination of overall long-term risk classification**



Reading example: A country with a medium (low) S2 indicator and a high S1 indicator has an overall long-term risk classification of high (medium).
Source: Commission services.

Table 2: **Long-term risk classification: 2022 DSM vs. 2021 FSR approach**

A. 2022 DSM approach (S2 + revised S1)

	S2	S1	Overall
BE	6.7	5.9	HIGH
BG	3.9	2.5	MEDIUM
CZ	5.5	3.9	MEDIUM
DK	-0.1	-1.7	LOW
DE	3.6	2.7	MEDIUM
EE	0.9	0.4	LOW
IE	4.0	1.6	MEDIUM
EL	-3.6	-1.7	LOW
ES	1.0	2.4	MEDIUM
FR	0.9	2.4	MEDIUM
HR	2.0	2.1	MEDIUM
IT	0.7	3.5	MEDIUM
CY	-0.8	-1.7	LOW
LV	-0.4	-0.6	LOW
LT	1.8	1.3	LOW
LU	7.2	3.0	HIGH
HU	6.1	4.2	HIGH
MT	9.4	4.8	HIGH
NL	6.5	4.8	HIGH
AT	3.2	2.4	MEDIUM
PL	3.7	2.8	MEDIUM
PT	-2.1	0.1	LOW
RO	3.0	3.6	MEDIUM
SI	10.0	7.7	HIGH
SK	11.3	8.5	HIGH
FI	3.0	1.1	MEDIUM
SE	0.8	-1.8	LOW

B. 2021 FSR approach (S2 + DSA)

	S2	DSA	Overall
BE	6.7	HIGH	HIGH
BG	3.9	LOW	MEDIUM
CZ	5.5	MEDIUM	MEDIUM
DK	-0.1	LOW	LOW
DE	3.6	MEDIUM	MEDIUM
EE	0.9	LOW	LOW
IE	4.0	LOW	MEDIUM
EL	-3.6	HIGH	MEDIUM
ES	1.0	HIGH	MEDIUM
FR	0.9	HIGH	MEDIUM
HR	2.0	HIGH	HIGH
IT	0.7	HIGH	MEDIUM
CY	-0.8	MEDIUM	MEDIUM
LV	-0.4	LOW	LOW
LT	1.8	LOW	LOW
LU	7.2	LOW	HIGH
HU	6.1	HIGH	HIGH
MT	9.4	MEDIUM	HIGH
NL	6.5	MEDIUM	HIGH
AT	3.2	MEDIUM	MEDIUM
PL	3.7	MEDIUM	MEDIUM
PT	-2.1	HIGH	MEDIUM
RO	3.0	MEDIUM	MEDIUM
SI	10.0	MEDIUM	HIGH
SK	11.3	HIGH	HIGH
FI	3.0	MEDIUM	MEDIUM
SE	0.8	LOW	LOW

Source: Commission services based on the Commission 2022 autumn forecast.

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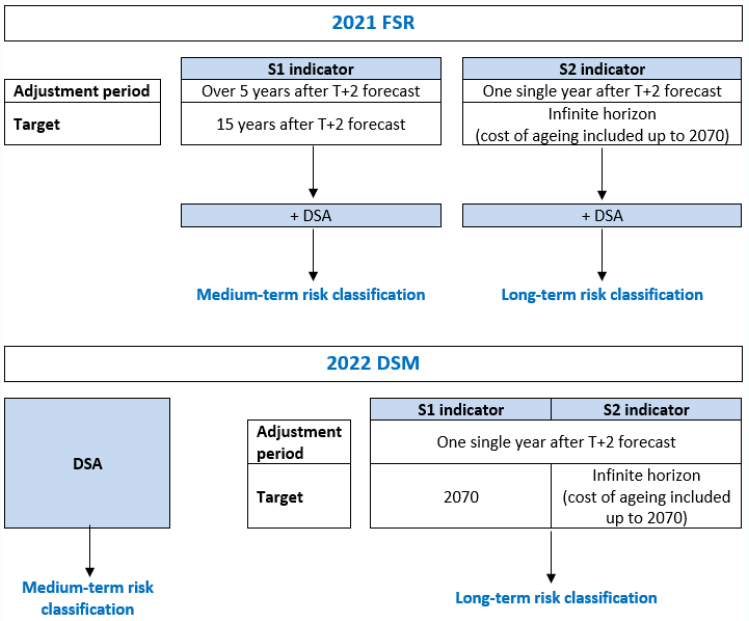
Box (continued)

Graph 1: **Medium- and long-term risk classification in the 2021 FSR and the 2022 DSM**



Source: Commission services.

Box 3.2: **S1 and S2 – sensitivity scenarios: description and results**

Non-demographic risk scenario

The non-demographic risk scenario adjusts the healthcare and long-term care expenditure projections for possible developments in non-demographic factors such as technological progress and convergence process. It is based on a sensitivity scenario from the 2021 Ageing Report, where it is called 'AWG risk' scenario. The scenario assumes a partial continuation of upward healthcare expenditure trends, notably due to technological progress, and an upward convergence of coverage and costs of long-term care towards the EU average.

Lower productivity scenario

The lower productivity scenario determines the S2 value in case ageing cost projections are based on lower-than-assumed productivity growth. This scenario is based on a sensitivity scenario from the 2021 Ageing Report, where it is called 'TFP risk' scenario. While the Ageing Report baseline projections assume a gradual convergence of total factor productivity growth (TFP) to 1% for all Member States, this scenario assumes convergence to a lower TFP growth rate of 0.8%.

Historical SPB scenario

The historical structural primary balance (SPB) scenario assumes that the SPB converges to its historical average level, thus improving the initial budgetary position when the SPB forecast for 2024 is below the historical average, as is the case for most countries. It uses the European Commission forecasts until 2024, followed by gradual convergence to the historical SPB average in 2028. The historical average is based on available data for 2007-2021.

Adverse 'r-g' scenario

This scenario applies a 1 pp. higher difference between interest rates (r) and nominal GDP growth (g). The 'r-g' differential determines the snowball effect. This implies a less favourable snowball effect and, especially for countries with high debt stocks, a higher required fiscal adjustment to stabilise the debt ratio.

Table 1: **Results of sensitivity scenarios (pps. of GDP)**

	S1 indicator					S2 indicator				
	Baseline	Non-demographic risk*	Lower productivity*	Historical SPB	Adverse 'r-g'	Baseline	Non-demographic risk*	Lower productivity*	Historical SPB	Adverse 'r-g'
BE	5.9	**6.8**	**6.3**	*3.8*	**6.4**	6.7	**8.4**	**7.4**	*4.3*	**7.0**
BG	2.5	**3.5**	**2.9**	*0.6*	**2.8**	3.9	**5.6**	**4.7**	*2.0*	**3.9**
CZ	3.9	**4.9**	**4.1**	**4.3**	**4.1**	5.5	**7.2**	**5.7**	**5.6**	**5.4**
DK	-1.7	**-0.7**	*-1.9*	*-2.5*	**-1.4**	-0.1	**1.5**	**-0.6**	**-0.8**	**-0.1**
DE	2.7	**3.9**	**2.8**	*0.0*	**3.1**	3.6	**5.7**	**3.6**	*0.8*	**3.8**
EE	0.4	**2.8**	**0.6**	*-1.0*	**0.8**	0.9	**6.3**	**1.1**	*-0.5*	**1.2**
IE	1.6	**2.7**	**1.6**	**4.6**	**1.8**	4.0	**6.1**	**3.9**	**7.0**	**3.7**
EL	-1.7	**-0.5**	**-1.1**	*-3.2*	**-0.6**	-3.6	**-0.8**	*-2.6*	*-5.0*	*-2.1*
ES	2.4	**3.8**	**3.0**	**2.6**	**3.2**	1.0	**3.5**	*2.0*	*1.0*	*2.1*
FR	2.4	**4.0**	**3.0**	*2.3*	**3.2**	0.9	**4.0**	*2.0*	*0.7*	*2.1*
HR	2.1	**3.4**	**2.3**	*1.0*	**2.7**	2.0	**4.5**	**2.4**	*0.9*	**2.7**
IT	3.5	**4.3**	**4.0**	*1.7*	**4.5**	0.7	*2.2*	*1.7*	*-1.3*	*2.5*
CY	-1.7	**-0.7**	**-1.5**	**-1.0**	**-1.2**	-0.8	**1.8**	**-0.5**	**0.0**	**-0.6**
LV	-0.6	**1.3**	**-0.4**	**0.8**	**-0.2**	-0.4	**3.5**	**-0.2**	**1.0**	**0.0**
LT	1.3	**3.5**	**1.4**	**2.4**	**1.6**	1.8	**6.3**	**1.9**	**2.9**	**2.1**
LU	3.0	**4.2**	**3.3**	*1.9*	**3.1**	7.2	**9.5**	**7.3**	**6.1**	**6.2**
HU	4.2	**5.9**	**4.6**	*3.6*	**4.6**	8.1	**9.6**	**6.4**	**5.1**	**5.9**
MT	4.8	**6.6**	**5.1**	*2.6*	**5.0**	9.4	**12.9**	**9.5**	**7.1**	**8.2**
NL	4.8	**5.8**	*4.7*	*2.5*	**5.1**	7.5	**8.2**	**6.3**	*4.0*	**6.4**
AT	2.4	**3.5**	**2.7**	*1.8*	**2.9**	3.2	**5.0**	**3.6**	**2.4**	**3.5**
PL	2.8	**5.0**	**3.1**	**3.8**	**3.2**	3.7	**8.0**	**3.9**	**4.4**	**3.8**
PT	0.1	**3.2**	**0.6**	**1.3**	**1.0**	-2.1	**5.1**	*-1.1*	*-1.0*	*-0.7*
RO	3.6	**5.4**	**4.2**	**4.7**	**4.0**	3.0	**6.6**	**3.8**	**3.7**	**3.7**
SI	7.7	**9.9**	**7.8**	*7.4*	**7.9**	10.0	**13.8**	**10.0**	**9.3**	**9.6**
SK	8.5	**10.4**	**8.6**	*7.9*	**8.6**	11.3	**15.1**	**11.2**	**10.4**	**10.7**
FI	1.1	**2.4**	**1.4**	*0.0*	**1.5**	3.0	**5.4**	**3.3**	**1.9**	**2.9**
SE	-1.8	**0.6**	*-1.8*	**-1.7**	**-1.5**	0.8	**5.2**	**0.5**	**1.0**	**0.5**

The cells are highlighted in line with the thresholds for the long-term risk classification (see Box 3.1), namely: greater 6 (red), between 2 and 6 (yellow) and below 2 (green). Values in bold: higher than baseline; values in italics: lower than baseline. *Ageing Report scenario.
Source: Commission services.

4. ADDITIONAL AGGRAVATING AND MITIGATING RISK FACTORS FOR FISCAL SUSTAINABILITY

Main takeaways

This chapter explores additional aggravating and mitigating risk factors for fiscal sustainability*. These factors are only partially reflected in the analysis of the previous chapters, but are critical to provide an overall assessment of fiscal sustainability risks. The risk factors include the structure of debt, government liabilities beyond (EDP) public debt, in particular contingent liabilities, as well as government assets and net debt.*

Recent developments in the structure of government debt are overall favourable across the EU, although the increased share of short-term debt in some Member States is a potential source of concern. *Over the past years, a general trend of lengthening debt maturities has been observed. However, in many Member States, the share of short-term debt has increased as a result of the COVID-19 pandemic and has only partially receded last year. The investor base is large and diversified in many Member States. Asset purchases' programmes by the Eurosystem in recent years resulted in a substantial increase of the share of government debt held by central banks, representing a stable financing source. However, the ECB has announced that it will reduce its securities portfolio holdings in 2023. Lastly, few non-euro area Member States are exposed to foreign exchange rate risks.*

Risks concerning government contingent liabilities increased since the COVID-19 pandemic, but appear overall limited. *As a response to the COVID-19 pandemic, many governments granted substantial support to the private sector in the form of guarantees. However, the surge in such government guarantees remained moderate in most Member States, and overall lower than during the global financial crisis. Most of these government guarantee schemes have expired in the course of 2021 and 2022 and are expected to decline further in 2023 according to Member States' Draft Budgetary Plans. A snapshot analysis of bank balance sheets points to contained vulnerabilities in most Member States. However, simulations based on the Commission's SYMBOL model show that (implicit) contingent liabilities' risks linked to the banking sector exist in some Member States, in particular under a stressed scenario.*

The holding of (large) financial assets in some countries mitigate fiscal sustainability risks, while net debt increased. *Country rankings for indebtedness are similar when comparing gross and net debt ratios. Both indicators increased in the majority of Member States over the past decades, notably reflecting the succession of crises.*

Additional aggravating and mitigating risk factors are taken into account as a complement to the quantitative results of the framework in order to ensure a balanced overall assessment of fiscal sustainability challenges. The previous chapters presented quantitative results on the basis of the DSA risk framework as well as fiscal sustainability indicators. Yet, these quantitative results need to be complemented by additional aggravating and / or mitigating risk factors that are only partially factored in in the quantitative results of the framework. Such factors are particularly relevant at the current juncture of still important uncertainty.

A number of key aggravating and mitigating risk factors are analysed in this chapter. Section 4.1 provides an analysis of the debt structure, notably in terms of maturity, currency denomination and holders, which gives an important indication of potential vulnerabilities (or strengths). Section 4.2 examines implicit and contingent liabilities, notably those linked to the government guarantees granted as a response to the COVID-19 crisis, and those stemming from the banking sector in general, including on the basis of the Commission Symbol model. Section 4.3 discuses other relevant factors, including government assets. The additional risk factors considered in this chapter are treated horizontally in the overall assessment, insofar the identified vulnerabilities or supporting factors may materialise in the short, medium or long term. ([44])

4.1. RISKS RELATED TO THE GOVERNEMENT STRUCTURE

The structure of government debt can play an important role in ensuring sustainable public finances in different ways. First, by determining the level and response of interest payments to changes in economic and financial conditions. Second, by influencing the degree of risks, notably refinancing and rollover risks. According to IMF (2014), an optimal government debt portfolio should minimise interest payments subject to a prudent degree of refinancing and rollover risks (cost-risk trade-off).

The debt composition needs to be analysed along several dimensions. In this section, the analysis focuses on three aspects: the maturity structure, the currency denomination composition and the nature of the investors' base. ([45]) With this aim, three main variables are used to analyse the debt structure: i) the share of short-term debt in total government debt (at original maturity); ii) the share of debt denominated in foreign currency in total government debt, and iii) the share of debt held by non-residents in total government debt.

A risk-based approach is applied to capture additional vulnerabilities or mitigating factors stemming from the composition of government debt. The values of the three main selected variables are analysed against critical thresholds of fiscal risk obtained through the same signalling approach, which is used for the computation of S0 ([46]). The results are reported for all Member States in the form of a heat map (see Table 4.1) ([47])

([44]) Some other factors are not examined in this chapter. This concerns in particular the quality of institutions. As shown by a rich literature, the quality of institutions is an important supporting factor of public debt sustainability. In the EU, a deeply integrated region of mainly advanced economies, evidence suggests that the quality of institutions would be on average higher and less heterogeneous than in other parts of the world (for a literature review, see Box 1.2 in European Commission (2019), Fiscal Sustainability Report 2018, *European Economy Institutional Paper*, No. 094.

([45]) Other dimensions could also be considered such as the type of interest rates (fixed / variable), and relatedly the presence of indexation mechanisms (e.g. inflation-linked bonds), or state-contingent features, as well the nature of debt instruments (the latter is analysed to some extent in section 4.2 of this chapter).

([46]) For details on the signals approach see Chapter 1. This methodology shows that, based on historical events, the three variables appear to be relatively good leading indicators of fiscal stress.

([47]) See also the statistical fiches in volume 2 of the 2021 Fiscal Sustainability Report. Fiscal risk levels are determined accordingly: i) high risk (red), if the values are at or above the threshold of fiscal risk from the signals' approach; ii) medium risk (yellow), if the values are below the threshold obtained from the signals' approach, but at or above a benchmark of around 80% of the same threshold; iii) low risk (green) otherwise. For information on the methodology, see European Commission (2022), Fiscal Sustainability Report 2021, *European Economy Institutional Paper*, No. 171.

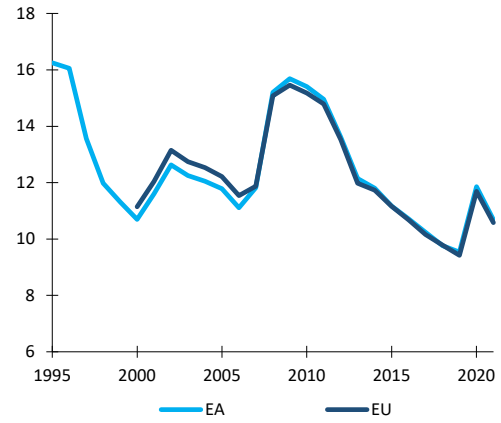
Table 4.1: **Risks related to the government debt structure (2021)**

	Short-term public debt (original maturity)	Public debt held in foreign currency	Public debt held by non-residents
BE	**7.4**	0.0	**53.8**
BG	0.1	**74.6**	46.1
CZ	2.6	7.7	29.7
DK	**13.2**	2.4	26.5
DE	**12.3**	2.7	41.5
EE	**8.6**	0.0	69.7
IE	**8.0**	0.0	**53.6**
EL	5.5	0.3	**78.9**
ES	**6.9**	0.0	43.2
FR	**10.2**	3.2	46.2
HR	5.7	**70.7**	34.0
IT	**13.1**	0.1	29.1
CY	1.9	0.0	**89.4**
LV	3.1	0.0	**63.9**
LT	0.0	0.0	**64.7**
LU	2.2	0.0	**49.7**
HU	5.9	22.6	31.7
MT	**8.5**	0.0	23.8
NL	**10.2**	0.0	34.7
AT	**7.1**	0.4	**60.6**
PL	1.2	22.7	33.1
PT	**15.5**	0.0	45.2
RO	5.1	**53.3**	49.2
SI	2.1	0.1	**55.2**
SK	3.6	0.0	**49.6**
FI	**10.7**	2.5	**51.8**
SE	**24.9**	3.4	19.1

(1) Upper and lower thresholds: (i) Share of short-term government debt: upper threshold 6.57%; lower threshold 5.3%; (ii) Share of government debt in foreign currency: upper threshold 31.58%; lower threshold 25%; (iii) Share of government debt held by non-residents: upper threshold 49%; lower threshold 40%.
(2) Share of short-term public debt is based on partially missing information for Netherlands.
(3) Foreign-held debt figures are shown against a double shading that blends the colour coding of volatility risks from non-resident tenure (left side of the shaded cells) with that of sovereign risk given by the average spread on 10-year government bonds vs. Germany (right side of the shaded cells).
Source: Eurostat, ECB.

The share of short-term government debt remains high in 14 Member States, although declining in most countries. With a high share of short-term debt, a government may be vulnerable to increases in monetary policy rate, and to rapid changes in financial markets' perceptions. From this angle, fiscal risks still persist for several EU countries (see Table 4.1). The share of short-term debt is considered high in 14 Member States, in particular in Sweden (about 25% of total government debt), but also in Denmark Portugal, Finland, Netherlands, Italy, France, and Germany (above 10% of total government debt). However, after the peak recorded during the COVID-19 crisis, the ratio of short-term debt decreased in most countries and for the EU/EA as a whole in 2021 (see Graph 4.1). ([48])

Graph 4.1: **Share of short-term debt (% of total general government debt)**



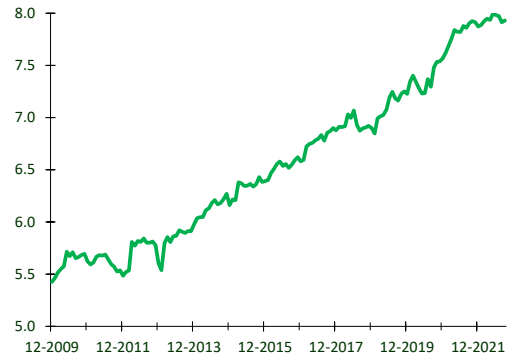
(1) Short-term debt includes currency and deposit, short-term debt securities and short-term loans.
Source: Eurostat.

Yet, the increase of the average maturity of government debt reduces vulnerabilities. The average (residual) maturity of government debt (securities) has increased significantly in recent years and reached a record high of close to 8 years on average in 2021 (see Graph 4.2) It seems to have stabilised in 2022. This increasing share is observed for most countries, and the maturity was particularly long in 2022 in Greece, Austria, Belgium, Ireland, Slovenia and Lithuania (see Table 4.2). Moreover, the weight of short-term debt *as a share of GDP* is worth considering in parallel (e.g. for Sweden, given the low level as a share of GDP, this ratio is limited) ([49]). In the case of external short-term debt of non-euro area Member States, the level of a country's international reserves equally deserves consideration. ([50]) Last, Treasury cash-flow

([48]) If the structure of debt tends to be fairly stable over time, in the wake of major (financial) crises or large scale financial innovation (such as quantitative easing), changes in the debt composition can be large and sudden (see Abbas, A., Blattner, L., De Broeck, M., ElGanainy, A. and Hu, M. (2014), Sovereign debt composition in advanced economies: a historical perspective, *IMF Working papers*, No. 14 / 162 and also Box 3.4 in Chapter 3 of European Commission (2019), Fiscal Sustainability Report 2018, *European Economy Institutional Paper*, No. 094).
([49]) See S0 indicator table on fiscal variables.
([50]) The extent to which international reserves are greater or equal than the country's stock of short-term external debt (the Greenspan-Guidotti rule) shows whether the country has enough resources to counter a sudden stop in capital

management has an influence both on the headline short-term debt and the availability of other liquid financial assets, such as cash deposits, which could mitigate potential stress (see also Section 4.3).

Graph 4.2: **Average residual maturity of government debt securities (in years, simple average over EU countries)**



(1) Data are missing for Estonia.
Source: ECB (debt securities issuance and service by EU governments, November 2022).

Table 4.2: **Average residual maturity of debt (general government)**

	Debt securities					All debt (Oct. 2022)
	Dec. 2009	Dec. 2020	Dec. 2021	Sep. 2022	Diff. 2022 - 09	
BE	5.5	10.1	10.4	10.7	5.2	10.7
BG	4.3	6.2	8.4	7.4	3.1	8.1
CZ	6.2	6.0	5.9	6.4	0.2	6.1
DK	8.1	7.9	7.3	8.3	0.2	8.9
DE	5.5	6.5	6.7	7.2	1.7	7.5
EE	:	:	:		:	8.0
IE	6.3	9.5	10.9	10.8	4.5	10.9
EL	7.9	7.6	9.2	9.5	1.6	22.1
ES	6.5	7.6	7.8	7.8	1.3	7.7
FR	6.4	7.6	7.9	8.2	1.8	8.4
HR	:	7.6	7.9	8.2	:	6.0
IT	7.3	6.8	7.0	7.1	-0.2	7.6
CY	3.1	4.9	7.9	7.7	4.6	7.5
LV	3.7	9.9	8.8	8.9	5.2	8.1
LT	:	6.2	9.0	9.3	:	9.5
LU	3.9	5.2	6.3	6.0	2.1	6.9
HU	4.1	3.7	5.6	6.9	2.8	5.9
MT	5.3	8.2	7.7	8.7	3.3	8.9
NL	5.2	7.4	7.2	8.1	2.9	8.7
AT	7.3	10.0	10.9	11.3	4.0	11.4
PL	5.3	4.8	4.4	4.4	-0.9	4.4
PT	6.1	6.1	6.5	7.1	1.0	7.4
RO	2.3	6.9	7.4	7.4	5.1	7.4
SI	5.9	9.4	8.8	9.7	3.8	9.8
SK	4.5	8.6	8.3	8.5	4.1	8.5
FI	4.1	6.6	6.5	7.3	3.2	7.6
SE	5.4	4.5	4.4	4.6	-0.8	5.0
Average (simple)	5.4	7.0	7.6	7.9	7.9	8.5

Source: ECB (debt securities), ECB, Eurostat, national sources (all debt).

The share of debt denominated in foreign currency is limited, except in few non-EA Member States. As advanced economies finance themselves overwhelmingly in their own currency, currency-related fiscal risks are largely absent for the EU Member States that have adopted the euro (see Table 4.1). ([51]) Yet, foreign currency-denominated debt is large in some Central and Eastern European countries (CEEC). This is the case of Bulgaria and Romania (with a share well above 50% of total debt), ([52]) as well as to a lesser extent Poland, Hungary and Sweden. In the case of Croatia, the bulk of debt shown on Table 4.1 is denominated in euro, and the country joined the euro area in 2022. For all these Member States, hedging of foreign currency positions can mitigate potential exchange rate risks, ([53]) whereas pegs or currency boards also significantly reduce exposure to fiscal risks from the share of public debt in foreign currency. ([54]) Moreover, in these countries, the major share of foreign currency issuances are denominated in euro, and in some countries, governments have succeeded in reducing their reliance on foreign currency borrowing, e.g. in Czechia, Hungary, Poland and Romania (Eller and Holler, 2018).

EU Member States' investor base is solid, though in some cases, the substantial share of debt held by non-residents creates vulnerabilities. ([55]) Several euro-area Member States are found to have large shares of foreign held government debt, including Greece, Cyprus, the Baltic countries, Austria, Finland, Slovenia,

flows and its capacity to service its short-term external debt.

([51]) A domestic currency denomination traditionally protects governments against currency mismatches between a government's interest expenditure and tax revenue. Yet, in some countries, the rationale behind foreign-currency-denominated debt issuance is to attract foreign investors, not willing to bear the foreign currency risk. Ultimately, this may reduce funding costs for these governments (all else being equal) by reducing liquidity premia (see Eller, M. and Holler, J. (2018), Digging into the composition of government debt in CESEE: a risk evaluation, Oesterreische Nationalbank (OeNB)).

([52]) Bulgaria has a currency board since 1997 and nearly all of its foreign currency debt is issued in euro. While the peg is maintained, shocks to debt in foreign currency are virtually zero. Croatia has tightly managed arrangements, also limiting exchange rate fluctuations.

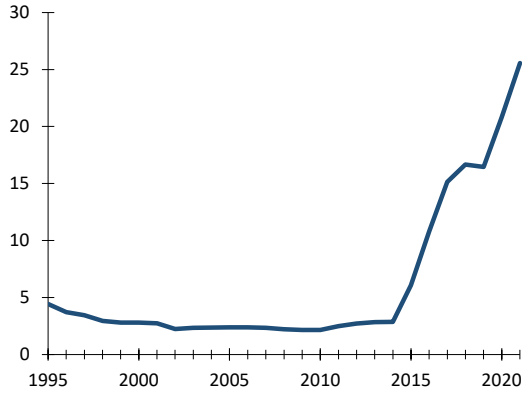
([53]) Hedging operations are not taken into account in the DSM.

([54]) On the idiosyncrasies of different exchange rate regimes and the extent to which exchange rate shocks could impact the public debt-to-GDP ratios see European Commission (2017), Debt Sustainability Monitor 2016, *European Economy Institutional Paper*, No. 47. - Chapter 2, Box 2.2.

([55]) Indeed, the foreign investor base tends to be more volatile and prone to sudden stops in situations of heightened uncertainty.

Belgium, Ireland, Slovakia and Romania (all beyond 50% of total government debt; see Table 4.1). However, in some cases, this high share reflects important official lending associated to past financial assistance programmes (Greece, Cyprus, Ireland and Portugal; see Graph 4.3). In others, the large foreign investor base underlines the country's worthiness, as shown by limited sovereign bond spreads (e.g. Austria, Finland and Belgium). ([56]) In general, it may also be beneficial for financial and macroeconomic stability as a higher share of foreign investors reduces the risks of adverse loops between the sovereign and the national banking systems. ([57]) For some other non-euro area Member States such as Romania, Poland and Hungary, the significant share of foreign held debt could be more associated with a search for yield given a more emerging markets status and relatively small local-currency markets.

Graph 4.3: **Share of government debt held by domestic central banks (% of total govt. debt, EA aggregate)**



(1) Based on Maastricht debt (at face value).
Source: ECB.

A detailed overview of government debt allocations by different holders indicates that an increasing share of government debt is held by domestic central banks (and the ECB for EA countries). By end 2021, in more than half of EA countries, at least one quarter of government debt was held by domestic Central Banks (see Graph 4.4). Largest shares are observed in Slovenia (close to 35%), Slovakia, Spain, Finland and Germany (close to 30%). For high debt countries, this share varies from less than 10% (Greece) to more than 25% (Spain). Moreover, for the EA on average, the share of debt held by (domestic) Central Banks has significantly increased since 2014 (when this share amounted to less than 3%; see Graph 4.3), notably reflecting asset purchases' programmes (see also chapter 1).

For almost all EA countries, the detailed overview of government debt allocation by different holders also indicates the degree of risks, notably refinancing and rollover risks (illustrated in Table 4.1**)** (see Graph 4.3). For medium size and larger EA economies, comparatively more significant shares of government debt are currently in the hands of non-EA central banks in the form of reserve assets (including Germany, France, the Netherlands, Finland, Austria, and Belgium). For smaller EA economies (e.g. Latvia, Lithuania, Slovenia and Slovakia), the rest of the EA financial sector has become a more important holder of government debt than these issuers' domestic financial sectors, suggesting that home bias is disappearing or transforming as the EA grows more integrated financially and financial institutions follow harmonised prudential rules under the Single Rulebook.

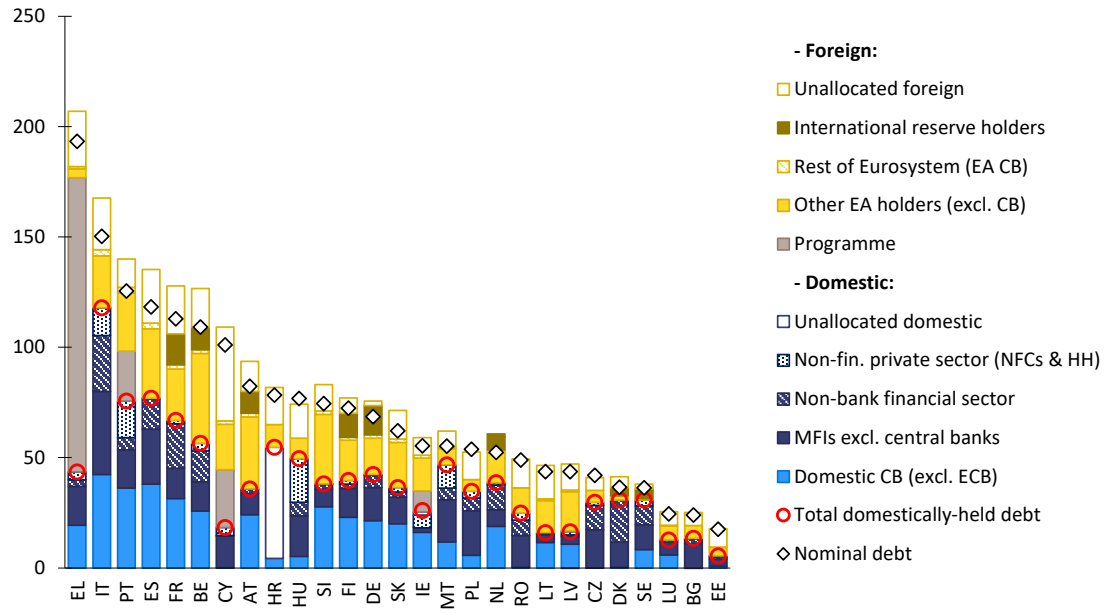
While evidence of domestic versus foreign debt holdings is mixed, the latter is more likely to entail risks when the foreign tenure is not particularly safe or confidence driven. In some Member States, such as Malta, Sweden and Italy, a high share of 2021 government debt is domestically held. Conversely, in a few cases relatively larger shares of government debt held by foreign and / or unidentified investors outside the euro area that are not reserve asset holders ('unallocated') may reflect risks usually associated to this uncertain, potentially more volatile basis (e.g. Romania, Cyprus, Lithuania, Finland and Slovakia).

The analysis of risks arising from the debt profile needs not be confined to these indicators and the associated benchmarks. Other factors, such as the exchange rate regime, the role of the

([56]) In Table 4.1, foreign-held debt figures are shown against a double shading that blends the colour coding of volatility risks from non-resident tenure (left side of the shaded cells) with that of sovereign risk given by the average spread on 10-year government bonds vs. Germany (right side of the shaded cells).

([57]) Bouabdallah, O., Checherita-Westphal, C., Warmedinger, T., De Stefani, R., Drudi, F., Setzer, R., and Westphal, A. (2017), Debt sustainability analysis for euro area sovereigns: a methodological framework, *ECB Occasional Paper*, No. 185.

Graph 4.4: **Holders of government debt (market value, % of GDP, 2021-Q4)**



(1) Debt refers to consolidated general government debt at market value, which for some countries differs from debt at nominal value (EDP debt) used in the rest of the report and represented here by white diamonds. For more details, see https://www.bis.org/publ/qtrpdf/r_qt1509g.htm and https://www.bis.org/statistics/totcredit/credgov_doc.pdf. (2) Only data for total MFIs (Monetary Financial Institutions) are reported. The split between commercial banks and central banks is an estimate based on annual nominal data. The category 'International reserve holders' represents holdings by international organisations and non-EA central banks as reserve assets. The category '(Rest of) Eurosystem' includes holdings by the ECB. The category 'Non-financial private sector' represents holdings by non -financial corporations (NFCs) and households (HH).
Source: Commission services based on ECB, Eurostat and IMF.

central bank in mitigating short-term liquidity needs, the capacity of the market to absorb debt, influence as well the results of the analysis. The underlying reasons for debt profile vulnerabilities, such as contagion, incomplete credit markets, weak debt management practices, may also be important in this regard.

4.2. LOOKING BEYOND 'GOVERNMENT DEBT': RISKS RELATED TO GOVERNMENT OTHER DIRECT AND CONTINGENT LIABILITIES

This section provides an analysis of the size and, when possible, the evolution of government liabilities other than 'EDP (or Maastricht) debt' in the EU. Such a complementary analysis allows identifying additional risk factors compared to the results of the standard debt sustainability analysis provided in this report (see Chapter 2). The section looks in particular into government direct liabilities that are not included in the EDP debt (Section 4.1), while sub-sections 4.2.2 to 4.2.3 discuss risks linked to contingent liabilities. Assessing the risks related to those liabilities, including the additional risks stemming from the banking sector, is particularly relevant in the current context, as vulnerabilities could eventually materialise.

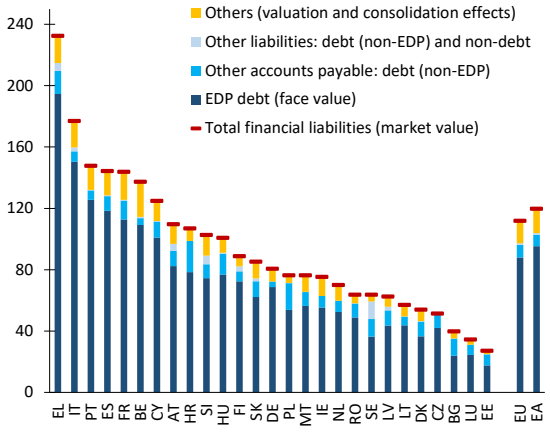
4.2.1. EDP debt, other debt and non-debt financial instruments: an overview

The EDP debt liabilities were the main component of on-balance government gross liabilities in 2021 in all Member States. In the EU as a whole, the EDP debt was around 90% of GDP in 2021 and accounted for about eight tenths of total gross financial liabilities in 2021 (see Graph 4.5). In terms of instrument coverage, debt securities, commonly in the form of bills, commercial papers and bonds, account for more than seven tenths of the government gross debt in most Member States. Contributions of loans, coins when issued by governments and deposits held by

entities classified inside general government tend to be less significant across Member States. ([58])

The difference between total gross liabilities and the EDP debt varies widely across Member States. In 2021, the portion of total gross government liabilities (at market value) not reflected in the EDP debt (measured at face value) ranged from 29 to 38% of GDP in Greece, Austria and Portugal, and close to 10% of GDP in Estonia, Luxembourg, and Lithuania. This difference consists of other debt instruments (so-called non-EDP debt), non-debt financial instruments and a gap due to different valuation and consolidation methods applied to financial liabilities. ([59])

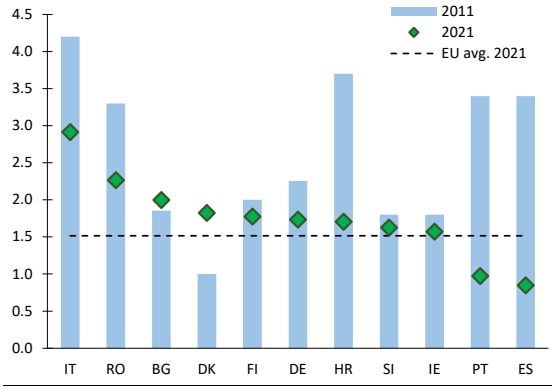
Graph 4.5: **Debt and non-debt financial liabilities (% of GDP, 2021)**



Source: Commission services based on Eurostat.

Among non-EDP debt liabilities, "other accounts payable" is the most significant component. Other accounts payable include trade credits and advances. These are in most cases outstanding short-term liabilities of the government from transactions of goods and services, and to a lesser extent other timing differences in settling obligations. During periods of financial distress, this debt instrument can become an important government financing alternative. For instance, in few Member States, such as Italy, Portugal, Romania, Spain and Slovenia, government trade debt tended to be higher during the Global Financial Crisis. Over time, stocks of trade credits and advances have receded in these Member States, while increasing in others (e.g. Belgium and Denmark). In 2021, as a share of GDP, these liabilities were highest in Italy (2.9% of GDP), Romania (2.3%), Bulgaria (2.0%), Denmark (1.8%), Finland (1.8%), Germany (1.7%) and Croatia (1.7%), and, compared to an EU average of 1.5% of GDP (see Graph 4.6). ([60])

Graph 4.6: **Trade credits and advances in selected Member States (2011 and 2021)**



Source: Eurostat.

Other liabilities (debt and non-debt financial instruments) are typically a narrow set of total government liabilities. In 2021, these other liabilities were more relevant for Sweden (12% of GDP – of which mainly insurance, pensions and standardised guarantees), Slovenia (5.7%– of which mainly financial derivatives and employee stock options), Greece (5.1%– of which mainly financial derivatives and employee stock options), Austria (4.6%), Finland (3.2%), Italy (2.6%), Slovakia (1.8%) and Latvia (2.4%), while accounting for less than 1% of GDP in other Member States.

The gap reflecting valuation and consolidation effects can be relatively large in some Member States. Ranging from 1% to 23% of GDP in 2021, this gap was highest in Belgium, Italy, Spain,

([58]) The share of loans can nevertheless be significant in some Member States, in particular in those that have benefited over the past years from financial assistance in the form of official loans.

([59]) The valuations of the EDP debt and ESA 2010 balance sheets are different. In particular, total gross EDP debt of the general government is valued at face value, while in ESA 2010, government gross liabilities are valued at market prices.

([60]) See Eurostat (2015), Note on stock of liabilities of trade credits and advances, April 2015 and Eurostat (2021), Note on stock of liabilities of trade credits and advances, October 2021.

Greece and France. In most cases, the magnitude of this gap is affected largely by the impact of different valuation bases for the EDP debt (face value) and gross financial liabilities (market value) and to a lesser extent by the impact of the consolidation method (EDP debt is consolidated both within and between the subsectors of the general government, gross financial liabilities only within subsectors). The consolidation effects are in fact small in most Member States. ([61])

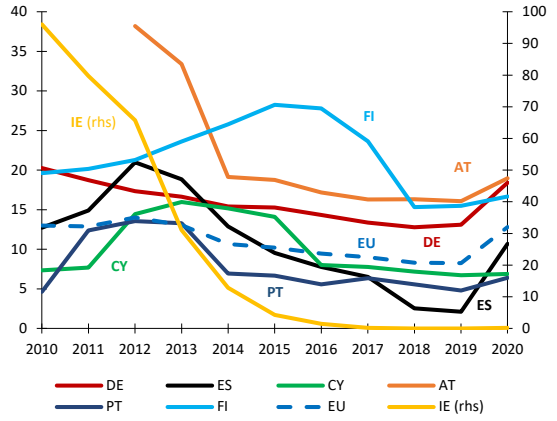
4.2.2. (Explicit) contingent liabilities in the EU

As part of the analysis of contingent liabilities proposed in this report, this section contains an overview of *explicit* contingent liabilities, as reported by Eurostat. These explicit contingent liabilities comprise government guarantees, including those related to government interventions in the financial sector, and liabilities related to off-balance PPPs (public private partnerships). ([62])

Government guarantees and PPPs up to 2020

Government guarantees represent a source of potential fiscal cost in several Member States, in case they are called. ([63]) Before the COVID-19 crisis, in 2019, the highest stock of outstanding government guarantees was recorded in Finland (about 25% of GDP), Denmark (more than 18%) and Austria (about 16% of GDP) (see Graph 4.8). In Finland, a sizeable part of the guarantees were related to export guarantees, student loans and funds for supporting housing production, and have been overall increasing since 2010 (see Graph 4.7). In Denmark, most guarantees concerned social housing and state-owned enterprises such as the Danish Railways, the national broadcaster DR and the Oresund, Storebaelt and Fehmarn connections. In *Austria*, guarantees were largely provided to nonfinancial private entities for export promotion, to public and private financial institutions during the crisis, and to non-financial public corporations such as road and rail infrastructure companies. ([64]) In the EU as a whole, after a peak at 14% of GDP in 2012, public guarantees have progressively declined around 9% of GDP in 2019 reflecting mainly the decline in the use of government guarantee schemes for financial institutions granted in the context of the 2007 Global Financial Crisis in a number of Member States. In 2020, a rebound in the recourse to public guarantees was recorded at 13% of GDP, as a result of the use of government guarantee schemes in the context of the COVID-19 crisis.

Graph 4.7: **Developments in government guarantees in selected EU Member States (% of GDP, 2010-2020)**



Source: Eurostat.

In most Member States, the largest category of government guarantees relates to one-off guarantees granted under individual contractual arrangements, usually involving more sizeable amounts. In 2020, the stock of *one-off guarantees* ranged from 25% of GDP in Finland and 19% of GDP in Austria to less than 1% of GDP in Romania, Lithuania, Latvia, Czechia, Bulgaria, Slovakia, Estonia and Ireland (see Graph 4.8). On the other hand, the total amount committed in *standardised guarantee schemes* (issued in large numbers for small amounts) carries a more modest risk for future

([61]) See Eurostat (2021), Stock-flow adjustment for the Member States, the euro area and the EU, for the period 2017-2020, October 2021 EDP notification.

([62]) This information can also be found in the statistical country fiches (see volume 2 of the 2021 Fiscal Sustainability Report). Note that some of this information may be overlapping, e.g. guarantees issued in the context of government interventions in the financial sector form a subset of total government guarantees. For this reason, evaluating the total risk by summing up the indicators could overestimate the potential impact.

([63]) Government guarantees are typically designed to reimburse a lender in case of possible losses linked to the loans it has provided. Government guarantees are issued to promote economic stability or pursue other public policy objectives, with the examples of guarantees on student loans or guarantees on the losses incurred by exporters in case of non-payment by a trading partner.

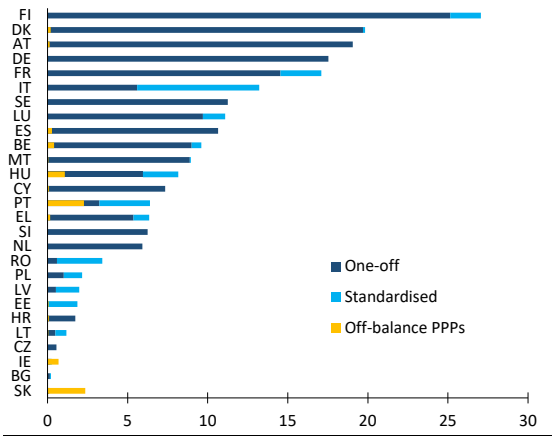
([64]) See IMF (2018), Austria. Fiscal Transparency Evaluation, *Country Report*, No. 18/193.

public expenditure in most Member States. These schemes account for more than 1% of GDP only in Italy (7.6% of GDP), Portugal (3.2%), Romania (2.8%), France (2.6%), Hungary (2.2%), Finland and Estonia (1.9% respectively), Latvia (1.5%). and Luxembourg (1.4%). ([65])

Contingent liabilities linked to off-balance public private partnerships (PPPs) are a modest source of risk for most Member States. The use of public private partnerships (PPPs) for economic and social infrastructure projects, such as for the development of transport infrastructures and hospitals, can generate additional liabilities for the government. Depending on the distribution of risks and rewards between private and public partner, assets and liabilities related to PPPs can be recorded either on government's balance sheet or on the private partner's balance sheet. The first ones (on-balance PPPs) affect government's debt directly. However, also for those PPPs where the private partner is exposed to the majority of risks and rewards, and which are therefore recorded off government's balance sheet, government may be contractually obliged to step in under certain circumstances (for example, failure of the private partner). For the EU as a whole, contingent liabilities related to off-balance PPPs have modestly accounted for no more than 0.1% of GDP since 2010 and are only affecting few Member States (see Graph 4.8). In 2020, more sizeable contingent liabilities related to off-balance PPPs were recorded in Slovakia (2.4% of GDP), Portugal (2.3%) and Hungary (1.1%).

([65]) In some cases, governments issued *standardised* guarantees in response to the COVID-19 crisis; for such guarantees, expected losses are recorded as estimated deficit impact upfront, in line with ESA 2010 rules. While high uncertainty remains, this mitigates the potential impact of the guarantees for future deficits. This was particularly the case for Italy, where the stock of guarantees increased most in 2020: as the guarantees issued in 2020 in response to the COVID-19 crisis were predominantly standardised, losses associated with the expected future guarantee calls (0.7% of GDP) were already reflected in the deficit of 2020.

Graph 4.8: **Government guarantees and off-balance PPPs in EU Member States (% of GDP, 2020)**

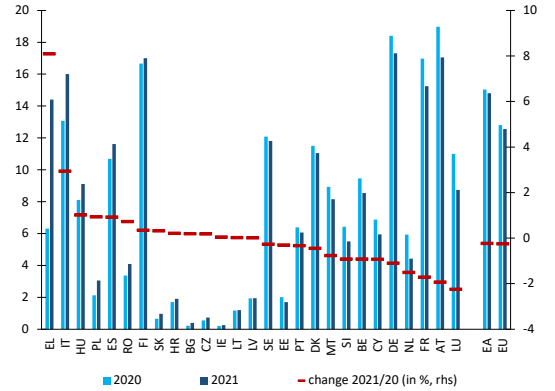


Source: Eurostat.

Government guarantees granted in the context of the COVID-19 crisis and recent developments

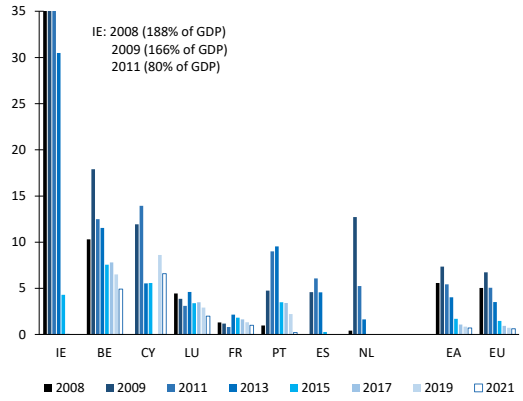
As a response to the COVID-19 crisis, Member States also provided significant liquidity support to households and businesses in the form of guarantees. During the COVID-19 crisis, the total stock of government guarantees for the EU as a whole increased from about 10% of GDP in 2019 to about 15% in 2020, and stabilised around that level in 2021. Large differences exist across Member States. While in 2021 increases were still recorded in Greece (about 8 pps. of GDP), Italy (about 3 pps.), and Hungary (1 pp.), the stock of guarantees in the remaining Member States has either stabilised (with a rise by less than 1 pp. of GDP) or decreased. The highest decrease in Luxembourg (-2.4 pps.), Austria (about -2 pps.), France (-1.7 pps.) and Netherlands (-1.5 pps.) (see Graph 4.8). Hence, the surge in government guarantees remained contained in most cases, and overall lower than during the Global Financial Crisis. It is worth noting that while the COVID-19 related guarantees schemes have expired in the course on 2020-21, some of the guarantees granted to sustain economic activity and sectors particularly hit by the pandemic might still be called over the near future and eventually be reflected in public debt and deficits, except in case of standardised guarantees.

Graph 4.9: **Stock of government guarantees (level and change 2021/20)**



(1) The 2021/20 change shown on the RHS also captures the dominator effect (GDP drop in 2020).
Source: Eurostat.

Graph 4.10: **Contingent liabilities linked to the financial sector interventions in the EU (2008-2021)**



Source: Eurostat.

Contingent liabilities and associated fiscal risks are expected to continue to ease in 2023. Government guarantees constituted an important part of support measures in response to the COVID-19 crisis. The reporting in the 2023 Draft Budgetary Plans highlights that the level of contingent liabilities has declined since 2021, as most of these government guarantee schemes have expired in the course of 2021 and 2022. Thus, no new COVID-19 related guarantees could be issued, while the guarantees granted in that context could still be in place for the near future. Furthermore, the cumulative issuance of guarantees linked to COVID-19 since 2020 is considerably lower than during the Global Financial Crisis. Nevertheless, the issuance of public guarantees in 2020 and 2021, including the COVID-19 related ones, has visibly affected the level of outstanding contingent liabilities in a number of Member States, particularly in Italy, Spain, France, Germany, Austria, Netherlands and Finland. ([66])

([66]) See European Commission (2022), Communication from the Commission to the European Parliament, the Council, and the European Central Bank on the 2023 Draft Budgetary Plans: Overall Assessment, COM (2022), 900 final, November.

Contingent liabilities related to government interventions to support financial institutions

A subset of contingent liabilities related to government interventions to support financial institutions have followed a downwards trend since 2013. Following an increase during and immediately after the Global Financial Crisis (GFC), the financial exposure of the government due to the financial stability schemes has been declining since 2013 in most Member States and in some countries already since 2012 (see Graph 4.10). In 2021, the contingent liabilities linked to financial stability schemes were close to zero in most Member States. Exceptions are Greece (10% of GDP), Cyprus (close to 7%), Belgium (5%), Luxembourg (2%) and France (1%). The lower level of outstanding contingent liabilities in recent years reflect the fact that improved financial stability did not require a renewal of the expiring guarantees issued as part of support packages for financial institutions and that the creation of the Banking Union and its bank resolution framework provides a credible alternative to direct public support. Though going forward, the full impact of the recent crises on financial institutions remains uncertain, for instance because some COVID-19 related guarantees might still be called (see next section).

4.2.3. Risks from contingent (implicit) liabilities related to the banking sector

A snapshot overview

In order to complement the analysis of potential (implicit) contingent liabilities, additional information is provided related to the banking sector. This consists of a heat map reporting values of variables that indirectly capture potential building risks in the banking sector and that have proven in the past to be good leading indicators of banking – fiscal crises. Adverse developments in terms of private sector credit flows, bank loan-to-deposit ratios, non-performing loans and house prices, can represent substantial risks to the government's financial position in the future and thus give rise to contingent liabilities, though recent regulation, notably under the Banking Union, helps mitigate such risks.

Key financial indicators point to contained vulnerabilities, though it is challenging to assess the precise impact of the recent crises on credit quality. Overall, recorded non-performing loans (NPLs) ratios declined over the past years (see also Graph 4.11). Between mid-2021 and mid-2022, NPLs ratios continued to decline in most Member States, with more sizeable reductions in Greece (-9.6 pps.), Cyprus (-5.5 pps.), Bulgaria (-2.9 pps.), Italy (-1.1 pps.), Ireland (-1.0 pps.), and Croatia (1.0 pps) ([67]). As of 2022Q2, the NPL coverage ratio shows that in the majority of Member States, NPLs are provisioned for in proportions of at least one third. Only in few cases (see Table 4.3), NPLs appear both high as a share of total loans, and provisioned for a level lower than 33% (i.e. Ireland – at 30.5% -, Cyprus – at 28.5% - and Malta – at 28.3%). Additional indicators point to contained vulnerabilities. Liquidity risks as indicated by the bank loan-to-deposit ratio are identified only in few Member States, e.g. in Denmark, Sweden, Finland and Luxembourg. Finally, risks on developments of private sector credit flows and house prices have increased in most Member States in light of the growth recovery in 2021 and the related pick up of investment. In few cases high risks stem from both the credit flow to the private sector and the change in the nominal house price index (i.e. Luxembourg, Hungary and Netherlands).

([67]) This overall declining trend is also confirmed by ECB data.

Table 4.3: **Potential triggers for contingent liabilities from the banking sector**

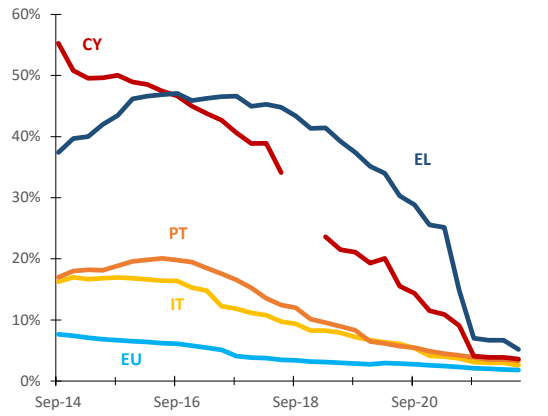
	Private sector credit flow (% GDP)	Bank loan-to-deposit ratio (%)	NPL ratio (% of total gross loans)	NPL ratio change (pps.)	NPL coverage ratio (%)	House price nominal index change (%)
BE	3.8	98.3	1.4	-0.3	44.3	7.1
BG	4.4	72.4	**3.5**	-2.9	65.7	8.7
CZ	2.9	78.3	1.2	-0.2	53.5	**19.7**
DK	**12.3**	**311.8**	1.5	-0.6	**27.3**	11.7
DE	5.7	123.8	1.0	-0.1	35.3	11.5
EE	6.5	99.8	0.7	-0.4	**29.5**	**15.1**
IE	2.6	72.5	**2.4**	-1.0	**30.5**	8.3
EL	-0.1	61.8	**5.2**	-9.6	41.8	7.5
ES	2.5	102.0	**2.8**	-0.4	41.8	3.7
FR	6.5	108.5	1.8	-0.2	48.6	6.3
HR	3.0	62.5	**2.9**	-1.0	62.6	7.3
IT	3.3	92.3	**2.6**	-1.1	52.7	2.6
CY	4.3	51.9	**3.6**	-5.5	**28.5**	-3.4
LV	0.9	70.3	0.6	-1.1	36.4	10.9
LT	5.9	68.5	0.9	0.0	38.5	**16.1**
LU	**53.9**	**143.5**	1.3	-0.1	**29.9**	**13.9**
HU	**12.7**	79.4	**3.7**	0.1	63.9	**16.5**
MT	9.4	52.5	**2.6**	-0.6	**28.3**	5.1
NL	**11.7**	115.8	1.3	-0.4	**25.7**	**15.0**
AT	7.4	96.2	1.8	-0.1	49.7	12.4
PL	4.0	83.6	**4.3**	-0.9	53.9	9.2
PT	4.0	73.3	**3.3**	-0.9	70.0	9.4
RO	3.8	63.2	**2.9**	-0.9	40.1	4.4
SI	3.5	69.4	2.2	-0.5	66.2	11.5
SK	5.5	111.5	1.5	-0.3	43.8	6.4
FI	6.1	**162.5**	1.1	-0.3	**30.2**	4.6
SE	**16.6**	**166.8**	0.3	-0.1	51.3	10.1

(1) Upper and lower thresholds (see Annex A4): (i) Private sector credit flow (% GDP): upper threshold 11.7%, lower threshold 9.4%; (ii) Nominal house price index (Y-o-Y Change): upper threshold 13.2%, lower threshold 11.0%; (iii) Bank loans-to-deposits ratio: upper threshold 133.4%, lower threshold 107.0%; (iv) NPL ratio: upper threshold 2.3%, lower threshold 1.8%; (v) NPL ratio (Change): upper threshold 0.3 pps, lower threshold 0.2 pps; (vi) NPL coverage ratio: lower threshold 66%; upper threshold 33%.
Source: Eurostat (2021– for private sector credit flows and change in house price nominal index), EBA (June 2022 – for other variables reported).

Caution is however warranted in interpreting these developments as the magnitude of the negative impact of the recent crises on banks' balance sheets remains uncertain. As explained in the next section, figures and risk indicators are affected by public support measures adopted by Member States (in particular, the introduction of loan moratoria and public guarantee schemes) and by monetary policy measures. ([68]) The borrower relief and liquidity support measures have mitigated the impact of the pandemic on bank balance sheets, so that an increase in NPLs may have been deferred until the support measures would be phased out because of the recourse to moratoria for instance. ([69]) This should be borne in mind when interpreting recent figures and inferring the impact of the crisis (and of mitigating measures) on credit risk.

([68]) For a detailed discussion of this point see for instance European Commission, ECB, SRB (2021), Monitoring report on risk reduction indicators, November 2021.
([69]) See European Commission, ECB, SRB (2021), Monitoring report on risk reduction indicators, May 2021.

Graph 4.11: **Non-performing loans ratio in the EU and selected countries (% of total loans)**



Source: EBA.

Implicit contingent liabilities from severe stress scenarios on the banking sector (SYMBOL model)

The analysis of potential contingent liabilities specifically related to the banking sector is completed by the SYMBOL model, estimates implicit contingent liabilities (and related losses) using bank stress scenarios'.

The COVID-19 pandemic has been a stress test for both the European banking system and the European bank crisis management framework. While evidence suggests that banks have remained resilient during the pandemic, validating past regulatory reform efforts, some financial stability risks remain as the uncertainty surrounding the banking sector outlook remains high. The COVID-19 pandemic has directly affected public finances and has resulted in significant increases in public debt levels, calling for targeted measures to avoid the onset of an adverse bank-sovereign 'doom loop' as seen in the past crisis. The effort made at the EU level with the NextGenerationEU, the largest stimulus package in the history of the Union, supported substantially the recovery from a challenging macroeconomic situation.

Gauging the effect of the crisis on the banking sector is challenging as measures to offset its impact may affect the interpretability of available information. As such, in 2020, the EBA, the Commission, the ECB and the SRB ([70]) performed a useful assessments of the impact of COVID-19 on the EU banking sector, which showed a significant impact on asset quality and on non-performing loans developments.

The potential impact of the banks' losses on public finances ([71]) presented here is estimated using Systemic Model of Banking Originated Losses (SYMBOL). The model has been developed by the European Commission's Joint Research Centre (JRC) and the Directorate General Financial Stability, Financial Services and Capital Markets Union (DG FISMA). Similarly to previous exercises, SYMBOL ([72]) uses

([70]) See EBA (2020), The EU banking sector: First insights into the COVID-19 impacts, *Thematic Note*, No. 17/2020 and European Commission, ECB, SRB (2021), Monitoring report on risk reduction indicators, May 2021.

([71]) Second-round effects, which would be linked to the fiscal consequences of possible bank failures, are not taken into account. As explained in Part 5.2.2 and in Part IV of European Commission (2016), Fiscal Sustainability Report 2015, *European Economy Institutional Paper*, No. 018 and in Chapter 2 of European Commission (2011), Public Finances in EMU 2011, *European Economy*, No. 3/2011, the relationship between the government's budget and banks' balance sheets is not uni-directional but rather circular and dynamic. Dynamic effects are, however, beyond the scope of the analysis presented here. It is not taken into account, for instance, that a downgrading of sovereign bonds reduces the value of bank assets and can lead to higher funding costs and further bank downgrading.

([72]) More details are reported in European Commission (2016), Fiscal Sustainability Report 2015, *European Economy Institutional Paper*, No. 018. SYMBOL has been used by the European Commission for the ex-ante quantitative impact assessment of several legislative proposals (see Marchesi, M., Petracco Giudici, M., Cariboni, J., Zedda, S., and Campolongo, F. (2012), Macroeconomic cost-benefit analysis of Basel III minimum capital requirements and of introducing deposit guarantee schemes and resolution funds, *European Commission JRC Scientific and Policy Report*, 24603; European Commission (2011), Commission staff working document - impact assessment accompanying the proposal for a directive of the European Parliament and of the Council establishing a framework for the recovery and resolution, SWD(2012) 166 final; Cariboni, J., Petracco Giudici, M., Pagano, A., Marchesi, M., and Cannas, G. (2012), Costs and Benefits of a New Bank Resolution Framework, *European Commission JRC Scientific and Policy Report*, 78882; Cannas, G., Cariboni, J., Naltsidis, M., Pagano, A., and Petracco Giudici, M. (2013), 2012 EU 27 banking sector database and SYMBOL simulations analyses, *JRC Scientific and Technical Report*, 86395; Cariboni J., Di Girolamo, F., Maccaferri, S., and Petracco Giudici, M. (2015), Assessing the potential reduction of DGS funds according to Article 10(6) of Directive 2014/49/EU: a simulation approach based on the Commission SYMBOL model, *JRC Technical report*, 95181), for the cumulative evaluation of the entire financial regulation agenda (ERFRA, European Commission, (2014), Commission staff working document – Economic

unconsolidated balance sheet data to assess the individual banks' losses in excess of their capital and the recapitalisation necessary to allow banks to continue to operate in case of distress. In particular, to account for the crisis environment, the SYMBOL assessment incorporates stress test results provided by the institutions mentioned above, and reports results under both a baseline and a stressed scenario (as done in the previous reports) ([73]).

The model estimates the potential residual costs on government budgets after all layers of the legal safety net available (capital, bail-in, resolution funds) have been deployed. The contingent liabilities due to a potential banking crisis are then split in government deficit and gross public debt. The implicit contingent liabilities that arise from the total funding needs, represented by the losses in excess of capital and recapitalisation needs at 10.5% of the Risk Weighted Assets (RWA) ([74]), are estimated for the short term and for the long term (ten year forward) scenarios (see Table 4.4 for the results and Annex A9 for details on the methodology). On the one hand, bank losses in excess of capital after the safety net are assumed to be covered by public injections of funds to the banking sector, affecting public deficit and debt. On the other hand, recapitalisation is deemed to be recoverable, since capital injection is done in exchange of shares (partial government ownership of the bank) being recorded as a financial transaction does not affect the deficit, but impacts (gross) debt through the stock-flow adjustment ([75]).

The COVID-19 outbreak posed a challenge to public finances by disrupting economies, though financial stability prevailed. Financial reforms adopted after the great financial crisis strengthened banks risk management processes, helping address the current challenge. This also helped preserve banks' credit flows to households, small businesses and corporates, cushioning the impact of the crisis and supporting the economic recovery ([76]). Coupled with direct government support to households and businesses ([77]), the improved regulatory environment mitigated the impact of the health crisis on bank balance sheets. Yet, a risk of a delayed adverse impact on the financial position of banks (e.g. non-performing loans) remains, notably as government support measures are now partially phased out. Moreover, the current energy crisis, and the changing macro-financial environment represent a new challenge for the banking sector.

The analysis in this section aims at quantifying the potential impact of a systemic banking crisis on public finances. As the estimates are based on 2021 data still affected by the COVID-19 crisis, the model was adapted to reflect the increased risk of bank losses, given the fact that government and other supportive measures were temporary. Thus, to assess properly the potential impact of a systemic banking crisis on public finances with

review of the financial regulation agenda) and for the estimation of contingent liabilities linked to public support to the EU banking sector (European Commission (2011), Report on public finances in EMU (2011), *European Economy*, No. 3; European Commission (2012), Fiscal sustainability report, *European Economy*, No. 8; European Commission (2016), Fiscal sustainability report 2015, *European Economy Institutional Paper*, No. 018; Benczur, P., Berti, K., Cariboni, J., Di Girolamo, F. E., Langedijk, S., Pagano, A., and Petracco Giudici, M. (2015), Banking stress scenarios for public debt projections, *Economic Papers*, No. 548).

([73]) This particular implementation of SYMBOL, tailored for the treatment of the COVID-19 environment, is detailed in Bellia, M., Di Girolamo, F.E., Orlandi, F., Pagano, A., Pamies, S. and Petracco Giudici, M. (forthcoming 2023), Assessing risks for public finances stemming from banks in volatile times, European Commission Discussion Paper.

([74]) Risk-weighted assets refers to the risk exposure amounts. It are used to determine the minimum amount of regulatory capital that must be held by banks to maintain their solvency. This minimum is based on a risk assessment for each type of bank risk exposure. The riskier the asset, the higher the RWAs and the greater the amount of regulatory capital required.

([75]) Under the assumption that such recapitalisations meet the following criteria of the Eurostat's decisions on the statistical recording of public interventions to support financial institutions and markets: the financial instrument used ensures a sufficient non-contingent rate of return and the State Aid rules are complied with (see March 2013 Decision and the earlier July 2009 Decision).

([76]) Macroprudential authorities, supervisors and macroprudential oversight bodies have allowed banks to release capital buffers, to defer the recognition of bad loans, and have recommended them to refrain from paying dividends with the final goal to deal with the consequences of the COVID-19 shock and provide lending to companies and households. These extraordinary measures has been terminated as of 10 February 2022, see FAQs on ECB supervisory measures in reaction to the coronavirus.

([77]) By the end of 2021, both EBA and ESRB data pointed to a substantial amount (around €400bln) of loans benefitting from (an uptake of) public guarantees, while moratoria measures has been suspended. However, there is a considerable stock of loans with expired moratoria (around €750bln) which might become problematic in the near future (see Box 4.1).

SYMBOL, several data adjustments were made in the baseline linked to the Covid-19 crisis to avoid underestimating potential bank losses in the estimates, and are notably based on the results of the EBA stress test (for the short-term scenario). These adjustments are presented in greater detail in Box 4.1. ([78]) Moreover, while loans under public guarantees are booked in the banks' balance sheet at a risk weight of zero, RWAs were adjusted assuming such (new) loans have average riskiness to avoid understating the risks of such loans due to the COVID-19 environment. In addition, in the SYMBOL simulations, losses associated to loans guaranteed by the state are directly transferred to public debt (without passing through the safety net cascade).

As in previous reports, only short-term effects of NPLs on the banking sector are considered in **the baseline ([79]), as their effect is assumed to become negligible over the long-term.** However, an adjustment is introduced to reflect an assumed delaying of adverse NPL developments due to moratoria ([80]). Specifically, the reported NPLs amount was adjusted by adding to it the amount of Stage 2 loans under moratoria, indicating that the latter loans could become non-performing in the near future ([81]). This adjustment reflects this by assuming that Stage 2 loans that are under moratoria or expired moratoria would eventually become NPLs (see Box 4.1).

The (adjusted amount of) NPLs is treated as in the previous reports. The baseline short-term scenario reflects how insufficient provisioning for NPLs may lead to overestimation of capital and to underestimation of potential losses in a banking crisis ([82]). The baseline modelling assumption is that non-collateralised NPLs count as loan losses for the system, while those that are collateralised (by immovable property) are redeemable subject to a recovery rate ([83]). Specifically, for each bank i and each country j, potential loans losses from NPLs are computed as follows:

$$NPLs\ Losses_{i.j} = \left(1 - CollShares_{i.j}\right) \times NPLs_{i.j} + CollShares_j \times NPLs_{i.j} \times \left(1 - RR_j\right) - Provisions_{i.j}$$

where RR is the recovery rate ([84]). *CollShares* represent the proportion of total loans covered by collateral, i.e. implicitly assuming that this proportion is also representative for the subset of NPLs ([85]). Provisions and NPLs are the amount of provisions and gross non-performing loans declared by banks in their balance sheet. The extra loan losses that come from the NPLs calculated as per the above equation are then added to those coming from the SYMBOL simulation before the intervention of any safety net tools. ([86])

The approach used can be described as follows: i) The results are calibrated to match the severity of the 2008-2012 crisis, i.e. a severe and systemic crisis event, in line with the crisis event defined in

([78]) See also Bellia, M., Di Girolamo, F.E., Orlandi, F., Pagano, A., Pamies, S. and Petracco Giudici, M. (forthcoming 2023), Assessing risks for public finances stemming from banks in volatile times, European Commission Discussion Paper.

([79]) To recall in the baseline the correlation among banks is fixed to 0.5 and the NPL recovery rate is fixed per country.

([80]) The ECB introduced a specific package concerning the treatment of NPLs, allowing banks to exercise flexibility for the classification of the debtors in the case of exposures covered by moratoria. See for details Budnik, K.B., Dimitrov, I., Groß, J., Jancoková, M., Lampe, M., Sorvillo, B., Stular, A. and Volk, M. (2021), Policies in support of lending following the coronavirus (COVID-19) pandemic, *ECB Occasional Paper Series*, No. 257. This package, together with other measures, has been terminated as of 10 February 2022, thus after our sample period (which is related to end-2021 balance sheet data).

([81]) Using EBA aggregated data on loans under moratoria and under Stage 2.

([82]) The strong reduction in the NPL ratios might also be due to an increase in lending by banks (i.e. dominator effect). EBA data show that the gross loans increased by 7% between 2020Q4 and 2021Q1 in their EU sample. In addition, the new regulation on the prudential backstop for non performing exposures is not taken into account in the current set up.

([83]) Note that this approach may entail a bias of different kind (and sign) depending on the circumstances and the type of loans – e.g. in the of difficult foreclosure of household mortgages (leading to loss underestimation) or when household's mortgages command better recovery rates than applicable to firms (leading to loss overestimation).

([84]) Based on country data provided by the World Banks in its flagship report "Doing Business 2020" available here.

([85]) Based on ECB data.

([86]) As explained in the Annex 9, in case of a financial crisis there will be losses due to defaults from the private sector (before any safety net intervention). These losses are estimated by the probability of default of the portfolio of the bank related to credit risk. After safety net intervention, there could be extra losses among which those coming from NPLs. For more details see Bellia M., Di Girolamo, F.E., Orlandi, F., Pagano, A., Pamies, S. and Petracco Giudici, M. (forthcoming 2023), Assessing risks for public finances stemming from banks in volatile times, European Commission Discussion Paper.

previous reports. ([87]). ii) Second, as indicated above, the impact of (existing) NPLs is considered only in the short term. ([88]) iii) Third, a (conservative) assumption is made, whereby all simulated banks' excess losses and recapitalisation needs that cannot be covered by the safety net fall on public finances. iv) Fourth, the safety net is assumed to prevent the onset of any contagion effects ([89]). v) Finally, in the main scenario, non-significant banks are liquidated, and significant banks might be recapitalised or liquidated. This assumption is consistent with the fact that entities under direct ECB supervision do not go automatically into resolution, as the SRB decides on a case-by-case basis the resolution of the bank. ([90]).

The stressed scenario is constructed with the following features: as in previous reports, to mimic a fire sales mechanism, increased asset correlation is calibrated in line with the importance of common shocks. During a financial crisis, banks will sell assets to keep their liquidity positions. If many banks are exposed to the same shock, this will have a negative impact on the asset value (i.e. fire sales environment). The intensity of this mechanism is linked to size of the common shock, which underpins the degree of asset correlation. As in previous reports, NPL losses are modelled by linking the level of recovery rates to the level of the common shock. This hypothesis takes into account that markets force banks to clean up their balance sheets during a financial crisis. NPLs are liquidated and the losses arising from this forced sale depends on the recovery rate for NPLs. The higher the common shock, the larger the markets pressure to clean up balance sheets. As pointed out before, the amount of NPL is increased to take into account the current moratoria on loans.

Under all scenarios, the required level of recapitalisation is set at 10.5% of RWA for each bank. This represents the minimum level of capital and capital conservation buffer set by the CRDIV. The extra capital buffers built for G-SIIs are also to be recapitalised. ([91])

Under the short-term (2022) baseline scenario ([92]), the expected budgetary impact of a major crisis ([93]) seems negligible for most Member States with losses and recapitalisation needs generally not exceeding 1% of the GDP (see Table 4.4). Highest figures are recorded for Luxembourg (2% of GDP). Similarly, in the long-term (2032) baseline scenario, where current NPL stocks' effects are assumed negligible, final losses are negligible for all countries. Hence, under the baseline, results show that the risk that contingent liabilities has a significant impact on public finances under the short-term and long-term baseline is limited.

Under the (stressed) scenario, more serious adverse results are expected with combined

([87]) Bank losses and recapitalisation needs triggered by the last crisis are proxied by state aid data, in particular the total recapitalisation and asset relief provided to banks over 2008-12 (around 615 bn euro), see European Commission (2014), State Aid Scoreboard 2014, and Benczur, P., Berti, K., Cariboni, J., Di Girolamo, F.E., Langedijk, S., Pagano, A. and Petracco Giudici, M. (2015), Banking stress scenarios for public debt projections, *Economic Papers*, No. 548.

([88]) SYMBOL models NPLs not covered by collateration or provisions. In addition, the analysis includes the analysis the potential impact of stage 2 loans, which might become NPLs in the worse case scenario. In the SYMBOL framework, this is a short-term one-off effect as over the long run banks will recognise this NPLs, write-off part of the credits and clean up the balance sheet such that this NPL effect would not persist over time.

([89]) Potential contagion across banks through bail-in (some of the losses absorbed by the safety net re-entering the banking system) is disregarded due to scarce data. Contagion across Global Systemically Important Banks (or GSIBs) due to the bail in has been already addressed by the new banking package, where cross-holdings of TLAC instruments are to be deducted between G-SIBs.

([90]) Please note that (i) in practice, most of the SRB's banks (82% of the total number of SRB banks accounting for 97% of total exposure at risk) are earmarked for resolution. In contrast, liquidation is foreseen for 18% of the banks, which account for 3% of total exposure at risk, mostly made up of public development banks and smaller banks with a specific business model. (2022-07-13_SRB-Resolvability-Assessment.pdf (europa.eu)). (ii) Up until last year, for DSA exercises, the standard assumptions were either that only significant institutions go into resolution, or that all banks go into resolution. The current set up is thus more favorable to resolution funds, because a share of the significant banks (20%) is now supposed to go into liquidation. More details can be found in detailed in Bellia M., Di Girolamo F.E., Orlandi, F., Pagano, A., Pamies, S. and Petracco Giudici, M. (forthcoming 2023), Assessing risks for public finances stemming from banks in volatile times, European Commission Discussion Paper.

([91]) O-SIIs buffers are not taken into account due to unavailability of data and technical limitation in identifying the subsidiaries of all OSI.

([92]) With loans under public guarantees, moratoria, NPLs and Regulatory Capital reflecting data up to 2021Q3, provided by EBA.

([93]) That is impact due to excess bank losses and recapitalisation needs, after cascade intervention of regulatory tools.

losses and recapitalisation needs reaching up to 2-3% of GDP in some Member States, and up to 8% of GDP in one country. ([94]) In the short-term, the largest effects are witnessed for Cyprus (3.2% of GDP), Spain (1.8%), Greece (2.0%) and Luxembourg (7.8%). In the long-term stressed scenario, only Spain (1.0% of GDP) and Luxembourg (5.4%) have losses that exceed 1% of GDP, although linked to recapitalisation needs rather than excess losses, which partly reflects the large size of the banking sector in these countries.

Only in few countries, in case of a systemic banking crisis, related implicit contingent liabilities are likely to have an impact on public finances greater than 3% of GDP (Table 4.5). ([95]) The colour coding of the heat map reflects the relative magnitude of the theoretical probabilities of such an event (see Annex A9 for the details of heat map calculation and calibration). In the short-term, contingent liabilities would not have a potentially significant impact on public finances, under the baseline scenario for any Member States but Luxembourg. Under the more extreme (stressed) scenario, some Member States (i.e. Luxembourg, Cyprus, Greece, Spain and Portugal) post some probability of their public finances being hit by losses of (at least) 3% of GDP. Over the long-term, only for Luxembourg contingent liabilities would signal a potentially significant impact on public finances under the stressed scenario.

([94]) While in the baseline scenario, the correlation among banks is fixed to 0.5 and the NPL recovery rate is fixed per country, in the stressed scenario the correlation and the NPL recovery rate vary with the realisation of the common factor (i.e. the higher the realisation of the common factor, the higher the correlation between banks and lower the recovery rate). In addition, in the stressed scenario.

([95]) The theoretical probability of public finances being hit by more than a certain share of GDP is directly linked with the magnitude of implicit contingent liabilities presented earlier, the results in the heat map are highly correlated with those in Table 5.2. However, other factors such as a high concentration of a banking sector may also increase the theoretical probabilities presented in the heat map.

Table 4.4: **Implicit contingent liabilities from banks' excess losses and recapitalisation needs under alternative scenarios (% GDP 2021)**

Scenarios:	Initial (2023) short term scenarios				Final (2033) long term scenarios			
	Baseline (a)		Stressed (b)		Baseline (a)		Stressed (b)	
	Excess losses To deficit and debt	Recap needs 10.5% Directly to debt	Excess losses To deficit and debt	Recap needs 10.5% Directly to debt	Excess losses To deficit and debt	Recap needs 10.5% Directly to debt	Excess losses To deficit and debt	Recap needs 10.5% Directly to debt
BE	0.0%	0.1%	0.1%	0.7%	0.0%	0.1%	0.0%	0.5%
BG	0.0%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%	0.1%
CZ	0.0%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%	0.2%
DK	0.0%	0.2%	0.1%	0.7%	0.0%	0.1%	0.1%	0.7%
DE	0.0%	0.1%	0.1%	0.3%	0.0%	0.0%	0.0%	0.2%
EE	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
IE	0.0%	0.2%	0.1%	1.0%	0.0%	0.1%	0.1%	0.5%
EL	0.1%	0.5%	0.3%	2.0%	0.0%	0.0%	0.0%	0.4%
ES	0.2%	0.4%	0.4%	1.8%	0.0%	0.1%	0.1%	1.0%
FR	0.1%	0.3%	0.3%	1.2%	0.0%	0.1%	0.1%	0.8%
HR	0.0%	0.1%	0.0%	0.3%	0.0%	0.0%	0.0%	0.2%
IT	0.2%	0.3%	0.4%	1.4%	0.0%	0.1%	0.1%	0.6%
CY	0.0%	0.4%	0.3%	3.2%	0.0%	0.0%	0.1%	0.4%
LV	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
LT	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
LU	0.1%	1.9%	0.3%	7.8%	0.0%	0.7%	0.2%	5.4%
HU	0.0%	0.1%	0.0%	0.3%	0.0%	0.1%	0.0%	0.3%
MT	0.1%	0.1%	0.2%	0.7%	0.0%	0.0%	0.0%	0.3%
NL	0.0%	0.2%	0.1%	0.9%	0.0%	0.1%	0.1%	0.7%
AT	0.0%	0.2%	0.1%	1.0%	0.0%	0.1%	0.0%	0.5%
PL	0.1%	0.4%	0.2%	1.6%	0.0%	0.1%	0.0%	0.6%
PT	0.1%	0.3%	0.3%	1.8%	0.0%	0.1%	0.1%	0.7%
RO	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.1%
SI	0.0%	0.1%	0.1%	0.6%	0.0%	0.0%	0.0%	0.4%
SK	0.0%	0.7%	0.1%	1.6%	0.0%	0.2%	0.0%	0.8%
FI	0.0%	0.1%	0.1%	0.4%	0.0%	0.0%	0.0%	0.3%
SE	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%

Source: Commission services.

Table 4.5: **Theoretical probabilities of public finances being hit by more than 3% of GDP in the event of a severe crisis**

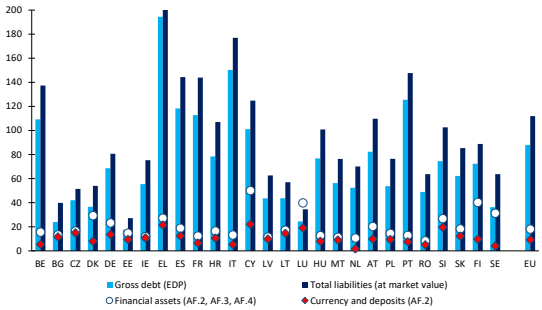
	Initial (2023) short-term scenarios		Final (2033) long-term scenarios	
	Baseline (a)	Stressed (b)	Baseline (a)	Stressed (b)
BE	0.02%	0.38%	0.02%	0.29%
BG	0.01%	0.09%	0.00%	0.04%
CZ	0.01%	0.14%	0.01%	0.12%
DK	0.19%	0.55%	0.05%	0.50%
DE	0.01%	0.12%	0.00%	0.10%
EE	0.00%	0.02%	0.00%	0.01%
IE	0.06%	0.65%	0.03%	0.32%
EL	0.11%	1.50%	0.01%	0.23%
ES	0.15%	1.28%	0.06%	0.67%
FR	0.06%	0.65%	0.02%	0.45%
HR	0.00%	0.09%	0.00%	0.07%
IT	0.06%	0.79%	0.02%	0.29%
CY	0.15%	2.50%	0.02%	0.30%
LV	0.00%	0.02%	0.00%	0.02%
LT	0.01%	0.03%	0.00%	0.02%
LU	1.45%	5.62%	0.36%	3.26%
HU	0.02%	0.12%	0.01%	0.11%
MT	0.04%	0.46%	0.01%	0.22%
NL	0.08%	0.59%	0.02%	0.43%
AT	0.01%	0.43%	0.00%	0.22%
PL	0.02%	0.80%	0.01%	0.22%
PT	0.07%	1.18%	0.03%	0.43%
RO	0.00%	0.02%	0.00%	0.02%
SI	0.00%	0.21%	0.00%	0.15%
SK	0.04%	0.71%	0.01%	0.23%
FI	0.03%	0.29%	0.02%	0.23%
SE	0.03%	0.07%	0.01%	0.06%

Green: low risk (probability lower than 0.50%); Yellow: medium risk (probability between 0.50% and 1%); Red: high risk (probability higher than 1%).
Source: Commission services.

4.3. GOVERNMENT ASSETS AND NET DEBT

In 2021, the net debt ([96]) in the EU was about 18 pps. of GDP lower than gross debt, with sizeable differences across Member States. This essentially reflects the large variation of government financial assets across Member States, which is due to the set-up of pension systems, the past realisation of contingent events, or country-specific fiscal policies such as maintenance of large cash buffers. The difference between gross and net debt was more than 30 pps. of GDP for Sweden, Finland, Luxembourg and Cyprus (see Graph 4.12) and 20-30 pps. in the cases of Austria, Germany, Greece, Slovenia and Denmark. For Luxembourg, among the Member States with the lowest gross debt, net debt is even negative as the value of financial assets exceeds the outstanding government debt at face value. The difference between gross and net debt is less than 10 pps. of GDP for Romania. Among the Member States considered, for those with the highest government debt, i.e. Greece, Italy, Portugal, Spain and France, net debt is around 15 pps. of GDP lower than gross debt (though for Greece, the difference is higher at about 27 pps. of GDP due to large cash buffers). Also in net terms, these countries have the highest debt burden among EU Member States. Overall, country rankings for indebtedness are similar when comparing gross and net debt.

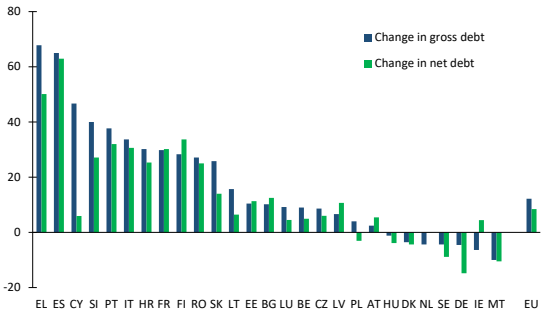
Graph 4.12: **Gross debt, total liabilities and financial assets in 2021 (% of GDP)**



Source: Commission services based on Eurostat.

In most Member States gross and net debt ratios have increased over the past decade (see Graph 4.13). In the majority of Member States, debt increased under both gross and net terms over the last decade. In Malta, Hungary, Germany and Sweden, both gross and net debt ratios decreased between 2009 and 2021. A large (positive) difference between changes in gross and net debt is found for Cyprus. In this country, gross debt rose by about 50 pps. of GDP between 2009 and 2021, while over the same period, net debt only increased by 6 pps. of GDP. The large-scale financial sector rescue operations led to higher deficits and debt but also involved the accumulation of financial assets. This example illustrates how net debt figures help interpret increases in gross debt that result from financial assistance to the private sector.

Graph 4.13: **Change in gross and net government debt ratio (pps. of GDP, 2009-21)**



(1) The following financial assets are considered for the calculations of net debt: currency and deposits (AF.2), debt securities (AF.3) and loans (AF.4).
Source: Commission services based on Eurostat.

([96]) Measured as the difference between, on the one hand, EDP debt and, on the other hand, financial assets in the form of currency and deposits (AF.2), debt securities (AF.3) and loans (AF.4).

Box 4.1: Details on SYMBOL, RWA, guarantees and moratoria

This box presents adjustments to the SYMBOL-based analysis to address specificities in the aftermath of the COVID-19 crisis ([1]), whose economic and financial consequences are still present. The COVID-19 crisis and associated government measures had a significant impact on a set of key indicators of the SYMBOL-based analysis. In order to consider this, adjustments were introduced in the form of the treatment of information related to risk weighted assets (RWA), loans under public guarantees and loans under (expired) moratoria.

1. REGULATORY MEASURES AND REPRESENTATIVENESS OF THE ACTUAL RISK WEIGHTED ASSETS

Balance sheet data for Q4 2021 show that the riskiness of bank's portfolios declined in 2020, although to a smaller extent than in 2019. The riskiness of banks' portfolios can be measured with the density of RWA. At EU level, this density declined from 40.9% in 2018 to 37.6% in 2020 and 36% in 2021. Given the strong economic downturn due to the COVID-19 crisis, this development is likely to be driven by the exceptional measures put in place by the regulators, which have a substantial impact on internal risk evaluation for reporting purposes. As such, reported RWAs by banks potentially underestimate the actual riskiness of banks' portfolios.

To account for a potential bias on the reported RWAs, a correction to the RWA coefficients were applied in line with the adverse scenario by the EBA stress test ([2]).

The EBA performed a stress test exercise to evaluate the impact of adverse market developments on banks, under a baseline and an adverse scenario at different time horizons (from end of 2021 to end of 2023). The correction applied to RWAs ensure that, in the short term, riskiness of banks are in line with the adverse scenario depicted by EBA.

The impact of this correction on RWAs levels can be quite sizeable (see Table 1). The average increase of the RWAs of banks in the EU is around 8%. However, for some Member States (e.g. Denmark, the Netherlands, France and Germany) RWAs would increase by more than 10%. For this exercise, the end-2022 stress test correction, which is more severe with respect to the end-2021 correction used in the previous exercise, is considered to capture the heightened uncertainty of the economic context. For some Member States, the corrected RWAs density in 2021 remain lower than the year before (see Graph 1).

Table 1: **EBA stress test-based adjustments of RWAs (deviations from baseline, end of 2022)**

BE	6.2%	LT	8.0%
BG	8.0%	LU	8.0%
CZ	8.0%	HU	8.2%
DK	17.0%	MT	8.0%
DE	11.9%	NL	16.4%
EE	8.0%	AT	8.5%
IE	2.7%	PL	3.6%
EL	8.0%	PT	0.8%
ES	2.7%	RO	8.0%
FR	13.5%	SI	8.0%
HR	8.0%	SK	8.0%
IT	4.5%	FI	7.0%
CY	8.0%	SE	9.4%
LV	8.0%		

(1) Percentage change adjustment of RWAs based on adverse EBA scenario (end of 2022).
(2) In red, missing data replaced by standard assumption: we assume average increase of available data for the Member States included in the stress test exercise.
Source: Commission services based on EBA stress test data (2021).

([1]) The analysis presented here is based on Bellia M., Di Girolamo F. E., Orlandi F., Pagano A., Pamies S. and Petracco Giudici M., 'Assessing risks for public finances stemming from banks in volatile times", European Commission Discussion paper (forthcoming 2023).

([2]) The EBA stress test, released on 30 July 2021, contains data for 50 banks from 15 EU and EEA countries, covering around 70% of the EU banking sector assets, (see https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing .

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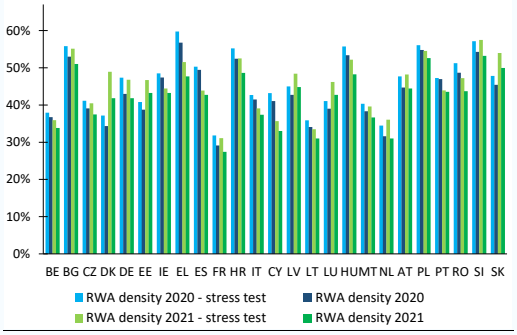
Box (continued)

Graph 1: **Risk-weighted assets (RWA) density comparison**



Source: Commission services.

2. PUBLIC GUARANTEES SCHEME

Loans guaranteed schemes by the government bear a zero risk weight in the banks' balance sheets, while losses on such loans would directly impact public finances. Since 2020, most Member States introduced programmes providing public guarantees to loans to support credit access for businesses severely impacted by the COVID-19 related containment measures. Risks associated to such loans, which might increase due to the crisis, would need to be properly reflected in the simulation of losses, via an adjustment of the banks' RWAs. The amount of guaranteed loansis substantial, totalling around EUR 400 bln at the end of 2021, which is larger than the year before (around EUR 350 bln). ([3])

Under the assumption of an average risk weight for guaranteed loans, a measure of the increase in losses in SYMBOL simulations is performed. For this exercise, relying on EBA ([4]) aggregated data on new loans under guarantee as of Q4 2021, the adjustment proceeds in two steps (Table 2). First, for each bank in our sample we adjust the RWA, assuming that the new loans under guarantee bear same average riskiness as observed for other loans in the bank's portfolio. Second, SYMBOL is used to estimate the increased losses that these adjusted RWAs for all banks would imply.

The additional losses related to adjusted (*i.e.* increased) risk weight of loans under guarantee have a direct impact on public finances. As losses on guaranteed loans are covered by the guarantor (i.e. the state), the additional (gross) losses do not impact the capital of the institutions concerned. Instead, simulations directly transfer losses to deficit (excess losses) or debt (recapitalisation) ([5]).

Table 2: **Data related to adjustment of RWAs due to rescaling of guaranteed loans risks**

	RWA credit risk (EBA sample)	GL (EBA sample, excl. guarantees)	New loans guaranteed (EBA sample)	RWA (EBA sample)	New RWA (EBA sample)	Guarantee-based adjustment of RWAs
	EUR bn	EUR bn	EUR bn	EUR bn	EUR bn	%
	A	B	C	D	E = (A/B)*C	E/D
BE	329.3	969.7	1.2	393.8	0.4	0.1%
BG	18.8	31.3	0.4	20.5	0.2	1.1%
CZ	49.6	148.2	1.8	58.5	0.6	1.0%
DK	170.8	622.3	0.8	202.7	0.2	0.1%
DE	966.3	2,695.4	12.0	1,243.5	4.3	0.3%
EE	13.4	33.3	0.0	15.0	0.0	0.1%
IE	195.9	270.3	1.0	239.8	0.7	0.3%
EL	122.9	210.4	5.5	141.7	3.2	2.3%
ES	1,172.8	2,602.1	103.6	1,358.7	46.7	3.4%
FR	2,291.1	5,721.2	110.0	2,674.9	44.1	1.6%
HR	23.0	44.4	0.1	25.6	0.1	0.2%
IT	842.4	1,849.6	120.5	1,004.5	54.9	5.5%
CY	16.4	33.1	0.0	18.5	0.0	0.0%
LV	13.1	43.2	0.0	15.0	0.0	0.0%
LT	8.5	28.8	0.0	9.6	0.0	0.0%
LU	93.6	161.4	0.1	108.0	0.1	0.1%
HU	58.5	93.2	0.0	66.1	0.0	0.0%
MT	7.2	17.9	0.3	8.1	0.1	1.6%
NL	544.8	1,915.2	3.2	696.5	0.9	0.1%
AT	273.4	610.4	4.0	324.4	1.8	0.6%
PL	99.0	125.6	3.7	111.2	2.9	2.6%
PT	109.8	212.2	7.6	128.5	3.9	3.1%
RO	20.4	37.0	1.5	25.2	0.8	3.3%
SI	17.3	26.4	0.2	20.4	0.1	0.7%
SK	23.1	56.0	0.7	25.3	0.3	1.1%
FI	176.4	549.1	1.5	219.1	0.5	0.2%
SE	152.7	798.8	0.1	255.4	0.0	0.0%

Source: Commission services based on EBA data.

3. LOANS UNDER MORATORIA AND NPLS

NPLs, on average, have continued to decline in the almost all Member States since 2019 (see Graph 2). Part of this decline is due to the regulatory measures introduced following the COVID-19 pandemic, such as the allowed flexibility with regard to the classification of debtors in the event of

([3]) These values represent the amount of new loans under public guarantees for the sample of banks included in the EBA Risk Dashboard. Albeit the sample is quite representative, the amounts potentially underestimate the total loans guaranteed granted during 2021.

([4]) Data for loans under guarantees come from the EBA risk dashboard, see https://www.eba.europa.eu/risk-analysis-and-data/risk-dashboard.

([5]) Since the actual portfolio of loans includes both positions with and without guarantees, we subtract the guaranteed loans (with zero risk weight) from the total amount of gross loans to have an accurate representation of the riskiness for the banks' portfolio. The updated amount of gross loans serves as a reference to estimate the RWA amount for the credit risk without public guarantees.

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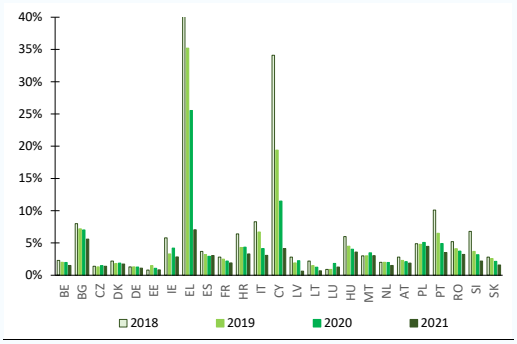
moratoria ([6]). All measures, including the ones related to capital and liquidity relief, as well as the restrictions on dividends and variable remuneration have been lifted on February 2022. ([7]) Although an overall decrease in the NPL ratio took place over the last few years, early warnings of credit risk deterioration has been detected, in particular for sectors particularly affected by the COVID-19 crisis. ([8])

Graph 2: **Recent NPL ratios (NPL over gross loans)**



Source: Aggregated data from EBA risk dashboard.

To address the potential under-reporting of NPLs due to moratoria during the COVID-19 crisis, which still might affect the banks' balance sheets in 2021, *Stage 2* loans are considered. *Stage 2* loans identify loans where credit risk has increased significantly, though they are not yet registered as NPLs. EBA provides the following useful loan breakdown, per country (Table 3):

- Amount of loans that are under moratoria or where the moratoria has expired.
- Amount of loans that are in Stage 2.
- Amount of loans that are already non-performing.

Table 3 reports 2021 loans under (active or expired) moratoria in column B, while column C reports the amount of those loans that are also *Stage 2*. Several sources report that loans with moratoria (expired and not) might be riskier, and that the amount of *Stage 2* loans covered by moratoria (including expired ones) have substantially increased during 2021. ([9]) These *Stage 2* loans with moratoria (ongoing and expired) are seen as potential NPLs in a severe financial crisis, although their registering as such might be delayed by the fact that they were under moratoria. ([10]) The share of loans under moratoria that are also *Stage 2* is shown in column D. This

([6]) For the relevant requirements in relationship with legislative and non-legislative moratoria, see EBA "Guidelines on legislative and non-legislative moratoria on loan repayments applied in the light of the COVID-19 crisis"

([7]) See FAQs on ECB supervisory measures in reaction to the coronavirus

([8]) See the EBA press release of 31 March 2021.

([9]) See the EBA press release of October 2021 "*Asset quality of exposures under moratoria and PGS deteriorated further*". In addition, see a publication by the Bank of Spain, which shows that the credit quality of loans linked to expired moratoria has deteriorated during 2021. In the same vein, the Bank of Italy reports that "*firms with moratoriums (expired or still outstanding at 31 December) had much higher actual riskiness levels than the other firms … This is consistent with the assumption that the riskiest firms would have applied for the longest suspension period possible*".

([10]) As loans benefitting from moratoria are those to sectors particularly exposed to the COVID 19 shock, the assumption is that these loans could be particularly fragile in case of a severe crisis, and would be therefore more likely to transition to NPL status than to recover. In reality, it can be argued that not all *Stage 2* loans under (expired) moratoria will become NPLs but only a part of it, that most probably relates to the loans, which their maturity was extended before the pandemic and that were put under moratoria during the pandemic. Theoretically, it should be possible to infer the part of those loans that would become NPLs by defining a rescaling factor of the number of *Stage 2* loans based on the following information: (i) the loans, which maturity was extended before the pandemic and were put under moratoria, and have remained *Stage 2* loans when moratoria expired and; (ii) the new loans granted during the pandemic, which maturity was extended after 2020 and were put under moratoria, and have become *Stage 2* loans when moratoria expired. However, due to data availability it is not possible, to our knowledge, to compute such rescaling factor of Stage 2 loans such that all Stage 2 loans under expired and non-expired moratoria are considered for this exercise. This assumption might overestimate the amount of NPLs in normal situation. At the same time in a risk management perspective, it seems to be a suitable proxy in case of the severe financial crisis that it is considered here.

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Box (continued)

share is around 30% on average, although significant difference exist for that proportion across countries.

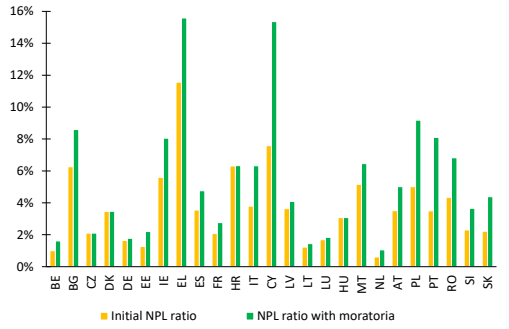
In a stress scenario using the SYMBOL model, we adjust the NPL stock by the share of loans that are *Stage 2* and are under ongoing or expired moratoria (Table 3, column E). This is a proxy for the idea that, in the case of a severe financial crisis, a country with a large share of *Stage 2* loans with ongoing or expired moratoria would be at a higher risk ending up with a larger amount of NPLs. ([11]) To illustrate this adjustment in terms of NPL amounts, Graph 4 report unadjusted and moratoria-adjusted NPLs.

Table 3: **Data related to adjustment of NPLs due to delayed effect of moratoria**

	Total Loans	Loans under moratoria (non expired and expired)	Loans under moratoria that are stage 2	Proportion of loans under moratoria that are stage 2	Increase in NPL
	EUR bn	EUR bn	EUR bn	%	%
	A	B	C	D = C/B	E=C/A
BE	970.8	33.7	5.9	0.2	0.0
BG	31.7	2.0	0.7	0.4	0.0
CZ	150.0	-	-	-	-
DK	623.1	-	-	-	-
DE	2,707.5	19.3	3.5	0.2	0.0
EE	33.3	0.6	0.3	0.5	0.0
IE	271.2	17.9	6.7	0.4	0.0
EL	215.8	21.8	8.7	0.4	0.0
ES	2,705.7	152.1	32.8	0.2	0.0
FR	5,831.2	198.6	39.7	0.2	0.0
HR	44.5	3.7	0.0	0.0	0.0
IT	1,970.1	145.4	49.9	0.3	0.0
CY	33.1	8.1	2.6	0.3	0.1
LV	43.2	0.7	0.2	0.3	0.0
LT	28.8	0.3	0.1	0.2	0.0
LU	161.5	2.6	0.2	0.1	0.0
HU	93.2	-	-	-	-
MT	18.2	1.1	0.2	0.2	0.0
NL	1,918.4	39.6	8.4	0.2	0.0
AT	614.4	24.5	9.3	0.4	0.0
PL	129.3	12.0	5.4	0.4	0.0
PT	219.8	33.8	10.1	0.3	0.0
RO	38.5	2.4	1.0	0.4	0.0
SI	26.6	2.0	0.4	0.2	0.0
SK	56.7	3.5	1.2	0.4	0.0
FI	550.7	7.1	0.2	0.0	0.0
SE	798.9	24.8	0.3	0.0	0.0

Source: Aggregated data from EBA risk dashboard, reference date 2021Q4, EUR bn.

Graph 3: **Impact of adjustment of NPL to account for delaying effect of moratoria**



Source: Aggregated data from Orbis Bankfocus and Commission services, references data 2021Q4.

([11]) It has to be stressed that a transition to NPL is due to a combination of current or past use of a COVID moratoria, being at stage 2, and a severe crisis (see also footnote 10 above). This is not a simple consequence of a moratoria, in line with EBA guidelines, since as long as moratoria are COVID related and only refer to deferral of payment dates, it should have no impact on evaluation of credit quality or definition of arrears or default.

ANNEX A1

Assessment of fiscal sustainability challenges criteria used and decision trees

This annex presents the approach followed to assess fiscal sustainability risks over the short, medium and long term. Graph A1.1 provides an overview of the main building blocks. The general approach is similar to that of the 2021 Fiscal Sustainability Report, except that the S1 indicator is now used to assess long-term fiscal sustainability risks, as a complement to the S2 indicator, and no longer to assess medium-term risks. As a result, the assessment of medium-term risks entirely relies on the debt sustainability analysis (DSA).

The remainder of this annex is organised as follows. Sections A1.1, A1.2 and A1.3 describe the approach to assess short-, medium- and long-term fiscal sustainability risks. Section A1.4 provides an overview of the thresholds used for the risk classification throughout the report.

A1.1. THE APPROACH USED TO ASSESS SHORT-TERM RISKS

The analysis of short-term fiscal sustainability risks relies on the composite S0 indicator. This early-detection indicator of fiscal stress follows a signalling approach: it flashes red when certain variables (among a set of 25) exceed critical thresholds beyond which they tended to be associated with episodes of fiscal stress in the past. S0 includes two sub-indices that cover the fiscal side and the financial-competitiveness side. The main benefit of this approach is therefore that it does not only consider purely fiscal factors, but also the risks that may arise from non-fiscal factors, thus recognising the role of structural weaknesses in triggering fiscal stress. Further details on S0 are available in Chapter 1 (in particular in Box 1.1) and Annex A2.

A1.2. THE APPROACH USED TO ASSESS MEDIUM-TERM RISKS

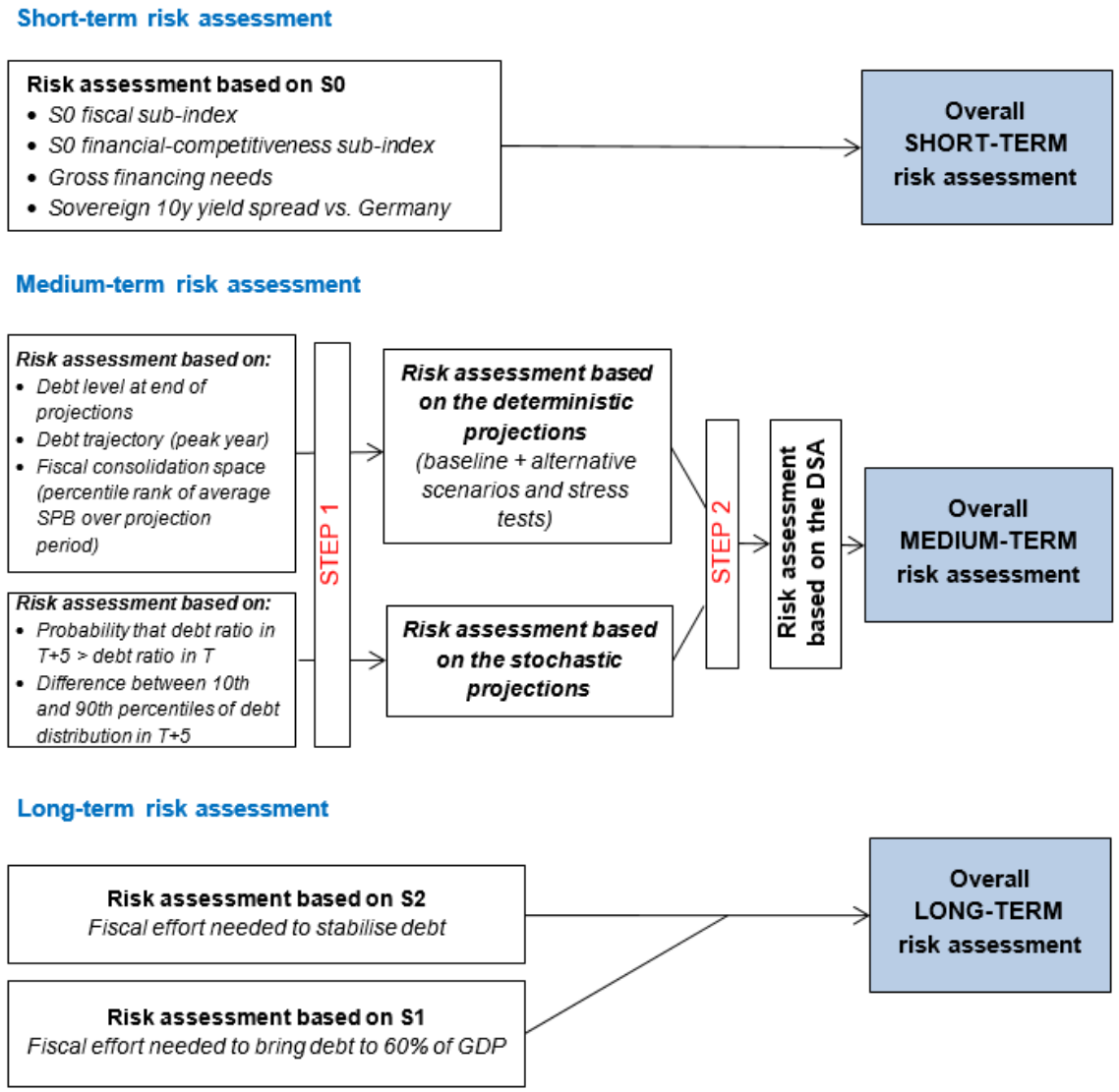
The assessment of medium-term risks is based on the debt sustainability analysis (DSA) risk classification, which is established in two steps. The first step assigns a risk category to the country under consideration for each of the deterministic projections (including the baseline) and for the stochastic projections. The second step combines the risk categories derived from the various deterministic scenarios and from the stochastic projections to conclude on the overall DSA risk classification. Further details on the DSA can be found in Chapter 2.

In the first step, *the risk assessment based on the deterministic scenarios* depends on three criteria. These are (1) the projected debt level in 10 years' time, (2) the projected debt trajectory (as summarised by the year in which debt is projected to peak), and (3) the 'fiscal consolidation space', as measured by the percentile rank of the projected structural primary balance (SPB) in the past distribution of SPBs. The fiscal consolidation space gives an indication of whether the projected SPB is plausible in view of the country's track record, and whether the country has fiscal room for manoeuvre to take corrective measures if necessary.

The decision tree for deterministic projections describes how the three criteria interplay. First, the value of each criterion is associated with a risk category (low, medium or high, according to the thresholds reported in Table A1.1 below), then the risk categories derived from the three criteria are combined along the decision tree presented in Graph A1.2. While the risk classification starts from the risk signal associated with the projected debt level, this signal may be notched up or down by one category depending on the projected debt trajectory and the available 'fiscal consolidation space'. Fiscal consolidation space is measured by the percentile rank of the SPB within the country-specific historical distribution of the SPB. The historical distributions start at the earliest in 1980, depending on data availability. The calculations use 3-year moving averages and exclude major crisis years, namely the Global Financial Crisis (2008-09) and the COVID-19 pandemic (2020-21).

***The risk category based on the stochastic projections* depends on two criteria.** The first one is the probability that the debt level in 5 years' time will not exceed its current level. The second one is the amount of uncertainty, as measured by the difference between the 10th and 90th percentiles of the distribution of debt paths resulting from the stochastic projections (i.e. the difference between the worst and the best possible outcomes, leaving aside tail events). The thresholds associated with these criteria are reported in Table A1.1, and the decision tree

Graph A1.1: **The multi-dimensional approach to assess fiscal sustainability risks**



Source: European Commission.

combining the two criteria is presented in Graph A1.3.

The second step combines the signals from the deterministic and stochastic projections. Each country is first attributed a preliminary risk classification based on the baseline. This preliminary category may then be notched up, but not down. It may be adjusted from low to medium or from medium to high based on the outcome of other scenarios and stochastic projections, as described in Graph A1.4. On the other hand, if a country is considered at high risk under the baseline, the overall DSA risk category is automatically high.

Table A1.1: **DSA: thresholds for the deterministic and stochastic projections**

	Criterion	Threshold	
Deterministic projections	Debt level in 2033	**High:** above 90% of GDP **Medium:** between 60% and 90% of GDP **Low:** below 60% of GDP	
	Debt trajectory (debt peak year)	**High:** peak year between T+7 (2029) and end of projections (2033), or still increasing by end of projections **Medium:** peak year between T+3 (2025) and T+6 (2028) **Low:** peak year within the T+2 forecast horizon (2022-2024)	
	Fiscal consolidation space (percentile rank of average SPB in 2024-2033)	**High:** up to 25% **Medium:** between 25% and 50% **Low:** above 50%	
Stochastic projections	Probability of debt not stabilising over the next 5 years, i.e. of debt ratio in 2027 exceeding the initial debt ratio	Initial debt ratio ≥ 90%	**High:** if probability > 30% **Medium:** if 0 < probability ≤ 30% **Low:** if probability = 0
		60 % ≤ initial debt ratio < 90%	**High:** if probability > 60% **Medium:** if 30% < probability ≤ 60% **Low:** if probability ≤ 30%
		Initial debt ratio < 60%	**Medium:** if probability > 70% **Low:** if probability ≤ 70%
	Size of macroeconomic uncertainty (diff. btw 10th and 90th percentiles of the distribution of debt paths)	**High:** the third of the countries with highest dispersion **Medium:** the third of the countries with intermediate dispersion **Low:** the third of the countries with lowest dispersion	

Source: European Commission.

Graph A1.2: **DSA, step 1: decision tree for the deterministic projections (including the baseline)**

All deterministic DSA scenarios				
Case	Debt level	Debt path	Consolidation space	Overall
1	HIGH	HIGH/MEDIUM	**ANY**	HIGH
2	HIGH	LOW	HIGH/MEDIUM	HIGH
3	HIGH	LOW	LOW	MEDIUM
4	MEDIUM	HIGH	HIGH/MEDIUM	HIGH
5	MEDIUM	HIGH	LOW	MEDIUM
6	MEDIUM	MEDIUM	ANY	MEDIUM
7	MEDIUM	LOW	HIGH/MEDIUM	MEDIUM
8	MEDIUM	LOW	LOW	LOW
9	LOW	HIGH	HIGH/MEDIUM	MEDIUM
10	LOW	HIGH	LOW	LOW
11	LOW	MEDIUM/LOW	ANY	LOW

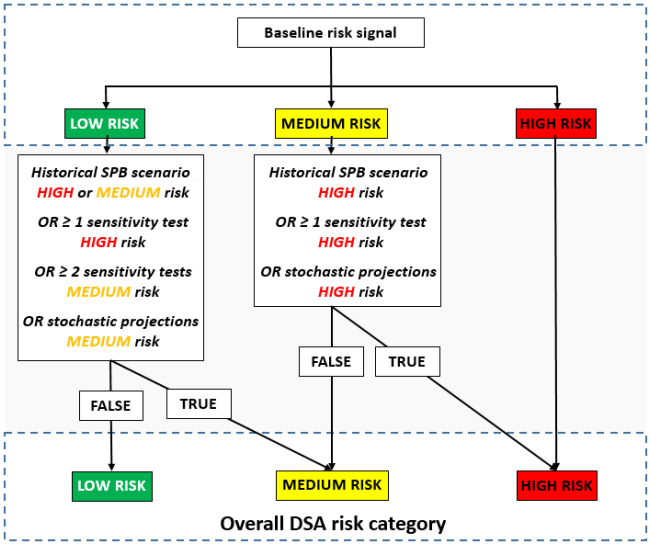
Note: the table is to be read as a decision tree, starting from the debt level then moving on to the debt path and the fiscal consolidation space. The risk category derived from the debt level in T+10 is notched up if the debt path points to high risk and the consolidation space points to medium or high risk (cases 4 and 9). Indeed, in these cases, countries have an increasing debt and limited consolidation space, meaning that there is a chance that there is no feasible adjustment path to curb the debt path. Conversely, the risk is notched down if both the debt path and the consolidation space indicator point to low risk (cases 3 and 8). In these cases, even if the projected debt level is high/medium, the debt path is decreasing, and the country has enough space to take measures in case of adverse shocks.
Source: European Commission.

Graph A1.3: **DSA, step 1: decision tree for the stochastic projections**

Probability of debt not stabilising	Size of uncertainty	Overall
HIGH	ANY	HIGH
MEDIUM	HIGH	MEDIUM
MEDIUM	MEDIUM	MEDIUM
MEDIUM	LOW	LOW
LOW	HIGH	MEDIUM
LOW	MEDIUM	LOW
LOW	LOW	LOW

Note: The table is to be read from left to right as a decision tree, starting from the probability of debt not stabilising then moving on to the size of uncertainty. It gives a strong weight to the probability of debt not stabilising over the next 5 years. Only in cases where the signal associated to this probability is medium and uncertainty is low, is the overall risk category notched down to low risk. Conversely, in cases where this probability is deemed low, but uncertainty is high, the overall risk category is notched up to medium risk.
Source: European Commission.

Graph A1.4: **DSA, step 2: decision tree for the overall DSA risk classification**



Note: It is not possible for a country to be classified at low risk under the baseline and at high risk under the stochastic projections.
Source: European Commission.

A1.3. THE APPROACH USED TO ASSESS LONG-TERM RISKS

The assessment of long-term fiscal sustainability risks is based on the S2 and S1 indicators. The S2 indicator measures the fiscal effort needed to stabilise debt in the long term, regardless of the level, based on the infinite version of the government budget constraint (see Box 3.1). The S1 indicator measures the fiscal effort needed to bring debt to 60% of GDP by 2070. For both indicators, the risk assessment depends on the amount of fiscal consolidation needed: high risk if the required effort exceeds 6 pp. of GDP, medium risk if it lies between 2 pp. and 6 pp. of GDP, and low risk if the effort is negative or below 2 pp. of GDP (see Table A1.3). Finally, the overall long-term risk classification brings together the risk categories derived from S1 and S2. S1 may notch up the risk category derived from S2 when it signals a higher risk than S2. As a result, a country is assessed to be at high risk if (i) the S2 indicator flags high risk, irrespective of the risk category derived from S1, or (ii) S2 signals medium risk but S1 points to high risk (see Table A1.2). Similarly, a country is assessed at medium risk if S2 points to low risk but S1 flags medium or high risk. The aim of these adjustments is to capture risks linked to higher debt levels, as explained in Box 3.1. The long-term risk classification is discussed in Chapter 3, and technical details can be found in Annex A5.

Table A1.2: **Decision tree for the long-term risk classification**

Risk derived from S2	Risk derived from S1	Overall long-term risk category
HIGH	Any	HIGH
MEDIUM	HIGH	HIGH
	MEDIUM	MEDIUM
	LOW	
LOW	HIGH	MEDIUM
	MEDIUM	
	LOW	LOW

Source: European Commission.

A1.4. OVERVIEW OF THE THRESHOLDS USED TO ASSESS FISCAL SUSTAINABILITY RISKS

The thresholds underpinning the various heat maps presented in the report can be found in the following tables:

The thresholds for the DSA risk classification, both for the deterministic and stochastic projections, are reported in Table A1.1.

For the short term, Table A1.3 reports the thresholds used for the S0 indicator, its sub-indices, and each of the variables that they include. The overall S0 index and its sub-indices use only one threshold, beyond which they identify vulnerabilities. For the individual variables, the upper thresholds derived from the signalling approach are complemented by lower thresholds, set at around 80% of the upper thresholds, so that variables may flash red, yellow or not flash at all.

For the S1 and S2 indicators, Table A1.3 reports upper and lower thresholds to distinguish between low, medium and high risk. The percentile ranks of the SPBs required by S1 and S2 are subject to the same thresholds as average SPBs in DSA scenarios (Table A1.1).

Table A1.3: **Overview of thresholds used for the fiscal sustainability risk classification**

	Safety	*Upper threshold*	*Lower threshold*
SHORT-TERM RISKS			
S0 overall index	<	0.46	:
S0 fiscal sub-index	<	0.36	:
S0 financial-competitiveness sub-index	<	0.49	:
Fiscal risks from the fiscal context			
Balance (% of GDP)	>	-9.6	-7.7
Primary balance (% of GDP)	>	0.2	0.3
Cyclically-adjusted balance (% of GDP)	>	-2.5	-2.0
Stabilising primary balance (% of GDP)	<	2.3	1.9
Gross debt (% of GDP)	<	68.4	54.8
Change in gross debt (% of GDP)	<	8.1	6.4
Short-term public debt (% of GDP)	<	13.2	10.6
Net debt (% of GDP)	<	59.5	47.6
Gross financing needs (% of GDP)	<	15.9	12.8
Interest-growth rate differential (%)	<	4.8	3.8
Change in governement expenditure (% of GDP)	<	1.9	1.5
Change in governement consumption (% of GDP)	<	0.6	0.5
Fiscal risks from the macro-financial context			
Yield curve (%)	>	0.6	0.7
Real GDP growth (%)	>	-0.7	-0.5
GDP per capita in PPP (% US level)	>	72.7	87.2
Net international investment position (% of GDP)	>	-19.8	-15.8
Net savings households (% of GDP)	>	2.6	3.1
Private debt (% of GDP)	<	164.7	131.8
Private credit flow (% of GDP)	<	11.7	9.4
Short-term debt non-financial corporations (% of GDP)	<	15.4	12.3
Short-term debt households (% of GDP)	<	2.9	2.3
Construction (% of value added)	<	7.5	6.0
Current account balance (% of GDP)	>	-2.5	-2.0
Change in REER (%)	<	9.7	7.7
Change in nominal ULC (%)	<	7.0	5.6
Fiscal risks from financial market developments			
Sovereign yield spreads (bp) - 10 year	<	231.0	184.8
MEDIUM-TERM RISKS			
DSA variables	see Table A1.2		
LONG-TERM RISKS			
S2 indicator	<	6	2
Percentile rank of the SPB implied by S2	>	25%	50%
S1 indicator	<	6	2
Percentile rank of the SPB implied by S1	>	25%	50%
ADDITIONAL VARIABLES			
Structure of public debt			
Share of short-term public debt (% of debt)	<	6.6	5.3
Share of public debt in foreign currency (% of debt)	<	31.6	25.0
Share of public debt held by non-residents (% of debt)	<	49.0	40.0
Contingent liabilites linked to the banking sector			
Bank loans-to-deposits ratio (%)	<	133.4	107.0
Share of non-performing loans (% of loans)	<	2.3	1.8
Change in share of non-performing loans (p.p.)	<	0.3	0.2
NPL coverage ratio (% loans)	>	66.0	33.0
Change in nominal house prix index (%)	<	13.2	11.0

Note: Variables common to the scoreboard used in the macroeconomic imbalances procedure (MIP) have different thresholds here than under the MIP, because the methodologies to calculate them are different.
Source: European Commission.

ANNEX A2

The early-detection indicator of fiscal stress risk (S0)

The analysis of short-term fiscal sustainability risks relies on the composite S0 indicator. This early-detection indicator of fiscal stress follows a signalling approach: it flashes red when certain variables (among a set of 25) exceed critical thresholds beyond which they tended to be associated with episodes of fiscal stress in the past. S0 includes two sub-indices that cover the fiscal side and the financial-competitiveness side.

A2.1. THE METHODOLOGY FOR THE CALCULATION OF THE THRESHOLDS

For each variable used in the composite indicator S0 the optimal threshold is chosen in a way to minimise, based on historical data, the sum of the number of fiscal stress signals sent ahead of no-fiscal-stress episodes (false positive signals – type-I error) and the number of no-fiscal-stress signals sent ahead of fiscal stress episodes (false negative signals – type-II error), with different weights attached to the two components**.** The table below reports the four possible combinations of events.

Table A2.1: **Possible cases based on type of signal sent by the variable at t-1 and state of the world at t**

	Fiscal stress episode	No-fiscal stress episode
Fiscal stress signal	True Positive signal	False Positive signal (Type I error)
No-fiscal stress signal	False Negative signal (Type II error)	True Negative signal

Source: Commission services

Formally, for each variable i the optimal threshold (t_i^*) is chosen to minimise the sum of type I and type II errors for variable i (respectively fiscal stress signals followed by no-fiscal stress episodes - False Positive signals - and no-fiscal-stress signals followed by fiscal stress episodes – False Negative signals) as from the following total misclassification error for variable i (TME_i): ([97])

$$t_i^* = \arg\min_{t_i \in T_i} \left(TME_i(t_i) \right) = \qquad (1)$$

$$= \arg\min_{t_i \in T_i} \left(\frac{FN_i(t_i)}{Fs} + \frac{FP_i(t_i)}{Nfs} \right)$$

$i = 1,.., n$

where T_i = set of all values taken by variable i over all countries and years in the panel; $FN_i(t_i)$ = total number of false negative signals sent by variable i (over all countries and years) based on threshold t_i; $FP_i(t_i)$ = total number of false positive signals sent by variable i (over all countries and years) based on threshold t_i; Fs = total number of fiscal stress episodes recorded in the data; Nfs = total number of no-fiscal-stress episodes recorded in the data; ([98]) n = total number of variables used.

As can be seen from the minimisation problem in (1), `false negative' signals are weighted more than `false positive' signals as:

$$\frac{1}{Fs} > \frac{1}{Nfs}$$

This is due to the fact that the total number of fiscal stress episodes recorded over a (large enough) panel of countries will be typically much smaller than the total number of non-fiscal-stress episodes. This is a positive feature of the model as we might reasonably want to weigh the type II error more than the type I given the more serious consequences deriving from failing to correctly predict a fiscal stress episode relative to predicting a fiscal stress episode when there will be none.

The threshold for variable i (with i = 1,…, n) obtained from (1) is common to all countries in the panel. We define it as a common *absolute* threshold (a critical value for the level of public debt to GDP, or general government balance over GDP, for instance) but it could also be defined as a common *relative* threshold (a common percentage tail of the country-specific distributions). ([99]) In

([97]) Following this methodological approach the optimal threshold will be such as to balance between type I and type II errors. For variables for which values above the threshold would signal fiscal stress, a relatively low threshold would produce relatively more false positive signals and fewer false negative signals, meaning higher type I error and lower type II error; the opposite would be true if a relatively high threshold was chosen.

([98]) Here we simplify on the total number of fiscal stress and non-fiscal-stress episodes as in fact also these numbers vary across variables. This is due to the fact that data availability constraints do not allow us to use the whole series of episodes for all variables.

([99]) See, for instance, Reinhart, M., Goldstein, G. and Kaminsky, C. (2000), Assessing financial vulnerability in emerging economies: A summary of empirical results, *East Asian Economic Review*, 4(2), 101-147, June. Hemming, R., Kell, M. and Schimmelpfennig, A. (2003), Fiscal

the latter case, while the optimal percentage tail obtained from (1) is the same for all countries, the associated absolute threshold will differ across countries reflecting differences in distributions (country *j*'s absolute threshold for variable *i* will reflect the country-specific history with regard to that variable). Both the aforementioned methods were applied and a decision was made to focus exclusively on the first, given that the second one tends to produce sensitive country-specific absolute thresholds for variable *i* only for those countries having a history of medium to high values for the variable concerned (or medium to low, depending on what the fiscal-stress-prone side of the distribution is), while country-specific thresholds would not be meaningful for the rest of the sample.

The TME function in equation (1) is the criterion we used to calculate the thresholds but it is not the only possible criterion used in the literature. The minimisation of the noise-to-signal ratio (*NSR*) is another possible option. ([100]) In this case the optimal threshold for variable *i* (t_i^*) is obtained as:

$$t_i^* = \arg\min_{t_i \in T_i} \left(NSR_i(t_i) \right) = \arg\min_{t_i \in T_i} \left(\frac{FP_i(t_i)/Nfs}{TP_i(t_i)/Fs} \right) \qquad (2)$$

$i = 1,\ldots,n$

where $TP_i(t_i)$ = total number of true positive signals sent by variable *i* (over all countries and years) based on threshold t_i. The TME minimisation was preferred to this alternative criterion based on the size of the total errors produced.

A2.2. THE CALCULATION OF THE COMPOSITE INDICATOR S0

The early-detection indicator of fiscal stress (S0) is constructed in a similar way to what done in Baldacci et al. (2011) and Reinhart et al. (2000). ([101]) To a certain country *j* and year *t*, a 1 is assigned for every variable *i* that signals fiscal stress for the following year (a dummy d^i is created for each variable *i* such that $d_{jt}^i = 1$ if a fiscal stress signal is sent by the variable and $d_{jt}^i = 0$ otherwise, i.e. if a no-fiscal-stress signal is sent or the variable is missing). The value of the composite indicator S0 for country *j* and year *t* ($S0_{jt}$) is then calculated as the weighted number of variables having reached their optimal thresholds with the weights given by the "signalling power" of the individual variables:

$$S0_{jt} = \sum_{i=1}^{n} w_i d_{jt}^i = \sum_{i=1}^{n} \frac{z_i}{\sum_{k=1}^{n} h_{jt}^k \cdot z_k} d_{jt}^i \qquad (3)$$

where *n* = total number of variables; z_i = 1 – (type I error + type II error) = signalling power of variable *i*; and $h_{jt}^k \in \{0,1\}$ is an indicator variable taking value 1 if variable *k* is observed for country *j* at time *t* and 0 otherwise. ([102]) The variables are therefore assigned higher weight in the composite indicator, the higher their past forecasting accuracy. ([103])

vulnerability and financial crises in emerging market economies, *IMF Occasional Paper*, 218.

([100]) See, for instance, Reinhart, M., Goldstein, G. and Kaminsky, C. (2000), Assessing financial vulnerability in emerging economies: A summary of empirical results, *East Asian Economic Review*, 4(2), 101-147, June. Hemming, R., Kell, M. and Schimmelpfennig, A. (2003), Fiscal vulnerability and financial crises in emerging market economies, *IMF Occasional Paper*, 218.

([101]) See Berti et al. (2012). The difference with Baldacci et al. (2011) is that Berti et al. do not use a system of "double weighting" of each variable incorporated in the composite indicator based on the weight of the subgroup of variables it belongs to (fiscal and financial-competitiveness variables here) and the weight of the individual variable within the group. The difference with Reinhart et al. (2000) is in the way the individual variables' weights are computed (Reinhart et al. use as weights the inverse of the noise-to-signal ratios of the individual variables as they apply the NSR criterion, rather than the TME minimisation).

([102]) This ensures that the sum of the weights is equal to 1 regardless of data availability (which is of course necessary to be able to analyse the evolution of the composite indicator).

([103]) Moreover, as evident from (3), the weight attached to each variable is decreasing in the signalling power attached to the other variables, as well as in the number of variables available for a given country and year.

ANNEX A3

Decomposing debt dynamics, projecting the interest rate on government debt and property incomes

A3.1. DECOMPOSING THE DEBT DYNAMICS

Deterministic government debt projections are based on a general identity characterising the evolution of the stock of debt. In a simplified version, the evolution of the government debt to GDP ratio can be described in the following way:

$$d_t = \alpha^n . d_{t-1} . \frac{(1+i_t)}{(1+g_t)} + \alpha^f . d_{t-1} . \frac{(1+i_t)}{(1+g_t)} . \frac{e_t}{e_{t-1}} - pb_t + f_t \quad (1)$$

where d_t represents the total government debt to GDP ratio in year t

α^n represents the share of total government debt denominated in national currency

α^f represents the share of total government debt denominated in foreign currency

i_t represents the implicit interest rate on government debt ([104])

g_t represents the *nominal* growth rate of GDP (in national currency)

e_t represents the nominal exchange rate (expressed as national currency per unit of foreign currency)

pb_t represents the primary balance over GDP

f_t represents the stock-flow adjustments over GDP.

In order to obtain the debt dynamics, d_{t-1} is subtracted from both sides of equation (1). This gives the following expression:

$$\Delta d_t = \alpha^n . d_{t-1} . \frac{(i_t - g_t)}{(1+g_t)} + \alpha^f . d_{t-1} . \frac{(i_t - g_t) + \varepsilon_t . (1+i_t)}{(1+g_t)} - pb_t + f_t \quad (2)$$

where $\varepsilon_t = \frac{e_t}{e_{t-1}} - 1$ represents the rate of depreciation of the national currency.

([104]) By simplicity, it is assumed that this interest rate is the same for government debt denominated in national currency and in foreign currency.

Decomposing further the nominal GDP growth rate, and rearranging the different terms, we obtain:

$$\Delta d_t = d_{t-1} . \frac{i_t}{(1+g_t)} - d_{t-1} . \frac{gr_t}{(1+g_t)} - d_{t-1} . \frac{\pi_t (1+gr_t)}{(1+g_t)} + \alpha^f . d_{t-1} . \varepsilon_t . \frac{(1+i_t)}{(1+g_t)} - pb_t + f_t \quad (2)'$$

where gr_t represents the *real* growth rate of GDP

π_t represents the inflation rate (in terms of GDP deflator, in national currency)

This expression allows us identifying the key drivers of the debt ratio dynamics, in particular the snow-ball effect, which can be further decomposed into four terms:

- (+) the interest rate effect: $d_{t-1} . \frac{i_t}{(1+g_t)}$

- (-) the real GDP growth effect: $-d_{t-1} . \frac{gr_t}{(1+g_t)}$

- (-) the inflation effect: $-d_{t-1} . \frac{\pi_t (1+gr_t)}{(1+g_t)}$

- (+) the exchange rate effect: $\alpha^f . d_{t-1} . \varepsilon_t . \frac{(1+i_t)}{(1+g_t)}$

As can be easily seen from this expression, both the interest rate and the foreign exchange depreciation rate contribute to the increase of the debt ratio. On the other hand, higher real GDP growth and higher inflation erode the debt to GDP ratio. ([105])

Other key contributors to the debt motion are the primary balance (pb_t) (that is further decomposed in our tables between the structural primary balance before cost of ageing, the cost of ageing, the cyclical component and one-offs and other temporary measures) and stock and flow adjustments (f_t).

([105]) This presentation, based on the government debt ratio identity equation, allows grasping the impact of real GDP growth and inflation on the debt motion coming from direct valuation effects (as government debt is expressed as a share of GDP). However, the primary balance is also influenced by economic activity and inflation. Such behavioural effects are explicitly taken into account in the fiscal reaction function scenario presented in chapter 2 of the report.

As can be seen from the exchange rate effect expression, both valuation effects affecting the *stock* of foreign currency denominated debt and *interest rate* payments (on this share of government debt) contribute to the debt dynamic. ([106]) Looking at historical series, Eurostat includes the exchange rate effect on the *stock* of foreign currency denominated debt in stock and flow adjustments, while the impact due to the cost of servicing debt in foreign currency is included in interest payments. In our tables, we follow this convention.

In practice, the equation used in our model is slightly more complex than equation (1), as we consider three currencies: the national currency, the EUR (foreign currency for non-euro area countries) and the USD (foreign currency for all countries). Hence, equation (1) becomes:

$$d_t = \alpha^n . d_{t-1} . \frac{(1+i_t)}{(1+g_t)} + \alpha^{eur} . d_{t-1} . \frac{(1+i_t)}{(1+g_t)} . \frac{e_t}{e_{t-1}} + \alpha^{usd} . d_{t-1} . \frac{(1+i_t)}{(1+g_t)} . \frac{\tilde{e}_{t-1}}{\tilde{e}_t} . \frac{e_t}{e_{t-1}} - pb_t + f_t \qquad (1)'$$

where

- α^{eur} represents the share of total government debt denominated in euros;
- α^{usd} represents the share of total government debt denominated in USD;
- e_t represents the nominal exchange rate between the national currency and the euro (expressed as national currency per EUR);
- $\tilde{e}_t$ represents the nominal exchange rate between the USD and the euro (expressed as USD per EUR).

Such a specification allows taking into account the effect of exchange rate movements on government debt not only in non-euro area countries, but also in euro area countries (among which government debt issued in USD can be significant).

([106]) An indirect effect, due to the fact that exchange rate movements affect the value of GDP in domestic currency through changes in prices in the tradable sector, could also be shown. However, in practice, in line with other institutions practices (e.g. IMF), these effects are not isolated (data limitation would require to impose further assumptions; effect likely to be of second-order).

A3.2. PROJECTING THE IMPLICIT INTEREST RATE ON GOVERNMENT DEBT

As seen from equation (1), a key driver of the debt motion is the implicit interest rate on government debt. Projecting the implicit interest rate on government debt requires not only assumptions on *market* interest rates (for newly issued debt), but also taking into account explicitly the current and future maturity structure of government debt (between short-term and long-term government debt, and between maturing, rolled-over or not, and non-maturing government debt). This allows a differential treatment in terms of interest rates applied to successive "debt vintages", and interestingly captures different levels of exposure of sovereigns to immediate financial markets' pressures.

Formally, in our model, the implicit interest rate is expressed in the following way:

$$iir_t = \alpha_{t-1} . i_t^{ST} + (1 - \alpha_{t-1}) . iir_t^{LT} \qquad (3)$$

where

- iii_t is the implicit interest rate in year t; ([107])
- i_t^{ST} is the *market* short-term interest rate in year t;
- iir_t^{LT} is the implicit long-term interest rate in year t;
- α_{t-1} is the share of short-term debt in total government debt (and $(1 - \alpha_{t-1})$ is the share of long-term debt in total government debt). ([108])

Our model considers two types of government debt in terms of maturity: short-term debt (debt issued with an *original* maturity of less than one year) and long-term debt (debt issued with an *original* maturity of more than one year). Furthermore, government debt can be decomposed between new debt (debt issued to cover new financing requirements), ([109]) maturing debt (i.e. existing

([107]) This corresponds to i_t in the previous section.
([108]) Hence, as indicated by the t index, these shares may vary through time depending on the debt dynamic.
([109]) This amount also corresponds to the yearly budgetary deficit.

debt that is maturing within the year ([110]) and that needs to be repaid), rolled-over (i.e. whose repayment is covered by newly issued debt) or not, and outstanding debt (i.e. existing debt that has not reached maturity). Combining these different aspects, α_{t-1} (and $(1-\alpha_{t-1})$) used in (3) can be described as follows:

$$\alpha_{t-1} = \frac{D_{t-1}^{STN} + D_{t-1}^{STR}}{D_{t-1}} \quad (4)$$

$$1-\alpha_{t-1} = \frac{D_{t-1}^{o} + D_{t-1}^{LTN} + D_{t-1}^{LTR}}{D_{t-1}} \quad (5)$$

where

- D_{t-1}^{STN} is the new short-term government debt in year $t-1$;
- D_{t-1}^{STR} is the maturing and rolled-over short-term government debt (i.e. the existing short-term debt that has reached maturity, and whose repayment is covered by newly issued short-term debt);
- D_{t-1}^{LTN} is the new long-term government debt;
- D_{t-1}^{LTR} is the maturing and rolled-over long-term government debt (i.e. the existing long-term debt that has reached maturity, and whose repayment is covered by newly issued long-term debt);
- D_{t-1}^{o} is the outstanding (non-maturing) long-term government debt.

Moreover, the implicit long-term interest rate used in (3) can be further decomposed:

$$iir_t^{LT} = \beta_{t-1}.i_t^{LT} + (1-\beta_{t-1}).iir_{t-1}^{LT} \quad (6)$$

where β_{t-1} is the share of newly issued long-term debt (corresponding to both new debt and maturing and rolled-over debt) in total long-term government debt in year $t-1$ (and $(1-\beta_{t-1})$ is the share of outstanding long-term debt in total long-term government debt).

i_t^{LT} is the *market* long-term interest rate in year t.

The share of newly issued long-term debt (respectively outstanding debt) in total long-term government debt, used in expression (6), is described as follows:

$$\beta_{t-1} = \frac{D_{t-1}^{LTN} + D_{t-1}^{LTR}}{D_{t-1}^{o} + D_{t-1}^{LTN} + D_{t-1}^{LTR}} \quad (7)$$

$$(1-\beta_{t-1}) = \frac{D_{t-1}^{o}}{D_{t-1}^{o} + D_{t-1}^{LTN} + D_{t-1}^{LTR}} \quad (8)$$

Hence, replacing iir_t^{LT} in (3) by its expression in (6) gives:

$$iir_t = a_{t-1}.i_t^{ST} + b_{t-1}.i_t^{LT} + (1-a_{t-1}-b_{t-1}).iir_{t-1}^{LT} \quad (3)'$$

From equation (3)', we can see that the implicit interest rate on government debt at year t is a weighted average of market short-term and long-term interest rates and of the implicit interest rate on outstanding (i.e. non-maturing) long-term debt in year $t-1$. Hence, depending on the weight of outstanding debt in total government debt, an increase of market interest rates will transmit more or less quickly to the implicit interest rate on government debt.

In the projections, the following assumptions are made:

- i_t^{LT} and i_t^{ST} are supposed to converge linearly by T+10 to the short term and 10 year long term forward rates.
- After T+10, i_t^{LT} is supposed to converge linearly to 4% in nominal terms ([111]) (2% in real terms) for all countries by the T+30 horizon;
- i_t^{ST} is supposed to converge linearly to i_t^{LT} time a coefficient corresponding to the historical (pre-crisis) EA yield curve (currently 0.5) for all countries by the T+30 horizon;
- new debt (D_{t-1}^{STN} and D_{t-1}^{LTN}) is assumed to be issued in the projections, as a proportion of the variation of government debt, based on the shares given by Estat (of short-term and long-

([110]) Another way to describe it is that this existing debt has a *residual* maturity of less than one year.

([111]) For some non-euro countries, the convergence value is higher: PL, RO: 4.5%, HU: 5%, reflecting higher inflation targets by the national central banks.

term government debt), ([112]) whenever government debt is projected to increase; ([113])

- short-term debt issued in year $t-1$ is assumed to entirely mature within the year, and to be rolled-over (D_{t-1}^{STR}) as a proportion of past government debt, based on the share of short-term government debt given by Estat, whenever government debt is projected to increase; ([114])

- a fraction of long-term debt issued in the past is assumed to mature every year, and to be rolled-over (D_{t-1}^{LTR}), whenever government debt is projected to increase. ([115]) This fraction is estimated based on Estat data on the share of long-term government debt and on ECB data on the share of existing long-term debt maturing within the year. ([116])

- Finally, the values of the different variables *over the forecast horizon* (especially i_t^{LT}, i_t^{ST} and iir_{t-1}^{LT}) are set consistently with the available forecast values of the implicit interest rate (iir_t) and information on the maturity structure of debt.

A3.3. TECHNICAL OVERVIEW OF THE T+10 METHODOLOGY

The following model is solved from T+3 up to T+10 (note that as of T+6, for the EU-15 without Germany, the model for the capital and investment module deviates from the general framework below and is governed by the rules described further down in the text):

$$YPOT_{it} = LS_{it}^{\alpha} K_{it}^{(1-\alpha)} TFPS_{it}$$

$$TFP_{it} = \frac{Y_{it}}{H_{it}^{\alpha} K_{it}^{(1-\alpha)}}$$

$$K_{it} = I_{it} + (1-\delta) K_{it-1}$$

$$I_{it} = \frac{I_{it}}{YPOT_{it}} YPOT_{it}$$

$$Y_{it} = YPOT_{it}(1 + YGAP_{it}) * 100$$

1. TFP trend: Kalman-filter extension. T+10 TFP is capped (i.e. a ceiling is imposed) on the basis of US TFP growth.

2. Capital:

a) Investment to potential GDP ratio: ARIMA process to produce extended series (extension to avoid end-point bias for HP filter)

b) Depreciation rate: fixed T+2 rate which is calculated on the basis of the capital law of motion

c) Investment rule: (K_{it} and I_{it} as defined in the equation system above) up to T+5; after T+5: a mix between a capital rule (K_{it} defined as $K_{it-1}\frac{YPOT_{it}}{YPOT_{it-1}}$) and I_{it} defined by capital law of motion) and the investment rule for EU-15 (except DE); investment rule for all other member states. The weight of the capital-rule based investment is gradually decreasing.

3. Trend labour: $LS_{it} = \left(POPW_{it} PARTS_{it}(1 - NAWRU_{it})\right) HPERES_{it}$

a) Working age population: use Eurostat projections on population growth ("proj_np")

b) Participation rate: up to T+5: HP-smoothed ARIMA process to produce extended series (extension beyond T+5 to avoid end-point bias for HP filter); for projection up to T+10 we use Ageing Working Group (AWG's) Cohort Simulation Model with a technical transition rule smoothing the break in T+6.

([112]) More precisely, we use the average shares over the last 3 years available.
([113]) Otherwise, in the cases where government debt is projected to decrease, for instance, in case of a budgetary surplus, no new debt needs to be issued.
([114]) Otherwise, in the cases where government debt is projected to decrease, for instance, in case of a budgetary surplus, only part of this maturing debt needs to be rolled-over (none when government debt is assumed to strongly decrease, for example, when a large budgetary surplus allows repaying past maturing debt).
([115]) See previous footnote.
([116]) More precisely, the starting point (currently 2022) is calculated based on the 2021 ECB data on the share of long-term debt that is maturing within the year. Beyond this year, it is assumed that the share of maturing long-term debt linearly converges from the value taken in the last available year (2022) to the country-specific historical average by the end of the T+10 projection horizon. Additionally, for post-program countries, IE, CY and PT, the redemption profile of official loans has been taken into account for the calculation of the long-term debt maturing within the year.

c) Average hours worked: ARIMA process to produce extended series up to T+5 (extension to avoid end-point bias for HP filter) and HP smoothed. From t+6 to t+10 we forecast hours using a stabilisation rule: hours(t) = hours(t-1)*1.5 – hours(t-2)*.5. Results are comparable with those from the AWG.

d) NAWRU (T+2 = last year of the ECFIN forecast):

Between T+2 and T+5:

$$NAWRU_{iT+1} = NAWRU_{iT} + \frac{NAWRU_{iT} - NAWRU_{iT-1}}{2}$$

$$NAWRU_{iT+2} = NAWRU_{iT+1}$$

$$NAWRU_{iT+3} = NAWRU_{iT+2}$$

Between T+6 and T+10: convergence rule and prudent rule

T+10 anchor based on panel regression (union density, tax wedge, almp, unemployment benefits replacement rate, demographics/education and a set of macro control variables i.e. TFP, real interest rate, construction)

4. Output gap: closure of the output gap by T+5; each year as of T+3, YGAP decreases by 1/3 of the T+2 YGAP. The gap closure rule states that if the gaps are not closed before the end of the medium term (T+5), they should be mechanically closed by that time.

A3.4. PROPERTY INCOME

The evolution of property income over time has been taken into account in the assessment of the medium and long-term sustainability of public finances since the 2007/08 round of assessments.

In the context of this report, property income received by Member States is considered to be the sum of returns from three categories of general government financial and non-financial assets: i) interest from debt securities – bonds, ii) dividends from equity securities – shares and iii) rents from tangible non-produced non-financial assets such as land and subsoil assets (i.e. natural resources water, mineral and fossil fuels). ([117])

Property income is projected up to 2070, affecting both the medium and long term fiscal sustainability assessment in the form of S1 and S2 indicators. ([118]) Property income projections are separate from and additional to present property income accounted for in the actual balances reported every year by Member States under the SCP scenario, as well as to property income reflected in the two-year forecast horizon.

In calculating the sustainability gaps, property income received by governments is explicitly modelled in a way that is different from government revenues in general. Government revenues in general are a function of the tax bases and the rates chosen by the government. Property income differs from this generalised assumption in that it is determined by market conditions rather than policy settings.

However, since the future stocks of assets and the expected rate of return on these assets that generate income for Member States' governments in the future are not always known, to render projections manageable, a number of simplifying assumptions are made.

In order to model the evolution of property income, the key assumption is that there is no stock-flow adjustment, meaning that government debt is only driven by the general government balance and there is no net sale or purchase of assets in the future. As such, projections for the three categories of property income rely on the general assumption that the stock of financial and non-financial assets generating this income remains constant over time ([119]) at the level of

([117]) This definition is somewhat narrower than the one used in national accounts, where property income (D.4) is as well the income from financial assets and non-produced non-financial assets, but sub-categories considered for these assets are more comprehensive. In national accounts the financial instruments giving rise to interest are, in addition to debt securities, monetary gold / SDRs, deposits, loans and other accounts. The use of produced non-financial assets such as buildings is a fee (P.11 / P.131).

([118]) In the calculation of sustainability indicators (S1 and S2), the projected path of property income is conventionally included in the sub-indicator "initial budgetary position" (IBP).

([119]) Exception are natural resources for Denmark and the Netherlands, see below.

latest available data, i.e. at the values posted in T-1. This assumption implies that there is no future sale or redemption of government assets, that when short-term assets (such as bonds) mature, they are implicitly assumed to be replaced with other bonds of the same nominal value, and that property income flows received by a government from the current stock of assets are used to reimburse debt through its contribution to the general government balance, rather than to purchase other assets.

Consequently, future property income is assumed to be generated only from the upcoming returns on the assets stock and property income projections are modelled by just using further assumptions on the future evolution of the rate of return on assets.

In this sense, returns for equity and non-financial assets (rents) are generally considered to occur in line with GDP projections, whereas returns on bonds are underpinned by the additional assumptions described below.

All data for property income projections comes from Eurostat (general government property income subcategories bonds D41, equity D42 and rents D45).

Bond returns projection

These projections are based on an agreement reached in 2009 by the Economic Policy Committee's Working Group on Ageing Populations and Sustainability (AWG) and later supported in 2012 and 2015, as well as on some ad-hoc assumptions.

Returns on bonds (D.41) have been considered to be as follows:

In the short run (between T and T+30): country-specific yields on 10y government bonds apply as starting point in present year T to gradually converge to a 4% yield applied in T+30.

In the medium to long run (as of T+30): a constant 4% yield applies; this horizon and value are in line with the horizon used for government debt projections.

Due to the current low level of government bond yields, an additional assumption was made that the starting point of convergence to a 4% yield in T+30 should not be the current (T) *level* of the 10-y government bond yield that year, but an *average* of the last 10-y government bond yields.

The assumptions regarding the starting yield value and the duration of convergence to a 4% yield intend to compress the yield gap to be bridged and to stretch the timespan available for convergence, thus limiting distortionary impacts on S1 and S2 for countries with high property income.

Equity returns projection

These projections are based on a method agreed by the AWG in 2007.

Using income from equity - D.42 which reports distributed returns - country-specific shares of paid dividends in GDP are calculated for the last year of available data, T-1; for each country it is considered this share remains constant over the projection horizon, thereby implicitly assuming continuing valuation effects in line with nominal GDP growth.

Rents projection

These projections are based on a method agreed by the AWG in 2007.

The share of rents (D45) to GDP is calculated for the last year of available data for each country, T-1. ([120]) This share is assumed to remain constant over the projection horizon for all countries except Denmark and the Netherlands. For these two countries rich in fossil fuels the stock of subsoil assets is assumed to deplete by 2050, so that the share of rents to GDP in these countries would decline linearly to reach the EU average ([121]) by 2050.

Returns on real estate (rentals on buildings etc.) are not included in property income in the National Accounts since they are produced and often consumed by the general government.

In sum, considering these hypotheses, the projected path of property income ultimately

([120]) This is a simplification. Rents projections should combine the size of reserves, the timing of exploitation and the eur value of the commodity (assumption).

([121]) This average excludes excluding Denmark and the Netherlands.

depends on the stock of bonds held at the start of the projection period (the higher the bonds stock, the steeper the decline in property income over time) given that the return on these bonds is assumed to converge to a 4% yield in the medium-long term.

Since both elements can affect property income projections markedly, mitigating assumptions on the starting point and length of bond returns convergence aim to avoid unrealistic boosts to property income projections (and thereby too large of a required SPB adjustment), in particular in countries with significant property income shares.

ANNEX A4

Stochastic debt projections based on a historical variance-covariance matrix

This annex provides a description of the methodology used for stochastic debt projections based on the historical variance-covariance matrix approach and the data used to implement it. ([122]) The annex is organised as follows: section A7.1 presents the method to obtain annual stochastic shocks to the main macroeconomic variables of the model, section A7.2 shows how shocks are applied around the central scenario (i.e. the baseline 'no-fiscal policy change') and section A7.3 provides further details on the data used.

A4.1. THE METHOD TO OBTAIN (ANNUAL) STOCHASTIC SHOCKS TO MACROECONOMIC VARIABLES

Stochastic shocks are simulated for five macroeconomic variables entering the debt dynamic equation: the government primary balance (pb), nominal short-term interest rate (i^{ST}), nominal long-term interest rate (i^{LT}), nominal GDP growth rate (g), and exchange rate (e) (for non-EA countries). We use quarterly data. ([123]) First, the methodology requires transforming the time series for each macroeconomic variable x into series of historical shocks. ([124]) The historical quarterly shocks are defined as the first difference of the quarterly time series of the five macroeconomic variables. δ_q^x as follows:

$$\delta_q^x = x_q - x_{q-1}$$

with x equal to pb, i^{ST}, i^{LT}, g and e (for non-EA countries).

Second, the variance-covariance matrix for the historical quarterly shocks of the five macroeconomic variables is calculated.

Third, a Monte Carlo simulation is run by extracting two thousand random vectors of quarterly shocks over the projection period (next five years). ([125]) Shocks are drawn from STATA's pseudo-random number functions assuming a joint normal distribution with zero mean and variance-covariance matrix identical to that of historical quarterly shocks. The quarterly shocks (ε_q) obtained in this way are aggregated into annual shocks to primary balance, nominal short-term interest rate, nominal long-term interest rate, nominal GDP growth, and exchange rate (for non-EA countries), as follows:

The shock to **nominal GDP growth** (g) in year t is given by the sum of the quarterly shocks to growth:

$$\varepsilon_t^g = \sum_{q=1}^{4} \varepsilon_q^g$$

This equation expresses the annual shock to nominal GDP growth in year t.

The shock to **the primary balance** (pb) in year t is given by the sum of the quarterly shocks to the primary balance:

$$\varepsilon_t^{pb} = \sum_{q=1}^{4} \varepsilon_q^{pb}$$

The shock to **the nominal exchange rate** (e) in year t is given by the sum of the quarterly shocks to the exchange rate:

$$\varepsilon_t^e = \sum_{q=1}^{4} \varepsilon_q^e$$

The shock to **the nominal short-term interest rate** (i^{ST}) in year t is given by the sum of quarterly shocks to the short-term interest rate:

$$\varepsilon_t^{i^{ST}} = \sum_{q=1}^{4} \varepsilon_q^{i^{ST}}$$

The calculation of the shock to the nominal short-term interest rate in annual terms is justified based

([122]) The approach is based on Berti, K. (2013) Stochastic public debt projections using the historical variance-covariance matrix approach for EU countries, *European Economy. Economic Papers* No. 480 and on Beynet and Paviot (2012) Assessing the sensitivity of Hungarian debt sustainability to macroeconomic shocks under two fiscal policy reactions, *OECD Economics Department Working Paper* No. 946.

([123]) A detailed account of the series used is provided in Table 1 of section A7.3.

([124]) Before the quarterly data series are turned into shocks, some adjustments are made to eliminate extreme outliers.

([125]) The total matrix size is 2000x5x20 (5 years of 4 quarters).

on the fact that the short-term interest rate is defined here as the interest rate on government bonds with maturity below the year. With the equation above, we rule out persistence of short-term interest rate shocks over time, exactly as done in standard deterministic projections. In other words, unlike the case of the long-term interest rate (see below), a shock to the short-term interest rate occurring in any of the quarters of year *t* is not carried over beyond year *t*.

- The aggregation of the quarterly shocks to **the nominal long-term interest rate** (i^{LT}) into annual shocks takes account of the persistence of these shocks over time. This is due to the fact that long-term debt issued/rolled over at the moment where the shock takes place will remain in the debt stock, for all years to maturity, at the interest rate conditions holding in the market at the time of issuance. ([126]) A shock to the long-term interest rate in year t is therefore carried over to the following years in proportion to the share of maturing debt that is progressively rolled over (ECB data on weighted average maturity is used to implement this).

- For countries where *average weighted maturity of debt* T is equal or greater than the number of projection years (5 years), the annual shock to long-term interest rate in year *t* is defined according to the following equations:

t = first projection year

$$\varepsilon_t^{i^{LT}} = \frac{1}{T}\sum_{q=1}^{4} \varepsilon_q^{i^{LT}}$$

t = second projection year

$$\varepsilon_t^{i^{LT}} = \frac{2}{T}\sum_{q=-4}^{4} \varepsilon_q^{i^{LT}}$$

t = third projection year

$$\varepsilon_t^{i^{LT}} = \frac{3}{T}\sum_{q=-8}^{4} \varepsilon_q^{i^{LT}}$$

t = fourth projection year

$$\varepsilon_t^{i^{LT}} = \frac{4}{T}\sum_{q=-12}^{4} \varepsilon_q^{i^{LT}}$$

t = fifth projection year

$$\varepsilon_t^{i^{LT}} = \frac{5}{T}\sum_{q=-16}^{4} \varepsilon_q^{i^{LT}}$$

where q = -4, -8, -12, -16 respectively indicate the first quarter of years t-1, t-2, t-3 and t-4.

The set of equations above clearly allows for shocks to the long-term interest rate in a certain year to carry over to the following years, till when, on average, debt issued at those interest rate conditions will remain part of the stock.

For countries where the average weighted maturity of debt is smaller than the number of projection years, the equations above are adjusted accordingly to reflect a shorter carryover of past shocks. For instance, countries with average weighted maturity T = 3 years will have the annual shock to the long-term interest rate defined as follows:

t = first projection year

$$\varepsilon_t^{i^{LT}} = \frac{1}{3}\sum_{q=1}^{4} \varepsilon_q^{i^{LT}}$$

t = second projection year

$$\varepsilon_t^{i^{LT}} = \frac{2}{3}\sum_{q=-4}^{4} \varepsilon_q^{i^{LT}}$$

t = third, fourth and fifth projection year

$$\varepsilon_t^{i^{LT}} = \sum_{q=-8}^{4} \varepsilon_q^{i^{LT}}$$

([126]) The implicit assumption is made here that long-term government bonds are issued at fixed interest rates only.

Finally, the weighted average of annual shocks to short-term and long-term interest rates (with weights given by the shares of short-term debt, α^{ST}, and long-term debt, α^{LT}, over total) gives us the annual shock to the implicit interest rate *i*:

$$\varepsilon_t^i = \alpha^{ST}\varepsilon^{i^{ST}} + \alpha^{LT}\varepsilon^{i^{LT}}$$

Where α^{ST} is the share of short-term debt in total government debt and $\alpha^{LT} = (1 - \alpha^{ST})$. These shares are given by ESTAT. ([127])

A4.2. APPLYING STOCHASTIC SHOCKS TO THE CENTRAL SCENARIO

All results from stochastic projections presented in this report refer to a scenario in which shocks are assumed to be temporary. In this case, annual shocks ε are applied to the baseline value of the variables (primary balance *b,* implicit interest rate *i,* nominal growth rate g and exchange rate *e*) each year as follows:

$b_t = \bar{b}_t + \varepsilon_t^b$ with $\bar{b}_t$ = baseline (from standard deterministic projections) primary balance at year *t*

$g_t = \bar{g}_t + \varepsilon_t^g$ with $\bar{g}_t$ = baseline (from standard deterministic projections) nominal GDP growth at year *t*

$i_t = \bar{\imath}_t + \varepsilon_t^i$ with $\bar{\imath}_t$ = baseline (from standard deterministic projections) implicit interest rate at year *t*

$e_t = \bar{e}_t + \varepsilon_t^e$ with $\bar{e}_t$ = nominal exchange rate as in DG ECFIN forecasts if *t* within forecast horizon; nominal exchange rate identical to last forecasted value if *t* beyond forecast horizon.

In other words, if the shock in year *t* were equal to zero, the value of the variable would be the same as in the standard deterministic baseline projections.

([127]) More precisely, we use the average shares over the last 3 years available.

A4.3. THE DEBT DYNAMIC EQUATION

Through the steps described above we obtain series, over the whole projection period, of shocks to government primary balance, nominal growth rate, implicit interest rate and nominal exchange rate that can be used in the debt dynamic equation to calculate debt ratios over a 5-year horizon, starting from the last historical value.

The debt dynamic equation takes the following form:

$$d_t = \alpha^n d_{t-1}\frac{1+i_t}{1+g_t} + \alpha^f d_{t-1}\frac{1+i_t}{1+g_t}\frac{e_t}{e_{t-1}} - b_t + c_t + f_t$$

where d_t = debt-to-GDP ratio in year t

α^n = share of total debt denominated in national currency ([128])

α^f = share of total debt denominated in foreign currency

b_t = primary balance over GDP in year t

c_t = change in age-related costs over GDP in year t relative to starting year ([129])

f_t = stock-flow adjustment over GDP in year t

All the steps above (extraction of random vectors of quarterly shocks over the projection horizon; aggregation of quarterly shocks into annual shocks; calculation of the corresponding simulated series of primary balance, implicit interest rate, nominal growth rate and exchange rate; calculation of the corresponding path for the debt ratio) are repeated 2000 times. This allows us to obtain yearly distributions of the debt-to-GDP ratio over the five projection years, from which we extract the percentiles to construct the fan charts.

([128]) Shares of public debt denominated in national and foreign currency are kept constant over the projection period at the latest ESTAT data (ECB data are used for those countries, for which ESTAT data were not available).

([129]) Figures on age-related costs from the latest European Commission's Ageing Report are used.

A4.4. DATA USED

For the calculation of the historical variance-covariance matrix, quarterly data on government primary balance are taken from ESTAT; nominal short-term and long-term interest rates are taken from IMF-IFS and OECD; quarterly data on nominal growth rate come from ESTAT and IMF-IFS; quarterly data on nominal exchange rate for non-EA countries come from ESTAT.

Results using the methodology described above were derived for all EU countries by using both short-term and long-term interest rates, whenever possible based on data availability, to keep in line with standard deterministic projections. This was indeed possible for the vast majority of EU countries, the only exceptions being Bulgaria, Croatia and Estonia. ([130])

Shocks to the primary balance were simulated for all countries but two (Croatia and Estonia), based on availability of sufficiently long time series of quarterly primary balances.

In general, data starting from the mid 70s until last available data were used to calculate the historical variance-covariance matrix. This period can be shorter in case of limited data availability. Table 1 provides the definition and sources of the data used.

([130]) For Estonia and Croatia we only used the short-term interest rate as quarterly data on the long-term rate were not available; for Bulgaria we used the long-term interest rate only as data on the short-term rate were not available for most recent years.

Table A4.1: **Overview of variables used to run stochastic debt projections**

Variable	Frequency	Definition	Source
Exchange rate	Quarterly	Nominal exchange rate, average in national currency (=national currency for 1 euro).	Eurostat (AVG-NAC in database ERT-BIL-EUR-Q)
Real GDP growth	Quarterly	Gross domestic product at market prices, percentage change compared to corresponding period of previous year, seasonally adjusted and adjusted data by working days. *Complemented for missing values with* Gross domestic product, real, seasonally adjusted. Calculation to compute real GDP growth values: $\frac{rGDP\,(n)-rGDP\,(n-4)}{rGDP\,(n-4)} \times 100$	Eurostat (B1GQ in unit of measure CLV-PCH-SM ir database NAMQ-10-GDP) IMF - International Financial Statistics (NGDP-R-SA-XDC)
GDP deflator	Quarterly	Price index, percentage change compared to corresponding period of previous year, based on 2005=100, in national currency, seasonally adjusted and adjusted data by working days. *Complemented for missing values with* Gross domestic product, deflator, seasonally adjusted. Calculation to compute deflator values: $\frac{GDPdefl\,(n)-GDPdefl\,(n-4)}{GDPdefl\,(n-4)} \times 100$	Eurostat (B1GQ in unit of measure PD-PCH-SM-NAC in database NAMQ 10-GDP) IMF - International Financial Statistics (NGDP-D-SA-IX)
Short-term interest rate	Quarterly	Government debt securities, treasury bills, in percent per annum. (For HR: Interbank rates, money market rate, in percent per annum) *Complemented for missing values with* 3-month interbank rate, in percentage.	IMF- International Financial Statistics (FITB-PA, FIMM-PA) OECD - Key short-term economic indicators
Long-term interest rate	Quarterly	Government debt securities, government bonds, in percent per annum. *Complemented for missing values with* Rate on government bonds maturing in 10 years, in percentage.	IMF - International Financial Statistics (FIGB-PA) OECD - Key short-term economic indicators
Primary balance - Net lending/ borrowing	Quarterly	Net lending/borrowing as percentage of GDP calculated based on (1) net lending (+)/net borrowing (-) and (2) nominal GDP, both in million units of national currency and seasonally adjusted.	Eurostat (B9 in GOV-10Q-GGNFA database and B1GQ in NAMQ-10-GDP database)
- Interest payable	Quarterly	Interest expenditure as a percentage of GDP, unadjusted data.	Eurostat (D41PAY in GOV-10Q-GGNFA)

Source: European Commission

ANNEX A5
The long-term fiscal sustainability indicators (S1, S2)

A5.1. NOTATION

t: time index. Each period is one year

t_F: last year before the long-term projection (i.e. last year forecasted in the European Commission Autumn Forecast 2021, 2023).

t_0: last year before the fiscal adjustment (country-specific).

$t_0 + 1$: first year of the long-term projection period (i.e. year of the fiscal adjustment).

t_1: final year of the long-term projection period (2070), which also correspond to the target year for the debt ratio (relevant for S1).

Notice that $t_0 < t_1$.

D_t: debt-to-GDP ratio (at the end of year t).

PB_t: ratio of structural primary balance to GDP

$\Delta\text{PB}_t \equiv \text{PB}_t - \text{PB}_{t_0}$: change in the structural primary balance relative to the base year t_0. In the absence of fiscal adjustment, it equals the change in age related expenditure (ΔA_t) for $t > t_0$.

$\Delta A_t \equiv A_t - A_{t_0}$: change in age-related costs relative to the base year t_0.

r: differential between the nominal interest rate and the nominal GDP growth rate i.e.

$1 + r \equiv \frac{1+R}{1+G}$: where R and G are, respectively, the nominal interest rate and the nominal growth rate.

If the interest-growth rate differential is time-varying, we define:

$$\alpha_{s;v} \equiv (1 + r_{s+1})(1 + r_{s+2}) \dots (1 + r_v)$$

$$\alpha_{v;v} \equiv 1$$

as the accumulation factor that transforms 1 nominal unit in period s to its period v value.

A5.2. DEBT DYNAMICS

By definition, the debt-to-GDP ratio evolves according to:

$$D_t = (1 + r_t)D_{t-1} - \text{PB}_t. \quad (1)$$

That is, the debt ratio at the end of year t, D_t, is a sum of three components: the debt ratio at the end of the previous year (D_{t-1}), interest accrued on existing debt during year t (rD_{t-1}), and the negative of the primary balance ($-\text{PB}_t$).

Repeatedly substituting for D_t, the debt ratio at the end of some future year $T > t$ can be expressed similarly, as:

$$D_T = D_{t-1}\alpha_{t-1;T} - \sum_{i=t}^{T}(\text{PB}_i\alpha_{i;T}). \quad (2)$$

The path of the debt ratio is thus determined by the initial debt ratio, accrued interest (net of growth), and the path of primary balances from t through T.

A5.3. DERIVATION OF THE S1 INDICATOR

The S1 indicator is defined as the immediate and permanent one-off improvement in the ratio of structural primary balance to GDP that is required to bring the debt ratio to 60% of GDP by year t_1 (2070).

In addition to accounting for the need to adjust the initial intertemporal budgetary position and the debt level, it incorporates financing for any additional expenditure until the target date arising from an ageing population.

Under the assumed immediate and permanent one-off consolidation, the change in the primary balance is thus given by

$$\text{PB}_i = \text{SPB}_{t_0} + S_1 - \Delta A_i + \Delta PI_i + CC_i \quad (3)$$

$$\text{for } i > t_0$$

Using (2), the debt ratio target D_{t_1} can then be written as:

$$D_{t_1} = D_{t_0}\alpha_{t_0;t_1} - \sum_{i=t_0+1}^{t_1}(\text{PB}_i\alpha_{i;t_1}) \quad (4)$$

Replacing (3) into (4) yields:

$$D_{t_1} = D_{t_0}\alpha_{t_0;t_1} - \sum_{i=t_0+1}^{t_1}\left(\mathrm{SPB}_{t_0} + S_1\right)\alpha_{i;t_2} + \sum_{i=t_0+1}^{t_1}\left(\left(\Delta A_i - \Delta PI_i - CC_i\right)\alpha_{i;t_1}\right) \quad (5)$$

After some straightforward manipulations, ([131]) we can decompose the S1 into the following main components:

$$S_1 \equiv$$

$$= \underbrace{\frac{D_{t_0}\left(\alpha_{t_0;t_1} - 1\right)}{\sum_{i=t_0+1}^{t_1}\left(\alpha_{i;t_1}\right)} - \mathrm{SPB}_{t_0} - \frac{\sum_{i=t_0+1}^{t_1}\left(\Delta PI_i\alpha_{i;t_1}\right)}{\sum_{i=t_0+1}^{t_1}\left(\alpha_{i;t_1}\right)} - \frac{\sum_{i=t_0+1}^{t_1}\left(CC_i\alpha_{i;t_1}\right)}{\sum_{i=t_0+1}^{t_1}\left(\alpha_{i;t_1}\right)}}_{A} + \underbrace{\frac{D_{t_0} - D_{t_1}}{\sum_{i=t_0+1}^{t_1}\left(\alpha_{i;t_1}\right)}}_{B} + \underbrace{\frac{\sum_{i=t_0+1}^{t_1}\left(\Delta A_i\alpha_{i;t_1}\right)}{\sum_{i=t_0+1}^{t_1}\left(\alpha_{i;t_1}\right)}}_{C} \quad (6)$$

where (A) is the initial budgetary position (IBP) (i.e. the gap to the debt-stabilising primary balance); (B) the required additional adjustment due to the debt target (DR); and (C) the additional required adjustment due to the costs of ageing (LTC).

A5.4. DERIVATION OF THE S2 INDICATOR

The intertemporal budget constraint and the S2 indicator

According to a generally invoked definition, fiscal policy is sustainable in the long term if the present value of future primary balances is equal to the current level of debt, that is, if the intertemporal government budget constraint (IBC) is met. Let us define the S2 as the immediate and permanent one-off fiscal adjustment that would ensure that the IBC is met. This indicator is appropriate for assessing long-term fiscal sustainability in the face of ageing costs. ([132])

([131]) Add and subtract D_{t_0} on the LHS of (5), divide on both sides by $\sum_{i=t_0+1}^{t_1}\left(\alpha_{i;t_1}\right)$ and group the terms as in (6).

([132]) Note that the derivation of S2 does not assume that either the initial sequence of primary balances or the fixed annual increase (S2) are optimal according to some criterion. S2 should be considered as a benchmark and not as a policy recommendation or as a measure of the actual adjustment needed in any particular year.

Since the S2 indicator is defined with reference to the intertemporal government budget constraint (IBC), we first discuss which conditions are required for the IBC to hold in a standard model of debt dynamics. From (2), the debt to GDP ratio at the end of any year $t > t_0$ is given by:

$$D_t = D_{t_0}\alpha_{t_0;t} - \sum_{i=t_0+1}^{t}\left(\mathrm{PB}_i\alpha_{i;t}\right). \quad (7)$$

Rearranging the above and discounting both sides to their time t_0 values, we obtain the debt ratio on the initial period:

$$D_{t_0} = \left(\frac{D_t}{\alpha_{t_0;t}}\right) + \sum_{i=t_0+1}^{t}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right). \quad (8i)$$

Assuming an infinite time horizon ($t \to \infty$) we get:

$$D_{t_0} = \lim_{t\to\infty}\left(\frac{D_t}{\alpha_{t_0;t}}\right) + \lim_{t\to\infty}\sum_{i=t_0+1}^{t}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) = \lim_{t\to\infty}\left(\frac{D_t}{\alpha_{t_0;t}}\right) + \sum_{i=t_0+1}^{\infty}\left(\frac{\mathrm{PB}_i}{\alpha_{t_0;i}}\right) \quad (8ii)$$

Either both of the limits on right-hand side of equation (8ii) fail to exist, or if one of them exists, so does the other.

Let us define the *no-Ponzi game condition* (also called the *transversality condition*) for debt sustainability, namely that the discounted present value of debt (in the very long term or in the infinite horizon) will tend to zero:

$$\lim_{t\to\infty}\left(\frac{D_t}{\alpha_{t_0;t}}\right) = 0 \quad (9i)$$

Condition (9i) means that asymptotically, the debt ratio cannot grow at a rate equal or higher than the (growth-adjusted) interest rate, which is what would happen if debt and interest were systematically paid by issuing new debt (i.e. a Ponzi game).

Combining the no-Ponzi game condition (9i) with (8ii), one obtains the intertemporal budget constraint, stating that a fiscal policy is sustainable if the present discounted value of future primary balances is equal to the initial value of the debt ratio.

$$D_{t_0} = \sum_{i=t_0+1}^{\infty} \left(\frac{\text{PB}_i}{\alpha_{t_0;i}} \right) \qquad \text{(9ii)}$$

On the other hand, substituting the intertemporal budget constraint (9ii) into (8ii) implies the no-Ponzi game condition. This shows that the no-Ponzi game condition (9i) and the IBC (9ii) are, in fact, equivalent.

Assuming that the intertemporal budget constraint is satisfied through a permanent, one-off fiscal adjustment whose size is given by the S2, from $t_0 + 1$ onwards we can write:

$$\text{PB}_i = \text{SPB}_{t_0} + S_2 - \Delta A_i + \Delta PI_i + CC_i \quad \text{for} \quad i > t_0. \qquad (10)$$

Then the intertemporal budget constraint (9ii) becomes

$$D_{t_0} = \sum_{i=t_0+1}^{\infty} \left(\frac{\text{PB}_{t_0} + S_2 - \Delta A_i + \Delta PI_i + CC_i}{\alpha_{t_0;i}} \right). \qquad \text{(9iii)}$$

Here the ratio of structural primary balance to GDP, PB_t is re-expressed in terms of the required annual additional effort, S2, and the change in age-related costs relative to the base year t_0, combining the equation (10) with equation (9ii).

According to the theory on the convergence of series, necessary conditions for the series in equation (9ii)-(9iii) to converge are for the initial path of primary balances to be bounded and the interest rate differential in the infinite horizon to be positive ([133]). The latter is equivalent to the modified golden rule, stating that the nominal interest rate exceeds the real growth rate (i.e. $\lim_{t\to\infty} r_t > 0$). ([134])

After some rearranging, ([135]) we can decompose the S2 into the following two components:

$$S_2 = \underbrace{\frac{D_{t_0}}{\sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right)} - \text{SPB}_{t_0} - \frac{\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta PI_i + CC_i}{\alpha_{t_0;i}}\right)}{\sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right)}}_{A} + \underbrace{\frac{\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta A_i}{\alpha_{t_0;i}}\right)}{\sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right)}}_{B} \qquad (11)$$

where (A) is the initial budgetary position i.e. the gap to the debt stabilising primary balance ([136]); and (B) the additional required adjustment due to the costs of ageing.

If the interest-growth rate differential r is constant, the accumulation factor simplifies to $\alpha_{s;v} = (1 + r_{s+1})(1 + r_{s+2}) \dots (1 + r_v) = (1 + r)^{v-s}$. Then equation (10) can be simplified further by noting that:

$$\sum_{i=t_0+1}^{\infty}\left(\frac{1}{\alpha_{t_0;i}}\right) = \sum_{i=t_0+1}^{\infty}\left(\frac{1}{(1+r)^{i-t_0}}\right) = \frac{1}{r} \qquad (12)$$

Thus, for a constant discounting factor, (11) can be rewritten as:

$$S_2 = \underbrace{rD_{t_0} - \text{SPB}_{t_0} - r\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta PI_i + CC_i}{\alpha_{t_0;i}}\right)}_{A} + \underbrace{r\sum_{i=t_0+1}^{\infty}\left(\frac{\Delta A_i}{\alpha_{t_0;i}}\right)}_{B} \qquad (13i)$$

If the interest-growth rate differential and the structural primary balance are constant after a certain date (here $t_1 = 2070$), equation (11) can be rewritten as:

$$S_2 = \frac{D_{t_0}}{\sum_{i=t_0+1}^{2069}\left(\frac{1}{\alpha_{t_0;i}}\right) + \frac{1}{r\alpha_{t_0;2069}}} - \text{SPB}_{t_0} - \frac{\sum_{i=t_0+1}^{2069}\left(\frac{\Delta PI_i + CC_i}{\alpha_{t_0;i}}\right) + \frac{\Delta PI_{2070} + CC_{2070}}{r\,\alpha_{t_0;2069}}}{\sum_{i=t_0+1}^{2069}\left(\frac{1}{\alpha_{t_0;i}}\right) + \frac{1}{r\,\alpha_{t_0;2069}}} + \frac{\sum_{i=t_0+1}^{2069}\left(\frac{\Delta A_i}{\alpha_{t_0;i}}\right) + \frac{\Delta A_{2070}}{r\,\alpha_{t_0;2069}}}{\sum_{i=t_0+1}^{2069}\left(\frac{1}{\alpha_{t_0;i}}\right) + \frac{1}{r\,\alpha_{t_0;2069}}} \qquad (13ii)$$

where $r_t = r$ and $\Delta A_t = \Delta A_{2070}$ for $t \geq t_1 = 2070$.

([133]) The latter is an application of the ratio test for convergence.
([134]) See Escolano (2010) for further details on the relationships among the stability of the debt ratio, the IBC and the no-Ponzi game condition.
([135]) In addition, constant multiplicative terms are systematically taken out of summation signs.
([136]) In practical calculations, the present value of property income is also accounted for in the initial budgetary position. Property income enters the equation in an identical manner as age-related costs ΔA_t (i.e. term (B)), but with an opposite sign.

Derivation of the steady state debt level (at the end of the projection period) corresponding to the S2

Assuming that the intertemporal budget constraint is satisfied and that the primary balance and the interest-growth rate differential are constant at their long-run levels after the end of the projection period, then the debt ratio remains constant at the value attained at the end point of the projection period (i.e. at $t_1 = 2070$).

To see this, rewrite (9ii) as:

$$D_{t_0} = \sum_{i=t_0+1}^{\infty} \left(\frac{\text{PB}_i}{\alpha_{t_0;i}}\right) = \sum_{i=t_0+1}^{t_1} \left(\frac{\text{PB}_i}{\alpha_{t_0;i}}\right) + \sum_{i=t_1+1}^{\infty} \left(\frac{\text{PB}_i}{\alpha_{t_0;i}}\right) \qquad (14\text{i})$$

Using (7) and the fact that for $t \geq t_1$ the primary balance and interest-growth rate differential stay constant at $\text{PB}_t = \text{PB}_{t_1}$ we can rearrange (14i) to obtain the debt ratio at t_1:

$$\begin{aligned} D_{t_1} &= D_{t_0}\alpha_{t_0;t_1} - \sum_{i=t_0+1}^{t_1} (\text{PB}_i \alpha_{i;t_1}) = \sum_{i=t_1+1}^{\infty} \left(\frac{\text{PB}_i}{\alpha_{t_1;i}}\right) \\ &= \sum_{i=1}^{\infty} \left(\frac{\text{PB}_{t_1}}{(1+r_{t_1})^i}\right) = \frac{\text{PB}_{t_1}}{r_{t_1}} \end{aligned} \qquad (14\text{ii})$$

We can generalising the above to each $t \geq t_1$ by using (7) with the initial year changed to t_1 instead of t_0, we see that for each year after t_1, the debt ratio remains unchanged at this value:

$$\begin{aligned} D_t &= D_{t_1}\alpha_{t_1;t} - \sum_{i=t_1+1}^{t} (\text{PB}_i \alpha_{i;t}) \\ &= \frac{\text{PB}_{t_1}}{r_{t_1}}(1+r_{t_1})^{t-t_1} - \text{PB}_{t_1} \sum_{i=t_1+1}^{t} (1+r_{t_1})^{t-i} \\ &= \underbrace{\left[(1+r_{t_1})^{t-t_1} - r_{t_1}\left(\frac{1-(1+r_{t_1})^{t-t_1}}{1-(1+r_{t_1})}\right)\right]}_{=1} \frac{\text{PB}_{t_1}}{r_{t_1}} \\ &= \frac{\text{PB}_{t_1}}{r_{t_1}} \equiv \overline{\overline{D}} \quad \text{for} \quad t \geq t_1 \end{aligned} \qquad (15)$$

where $\overline{\overline{D}}$ is the constant debt ratio reached after the end of the projection period.

Using (4), the primary balance at the end of the projection period can be calculated as:

$$\text{PB}_{t_1} = \text{SPB}_{t_0} + \Delta PI_{t_3} + CC_{t_1} + S_2 - \Delta A_{t_1} \qquad (16)$$

Replacing (16) into (15), the constant (steady-state) debt ratio ($\overline{\overline{D}}$) is given by:

$$\overline{\overline{D}} = \frac{\text{PB}_{t_1}}{r_{t_1}} = \frac{\text{SPB}_{t_0} + \Delta PI_{t_1} + CC_{t_1} + S_2 - \Delta A_{t_1}}{r_{t_1}} \qquad (17)$$

$$\text{for} \quad t \geq t_1$$

The S2 adjustment implies that the sum of debt and the discounted present value of future changes in aged-related expenditure is (approximately) constant over time

Replacing equations (16) and (13i) into (15), and assuming a constant interest rate differential, the following equation is obtained:

$$\begin{aligned} &D_t + \sum_{i=t+1}^{\infty} \left(\frac{\Delta A_i}{(1+r)^{i-t}}\right) - \sum_{i=t+1}^{\infty} \left(\frac{\Delta PI_i + CC_i}{(1+r)^{i-t}}\right) \\ &= D_{t_0} + \sum_{i=t_0+1}^{\infty} \left(\frac{\Delta A_i}{(1+r)^{i-t_0}}\right) - \sum_{i=t_0+1}^{\infty} \left(\frac{\Delta PI_i + CC_i}{(1+r)^{i-t_0}}\right) \end{aligned} \qquad (18)$$

Equation (18) can be interpreted as follows. Implementing a permanent annual improvement in the primary balance amounting to S2 (equation 5), which is both necessary and sufficient to secure intertemporal solvency, implies that the sum of explicit debt (the first term in both sides) and the variation in age-related expenditure or implicit debt (the second terms in both sides) is (approximately) constant over time. Equation (17) is exact in the steady state (e.g. after 2070), holding only as an approximation during transitory phases (i.e. for time-varying interest rate differentials). ([137])

([137]) Moreover, equations (17) and (18) imply that both the debt and the variation in age-related expenditure are constant over time in the steady state.

ANNEX A6

Estimating the potential impact of simulated bank losses on public finances based on the SYMBOL model

SYMBOL approximates the probability distributions of individual bank's losses using publicly available information from banks' financial statements. In particular, the model estimates an average implied default probability of the individual banks' asset/loan portfolios by inverting the Basel FIRB formula for capital requirements ([138]).

The main data source on banks' financial statements is Orbis Bank Focus, a commercial database of the private company Bureau van Dijk (part of Moody's analytics). For the reference year 2021, unconsolidated data for commercial, saving and cooperatives banks are included. The data as provided by Orbis Bank Focus occasionally lacks information on specific variables for some banks in the sample (e.g. capital, risk weighted assets, provisions, gross non-performing loans). In those cases, capital is imputed via a robust regression by using common equity, while risk weighted assets are approximated using the total regulatory capital ratio (at bank or country level) ([139]). While gross loans are available for all banks, values for provisions and non-performing loans are available only for two thirds of the sample. Missing values for provisions have thus been estimated by country aggregates coming from the EBA dashboard ([140]), while missing values for non-performing loans have been imputed by applying a robust regression using provisions as explanatory variable. Information on the sample is presented in Table A9.1, and Table A9.2 reports statistics at aggregated Member State level for non-performing loans (NPLs) and loans provisions, taken from the EBA dashboard, while recovery rates (country aggregates) are taken from the World Bank (2020). ([141])

Similarly to past exercises, the sample covers roughly 75% of all EU banking assets. ([142]) When the sample, as illustrated in Table A11.1, either includes a small number of banks or covers a low share of total assets, results should be interpreted with caution, since a minor change to any bank's data or the addition of a new bank could have large effects on results.

Table A9.1: **Descriptive statistics of samples used for SYMBOL simulations**

	Sample ratio *(Sample TA/ Population TA)*	Nbr.of banks	Total assets (TA)	Capital	Risk weighted assets (RWA)	RWA/TA	Capital/RWA
	%		EUR bn	EUR bn	EUR bn	%	%
AT	85.3%	398	844.0	77.1	374.9	44.4%	20.6%
BE	95.0%	26	966.1	64.2	326.9	33.8%	19.6%
BG	86.3%	15	60.9	7.1	31.1	51.0%	22.8%
CY	78.8%	21	55.0	3.8	18.2	33.0%	21.1%
CZ	69.6%	17	238.9	21.3	89.5	37.5%	23.9%
DE	71.9%	1123	6278.2	465.1	2625.1	41.8%	17.7%
DK	50.8%	53	580.2	60.9	242.7	41.8%	25.1%
EE	101.2%	3	37.6	3.9	16.2	43.2%	23.8%
ES	88.6%	83	2533.1	192.2	1082.7	42.7%	17.8%
FI	96.1%	101	610.9	45.0	194.5	31.8%	23.2%
FR	76.0%	149	8233.4	445.4	2255.9	27.4%	19.7%
GR	95.9%	7	310.8	23.0	148.2	47.7%	15.5%
HR	92.1%	19	63.8	7.9	31.0	48.6%	25.5%
HU	53.5%	12	87.3	9.7	42.1	48.2%	23.0%
IE	27.6%	21	364.6	37.0	157.6	43.2%	23.5%
IT	75.1%	273	2814.9	219.4	1052.2	37.4%	20.9%
LT	72.4%	4	32.1	2.2	10.0	31.0%	21.9%
LU	37.3%	40	390.1	35.1	166.7	42.7%	21.0%
LV	99.5%	10	20.2	2.2	9.0	44.8%	24.4%
MT	65.0%	9	27.7	2.2	10.1	36.6%	22.0%
NL	72.7%	15	1837.0	131.5	569.3	31.0%	23.1%
PL	68.9%	93	386.9	36.9	203.5	52.6%	18.1%
PT	87.5%	92	358.8	28.8	156.3	43.6%	18.4%
RO	83.8%	15	104.3	10.3	45.6	43.7%	22.6%
SE	56.3%	78	739.4	55.1	196.9	26.6%	28.0%
SI	84.9%	10	42.0	4.3	22.3	53.2%	19.4%
SK	94.9%	9	88.5	7.2	44.2	50.0%	16.3%

(1) 2021 unconsolidated data.
Source: Commission services.

([138]) For more detail on the SYMBOL model see European Commission (2016), Fiscal Sustainability Report, European Economy Institutional Papers, 18 January, Section 5.2.2 and Annex A7.

([139]) The procedure for the imputation of missing values of capital and RWA is described in "SYMBOL database and simulations for 2013, P. Benczur, J. Cariboni, F.E. Di Girolamo, A. Pagano, M. Petracco, JRC European Commission, Technical Report, JRC9298".

([140]) EBA Risk Dashboard - data as of Q4 2021.

([141]) Due to issues in the data, the World Bank paused the 2021 Doing Business report to start a series of audits in the methodology. Thus, we use the recovery rates as of end 2020.

([142]) The sample ratio changes per each MS ranging from 27.5% in Ireland to higher than 100% in EE. This variability calls for caution when reading the results in particular for country with a low coverage ratio and small number of banks.

	Gross loans	NPL Ratio Gross NPL/Gross loans	NPL/TA Gross NPL/TA	NPL/Capital Gross NPL/Capital	Provisions	Recovery rate Baseline Scenario	NPL losses Baseline Scenario
	EUR bn	%	%	%	EUR bn	%	EUR bn
AT	403.2	2.5%	1.4%	16.1%	5.5	79.9%	1.8
BE	472.9	1.2%	0.6%	7.9%	3.8	89.4%	0.1
BG	30.6	8.4%	4.7%	39.5%	1.6	37.7%	0.6
CY	25.9	13.9%	6.9%	83.4%	1.7	73.8%	0.5
CZ	111.8	2.3%	1.3%	14.2%	2.2	67.5%	0.3
DE	2607.1	1.1%	0.6%	7.4%	15.5	79.8%	4.4
DK	165.9	4.3%	1.4%	15.6%	5.2	88.5%	0.0
EE	24.1	1.8%	1.1%	10.0%	0.2	36.1%	0.2
ES	1178.3	3.4%	1.8%	20.7%	29.4	77.5%	2.6
FI	234.0	2.2%	0.9%	11.9%	2.7	88.0%	0.3
FR	2489.7	2.3%	0.7%	13.0%	29.6	74.8%	14.5
GR	75.2	32.9%	17.3%	175.9%	11.3	32.0%	9.0
HR	35.6	7.6%	4.6%	34.9%	2.2	35.2%	0.2
HU	32.2	2.7%	1.1%	9.0%	1.0	44.2%	0.0
IE	117.0	6.5%	2.4%	22.4%	5.0	86.1%	0.0
IT	1606.2	5.1%	3.2%	37.6%	54.9	65.6%	9.4
LT	13.7	2.2%	1.1%	14.0%	0.1	41.4%	0.1
LU	162.7	1.5%	0.6%	6.3%	1.3	43.9%	0.7
LV	9.6	4.4%	2.1%	18.7%	0.2	41.4%	0.2
MT	12.0	5.0%	2.4%	27.9%	0.4	39.2%	0.1
NL	938.5	0.8%	0.4%	5.4%	5.1	90.1%	0.1
PL	222.0	6.3%	3.8%	35.3%	10.5	60.9%	0.2
PT	146.1	4.3%	2.3%	25.0%	6.3	64.8%	0.0
RO	49.4	5.1%	2.7%	24.5%	2.7	34.4%	0.0
SE	308.4	1.6%	0.7%	9.0%	3.1	78.1%	0.1
SI	20.1	3.0%	1.6%	14.9%	0.5	90.0%	0.0
SK	49.0	2.6%	2.0%	22.6%	1.3	46.1%	0.0

Table A9.2: **Descriptive statistics for non-performing loans (NPL)**

	Gross loans	NPL Ratio Gross NPL/Gros	NPL/TA Gross NPL/TA	NPL/ Capital Gross NPL/Capi	Provisions	Recovery rate Baseline Scenario	NPL losses Baseline Scenario
	EUR bn	%	%	%	EUR bn	%	EUR bn
AT	453.4	3.5%	1.9%	20.6%	5.5	79.9%	5.6
BE	498.6	1.0%	0.5%	7.8%	3.3	89.4%	0.2
BG	34.4	6.3%	3.5%	30.3%	1.5	37.7%	0.5
CY	21.0	7.6%	2.9%	41.5%	0.6	73.8%	0.5
CZ	136.4	2.1%	1.2%	13.4%	2.4	67.5%	0.2
DE	3364.8	1.6%	0.9%	11.9%	14.7	79.8%	22.1
DK	175.4	3.5%	1.1%	10.0%	4.9	88.5%	0.0
EE	25.1	1.3%	0.8%	8.2%	0.2	36.1%	0.1
ES	1326.4	3.5%	1.9%	24.5%	31.2	77.5%	3.5
FI	245.1	2.1%	0.8%	11.4%	2.5	88.0%	0.5
FR	2727.8	2.1%	0.7%	12.7%	28.8	74.8%	15.3
GR	149.7	11.6%	5.6%	75.2%	8.0	32.0%	7.0
HR	36.7	6.3%	3.6%	29.3%	2.0	35.2%	0.2
HU	34.7	3.1%	1.2%	11.0%	1.0	44.2%	0.1
IE	113.7	5.6%	1.7%	17.2%	4.0	86.1%	0.3
IT	1692.0	3.8%	2.3%	29.3%	47.1	65.6%	6.1
LT	15.2	1.2%	0.6%	8.5%	0.1	41.4%	0.0
LU	156.8	1.7%	0.7%	7.5%	1.2	43.9%	0.9
LV	10.5	3.6%	1.9%	17.3%	0.1	41.4%	0.2
MT	12.7	5.2%	2.4%	29.5%	0.4	39.2%	0.2
NL	932.6	0.6%	0.3%	4.3%	4.1	90.1%	0.1
PL	229.8	5.0%	3.0%	31.2%	9.0	60.9%	0.4
PT	188.1	3.5%	1.8%	22.8%	6.7	64.8%	0.1
RO	56.3	4.3%	2.3%	23.7%	2.8	34.4%	0.0
SE	319.0	1.1%	0.5%	6.2%	2.7	78.1%	0.1
SI	22.4	2.3%	1.2%	11.9%	0.5	90.0%	0.0
SK	60.7	2.2%	1.5%	18.7%	1.4	46.1%	0.0

(1) 2021 unconsolidated data.
Source: Commission services.

Computation of aggregate banking losses and estimated impact on public finances

Starting from the estimated average probability of default of the asset portfolio of each bank, SYMBOL generates realisations for each individual bank's credit losses via Monte Carlo simulation using the Basel FIRB loss distribution function and assuming a correlation between simulated shocks hitting different banks in the system ([143]). In the short-term scenario, losses from SYMBOL are added on top of losses due to current stocks of non-performing loans, adjusted for moratoria.

Individual bank losses are then transformed into excess losses and recapitalisation needs to be covered and finally aggregated at country and EU27 system level. Based on the bank-level balance sheet data and losses simulation, the model can then implement the loss allocation cascade (e.g. own funds, bail-in of eligible liabilities, Resolution Fund interventions), distinguishing between excess losses and recapitalisation needs. Excess losses are losses in excess of available total capital of a bank (negative equity), while recapitalisation needs are the funds necessary to restore the bank's minimum level of capitalisation given by the regulatory scenario under consideration. ([144])

Throughout the cascade of safety net interventions, it can then be traced how much of each of these two types of financing needs are picked up by the different tools. If after depletion of capital, a bank is failing or left undercapitalised with respect to the minimum level established in the scenarios, the bail-in tool is applied at individual bank level up to 8% of its total liabilities and own funds (TLOF) (or total assets, TA). ([145]) When a Resolution Fund

([143]) The correlation is assumed to be 0.5 for all banks in the current simulation. All EU banks are simulated together.

([144]) European Commission (2016), Fiscal Sustainability Report, European Economy Institutional Papers, 18 January, Annex A7.

([145]) The BRRD does not establish a harmonised level of liabilities eligible for bail-in, but Art. 44 sets out that the RF can kick in only after shareholders and holders of other eligible instruments have made a contribution to loss absorption and recapitalisation of at least 8% of total liabilities and own funds (TLOF). Since bank-level data on bail-inable liabilities is unavailable, the bail-in tool is modelled in both the short- and long-term by imposing that individual banks hold a LAC of at least

(RF) is available, it is then assumed to intervene up to 5% of the total assets of each bank. ([146]) Given that the sample coverage in terms of the number and total assets of banks in the sample is not complete, the RF is assumed to have ex-ante funding equal to the appropriate percentage of covered deposits of the banks in the sample. Any leftover losses or recapitalisation needs not covered after all available tools have intervened are finally assumed to be covered by the government, taking into account the ratio between the total assets (TA) in the sample and the population of all banks.

In the baseline scenario, for the purposes of determining the course of action in case of failure, banks are split into two groups. Those that are not designated as 'significant institutions for SSM purposes', are assumed to be always liquidated (i.e. resolution probability equal to 0%). Those that are designated as 'significant institutions in case of distress' might go into resolution or liquidation. In the category of 'significant institutions', for global systemically important institutions (G-SIIs) and their subsidiaries the probability of going into resolution is set to 100% (i.e. we assume that G-SIIs will be always resolved), while for the other entities we assume an 80% resolution probability ([147]).

The results are used to provide an estimate of the implicit contingent liabilities - banking losses and recapitalisation needs after the safety net– in case of a financial crisis. Notably, in the current exercise, this is done by using a sub-additive measure, the Expected Shortfall, to calculate the expected losses in the tail of the distribution. This methodological development of the estimation technique is illustrated in Bellia *et al*. (forthcoming 2023). In practical terms, we select all the simulations where the factor is above a threshold (fixed for values of the common factor above 3 standard deviations) and we calculate the average value in this selected tail of the distribution. This represents the expected value of the portfolio losses under a stressed economic situation. ([148])

Table A9.3 visualises the role of the various safety-net tools in absorbing unexpected losses.

8% of their TLOF. In practice banks with total capital under this threshold are assumed to meet the 8% minimum threshold via bail-inable liabilities. In the simulation, bail-in stops once the 8% of TA limit has been reached. If a bank holds capital above 8% of TA, there would be no bail-in, but capital might be bearing losses above 8% of TLOF.

([146]) Art. 44 of the BRRD sets out that the contribution of the resolution financing arrangement cannot exceed 5% of the total liabilities. In case of excess demand for SRF funds, funds are rationed in proportion to demand (i.e., proportionally to excess losses and recapitalisation needs after the minimum bail-in, capped at 5% of TA at bank level).

([147]) Please note that (i) in practice, Most of the SRB's banks (82% of the total number of SRB banks accounting for 97% of total exposure at risk) are earmarked for resolution. In contrast, liquidation is foreseen for 18% of the banks, which account for 3% of total exposure at risk, mostly made up of public development banks and smaller banks with a specific business model. (2022-07-13_SRB-Resolvability-Assessment.pdf (europa.eu)). (ii) Up until last year, for DSA exercises, the standard assumptions were either that only significant institutions go into resolution, or that all banks go into resolution. The current set up is thus more favorable to resolution funds, because a share of the significant banks (20%) is now assumed to go into liquidation. However, recent resolutions procedures also involved very small banks, thus it might be that this assumption is not fully aligned with the actual choice of liquidating versus resolving a bank.

([148]) Values of the common factor greater or equal to 3 corresponds to values 3 standard deviations away to the mean, which implies a (one tail) cumulative percentile equal to 99.865. In other words, we focus on the 0.135% of the extreme values of the factor. Replicating the methodology with 2009 data (as in the original SYMBOL implementation), using the expected shortfall approach yields 657 billion of losses, a value 2.6% smaller with respect to the 99.95th percentile under the original calibration (675 EUR billion). We also verify that all runs of simulations used for the original calibration with the percentile approach have a common factor larger or equal than 3. No runs of the simulations where at least one bank defaults have a common factor smaller than 3 (with more than 6 million simulations).

Table A9.3: **Leftover financial needs after each safety net tool (% of GDP 2021), under the short and long term scenarios**

	Initial (2023) short term scenarios			Final (2033) long term scenarios		
	Excess losses plus recap	Excess losses plus recap after bail in	Excess losses plus recap after RFs	Excess losses plus recap	Excess losses plus recap after bail in	Excess losses plus recap after RFs
AT	1.0%	0.6%	0.2%	0.4%	0.3%	0.1%
BE	0.6%	0.4%	0.1%	0.4%	0.3%	0.1%
BG	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%
CY	2.7%	1.4%	0.5%	0.3%	0.2%	0.1%
CZ	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%
DE	0.6%	0.2%	0.1%	0.3%	0.1%	0.0%
DK	0.3%	0.3%	0.3%	0.2%	0.2%	0.1%
EE	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%
ES	1.3%	1.0%	0.6%	0.8%	0.6%	0.2%
FI	0.3%	0.2%	0.1%	0.3%	0.2%	0.0%
FR	1.8%	0.7%	0.4%	0.8%	0.3%	0.1%
GR	2.7%	1.8%	0.6%	0.4%	0.2%	0.0%
HR	0.2%	0.2%	0.1%	0.1%	0.1%	0.0%
HU	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%
IE	0.5%	0.5%	0.2%	0.3%	0.3%	0.1%
IT	1.6%	1.0%	0.5%	0.6%	0.4%	0.1%
LT	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%
LU	6.3%	4.8%	2.0%	3.7%	2.8%	0.7%
LV	0.1%	0.1%	0.0%	0.1%	0.1%	0.0%
MT	0.5%	0.4%	0.2%	0.2%	0.1%	0.0%
NL	0.6%	0.4%	0.2%	0.3%	0.2%	0.1%
PL	0.7%	0.7%	0.5%	0.3%	0.3%	0.2%
PT	1.4%	1.0%	0.4%	0.9%	0.5%	0.1%
RO	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%
SE	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%
SI	0.3%	0.3%	0.1%	0.2%	0.2%	0.0%
SK	1.3%	1.3%	0.7%	0.7%	0.6%	0.2%

Source: Commission services.

Scenarios settings

SYMBOL can be used to illustrate how the regulatory framework set up by the Commission in recent years would, under certain assumptions, limit the impact of a hypothetical future systemic banking crisis on public finances.

Three pieces of legislation are considered: the Capital Requirement Regulation and Directive IV (CRR, CRDIV) ([149]), which improved the definitions of regulatory capital and risk-weighted assets, increased the level of regulatory capital by introducing the capital buffers, including extra capital buffers for European Global Systematically Important Institutions (G-SIIs) and Other Systemically Important Institutions (O-SII) ([150]); the Bank Recovery and Resolution Directive (BRRD) ([151]), which introduced bail-in ([152]) and national resolution funds ([153]), and the Single Resolution Mechanism Regulation (SRMR), ([154]) which established the Single Resolution Board and the Single Resolution Fund (SRF). To reflect the phasing-in ([155]) of the safety-net tools foreseen by this body of legislation, two regulatory scenarios are modelled.

An initial (2023) short-term baseline scenario with safety net in progress, comprising:

- Asset correlation is fixed to 50% (traditional SYMBOL assumption, compatible with default regulatory parameter);
- Bank total capital and initial risk-weighted assets (RWAs) taken directly from the banks' balance sheets. RWA are then updated to reflect the stress condition.

([149]) See European Parliament and Council (2013), Directive 2013/36/EU of the 26 June 2013 on Access to the Activity of Credit Institutions and the Prudential Supervision of Credit Institutions and Investment Firms, Amending Directive 2002/87/EC and Repealing Directives 2006/48/EC and 2006/49/EC, 2013, Official Journal of the European Union, L 176/338

([150]) Very few banks which are OSII are affected by extra buffer (not considered).

([151]) See European Parliament and Council (2014a), Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms and Amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council" Official Journal of the European Union, L 173/190.

([152]) A legal framework ensuring that part of the distressed banks' losses are absorbed by unsecured creditors. The bail-in tool entered into force on 01/01/2016.

([153]) Funds financed by banks to orderly resolve failing banks, avoiding contagion and other spill-overs.

([154]) See European Parliament and Council (2014b), Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014 establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Resolution Fund and amending Regulation (EU) No 1093/2010, Official Journal of the European Union, L 225/1.

([155]) CRR/CRDIV increased capital requirements are being phased-in from 2014 to 2019 and banks are progressively introducing the capital conservation buffer; according to BRRD and SRMR, national RFs and the SRF have a target of 1% of covered deposits to be collected over 10 years from 2015 onwards and 8 years from 2016 onwards, respectively.

- Current stocks of non-performing loans contribute to losses in the banking system of each country and their magnitude has been estimated as explained in the main text, including the potential effects of the moratoria.

- Extra capital buffers for G-SIIs prescribed by the Financial Stability Board (FSB) are considered.

- Bail-in: modelled as a scenario whereby a Loss Absorbing Capacity (LAC) is built to represent, together with regulatory capital, 8% of TLOF.

- Resolution Funds - national (NRFs, for Member States not part of the Banking Union) and single (SRF, for Banking Union members) – phased-in in proportion of 8/10 of their target or long-run level and contributing to resolution absorbing losses up to 5% of the TA of the insolvent bank, provided that at least 8% LAC has already been called in ([146]). No backstop (other than public finances) nor ex-post contributions ([156]) are considered.

- No DGS contribution or intervention is modelled.

- Extra losses generated by loans granted by the State are directly transferred to debt or deficit without passing through the safety net cascade.

A final (long-term) 2033 baseline scenario as of when a completely phased-in safety net comprises:

- Asset correlation is fixed to 50% (traditional SYMBOL assumption, compatible with default regulatory parameter).

- Bank total capital taken directly from the banks' balance sheets and reflecting an increased minimum requirement topped-up to 10.5% RWA ([157]). RWA as reported, without Stress Test adjustments.

- Losses on current NPL stocks are not considered, moratoria and guarantees are assumed to be expired ([158]).

- Extra capital buffers for G-SIIs prescribed by the Financial Stability Board (FSB) are considered.

- Bail-in: modelled as a scenario whereby a Loss Absorbing Capacity (LAC) is built to represent, together with regulatory capital, 8% of TA ([159]).

- Resolution Funds ([160]) - national (NRFs, for Member States not part of the Banking Union) and single (SRF, for Banking Union members) – fully phased-in and contributing to resolution absorbing losses up to 5% of the TA of the insolvent bank, provided that at least 8% TA has already been called in ([161]). No backstop (other than public finances) nor ex-post contributions ([162]) are considered.

([156]) Given the aim to portray worst-case fiscal consequences, ex-post contributions to the NRFs/SRF are not modelled, but these can actually go up to 3 times the ex-ante contributions, further reducing the impact on public finances.

([157]) Only mandatory requirements, i.e. the 8% total capital requirement and the 2.5% capital conservation buffer, are included. The discretionary counter-cyclical capital buffer (at the regulator's choice) is not.

([158]) The impact of non-performing loans (NPLs) is considered only in the current situation and the effect is assumed to become negligible in the long-term.

([159]) Same assumptions regarding 8% TA hold under BRRD2 once it will become applicable in December 2020.

([160]) In practice, under the Agreement on the mutualisation and transfer of contributions to the SRF (IGA), in the short-term only a part of current SRF contributions would be mutualised (i.e. available to all banks irrespective of their location), while the rest of the fund is only available to banks from their country of origin. Since a system-wide waterfall under IGA with sequential intervention of national and mutualised SRF is complex to model and since in the short-term only 10% of the SRF would be in place, the model assumes that the entire SRF is already mutualised.

([161]) In case of excess demand for SRF funds, funds are rationed in proportion to demand (i.e., proportionally to excess losses and recapitalisation needs after the minimum bail-in, capped at 5% of TA at bank level).

([162]) Given the aim to portray worst-case fiscal consequences, ex-post contributions to the NRFs/SRF are not modelled, but these can actually go up to 3 times the ex-ante contributions, further reducing the impact on public finances.

- No DGS contribution or intervention is modelled.

- Graph A9.2 illustrates the order of intervention of different tools. The first cushion assumed to absorb simulated losses is capital, the second tool is bail-in, and the last are RFs, as legally foreseen ([163]).

- Moreover, alternative scenario settings are considered, as summarised in Table A9.4 and Graph A9.2.

Calibrating the heat map

The model allows estimating the probability distribution of the amount of public funds needed to cover losses after exhausting the protection provided by the financial safety net. To obtain the input for the heat map on government's implicit contingent liability risks, a minimum size of government's contingent liabilities is fixed, and the theoretical probability of the materialisation of such an event is assessed.

Table A9.5 shows a heat map illustrating the relative riskiness of countries in terms of public finances being hit by a shock of a given minimum share of GDP (3%, 5%, and 10%), conditional on having (a) the banking sector in distress, (2) at least three countries with government's contingent liabilities. The colour coding reflects the relative magnitude of the theoretical probabilities of such an event. ([164])

Table A9.4: **Theoretical probability of public finances being hit by more than 3%, 5% or 10% of GDP, in the event of a severe crisis (i.e. involving excess loses and recapitalisation needs in at least three different EU countries)**

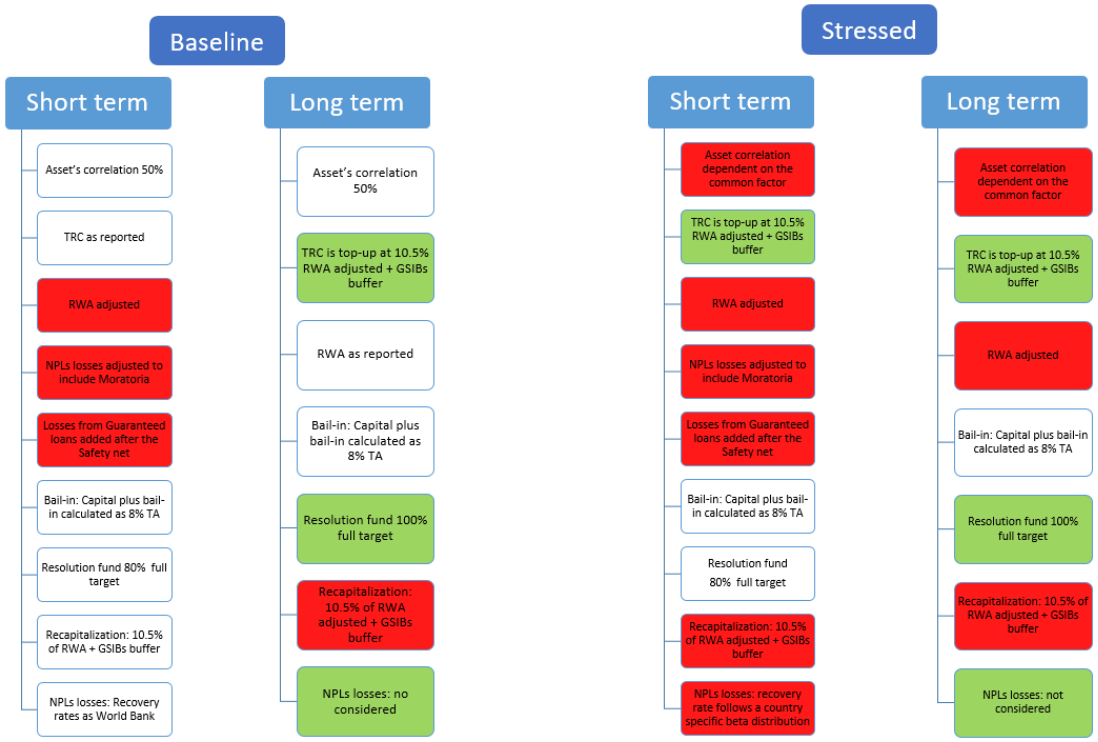
	Initial (2023) short term scenarios						Final (2033) long term scenarios					
	Baseline (a)			Stress (b)			Baseline (a)			Stress (b)		
	3% GDP	5% GDP	10% GDP	3% GDP	5% GDP	10% GDP	3% GDP	5% GDP	10% GDP	3% GDP	5% GDP	10% GDP
AT	0.01%	0.00%	0.00%	0.43%	0.15%	0.02%	0.00%	0.00%	0.00%	0.22%	0.08%	0.01%
BE	0.02%	0.01%	0.00%	0.38%	0.15%	0.02%	0.02%	0.01%	0.00%	0.29%	0.11%	0.02%
BG	0.01%	0.00%	0.00%	0.09%	0.02%	0.00%	0.00%	0.00%	0.00%	0.04%	0.01%	0.00%
CY	0.15%	0.07%	0.02%	2.50%	1.36%	0.39%	0.02%	0.01%	0.00%	0.30%	0.15%	0.04%
CZ	0.01%	0.00%	0.00%	0.14%	0.05%	0.01%	0.01%	0.00%	0.00%	0.12%	0.04%	0.01%
DE	0.01%	0.00%	0.00%	0.12%	0.04%	0.00%	0.00%	0.00%	0.00%	0.10%	0.03%	0.00%
DK	0.19%	0.09%	0.03%	0.55%	0.28%	0.08%	0.05%	0.03%	0.01%	0.50%	0.26%	0.08%
EE	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%
ES	0.15%	0.05%	0.00%	1.28%	0.59%	0.12%	0.06%	0.02%	0.00%	0.67%	0.32%	0.06%
FI	0.03%	0.02%	0.00%	0.29%	0.14%	0.03%	0.02%	0.01%	0.00%	0.23%	0.11%	0.03%
FR	0.06%	0.02%	0.00%	0.65%	0.32%	0.08%	0.02%	0.01%	0.00%	0.45%	0.21%	0.06%
GR	0.11%	0.02%	0.00%	1.50%	0.50%	0.04%	0.01%	0.00%	0.00%	0.23%	0.08%	0.01%
HR	0.00%	0.00%	0.00%	0.09%	0.02%	0.00%	0.00%	0.00%	0.00%	0.07%	0.02%	0.00%
HU	0.02%	0.00%	0.00%	0.12%	0.03%	0.00%	0.01%	0.00%	0.00%	0.11%	0.03%	0.00%
IE	0.06%	0.03%	0.00%	0.65%	0.33%	0.10%	0.03%	0.02%	0.00%	0.32%	0.18%	0.06%
IT	0.06%	0.02%	0.00%	0.79%	0.30%	0.05%	0.02%	0.01%	0.00%	0.29%	0.12%	0.02%
LT	0.01%	0.00%	0.00%	0.03%	0.01%	0.00%	0.00%	0.00%	0.00%	0.02%	0.01%	0.00%
LU	1.45%	0.72%	0.15%	5.63%	3.53%	1.46%	0.36%	0.19%	0.05%	1.26%	0.75%	0.97%
LV	0.00%	0.00%	0.00%	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%
MT	0.04%	0.02%	0.01%	0.46%	0.23%	0.05%	0.01%	0.01%	0.00%	0.22%	0.11%	0.03%
NL	0.08%	0.03%	0.01%	0.59%	0.29%	0.07%	0.02%	0.01%	0.00%	0.43%	0.23%	0.06%
PL	0.02%	0.00%	0.00%	0.80%	0.17%	0.01%	0.01%	0.00%	0.00%	0.22%	0.06%	0.00%
PT	0.07%	0.02%	0.00%	1.18%	0.50%	0.08%	0.03%	0.01%	0.00%	0.43%	0.19%	0.03%
RO	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.02%	0.00%	0.00%
SE	0.03%	0.01%	0.00%	0.07%	0.03%	0.01%	0.01%	0.01%	0.00%	0.06%	0.03%	0.01%
SI	0.00%	0.00%	0.00%	0.21%	0.06%	0.00%	0.00%	0.00%	0.00%	0.15%	0.03%	0.00%
SK	0.04%	0.00%	0.00%	0.71%	0.15%	0.00%	0.01%	0.00%	0.00%	0.23%	0.06%	0.00%

(1) Green: low risk (probability lower than 0.50%); Yellow: medium risk (probability between 0.50% and 1%); Red: high risk (probability higher than 1%).
Source: Commission services.

([163]) Additional tools are available to absorb residual losses and recapitalisation needs, including additional bail-in liabilities, leftover resolution funds and the deposit guarantee scheme. See for a discussion Benczur P., Berti K., Cariboni J., Di Girolamo F. E., Langedijk S., Pagano A., and Petracco Giudici M. (2015), Banking stress scenarios for public debt projections, European Economy Economic Papers 548. In addition, by 2024 at the latest a common backstop to the SRF will be introduced.

([164]) The absolute levels of the probabilities reported in the heatmap are not to be interpreted as actual probabilities, but rather theoretical probabilities derived from the modelling framework.

Graph A9.2: **Schematic representation of the scenarios**



Source: Commission services

Table A9.5: **Detailed scenarios description**

Components: / *Scenario:*	Asset correlation	TRC	RWAs	Bail-in	National/ Single RF	Recapitalization	Extra losses due to NPLs	Deposit Guarantee Scheme	Banks in resolution
Initial Baseline (2023) Short term	50%	K	RWA Adjusted	Yes Capital plus bail-in 8% TA	Yes, 5% TA cap, after LAC of 8% has been called in 8/10 of full target No ex-post contributions	10.5% RWA Adjusted + Buffers	- Yes to all banks - NPL including loans under moratoria - RR as reported by World Bank	No	Random significant banks
Initial Stressed (2023) Short term	Depending on common factor	K	RWA Adjusted	Yes Capital plus bail-in 8% TA	Yes, 5% TA cap, after LAC of 8% has been called in 8/10 of full target No ex-post contributions	10.5% RWA Adjusted + Buffers	- Yes to all banks - NPL including loans under moratoria - RR follows a country specific beta distribution depending on the size of the shock	No	Random significant banks
Final Baseline (2033) Long term	50%	K	RWA	Yes Capital plus bail-in 8% TA	Yes, 5% TA cap, after LAC of 8% has been called in No ex-post contributions	10.5% RWA + Buffers	No	No	Random significant banks
Final Stressed (2033) Long term	Depending on common factor	K	RWA	Yes Capital plus bail-in 8% TA	Yes, 5% TA cap, after LAC of 8% has been called in No ex-post contributions	10.5% RWA + Buffers	No	No	Random significant banks

(1) The size of the Single Resolution Fund was on Q2 2021 €52 billion (https://www.srb.europa.eu/en/content/single-resolution-fund#build-up) which is around 65% of its target size (i.e. 1% of deposits, around €80 billion)
Source: Commission services.

ANNEX A7
Cross-country tables

A7.1. SHORT-TERM FISCAL SUSTAINABILITY CHALLENGES

Table A7.1: **S0 and sub-indices heat map**

	Overall SHORT-TERM risk category	Overall S0 index	Components	
			Fiscal sub-index	Financial-competitive-ness sub-index
BE	LOW	0.00	0.57	0.12
BG	LOW	0.00	0.28	0.28
CZ	LOW	0.00	0.22	0.25
DK	LOW	0.00	0.00	0.34
DE	LOW	0.00	0.23	0.12
EE	LOW	0.00	0.08	0.13
IE	LOW	0.00	0.00	0.32
EL	LOW	0.00	0.33	0.45
ES	LOW	0.00	0.57	0.22
FR	LOW	0.00	0.57	0.21
HR	LOW	0.00	0.33	0.22
IT	LOW	0.00	0.69	0.07
CY	LOW	0.00	0.07	0.40
LV	LOW	0.00	0.22	0.22
LT	LOW	0.00	0.08	0.35
LU	LOW	0.00	0.08	0.30
HU	LOW	0.00	0.41	0.46
MT	LOW	0.00	0.22	0.14
NL	LOW	0.00	0.08	0.30
AT	LOW	0.00	0.45	0.06
PL	LOW	0.00	0.22	0.45
PT	LOW	0.00	0.53	0.33
RO	LOW	0.00	0.22	0.37
SI	LOW	0.00	0.29	0.13
SK	LOW	0.00	0.22	0.33
FI	LOW	0.00	0.15	0.24
SE	LOW	0.00	0.00	0.31

The following thresholds are used to identify countries at risk of fiscal stress: 0.46 for the S0; 0.36 for the fiscal sub-index and 0.49 for the financial-competitiveness sub-index. They have been derived using a signalling approach (see Chapter 1).
Source: Commission services.

Table A7.2: **Fiscal variables used in the S0 indicator (2022)**

	Budget balance (%GDP)	Primary balance (%GDP)	Cyclically-adjusted balance (%GDP)	Stabilising primary balance (%GDP)	Gross debt (%GDP)	Change in gross debt (%GDP)	Short-term debt (%GDP)	Net debt (%GDP)	Gross financing needs (%GDP)	Interest-rate growth differen-tial	Change in govt. exp. (%GDP)	Change in govt. consump. (%GDP)
BE	-5.2	-3.7	-5.6	-8.2	106.2	-3.0	8.0	90.6	19.9	-8.2	-1.3	0.0
BG	-3.4	-2.9	-3.8	-2.8	22.5	-1.5	0.0	13.9	3.5	-13.6	3.1	-0.2
CZ	-4.3	-3.3	-3.9	-3.4	42.9	0.9	1.1	27.4	9.2	-9.0	-1.3	-1.1
DK	1.8	2.3	1.6	-1.6	33.7	-3.0	4.8	9.0	8.2	-4.7	-2.6	-0.7
DE	-2.3	-1.7	-2.3	-3.9	67.4	-1.2	8.3	47.7	17.1	-6.0	-1.8	-0.2
EE	-2.3	-2.2	-1.6	-2.1	18.7	1.1	1.5	7.1	4.6	-13.6	-1.1	-0.5
IE	0.2	0.9	-2.5	-7.9	44.7	-10.6	7.3	42.8	3.6	-16.9	-2.7	-1.1
EL	-4.1	-1.6	-3.1	-23.7	171.1	-23.4	10.8	:	15.3	-14.1	-3.1	-2.0
ES	-4.6	-2.4	-3.7	-6.7	114.0	-4.3	8.1	99.1	21.0	-6.2	-1.9	-1.0
FR	-5.0	-3.2	-5.1	-4.0	111.7	-1.2	11.5	100.3	22.9	-3.8	-1.1	-0.5
HR	-1.6	-0.3	-3.2	-7.0	70.0	-8.4	4.5	:	10.6	-10.0	-1.3	-0.6
IT	-5.1	-1.1	-5.6	-6.0	144.6	-5.7	19.7	135.4	23.2	-4.3	-1.3	0.0
CY	1.1	2.6	-0.7	-8.1	89.6	-11.5	1.8	49.5	8.4	-8.8	-2.9	-0.2
LV	-7.1	-6.6	-6.9	-4.5	42.4	-1.2	1.3	36.4	5.6	-11.7	-0.6	-1.4
LT	-1.9	-1.6	-1.8	-6.8	38.0	-5.7	0.2	38.0	4.8	-18.7	0.1	-0.5
LU	-0.1	0.1	0.2	-1.5	24.3	-0.3	0.5	-7.6	3.1	-6.6	0.4	0.1
HU	-6.2	-3.2	-6.8	-7.2	76.4	-0.5	4.6	67.9	15.6	-10.8	0.9	-0.4
MT	-6.0	-4.9	-6.0	-4.5	57.4	1.1	8.0	50.0	13.0	-8.8	-1.7	-0.1
NL	-1.1	-0.5	-2.1	-3.4	50.3	-2.1	4.2	39.5	12.2	-7.1	-1.8	-0.7
AT	-3.4	-2.3	-4.1	-7.0	78.5	-3.8	5.9	58.2	18.0	-9.5	-3.7	-1.1
PL	-4.8	-3.1	-5.3	-6.2	51.3	-2.4	0.6	35.7	9.8	-13.5	-0.1	-0.7
PT	-1.9	0.2	-2.8	-9.7	115.9	-9.6	19.5	108.3	12.0	-8.5	-1.9	-1.1
RO	-6.5	-4.7	-6.3	-5.6	47.9	-1.0	2.5	41.0	10.8	-13.5	-0.3	-1.5
SI	-3.6	-2.5	-6.1	-7.6	69.9	-4.5	1.6	45.2	14.2	-11.5	-2.7	-2.1
SK	-4.2	-3.2	-4.3	-4.4	59.6	-2.6	2.2	50.6	4.3	-7.7	-1.4	-0.6
FI	-1.4	-0.8	-1.1	-4.6	70.7	-1.6	7.1	34.3	15.5	-6.9	-2.0	-0.8
SE	0.2	0.6	-0.1	-2.8	32.1	-4.2	8.9	7.6	7.5	-8.4	-0.6	-0.9

Note: The upper thresholds used for each variable have been derived using a signalling approach (see Chapter 1). The lower thresholds have been set at 80% of the original signalling thresholds.
Source: Commission services.

Table A7.3: **Financial-competitiveness variables used in the S0 indicator (2022)**

	Yield curve	Real GDP growth	GDP per capita (PPP, USD)	NIIP (t-1)	HH net savings (%GDP, t-1)	Private debt (%GDP, t-1)	Private credit flow (%GDP, t-1)	Short debt NFC (%GDP, t-1)	Short debt HH (%GDP, t-1)	construc-tion (% value added, t-1)	Current account (%GDP, t-1)	Change in REER (t-1)	Change in nom. ULC (t-1)
BE	1.5	2.8	84.2	59.9	5.6	169.0	3.8	23.4	1.3	5.4	0.5	-1.3	5.4
BG	0.2	3.1	41.2	-18.4	:	84.4	4.4	11.7	1.5	3.8	0.5	7.3	16.4
CZ	-1.9	2.5	62.4	-15.6	8.0	78.8	2.9	12.5	0.9	5.6	0.5	0.7	13.9
DK	1.0	3.0	93.8	77.0	1.5	214.7	12.3	36.5	2.3	5.6	8.5	3.7	6.1
DE	1.0	1.6	83.1	70.7	8.8	120.4	5.7	16.8	1.5	5.5	7.3	-1.6	7.4
EE	1.9	-0.1	57.0	-13.0	3.3	95.3	6.5	7.9	0.7	6.7	-0.1	-1.0	10.7
IE	1.6	7.9	161.7	-145.5	6.0	168.1	2.6	17.7	0.4	2.2	-4.2	-6.1	-7.9
EL	3.3	6.0	46.7	-171.9	-2.1	120.7	-0.1	8.7	3.5	1.8	-5.0	-2.7	4.0
ES	2.0	4.5	59.8	-71.5	5.9	139.1	2.5	7.2	2.7	5.6	1.2	-0.3	12.3
FR	1.5	2.6	73.0	-32.1	7.7	167.8	6.5	27.7	1.3	5.7	-0.3	0.0	4.6
HR	2.5	6.0	52.0	-35.1	3.7	86.9	3.0	3.9	2.5	6.0	1.8	-3.2	8.2
IT	2.9	3.8	67.2	8.1	4.7	113.5	3.3	11.7	2.6	5.0	3.4	-1.8	4.6
CY	2.7	5.6	63.8	-117.8	3.1	248.4	4.3	14.2	3.6	6.2	-7.5	-5.4	4.1
LV	1.9	1.9	50.8	-27.4	3.6	58.0	0.9	4.9	1.1	5.5	-0.7	3.9	14.5
LT	0.3	2.5	62.0	-7.4	1.3	53.9	5.9	4.4	0.5	7.1	4.0	-4.6	19.2
LU	1.5	1.5	185.4	30.6	4.3	340.6	53.9	72.1	1.5	5.8	4.2	5.2	11.2
HU	-0.9	5.5	54.5	-53.1	7.2	80.5	12.7	11.5	1.9	6.1	-1.9	-5.2	12.4
MT	2.1	5.7	70.3	52.8	:	131.8	9.4	10.3	2.7	4.3	-0.8	-1.8	12.9
NL	1.2	4.6	93.4	93.0	9.0	229.3	11.7	34.9	1.6	5.3	6.4	-1.2	11.2
AT	1.5	4.6	86.1	14.7	6.8	129.7	7.4	10.9	2.1	7.2	1.9	-2.2	9.9
PL	0.1	4.0	53.6	-39.5	0.4	71.6	4.0	6.9	1.8	6.9	0.3	1.4	9.9
PT	2.0	6.6	54.9	-94.7	-0.5	156.9	4.0	13.3	2.1	4.8	-0.6	-2.5	12.5
RO	1.9	5.8	53.4	-47.2	:	48.1	3.8	8.7	0.7	7.3	-5.7	0.4	14.4
SI	1.6	6.2	65.7	-6.8	7.0	66.4	3.5	7.5	1.8	6.2	5.8	-3.2	12.8
SK	1.8	1.9	47.8	-61.0	2.0	95.0	5.5	12.0	1.3	6.0	-1.8	-3.4	14.1
FI	1.5	2.3	78.6	-1.4	1.1	150.1	6.1	15.2	3.7	7.7	0.3	-1.8	6.0
SE	0.7	2.9	87.1	21.2	8.0	215.2	16.6	38.5	15.5	6.7	5.6	-2.6	5.5

Notes: (1) Variable names preceded by 'L.' are in lagged value. (2) The upper thresholds used for each variable have been derived using a signalling approach (see Chapter 1). (3) The lower thresholds have been set at 80% of the original signalling approach thresholds, for prudential reasons.
Source: Commission services.

Additional indicators

Table A7.4: **Risks related to the government debt structure (2021)**

	as shares of total debt (%)		
	Short-term public debt (original maturity)	Public debt held in foreign currency	Public debt held by non-residents
BE	**7.4**	0.0	**53.8**
BG	0.1	**74.6**	46.1
CZ	2.6	7.7	29.7
DK	**13.2**	2.4	26.5
DE	**12.3**	2.7	41.5
EE	**8.6**	0.0	69.7
IE	**8.0**	0.0	**53.6**
EL	5.5	0.3	**78.9**
ES	**6.9**	0.0	43.2
FR	**10.2**	3.2	46.2
HR	5.7	**70.7**	34.0
IT	**13.1**	0.1	29.1
CY	1.9	0.0	**89.4**
LV	3.1	0.0	**63.9**
LT	0.0	0.0	**64.7**
LU	2.2	0.0	**49.7**
HU	5.9	22.6	31.7
MT	**8.5**	0.0	23.8
NL	**10.2**	0.0	34.7
AT	**7.1**	0.4	**60.6**
PL	1.2	22.7	33.1
PT	**15.5**	0.0	45.2
RO	5.1	**53.3**	49.2
SI	2.1	0.1	**55.2**
SK	3.6	0.0	**49.6**
FI	**10.7**	2.5	**51.8**
SE	**24.9**	3.4	19.1

(1) Upper and lower thresholds: (i) Share of short-term government debt: upper threshold 6.57%; lower threshold 5.3%; (ii) Share of government debt in foreign currency: upper threshold 31.58%; lower threshold 25%; (iii) Share of government debt held by non-residents: upper threshold 49%; lower threshold 40%.
(2) Share of short-term public debt is based on partially missing information for Netherlands.
(3) Foreign-held debt figures are shown against a double shading that blends the colour coding of volatility risks from non-resident tenure (left side of the shaded cells) with that of sovereign risk given by the average spread on 10-year government bonds vs. Germany (right side of the shaded cells).
Source: Eurostat, ECB.

Table A7.5: **Potential triggers for governments' contingent liabilities from the banking sector**

	Private sector credit flow (% GDP)	Bank loan-to-deposit ratio (%)	NPL ratio (% of total gross loans)	NPL ratio change (pps.)	NPL coverage ratio (%)	House price nominal index change (%)
BE	3.8	98.3	1.4	-0.3	44.3	7.1
BG	4.4	72.4	**3.5**	-2.9	65.7	8.7
CZ	2.9	78.3	1.2	-0.2	53.5	**19.7**
DK	**12.3**	**311.8**	1.5	-0.6	**27.3**	11.7
DE	5.7	123.8	1.0	-0.1	35.3	11.5
EE	6.5	99.8	0.7	-0.4	**29.5**	**15.1**
IE	2.6	72.5	**2.4**	-1.0	**30.5**	8.3
EL	-0.1	61.8	**5.2**	-9.6	41.8	7.5
ES	2.5	102.0	**2.8**	-0.4	41.8	3.7
FR	6.5	108.5	1.8	-0.2	48.6	6.3
HR	3.0	62.5	**2.9**	-1.0	62.6	7.3
IT	3.3	92.3	**2.6**	-1.1	52.7	2.6
CY	4.3	51.9	**3.6**	-5.5	**28.5**	-3.4
LV	0.9	70.3	0.6	-1.1	36.4	10.9
LT	5.9	68.5	0.9	0.0	38.5	**16.1**
LU	**53.9**	**143.5**	1.3	-0.1	**29.9**	**13.9**
HU	**12.7**	79.4	**3.7**	0.1	63.9	**16.5**
MT	9.4	52.5	**2.6**	-0.6	**28.3**	5.1
NL	**11.7**	115.8	1.3	-0.4	**25.7**	**15.0**
AT	7.4	96.2	1.8	-0.1	49.7	12.4
PL	4.0	83.6	**4.3**	-0.9	53.9	9.2
PT	4.0	73.3	**3.3**	-0.9	70.0	9.4
RO	3.8	63.2	**2.9**	-0.9	40.1	4.4
SI	3.5	69.4	2.2	-0.5	66.2	11.5
SK	5.5	111.5	1.5	-0.3	43.8	6.4
FI	6.1	**162.5**	1.1	-0.3	**30.2**	4.6
SE	**16.6**	**166.8**	0.3	-0.1	51.3	10.1

The upper thresholds used for each variable were derived using a signalling approach, except for the NPL coverage ratio; the lower thresholds have been set at 80% of the upper thresholds, for prudential reasons (see Annex A4 and Chapter 4).
Source: Eurostat (2020), EBA (June 2021).

Table A7.6: **10-y sovereign yield spreads vs. German bund (bps., Nov. 2022)**

BE	58
BG	-22
CZ	304
DK	31
DE	0
EE	168
IE	46
EL	235
ES	99
FR	51
HR	150
IT	217
CY	212
LV	167
LT	81
LU	63
HU	674
MT	137
NL	28
AT	63
PL	517
PT	95
RO	558
SI	149
SK	130
FI	62
SE	-2

(1) The upper thresholds used for each variable were derived using a signalling approach; the lower thresholds have been set at 80% of the original signalling approach thresholds, for prudential reasons (see Annex A4).
Source: ECB.

A7.2. MEDIUM-TERM FISCAL SUSTAINABILITY CHALLENGES

Table A7.7: **Medium-term risk classification: DSA heat map**

	Heat map for medium-term risks in the EU countries - Debt sustainability analysis (DSA)																											
	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE
Baseline (no-fiscal-policy-change scenario)	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	121.6	40.3	52.2	16.3	70.3	33.6	25.3	125.4	112.4	121.1	84.9	155.9	45.4	36.9	39.6	23.5	81.5	63.4	70.4	74.4	69.0	94.3	62.8	79.3	82.6	71.5	10.9
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2022	2033	2033	2033	2022	2023	2023	2024	2033	2033	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
Stochastic projections	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	MEDIUM	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW
Probability of debt in 2027 > debt in 2022	59%	81%	57%	16%	40%	100%	12.0%	12%	46%	51%	62%	50%	6%	47%	52%	45%	45%	66%	71%	24%	79%	22%	55%	45%	61%	55.1%	8%
Difference between the 10th and 90th percentile in 2027 (p.p. of GDP)	36.2	25.0	27.3	17.9	24.7	9.7	28.1	58.4	38.9	21.7	39.0	43.651	38.1	35.8	29.3	24.3	46.7	26.7	24.4	26.4	20.4	55.0	39.6	29.2	31.3	25.4	16.6
'Historical SPB' scenario	MEDIUM	LOW	MEDIUM	LOW	LOW	LOW	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	106.5	26.7	52.7	13.0	53.1	25.4	42.0	115.4	112.5	119.8	76.2	142.2	50.6	46.6	46.7	15.9	74.1	49.0	54.8	69.5	73.4	101.3	67.0	73.3	75.2	64.7	12.7
Debt peak year	2024	2027	2033	2022	2022	2029	2022	2022	2022	2033	2033	2022	2022	2033	2033	2024	2022	2025	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	88%	90%	35%	69%	53%	77%	80%	21%	77%	91%	53%	46%	30%	73%	61%	79%	59%	52%	90%	85%	86%	41%	82%	66%	55%	86%	61%
'Adverse r-g' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	LOW	LOW	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW
Debt level (2033)	130.5	42.8	56.2	18.3	75.8	35.7	27.5	134.5	121.7	130.7	91.5	169.1	50.2	39.9	42.6	25.3	88.3	68.1	75.2	80.3	74.5	102.4	67.4	85.1	87.4	76.9	12.3
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2023	2033	2024	2033	2033	2033	2033	2033	2022	2033	2033	2033	2033	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
'Financial stress' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	MEDIUM	HIGH	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	123.1	40.5	52.6	16.6	70.8	33.8	25.4	126.5	114.4	123.0	85.3	160.6	45.7	37.2	39.9	23.6	82.2	63.9	70.7	75.0	69.5	96.0	63.2	79.8	82.9	71.9	11.0
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2023	2023	2024	2033	2033	2033	2022	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	97%	96%	36%	74%	88%	94%	60%	24%	77%	92%	58%	66%	28%	42%	41%	85%	67%	70%	100%	94%	78%	34%	75%	84%	61%	97%	61%
'Lower SPB' scenario	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	MEDIUM	HIGH	LOW	MEDIUM	LOW	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	LOW
Debt level (2033)	127.5	45.6	60.8	18.0	70.3	34.1	36.3	144.5	114.6	127.1	85.6	164.4	52.3	66.0	43.2	23.3	96.3	73.2	73.4	84.8	80.6	104.0	75.3	88.7	82.1	72.1	15.5
Debt peak year	2033	2033	2033	2022	2033	2033	2022	2022	2033	2033	2033	2033	2022	2033	2033	2023	2033	2033	2033	2033	2033	2022	2033	2033	2033	2024	2022
Fiscal consolidation space (percentile rank of avg SPB 2024-2033)	100%	100%	53%	76%	89%	94%	70%	39%	78%	97%	59%	71%	30%	93%	55%	85%	74%	86%	100%	100%	90%	44%	86%	93%	61%	97%	72%
Overall MEDIUM-TERM risk category	HIGH	LOW	MEDIUM	LOW	MEDIUM	LOW	LOW	HIGH	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	HIGH	MEDIUM	LOW

(1) All the thresholds and decision trees used to derive the DSA risk assessment are presented in Annex A4.

Source: Commission services.

Table A7.8: **Gross government debt projections (% of GDP) and underlying macro-fiscal assumptions (EU, baseline)**

	2022	2023	2024	2025	2026	2027	2030	2033
Gross debt ratio	**86.0**	**84.9**	**84.1**	**83.4**	**82.9**	**82.6**	**83.9**	**87.6**
of which Oustanding (non-maturing) debt	*66.3*	*65.4*	*64.9*	*64.5*	*64.1*	*63.9*	*64.6*	*67.1*
Rolled-over short-term debt	*9.4*	*9.2*	*9.1*	*9.0*	*8.8*	*8.7*	*8.6*	*8.9*
Rolled-over long-term debt	*6.8*	*6.7*	*6.7*	*6.7*	*6.7*	*6.8*	*6.9*	*7.4*
New short-term debt	*0.3*	*0.4*	*0.3*	*0.3*	*0.3*	*0.3*	*0.4*	*0.4*
New long-term debt	*3.2*	*3.3*	*3.1*	*2.9*	*2.9*	*3.0*	*3.4*	*3.9*
Changes in the debt ratio (-1+2+3)	**-3.4**	**-1.1**	**-0.8**	**-0.7**	**-0.5**	**-0.3**	**0.7**	**1.3**
of which (1) Overall primary balance (1.1+1.2+1.3)	**-1.8**	**-1.8**	**-1.4**	**-1.3**	**-1.3**	**-1.4**	**-1.7**	**-2.0**
(1.1) Structural primary balance (1.1.1-1.1.2+1.1.3)	***-2.0***	***-1.5***	***-1.1***	***-1.2***	***-1.3***	***-1.4***	***-1.7***	***-2.0***
(1.1.1) Structural primary balance (before CoA)	*-2.0*	*-1.5*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*
(1.1.2) Cost of ageing (incl. revenues pensions tax)				*0.1*	*0.1*	*0.2*	*0.6*	*0.9*
(1.1.3) Property incomes				*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***0.2***	***-0.3***	***-0.2***	***-0.2***	***-0.1***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (interest rate-growth differential) (2.1+2.2+2.3)	**-5.6**	**-3.2**	**-2.4**	**-2.1**	**-1.9**	**-1.7**	**-1.0**	**-0.7**
(2.1) Interest expenditure	*1.5*	*1.7*	*1.8*	*1.8*	*1.8*	*1.8*	*2.0*	*2.2*
(2.2) Growth effect (real)	*-2.7*	*-0.2*	*-1.3*	*-1.1*	*-1.0*	*-1.0*	*-0.7*	*-0.8*
(2.3) Inflation effect	*-4.3*	*-4.6*	*-2.9*	*-2.8*	*-2.6*	*-2.5*	*-2.3*	*-2.1*
(3) Stock flow adjustments	***0.3***	***0.2***	***0.2***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***
PM : Structural balance	***-3.6***	***-3.2***	***-3.0***	***-3.0***	***-3.1***	***-3.2***	***-3.7***	***-4.3***
Key macroeconomic assumptions								
Actual GDP growth (real)	3.3	0.3	1.6	1.4	1.3	1.2	0.9	1.0
Potential GDP growth (real)	1.5	1.3	1.4	1.2	1.1	1.1	0.9	1.0
Inflation (GDP deflator)	5.3	5.7	3.6	3.4	3.3	3.2	2.8	2.5
Implicit interest rate (nominal)	1.8	2.1	2.2	2.2	2.2	2.3	2.4	2.7

Note: Given that the drivers of the change in the government debt ratio for the EU as a whole are calculated as GDP-weighted averages of country-specific debt projections, small differences may exist between the total change in the government debt ratio and the sum of its drivers.
Source: Commission services.

Table A7.9: **Gross government debt projections (% of GDP) and underlying macro-fiscal assumptions (euro area, baseline)**

	2022	2023	2024	2025	2026	2027	2030	2033
Gross debt ratio	**93.6**	**92.3**	**91.4**	**90.8**	**90.3**	**90.1**	**91.7**	**95.9**
of which Oustanding (non maturing) debt	*72.1*	*71.0*	*70.4*	*70.0*	*69.6*	*69.4*	*70.1*	*72.9*
Rolled-over short-term debt	*10.4*	*10.3*	*10.2*	*10.1*	*10.0*	*10.0*	*10.1*	*10.5*
Rolled-over long-term debt	*7.4*	*7.4*	*7.4*	*7.4*	*7.4*	*7.4*	*7.6*	*8.1*
New short-term debt	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*	*0.5*
New long-term debt	*3.2*	*3.3*	*3.1*	*2.9*	*3.0*	*3.0*	*3.4*	*4.0*
Changes in the debt ratio (-1+2+3)	**-3.5**	**-1.3**	**-0.9**	**-0.7**	**-0.4**	**-0.2**	**0.8**	**1.5**
of which (1) Overall primary balance (1.1+1.2+1.3)	**-1.9**	**-1.9**	**-1.4**	**-1.4**	**-1.5**	**-1.5**	**-1.9**	**-2.2**
(1.1) Structural primary balance (1.1.1-1.1.2+1.1.3)	***-2.0***	***-1.7***	***-1.3***	***-1.3***	***-1.4***	***-1.5***	***-1.9***	***-2.3***
(1.1.1) Structural primary balance (before CoA)	*-2.0*	*-1.7*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.2*
(1.1.2) Cost of ageing (incl. revenues pensions tax)				*0.1*	*0.2*	*0.3*	*0.7*	*1.0*
(1.1.3) Property incomes				*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***0.2***	***-0.3***	***-0.1***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (interest rate-growth differential) (2.1+2.2+2.3)	**-5.6**	**-3.4**	**-2.6**	**-2.3**	**-2.0**	**-1.9**	**-1.2**	**-0.9**
(2.1) Interest expenditure	*1.4*	*1.6*	*1.7*	*1.7*	*1.7*	*1.7*	*1.8*	*2.0*
(2.2) Growth effect (real)	*-2.9*	*-0.3*	*-1.3*	*-1.1*	*-0.9*	*-0.9*	*-0.6*	*-0.7*
(2.3) Inflation effect	*-4.1*	*-4.7*	*-3.0*	*-2.9*	*-2.8*	*-2.7*	*-2.4*	*-2.2*
(3) Stock flow adjustments	***0.3***	***0.2***	***0.3***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***
PM : Structural balance	***-3.6***	***-3.4***	***-3.2***	***-3.2***	***-3.3***	***-3.4***	***-3.9***	***-4.5***
Key macroeconomic assumptions								
Actual GDP growth (real)	3.2	0.3	1.5	1.2	1.1	1.0	0.7	0.8
Potential GDP growth (real)	1.3	1.2	1.3	1.1	1.0	1.0	0.7	0.8
Inflation (GDP deflator)	4.6	5.3	3.4	3.3	3.2	3.1	2.7	2.4
Implicit interest rate (nominal)	1.6	1.8	1.9	1.9	1.9	1.9	2.0	2.2

Note: Given that the drivers of the change in the government debt ratio for the EU as a whole are calculated as GDP-weighted averages of country-specific debt projections, small differences may exist between the total change in the government debt ratio and the sum of its drivers.
Source: Commission services.

Table A7.10: **Gross government debt projections and underlying fiscal effort (% of GDP) under the baseline**

	Baseline				
	Debt			SPB	
	2024	2033	Peak year	Avg. 2024-33	Perc. rank
BE	108.6	121.6	2033	-2.7	97%
BG	25.6	40.3	2033	-2.3	96%
CZ	44.5	52.2	2033	-0.9	36%
DK	32.1	16.3	2022	1.7	74%
DE	65.4	70.3	2033	-1.4	88%
EE	21.9	33.6	2033	-1.9	94%
IE	39.3	25.3	2022	1.0	60%
EL	156.9	125.4	2022	2.5	24%
ES	112.1	112.4	2022	-1.1	77%
FR	110.2	121.1	2033	-2.0	92%
HR	68.0	84.9	2033	-2.0	58%
IT	142.6	155.9	2033	-0.5	66%
CY	77.7	45.4	2022	2.4	28%
LV	43.6	36.9	2023	-0.3	42%
LT	39.9	39.6	2023	-0.3	41%
LU	26.3	23.5	2024	0.6	85%
HU	75.1	81.5	2033	-1.1	67%
MT	60.6	63.4	2033	-2.5	70%
NL	53.2	70.4	2033	-2.5	100%
AT	74.9	74.4	2022	-0.6	94%
PL	54.2	69.0	2033	-1.4	78%
PT	105.3	94.3	2022	1.4	34%
RO	47.6	62.8	2033	-2.2	75%
SI	68.8	79.3	2033	-2.2	84%
SK	57.4	82.6	2033	-3.3	61%
FI	73.3	71.5	2024	-0.8	97%
SE	28.5	10.9	2022	1.5	61%
EU	84.1	87.6	2033	-1.1	66%
EA	91.6	96.0	2033	-1.3	90%

Source: Commission services.

Table A7.11: **Gross government debt projections and underlying fiscal effort (% of GDP) under the 'historical SPB' scenario**

	Historical SPB scenario						
	Debt			SPB			
	2024	2033	Peak year	Avg. 2024-33	Perc. rank	Diff. with baseline	Avg. 2007-21
BE	108.6	106.5	2024	-0.8	88.2%	1.9	-0.2
BG	25.6	26.7	2027	-0.8	89.9%	1.5	-0.3
CZ	44.5	52.7	2033	-0.9	35.3%	0.0	-0.9
DK	32.1	13.0	2022	2.2	69.4%	0.5	2.4
DE	65.4	53.1	2022	0.6	53.0%	2.1	1.3
EE	21.9	25.4	2029	-0.9	76.7%	1.1	-0.5
IE	39.3	42.0	2022	-1.1	79.5%	-2.1	-1.8
EL	156.9	115.4	2022	3.5	20.7%	1.0	3.8
ES	112.1	112.5	2022	-1.1	77.3%	0.0	-1.1
FR	110.2	119.8	2033	-1.9	91.2%	0.2	-1.8
HR	68.0	76.2	2033	-1.1	53.1%	0.9	-0.8
IT	142.6	142.2	2022	1.0	45.6%	1.5	1.5
CY	77.7	50.6	2022	1.7	29.9%	-0.7	1.5
LV	43.6	46.6	2033	-1.3	72.5%	-1.1	-1.7
LT	39.9	46.7	2033	-1.0	60.5%	-0.7	-1.3
LU	26.3	15.9	2024	1.5	79.4%	1.0	1.9
HU	75.1	74.1	2022	-0.3	58.6%	0.9	0.0
MT	60.6	49.0	2025	-0.7	52.1%	1.8	-0.1
NL	53.2	54.8	2033	-0.6	90.2%	1.9	0.0
AT	74.9	69.5	2022	0.0	85.3%	0.6	0.2
PL	54.2	73.4	2033	-1.8	85.6%	-0.4	-1.9
PT	105.3	101.3	2022	0.6	40.9%	-0.8	0.3
RO	47.6	67.0	2033	-2.6	82.2%	-0.4	-2.7
SI	68.8	73.3	2033	-1.6	65.5%	0.7	-1.3
SK	57.4	75.2	2033	-2.5	55.4%	0.9	-2.2
FI	73.3	64.7	2024	0.1	86.2%	0.9	0.4
SE	28.5	12.7	2022	1.3	61.3%	-0.1	1.3
EU	84.1	80.9	2022	-0.3	52.6%	0.8	0.2
EA	91.6	87.6	2022	-0.2	74.0%	1.0	0.2

Source: Commission services.

Table A7.12: **Gross government debt projections and underlying fiscal efforts (% of GDP) under the 'adverse interest rate - growth rate differential' scenario**

	Adverse 'r-g' scenario						
	Debt			SPB		r-g in 2033	
	2024	2033	Peak year	Avg. 2024-33	Perc. rank	Baseline	r-g scenario
BE	109.9	130.5	2033	-2.7	97.0%	-0.9%	0.0%
BG	25.9	42.8	2033	-2.3	95.7%	-1.4%	-0.5%
CZ	45.1	56.2	2033	-0.9	35.5%	0.2%	1.2%
DK	32.5	18.3	2022	1.7	73.9%	-1.7%	-1.0%
DE	66.2	75.8	2033	-1.4	87.5%	-1.6%	-0.7%
EE	22.1	35.7	2033	-1.9	93.6%	-2.1%	-1.2%
IE	39.8	27.5	2022	1.0	60.0%	-2.0%	-1.2%
EL	158.5	134.5	2022	2.5	23.5%	-1.9%	-1.2%
ES	113.4	121.7	2033	-1.1	77.4%	-0.6%	0.3%
FR	111.6	130.7	2033	-2.0	92.1%	-0.6%	0.3%
HR	68.8	91.5	2033	-2.0	58.3%	-0.2%	0.7%
IT	144.5	169.1	2033	-0.5	65.9%	0.4%	1.4%
CY	78.7	50.2	2022	2.4	28.3%	-1.6%	-0.8%
LV	44.1	39.9	2023	-0.3	42.3%	-1.7%	-0.9%
LT	40.4	42.6	2033	-0.3	40.7%	-1.8%	-1.0%
LU	26.6	25.3	2024	0.6	84.9%	-1.9%	-1.0%
HU	76.0	88.3	2033	-1.1	66.9%	1.2%	2.1%
MT	61.3	68.1	2033	-2.5	70.2%	-2.7%	-1.8%
NL	53.8	75.2	2033	-2.5	100.0%	-1.4%	-0.5%
AT	75.8	80.3	2033	-0.6	93.9%	-1.4%	-0.5%
PL	54.9	74.5	2033	-1.4	78.4%	1.0%	1.9%
PT	106.6	102.4	2022	1.4	34.2%	-0.3%	0.5%
RO	48.2	67.4	2033	-2.2	75.2%	1.2%	2.2%
SI	69.6	85.1	2033	-2.2	83.7%	-1.7%	-0.8%
SK	58.0	87.4	2033	-3.3	61.1%	-1.4%	-0.5%
FI	74.2	76.9	2033	-0.8	96.5%	-1.8%	-0.9%
SE	28.9	12.3	2022	1.5	60.5%	-2.7%	-2.1%
EU	85.2	94.7	2033	-1.1	66.3%	-0.8%	0.0%
EA	92.7	103.7	2033	-1.3	90.0%	-1.0%	-0.1%

Source: Commission services.

Table A7.13: **Gross government debt projections and underlying fiscal efforts (% of GDP) under the 'financial stress' scenario**

Financial stress scenario						
	Debt			SPB		LT interest rate: Diff. with baseline in 2023
	2024	2033	Peak year	Avg. 2024-33	Perc. rank	
BE	109.2	123.1	2033	-2.7	97.0%	2.0%
BG	25.6	40.5	2033	-2.3	95.7%	1.0%
CZ	44.7	52.6	2033	-0.9	35.5%	1.0%
DK	32.2	16.6	2022	1.7	73.9%	1.0%
DE	65.6	70.8	2033	-1.4	87.5%	1.0%
EE	22.0	33.8	2033	-1.9	93.6%	1.0%
IE	39.4	25.4	2022	1.0	60.0%	1.0%
EL	157.5	126.5	2022	2.5	23.5%	5.9%
ES	112.8	114.4	2033	-1.1	77.4%	2.4%
FR	111.0	123.0	2033	-2.0	92.1%	2.3%
HR	68.2	85.3	2033	-2.0	58.3%	1.0%
IT	144.7	160.6	2033	-0.5	65.9%	4.3%
CY	77.9	45.7	2022	2.4	28.3%	1.0%
LV	43.7	37.2	2023	-0.3	42.3%	1.0%
LT	40.0	39.9	2023	-0.3	40.7%	1.0%
LU	26.3	23.6	2024	0.6	84.9%	1.0%
HU	75.3	82.2	2033	-1.1	66.9%	1.0%
MT	60.8	63.9	2033	-2.5	70.2%	1.0%
NL	53.4	70.7	2033	-2.5	100.0%	1.0%
AT	75.1	75.0	2022	-0.6	93.9%	1.0%
PL	54.4	69.5	2033	-1.4	78.4%	1.0%
PT	106.1	96.0	2022	1.4	34.2%	2.6%
RO	47.8	63.2	2033	-2.2	75.2%	1.0%
SI	69.0	79.8	2033	-2.2	83.7%	1.0%
SK	57.5	82.9	2033	-3.3	61.1%	1.0%
FI	73.5	71.9	2024	-0.8	96.5%	1.0%
SE	28.6	11.0	2022	1.5	60.5%	1.0%
EU	84.7	89.0	2033	-1.1	66.3%	1.8%
EA	92.2	97.6	2033	-1.3	90.0%	2.0%

Source: Commission services.

Table A7.14: **Gross government debt projections and underlying fiscal effort (% of GDP) under the 'lower SPB' scenario**

Lower SPB scenario						
	Debt			SPB		
	2024	2033	Peak year	Avg. 2024-33	Perc. rank	Diff. with baseline in 2025
BE	108.0	127.5	2033	-3.4	100.0%	-0.7
BG	26.8	45.6	2033	-2.8	100.0%	-0.5
CZ	44.7	60.8	2033	-1.8	52.8%	-0.9
DK	32.0	18.0	2022	1.5	76.4%	-0.2
DE	65.3	70.3	2033	-1.5	88.5%	0.0
EE	21.4	34.1	2033	-2.1	94.4%	-0.1
IE	40.1	36.3	2022	-0.3	70.4%	-1.3
EL	160.6	144.5	2022	0.8	39.4%	-1.7
ES	112.9	114.6	2033	-1.3	78.4%	-0.2
FR	110.9	127.1	2033	-2.6	97.1%	-0.6
HR	67.7	85.6	2033	-2.1	58.9%	-0.1
IT	144.3	164.4	2033	-1.2	71.2%	-0.8
CY	77.9	52.3	2022	1.6	30.2%	-0.8
LV	47.6	66.0	2033	-3.3	93.1%	-3.1
LT	38.0	43.2	2033	-0.9	55.2%	-0.6
LU	25.1	23.3	2023	0.5	85.2%	-0.1
HU	77.0	96.3	2033	-2.4	74.0%	-1.3
MT	60.7	73.2	2033	-3.7	85.6%	-1.2
NL	51.8	73.4	2033	-3.0	100.0%	-0.5
AT	75.1	84.8	2033	-1.8	100.0%	-1.2
PL	54.7	80.6	2033	-2.6	89.9%	-1.2
PT	106.5	104.0	2022	0.5	44.0%	-1.0
RO	49.0	75.3	2033	-3.3	86.3%	-1.2
SI	67.3	88.7	2033	-3.5	93.3%	-1.2
SK	56.3	82.1	2033	-3.4	61.4%	0.0
FI	73.0	72.1	2024	-0.9	96.8%	-0.1
SE	28.5	15.5	2022	0.9	72.3%	-0.6
EU	84.5	92.9	2033	-1.7	71.4%	-0.5
EA	91.9	100.5	2033	-1.7	93.5%	-0.5

Source: Commission services.

Table A7.15: **Gross government debt projections and underlying structural fiscal effort (% of GDP) under the 'SCP' scenario (by country)**

Stability and convergence programme (SCP) scenario						
	Debt			SPB		
	2024	2033	Peak year	Avg. 2024-33	Perc. rank	Diff. with baseline in 2025
BE	116.3	132.2	2033	-3.5	100%	-0.5
BG	27.0	27.7	2033	-1.4	92%	1.6
CZ	47.3	63.1	2033	-2.8	76%	-1.4
DK	33.6	-1.3	2022	3.5	43%	2.4
DE	66.9	51.4	2022	-0.3	71%	2.3
EE	21.6	19.9	2024	-1.7	92%	1.0
IE	50.3	55.6	2033	-1.9	82%	-2.5
EL	155.2	113.2	2022	2.6	23%	-2.0
ES	120.1	117.5	2024	-1.8	85%	-0.4
FR	115.0	128.1	2033	-3.7	100%	-1.4
HR	75.9	86.3	2033	-2.3	60%	-0.3
IT	150.9	162.2	2033	-2.3	74%	-1.4
CY	90.5	65.2	2022	0.1	42%	-1.2
LV	49.3	48.6	2022	-2.5	90%	-1.2
LT	43.9	28.8	2023	-0.7	50%	1.3
LU	23.6	14.6	2022	0.9	84%	0.7
HU	75.2	64.8	2022	-1.8	71%	0.3
MT	65.3	71.4	2033	-3.9	87%	-0.5
NL	56.9	71.1	2033	-2.1	100%	0.6
AT	76.5	70.4	2022	-0.9	100%	0.6
PL	48.7	56.2	2033	-2.3	89%	-0.9
PT	121.6	123.5	2022	-0.3	53%	-1.8
RO	52.5	60.8	2033	-3.2	86%	0.1
SI	76.2	83.7	2033	-3.4	93%	-0.2
SK	58.0	62.2	2033	-1.9	51%	2.4
FI	70.3	64.5	2022	-1.3	100%	-0.1
SE	31.1	28.1	2022	-0.3	93%	-2.1
EU	88.6	86.7	2022	-1.7	72%	0.0
EA	96.7	95.6	2022	-1.8	94%	0.1

Note: This scenario was run based on the Commission 2022 spring forecast.
Source: Commission services.

A7.3. LONG-TERM FISCAL SUSTAINABILITY CHALLENGES

Table A7.16: **S2 baseline and alternative scenarios (by country in pps. of GDP)**

	Baseline	Non-demographic risk scenario	Lower productivity scenario	Historical SPB scenario	Adverse 'r-g' scenario
BE	6.7	8.4	7.4	4.3	7.0
BG	3.9	5.6	4.7	2.0	3.9
CZ	5.5	7.2	5.7	5.6	5.4
DK	-0.1	1.5	-0.6	-0.8	-0.1
DE	3.6	5.7	3.6	0.8	3.8
EE	0.9	6.3	1.1	-0.5	1.2
IE	4.0	6.1	3.9	7.0	3.7
EL	-3.6	-0.8	-2.6	-5.0	-2.1
ES	1.0	3.5	2.0	1.0	2.1
FR	0.9	4.0	2.0	0.7	2.1
HR	2.0	4.5	2.4	0.9	2.7
IT	0.7	2.2	1.7	-1.3	2.5
CY	-0.8	1.8	-0.5	0.0	-0.6
LV	-0.4	3.5	-0.2	1.0	0.0
LT	1.8	6.3	1.9	2.9	2.1
LU	7.2	9.5	7.3	6.1	6.2
HU	6.1	9.6	6.4	5.1	5.9
MT	9.4	12.9	9.5	7.1	8.2
NL	6.5	8.2	6.3	4.0	6.4
AT	3.2	5.0	3.6	2.4	3.5
PL	3.7	8.0	3.9	4.4	3.9
PT	-2.1	5.1	-1.1	-1.0	-0.7
RO	3.0	6.6	3.8	3.7	3.7
SI	10.0	13.8	10.0	9.3	9.6
SK	11.3	15.1	11.2	10.4	10.7
FI	3.0	5.4	3.3	1.9	2.9
SE	0.8	5.2	0.5	1.0	0.5

(1) The lower and upper thresholds for S2 are 2 and 6.
Source: Commission services.

Table A7.17: **S1 indicator, baseline and alternative scenarios, by country (pps. of GDP)**

	Baseline	Non-demographic risk scenario	Lower productivity scenario	Historical SPB scenario	Adverse 'r-g' scenario
BE	5.9	6.8	6.3	3.8	6.4
BG	2.5	3.5	2.9	0.6	2.8
CZ	3.9	4.9	4.1	4.3	4.1
DK	-1.7	-0.7	-1.9	-2.5	-1.4
DE	2.7	3.9	2.8	0.0	3.1
EE	0.4	2.8	0.6	-1.0	0.8
IE	1.6	2.7	1.6	4.6	1.8
EL	-1.7	-0.5	-1.1	-3.2	-0.6
ES	2.4	3.8	3.0	2.6	3.2
FR	2.4	4.0	3.0	2.3	3.2
HR	2.1	3.4	2.3	1.0	2.7
IT	3.5	4.3	4.0	1.7	4.5
CY	-1.7	-0.7	-1.5	-1.0	-1.2
LV	-0.6	1.3	-0.4	0.8	-0.2
LT	1.3	3.5	1.4	2.4	1.6
LU	3.0	4.2	3.3	1.9	3.1
HU	4.2	5.9	4.6	3.6	4.6
MT	4.8	6.6	5.1	2.6	5.0
NL	4.8	5.8	4.7	2.5	5.1
AT	2.4	3.5	2.7	1.8	2.9
PL	2.8	5.0	3.1	3.8	3.2
PT	0.1	3.2	0.6	1.3	1.0
RO	3.6	5.4	4.2	4.7	4.0
SI	7.7	9.9	7.8	7.4	7.9
SK	8.5	10.4	8.6	7.9	8.6
FI	1.1	2.4	1.4	0.0	1.5
SE	-1.8	0.6	-1.8	-1.7	-1.5

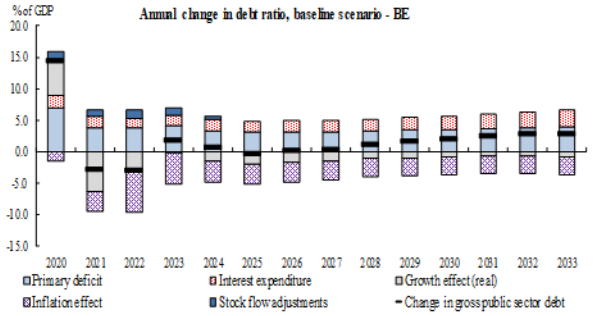
(1) The lower and upper thresholds for S1 are 2 and 6 pps. of GDP.
Source: Commission services.

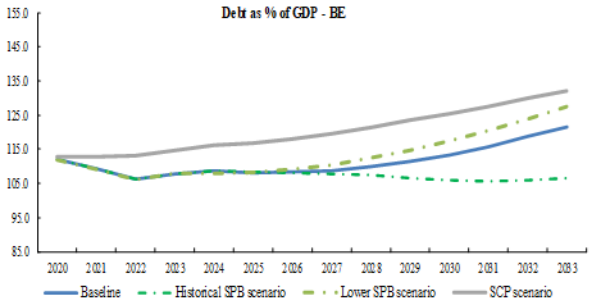
ANNEX A8
Country fiches tables and graphs

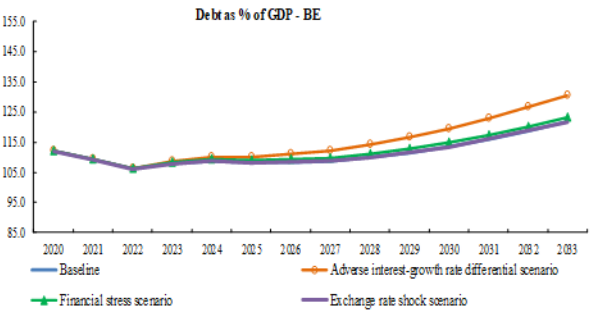
Belgium

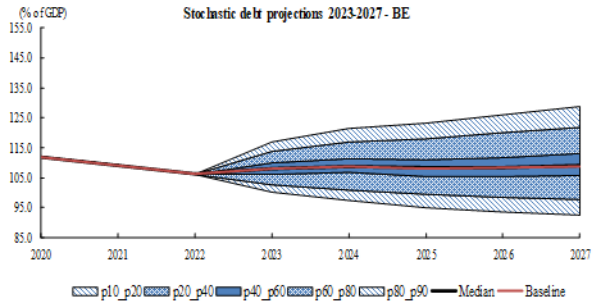
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

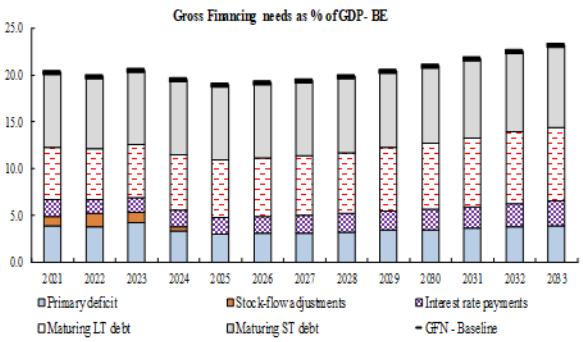
BE - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	112.0	109.2	106.2	107.9	108.6	108.2	108.3	108.7	109.9	111.5	113.5	115.9	118.7	121.6
Changes in the ratio (-1+2+3)	*14.4*	*-2.8*	*-3.0*	*1.7*	*0.7*	*-0.4*	*0.1*	*0.4*	*1.2*	*1.6*	*1.9*	*2.4*	*2.8*	*2.9*
of which														
(1) Primary balance (1.1+1.2+1.3)	-7.0	-3.9	-3.7	-4.2	-3.4	-3.1	-3.1	-3.1	-3.3	-3.4	-3.5	-3.6	-3.8	-3.9
(1.1) Structural primary balance (1.1.1-1.1.2+1.1.3)	*-4.1*	*-3.5*	*-4.1*	*-3.6*	*-2.7*	*-2.7*	*-2.9*	*-3.1*	*-3.3*	*-3.4*	*-3.5*	*-3.6*	*-3.8*	*-3.9*
(1.1.1) Structural primary balance (bef. CoA)	*-4.1*	*-3.5*	*-4.1*	*-3.6*	*-2.7*	*-2.7*	*-2.7*	*-2.7*	*-2.7*	*-2.7*	*-2.7*	*-2.7*	*-2.7*	*-2.7*
(1.1.2) Cost of ageing					*0.0*	*0.0*	*0.3*	*0.5*	*0.7*	*0.9*	*0.9*	*1.1*	*1.3*	*1.4*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*
(1.2) Cyclical component	*-3.0*	*-0.3*	*0.4*	*-0.5*	*-0.6*	*-0.4*	*-0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.3) One-off and other temporary measures	*0.1*	*-0.2*	*-0.1*	*-0.1*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(2) Snowball effect (2.1+2.2+2.3+2.4)	5.9	-7.8	-8.2	-3.6	-3.1	-3.5	-3.0	-2.7	-2.1	-1.8	-1.5	-1.2	-0.9	-1.0
(2.1) Interest expenditure	*1.9*	*1.7*	*1.5*	*1.6*	*1.7*	*1.8*	*1.8*	*1.9*	*1.9*	*2.0*	*2.2*	*2.3*	*2.5*	*2.7*
(2.2) Growth effect	*5.4*	*-6.3*	*-2.8*	*-0.2*	*-1.6*	*-2.0*	*-1.7*	*-1.5*	*-1.0*	*-0.9*	*-0.9*	*-0.7*	*-0.7*	*-0.9*
(2.3) Inflation effect	*-1.5*	*-3.2*	*-6.9*	*-5.0*	*-3.3*	*-3.2*	*-3.1*	*-3.0*	*-3.0*	*-2.9*	*-2.9*	*-2.8*	*-2.8*	*-2.8*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	1.5	1.1	1.5	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(3.1) Base	*1.5*	*1.1*	*1.5*	*1.1*	*0.5*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-6.1	-5.2	-5.5	-5.2	-4.4	-4.4	-4.7	-5.0	-5.2	-5.5	-5.6	-5.9	-6.3	-6.6
Gross financing needs	23.5	20.2	19.9	20.5	19.5	18.9	19.1	19.3	19.8	20.4	21.0	21.7	22.5	23.2

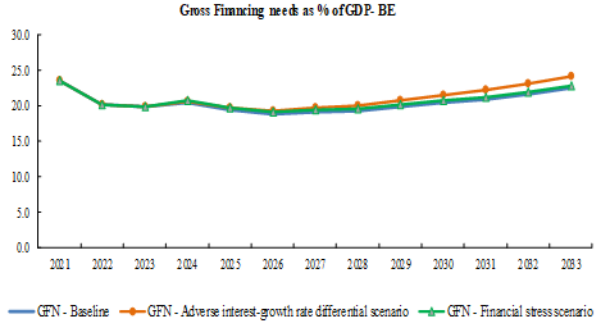












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	HIGH	Overall	HIGH	MEDIUM	HIGH	HIGH	HIGH	HIGH	HIGH	MEDIUM	HIGH
		Debt level (2033), % GDP	121.6	106.5	127.5	130.5	123.1				
		Debt peak year	2033	2024	2033	2033	2033				
		Fiscal consolidation space	97%	88%	100%	97%	97%				
		Probability of debt ratio exceeding in 2027 its 2022 level						59%			
		Difference between 90th and 10th percentiles (pps. GDP)						36.2			

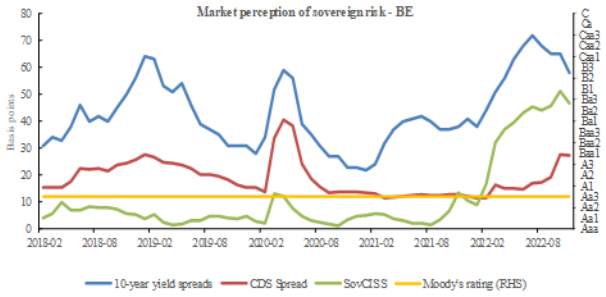
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.5**	**0.3**	**0.5**
Fiscal sub-index	0.9	0.6	0.4
Financial competitiveness sub-index	0.3	0.1	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**7.8**	**6.7**	**7.4**	**8.4**
of which Initial Budgetary position	3.9	3.0	2.7	3.1
Ageing costs	3.9	3.7	4.7	5.3
of which Pensions	*1.7*	*1.6*	*2.5*	*1.6*
Health care	*0.5*	*0.5*	*0.5*	*1.0*
Long-term care	*1.9*	*1.9*	*2.0*	*3.0*
Others	*-0.3*	*-0.2*	*-0.2*	*-0.2*
Required structural primary balance related to S2	**4.2**	**4.0**	**4.8**	**5.7**

S1 indicator		Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index		**5.9**	**6.3**	**6.8**
of which *Initial budgetary position*		*2.1*	*2.3*	*2.1*
Debt requirement		*1.1*	*1.0*	*1.1*
Ageing costs		2.7	3.0	3.6
Required structural primary balance related to S1		**3.2**	**3.7**	**4.1**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	58.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - BE (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	7.4	0.0	53.8

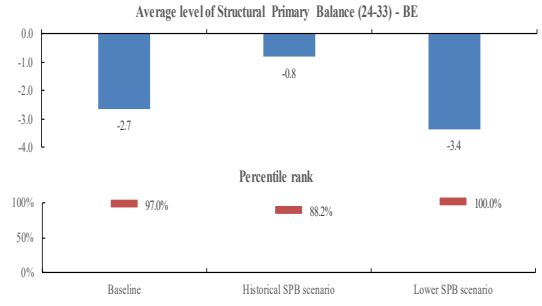
Net International Investment Position (IIP) - BE (2021)	Net IIP (% GDP):
	59.9

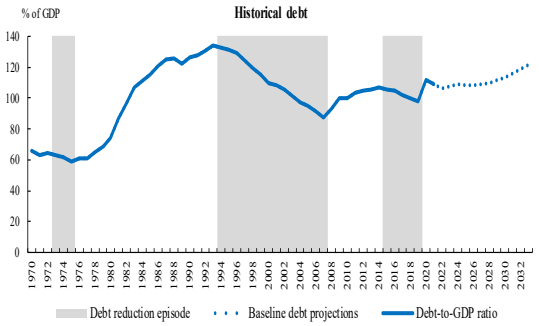
5. Risks related to government's contingent liabilities

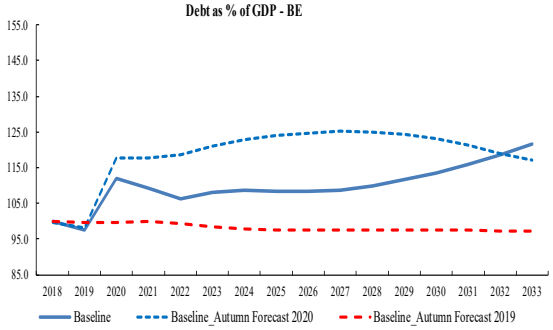
General government contingent liabilities		BE						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		10.5	9.7	9.2	8.3	9.5	8.5	7.5
of which One-off guarantees		*10.1*	*9.3*	*8.8*	*7.9*	*8.9*	*8.0*	*6.4*
Standardised guarantees		*0.4*	*0.4*	*0.4*	*0.4*	*0.5*	*0.6*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.3*	*0.3*	*0.3*	*0.4*	*0.4*	*0.4*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	8.5	7.8	7.3	6.5	6.2	4.9	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	8.5	7.8	7.3	6.5	6.2	4.9	0.9

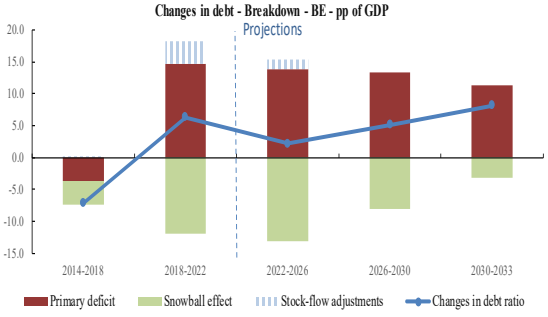
Government's contingent liability risks from banking sector - BE (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	3.8	7.1	98.3	1.4	-0.3	44.3	0.02%	0.38%

6. Realism of baseline assumptions









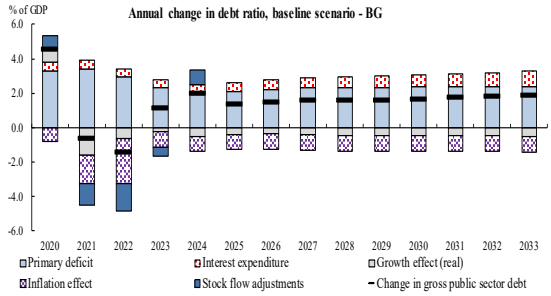
7. Underlying macro-fiscal assumptions

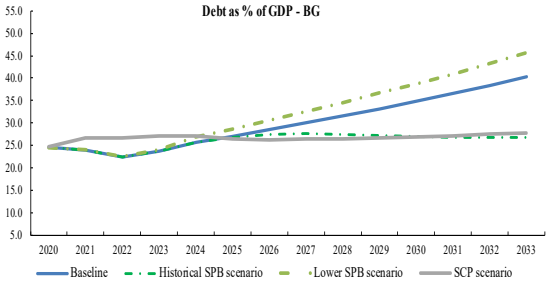
Macro-fiscal assumptions, Belgium	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	106.2	107.9	108.6	111.5	115.9	121.6	107.6	112.9	111.6
Primary balance	-3.7	-4.2	-3.4	-3.4	-3.6	-3.9	-3.8	-3.4	-3.5
Structural primary balance (before CoA)	-4.1	-3.6	-2.7	-2.7	-2.7	-2.7	-3.4	-2.7	-2.9
Real GDP growth	2.8	0.2	1.5	0.9	0.6	0.8	1.5	1.1	1.2
Potential GDP growth	1.7	1.7	1.6	0.9	0.6	0.8	1.7	1.0	1.2
Inflation rate	6.7	5.0	3.1	2.7	2.5	2.4	4.9	2.7	3.3
Implicit interest rate (nominal)	1.5	1.6	1.7	1.9	2.1	2.3	1.6	2.0	1.9
Gross financing needs	19.9	20.5	19.5	20.4	21.7	23.2	19.9	20.7	20.5
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	113.1	114.7	116.3	123.4	127.6	132.2	114.7	122.1	119.9
Primary balance	-3.7	-3.4	-3.5	-4.1	-4.3	-4.6	-3.6	-3.9	-4.0
Structural primary balance (before CoA)	-3.5	-3.3	-3.1	-3.1	-3.1	-3.1	-3.3	-3.1	-3.4
Real GDP growth	2.6	1.7	1.2	0.9	0.6	0.9	1.8	1.0	1.6
Gross financing needs	19.8	19.8	19.8	22.1	23.3	24.4	19.8	21.6	21.3
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	106.2	107.9	108.6	106.7	105.6	106.5	107.6	107.0	107.1
Primary balance	-3.7	-4.2	-3.4	-1.5	-1.2	-1.4	-3.8	-1.7	-2.2
Structural primary balance (before CoA)	-4.1	-3.6	-2.7	-0.2	-0.2	-0.2	-3.4	-0.6	-1.3
Real GDP growth	2.8	0.2	1.5	1.3	1.1	0.8	1.5	1.1	1.2
Gross financing needs	19.9	20.5	19.5	18.0	18.0	18.6	19.9	18.3	18.7
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	106.2	108.3	109.2	112.7	117.2	123.1	107.9	114.1	112.5
Implicit interest rate (nominal)	1.5	2.0	1.9	2.0	2.2	2.4	1.8	2.1	2.0
Gross financing needs	19.9	20.8	19.7	20.7	22.0	23.5	20.1	21.0	20.8
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	106.2	107.9	108.0	114.7	120.4	127.5	107.3	116.0	113.8
Primary balance	-3.7	-4.3	-3.5	-4.1	-4.3	-4.6	-3.8	-4.1	-4.0
Structural primary balance (before CoA)	-4.1	-3.7	-3.4	-3.4	-3.4	-3.4	-3.7	-3.4	-3.4
Real GDP growth	2.8	0.2	2.3	0.9	0.6	0.8	1.8	1.0	1.2
Gross financing needs	19.9	20.6	19.5	21.5	23.0	24.8	20.0	21.7	21.3
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	106.2	107.9	108.6	111.5	115.9	121.6	107.6	112.9	111.6
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	19.9	20.5	19.5	20.4	21.7	23.2	19.9	20.7	20.5
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	106.2	108.5	109.9	116.6	122.7	130.5	108.2	118.1	115.6
Implicit interest rate (nominal)	1.5	1.7	1.8	2.2	2.5	2.7	1.7	2.3	2.1
Real GDP growth	2.8	-0.3	1.0	0.4	0.1	0.3	1.2	0.6	0.7
Gross financing needs	19.9	20.6	19.8	21.5	23.2	25.1	20.1	21.8	21.4

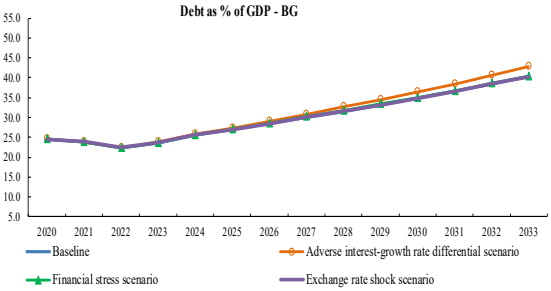
Bulgaria

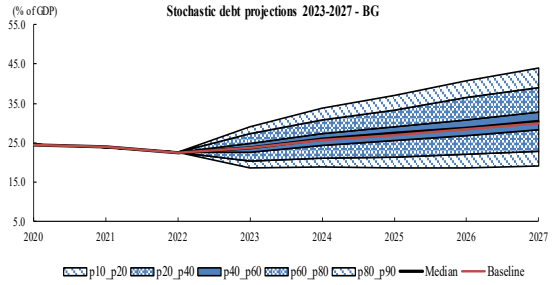
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

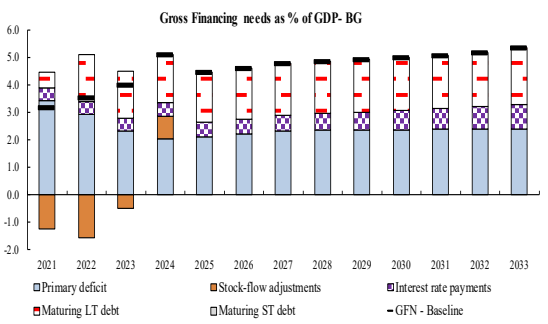
BG - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**24.5**	**23.9**	**22.5**	**23.6**	**25.6**	**27.0**	**28.5**	**30.0**	**31.6**	**33.2**	**34.9**	**36.6**	**38.4**	**40.3**
Changes in the ratio (-1+2+3)	*4.5*	*-0.6*	*-1.5*	*1.1*	*2.0*	*1.4*	*1.5*	*1.6*	*1.6*	*1.6*	*1.7*	*1.7*	*1.8*	*1.9*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-3.3**	**-3.4**	**-2.9**	**-2.3**	**-2.0**	**-2.1**	**-2.2**	**-2.3**	**-2.3**	**-2.3**	**-2.4**	**-2.4**	**-2.4**	**-2.4**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-1.8***	***-3.4***	***-3.3***	***-2.5***	***-2.3***	***-2.3***	***-2.3***	***-2.3***	***-2.3***	***-2.3***	***-2.4***	***-2.4***	***-2.4***	***-2.4***
(1.1.1) Structural primary balance (bef. CoA)	*-1.8*	*-3.4*	*-3.3*	*-2.5*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.3*
(1.1.2) Cost of ageing					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*0.1*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-1.5***	***0.0***	***0.4***	***0.2***	***0.3***	***0.2***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**0.5**	**-2.8**	**-2.8**	**-0.7**	**-0.9**	**-0.7**	**-0.7**	**-0.7**	**-0.8**	**-0.7**	**-0.7**	**-0.6**	**-0.6**	**-0.5**
(2.1) Interest expenditure	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*	*0.8*	*0.9*
(2.2) Growth effect	*0.8*	*-1.6*	*-0.6*	*-0.2*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
(2.3) Inflation effect	*-0.8*	*-1.6*	*-2.6*	*-0.9*	*-0.8*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**0.8**	**-1.3**	**-1.6**	**-0.5**	**0.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*0.8*	*-1.3*	*-1.6*	*-0.5*	*0.8*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-2.3	-3.9	-3.8	-2.9	-2.8	-2.8	-2.8	-2.9	-2.9	-3.0	-3.0	-3.1	-3.2	-3.3
Gross financing needs	5.5	3.2	3.5	4.0	5.1	4.5	4.6	4.8	4.9	4.9	5.0	5.1	5.2	5.3

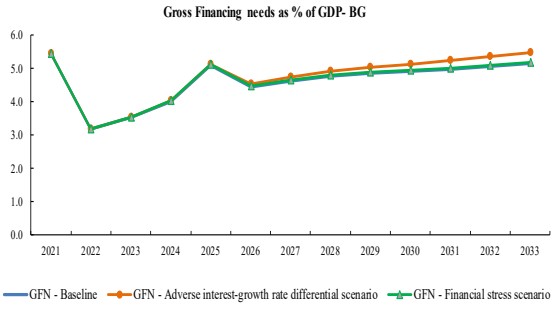












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM
		Debt level (2033), % GDP	40.3	26.7	45.6	42.8	40.5				
		Debt peak year	2033	2027	2033	2033	2033				
		Fiscal consolidation space	96%	90%	100%	96%	96%				
		Probability of debt ratio exceeding in 2027 its 2022 level						81%			
		Difference between 90th and 10th percentiles (pps. GDP)						25.0			

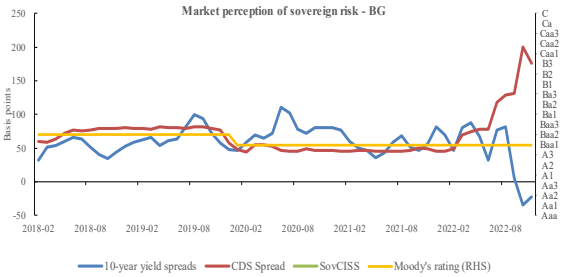
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.7**	**0.3**	**0.5**
Fiscal sub-index	0.3	0.3	0.4
Financial competitiveness sub-index	0.8	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.4**	**3.9**	**4.7**	**5.6**
of which Initial Budgetary position	2.1	2.5	2.6	2.6
Ageing costs	1.3	1.4	2.1	3.0
of which Pensions	*0.7*	*0.8*	*1.6*	*0.8*
Health care	*0.2*	*0.2*	*0.1*	*0.9*
Long-term care	*0.1*	*0.1*	*0.1*	*1.0*
Others	*0.3*	*0.3*	*0.3*	*0.3*
Required structural primary balance related to S2	**1.6**	**1.6**	**2.4**	**3.3**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.5**	**2.9**	**3.5**
of which *Initial budgetary position*	*2.3*	*2.3*	*2.3*
Debt requirement	*-0.7*	*-0.7*	*-0.7*
Ageing costs	*1.0*	*1.3*	*2.0*
Required structural primary balance related to S1	**0.2**	**0.6**	**1.2**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	-22.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - BG (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	0.1	74.6	46.1

Net International Investment Position (IIP) - BG (2021)	Net IIP (% GDP):
	-18.4

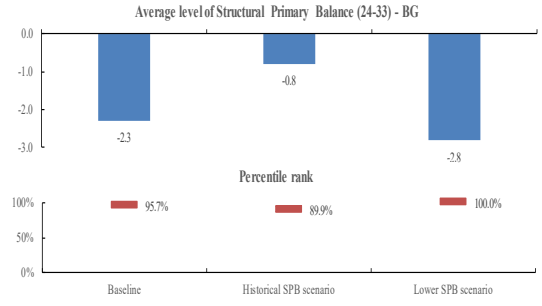
5. Risks related to government's contingent liabilities

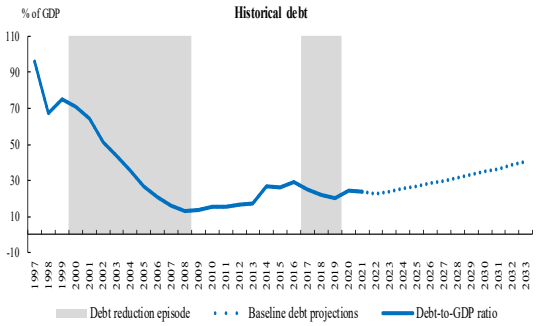
General government contingent liabilities	BG						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	0.4	0.3	0.2	0.1	0.2	0.4	7.5
of which One-off guarantees	*0.3*	*0.2*	*0.1*	*0.1*	*0.2*	*0.4*	*6.4*
Standardised guarantees	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*

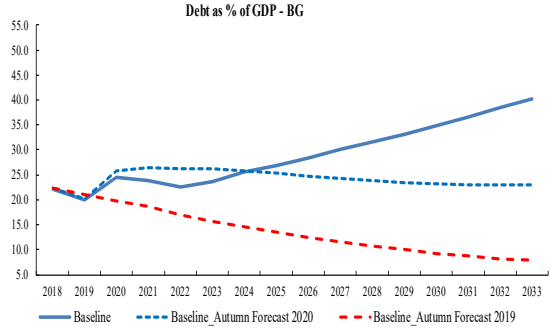
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

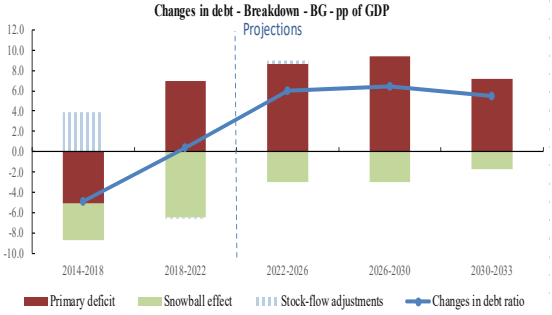
Government's contingent liability risks from banking sector - BG (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	4.4	8.7	72.4	3.5	-2.9	65.7	0.01%	0.09%

6. Realism of baseline assumptions









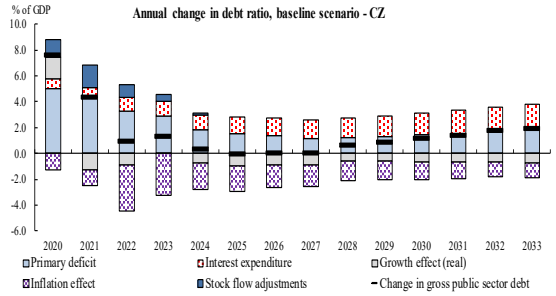
7. Underlying macro-fiscal assumptions

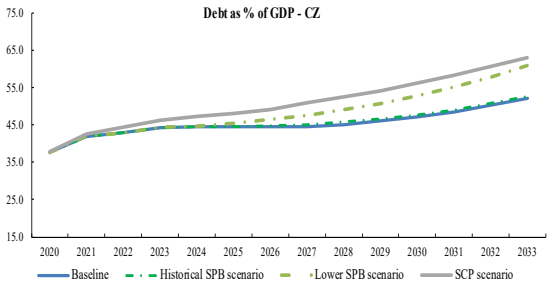
Macro-fiscal assumptions, Bulgaria	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	22.5	23.6	25.6	33.2	36.6	40.3	23.9	33.4	31.0
Primary balance	-2.9	-2.3	-2.0	-2.3	-2.4	-2.4	-2.4	-2.3	-2.3
Structural primary balance (before CoA)	-3.3	-2.5	-2.3	-2.3	-2.3	-2.3	-2.7	-2.3	-2.4
Real GDP growth	3.1	1.1	2.4	1.6	1.5	1.3	2.2	1.5	1.7
Potential GDP growth	1.6	1.9	2.0	1.6	1.5	1.3	1.8	1.6	1.7
Inflation rate	12.3	4.2	3.7	2.9	2.6	2.4	6.7	2.9	3.9
Implicit interest rate (nominal)	2.2	2.2	2.2	2.1	2.2	2.4	2.2	2.2	2.2
Gross financing needs	3.5	4.0	5.1	4.9	5.1	5.3	4.2	4.9	4.7
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	26.7	27.1	27.0	26.6	27.1	27.7	26.9	26.7	26.7
Primary balance	-2.2	-1.9	-0.4	-0.7	-0.7	-0.7	-1.5	-0.6	-1.0
Structural primary balance (before CoA)	-2.2	-2.4	-0.7	-0.7	-0.7	-0.7	-1.8	-0.7	-1.1
Real GDP growth	4.1	3.9	0.8	1.5	1.2	1.2	2.9	1.4	2.1
Gross financing needs	2.9	3.1	2.0	2.4	2.5	2.6	2.7	2.2	2.5
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	22.5	23.6	25.6	27.2	26.8	26.7	23.9	27.1	26.3
Primary balance	-2.9	-2.3	-2.0	-0.5	-0.4	-0.4	-2.4	-0.7	-1.2
Structural primary balance (before CoA)	-3.3	-2.5	-2.3	-0.3	-0.3	-0.3	-2.7	-0.6	-1.1
Real GDP growth	3.1	1.1	2.4	1.9	1.7	1.3	2.2	1.5	1.7
Gross financing needs	3.5	4.0	5.1	2.7	2.4	2.4	4.2	2.9	3.3
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	22.5	23.6	25.6	33.3	36.8	40.5	23.9	33.5	31.1
Implicit interest rate (nominal)	2.2	2.4	2.3	2.2	2.3	2.4	2.3	2.2	2.2
Gross financing needs	3.5	4.0	5.1	4.9	5.1	5.4	4.2	4.9	4.8
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	22.5	24.0	26.8	36.7	41.0	45.6	24.4	36.9	33.7
Primary balance	-2.9	-2.8	-2.6	-2.9	-2.9	-2.9	-2.8	-2.8	-2.8
Structural primary balance (before CoA)	-3.3	-3.1	-2.8	-2.8	-2.8	-2.8	-3.1	-2.8	-2.9
Real GDP growth	3.1	1.5	1.6	1.6	1.5	1.3	2.1	1.6	1.7
Gross financing needs	3.5	4.6	5.8	5.7	5.9	6.2	4.6	5.7	5.4
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	22.5	23.6	25.6	33.2	36.6	40.3	23.9	33.4	31.0
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	3.5	4.0	5.1	4.9	5.1	5.3	4.2	4.9	4.7
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	22.5	23.7	25.9	34.5	38.5	42.8	24.0	34.8	32.1
Implicit interest rate (nominal)	2.2	2.3	2.4	2.5	2.6	2.8	2.3	2.5	2.5
Real GDP growth	3.1	0.6	1.9	1.1	1.0	0.8	1.9	1.0	1.2
Gross financing needs	3.5	4.0	5.1	5.1	5.4	5.7	4.2	5.1	4.9

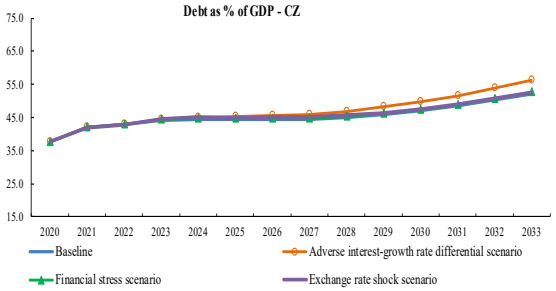
Czechia

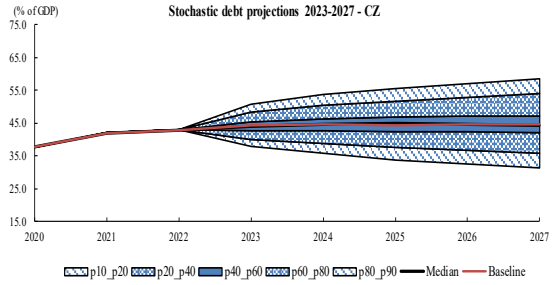
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

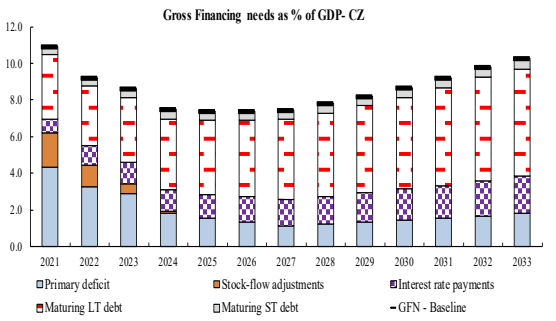
CZ - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**37.7**	**42.0**	**42.9**	**44.2**	**44.5**	**44.5**	**44.5**	**44.5**	**45.1**	**46.0**	**47.1**	**48.5**	**50.3**	**52.2**
Changes in the ratio (-1+2+3)	*7.6*	*4.4*	*0.9*	*1.3*	*0.3*	*-0.1*	*0.0*	*0.0*	*0.6*	*0.9*	*1.1*	*1.4*	*1.8*	*1.9*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-5.0**	**-4.3**	**-3.3**	**-2.9**	**-1.8**	**-1.6**	**-1.4**	**-1.1**	**-1.2**	**-1.3**	**-1.4**	**-1.5**	**-1.7**	**-1.8**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-3.5***	***-3.8***	***-2.8***	***-1.9***	***-0.9***	***-1.0***	***-1.1***	***-1.1***	***-1.2***	***-1.3***	***-1.4***	***-1.5***	***-1.7***	***-1.8***
(1.1.1) Structural primary balance (bef. CoA)	*-3.5*	*-3.8*	*-2.8*	*-1.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*
(1.1.2) Cost of ageing					*0.0*	*0.0*	*0.1*	*0.2*	*0.3*	*0.4*	*0.5*	*0.6*	*0.7*	*0.9*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-1.5***	***-0.5***	***-0.4***	***-1.0***	***-0.9***	***-0.6***	***-0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.2**	**-1.7**	**-3.4**	**-2.1**	**-1.6**	**-1.7**	**-1.3**	**-1.1**	**-0.6**	**-0.5**	**-0.3**	**-0.1**	**0.1**	**0.1**
(2.1) Interest expenditure	*0.8*	*0.8*	*1.1*	*1.2*	*1.2*	*1.3*	*1.4*	*1.4*	*1.5*	*1.6*	*1.7*	*1.8*	*1.9*	*2.0*
(2.2) Growth effect	*1.7*	*-1.2*	*-0.9*	*0.0*	*-0.8*	*-1.0*	*-0.9*	*-0.9*	*-0.6*	*-0.6*	*-0.7*	*-0.7*	*-0.7*	*-0.7*
(2.3) Inflation effect	*-1.2*	*-1.2*	*-3.5*	*-3.2*	*-2.0*	*-1.9*	*-1.8*	*-1.7*	*-1.6*	*-1.5*	*-1.4*	*-1.3*	*-1.2*	*-1.2*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**1.4**	**1.7**	**1.0**	**0.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.3*	*1.9*	*1.2*	*0.5*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.1*	*-0.1*	*-0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-4.3	-4.6	-3.8	-3.1	-2.1	-2.2	-2.4	-2.6	-2.7	-2.9	-3.1	-3.3	-3.6	-3.8
Gross financing needs	10.7	10.9	9.2	8.6	7.5	7.4	7.4	7.4	7.8	8.2	8.7	9.2	9.8	10.3

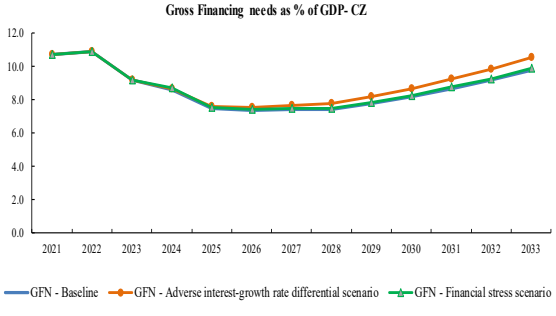












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM
		Debt level (2033), % GDP	52.2	52.7	60.8	56.2	52.6				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	36%	35%	53%	36%	36%				
		Probability of debt ratio exceeding in 2027 its 2022 level						57%			
		Difference between 90th and 10th percentiles (pps. GDP)						27.3			

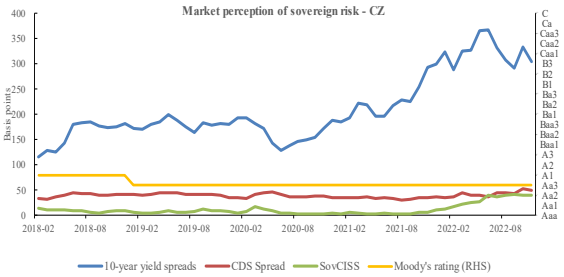
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.3**	**0.2**	**0.5**
Fiscal sub-index	0.4	0.2	0.4
Financial competitiveness sub-index	0.3	0.2	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**7.7**	**5.5**	**5.7**	**7.2**
of which Initial Budgetary position	3.3	1.1	1.2	1.2
Ageing costs	4.4	4.4	4.4	6.0
of which Pensions	*1.7*	*1.9*	*2.1*	*1.9*
Health care	*0.8*	*0.7*	*0.7*	*1.7*
Long-term care	*1.4*	*1.3*	*1.3*	*2.0*
Others	*0.4*	*0.4*	*0.4*	*0.4*
Required structural primary balance related to S2	**4.6**	**4.6**	**4.7**	**6.2**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.9**	**4.1**	**4.9**
of which *Initial budgetary position*	*0.9*	*1.0*	*0.9*
Debt requirement	*-0.3*	*-0.3*	*-0.3*
Ageing costs	*3.3*	*3.4*	*4.3*
Required structural primary balance related to S1	**3.0**	**3.1**	**3.9**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	304.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - CZ (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	2.6	7.7	29.7

Net International Investment Position (IIP) - CZ (2021)	Net IIP (% GDP):
	-15.6

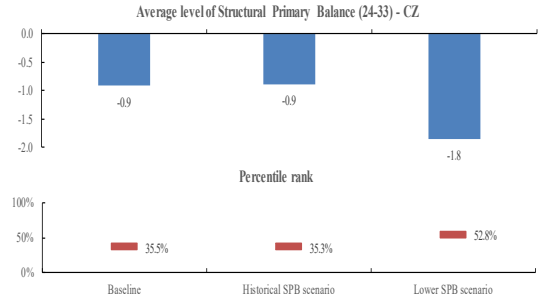
5. Risks related to government's contingent liabilities

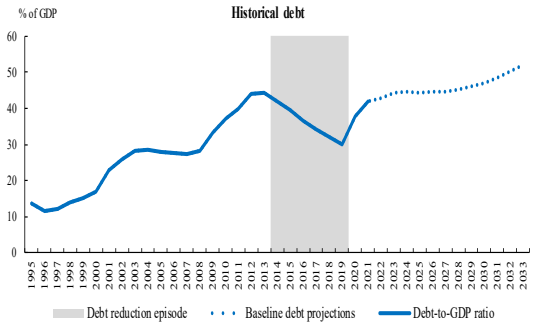
General government contingent liabilities	CZ						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	0.3	0.2	0.2	0.2	0.6	0.7	7.5
of which One-off guarantees	*0.3*	*0.2*	*0.2*	*0.2*	*0.6*	*0.7*	*6.4*
Standardised guarantees	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.2*	*0.3*

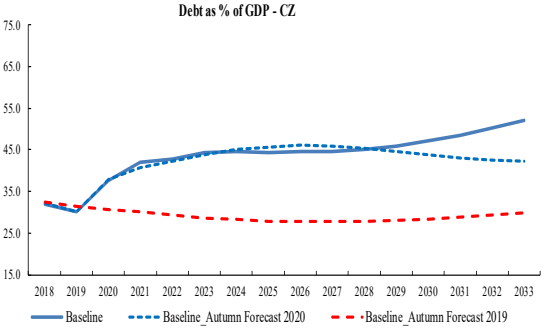
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

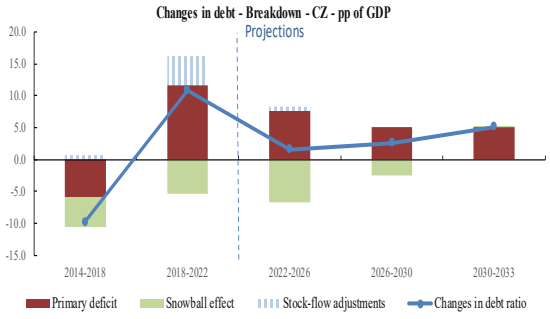
Government's contingent liability risks from banking sector - CZ (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	2.9	19.7	78.3	1.2	-0.2	53.5	0.01%	0.14%

6. Realism of baseline assumptions









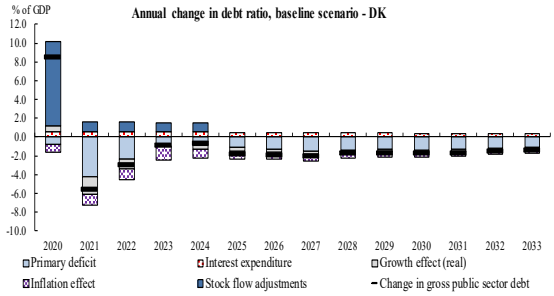
7. Underlying macro-fiscal assumptions

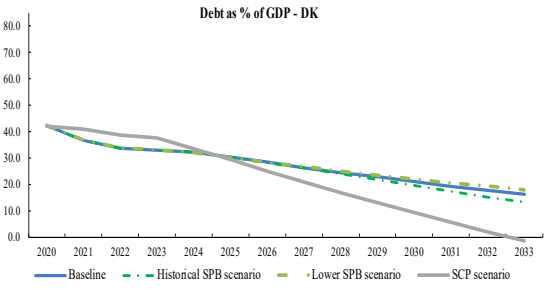
Macro-fiscal assumptions, Czechia	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.9	44.2	44.5	46.0	48.5	52.2	43.9	47.0	46.2
Primary balance	-3.3	-2.9	-1.8	-1.3	-1.5	-1.8	-2.7	-1.4	-1.8
Structural primary balance (before CoA)	-2.8	-1.9	-0.9	-0.9	-0.9	-0.9	-1.9	-0.9	-1.2
Real GDP growth	2.5	0.1	1.8	1.4	1.5	1.5	1.5	1.7	1.6
Potential GDP growth	2.2	1.5	1.7	1.4	1.5	1.5	1.8	1.4	1.5
Inflation rate	9.2	8.1	4.8	3.3	2.7	2.4	7.4	3.4	4.4
Implicit interest rate (nominal)	2.8	3.0	2.8	3.7	4.0	4.2	2.9	3.7	3.5
Gross financing needs	9.2	8.6	7.5	8.2	9.2	10.3	8.4	8.5	8.4
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.3	46.1	47.3	54.2	58.4	63.1	45.9	53.0	50.8
Primary balance	-3.5	-2.8	-2.4	-2.7	-2.9	-3.2	-2.9	-2.6	-3.0
Structural primary balance (before CoA)	-3.1	-2.6	-2.3	-2.3	-2.3	-2.3	-2.7	-2.3	-2.6
Real GDP growth	4.4	2.9	2.1	1.8	1.5	1.7	3.1	1.8	2.2
Gross financing needs	9.4	9.0	8.4	10.4	11.5	12.6	9.0	10.0	10.0
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.9	44.2	44.5	46.7	49.0	52.7	43.9	47.4	46.6
Primary balance	-3.3	-2.9	-1.8	-1.4	-1.5	-1.8	-2.7	-1.5	-1.8
Structural primary balance (before CoA)	-2.8	-1.9	-0.9	-0.9	-0.9	-0.9	-1.9	-0.9	-1.1
Real GDP growth	2.5	0.1	1.8	1.6	1.7	1.5	1.5	1.7	1.6
Gross financing needs	9.2	8.6	7.5	8.4	9.3	10.3	8.4	8.6	8.5
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.9	44.3	44.7	46.3	48.9	52.6	44.0	47.3	46.5
Implicit interest rate (nominal)	2.8	3.2	3.0	3.8	4.0	4.3	3.0	3.8	3.6
Gross financing needs	9.2	8.7	7.5	8.3	9.3	10.4	8.5	8.5	8.5
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.9	44.4	44.7	50.8	55.2	60.8	44.0	51.7	49.8
Primary balance	-3.3	-3.2	-2.3	-2.2	-2.5	-2.7	-2.9	-2.3	-2.5
Structural primary balance (before CoA)	-2.8	-2.3	-1.8	-1.8	-1.8	-1.8	-2.3	-1.8	-2.0
Real GDP growth	2.5	0.3	2.9	1.4	1.5	1.5	1.9	1.6	1.6
Gross financing needs	9.2	9.0	7.9	9.7	11.1	12.5	8.7	10.0	9.7
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.9	44.5	45.1	46.5	49.0	52.7	44.2	47.5	46.7
Exchange rate depreciation	0.0%	6.0%	6.0%	0.0%	0.0%	0.0%	4.0%	0.0%	1.0%
Gross financing needs	9.2	8.6	7.5	8.3	9.3	10.4	8.5	8.5	8.5
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.9	44.5	45.1	48.2	51.5	56.2	44.2	49.2	48.0
Implicit interest rate (nominal)	2.8	3.1	3.0	4.1	4.4	4.7	3.0	4.1	3.8
Real GDP growth	2.5	-0.4	1.3	0.9	1.0	1.0	1.1	1.2	1.2
Gross financing needs	9.2	8.7	7.6	8.7	9.8	11.1	8.5	9.0	8.8

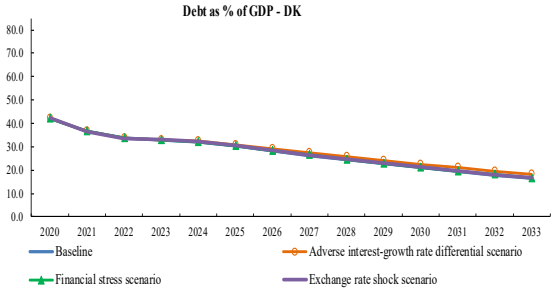
Denmark

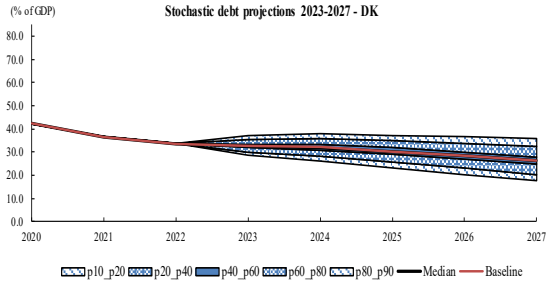
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

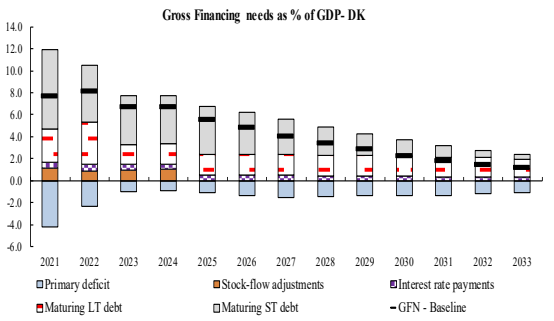
DK - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**42.2**	**36.6**	**33.7**	**32.8**	**32.1**	**30.2**	**28.3**	**26.2**	**24.5**	**22.8**	**21.0**	**19.3**	**17.8**	**16.3**
Changes in the ratio (-1+2+3)	*8.5*	*-5.6*	*-3.0*	*-0.9*	*-0.7*	*-1.9*	*-1.9*	*-2.0*	*-1.8*	*-1.7*	*-1.7*	*-1.7*	*-1.5*	*-1.4*
of which														
(1) Primary balance (1.1+1.2+1.3)	**0.8**	**4.2**	**2.3**	**1.0**	**0.9**	**1.1**	**1.3**	**1.6**	**1.4**	**1.3**	**1.4**	**1.4**	**1.2**	**1.1**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***3.0***	***4.7***	***2.2***	***2.3***	***1.7***	***1.7***	***1.6***	***1.6***	***1.4***	***1.3***	***1.4***	***1.4***	***1.2***	***1.1***
(1.1.1) Structural primary balance (bef. CoA)	*3.0*	*4.7*	*2.2*	*2.3*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.2*	*0.2*	*0.4*	*0.5*	*0.4*	*0.5*	*0.6*	*0.8*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.1*	*0.1*	*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*
(1.2) Cyclical component	***-2.2***	***-0.5***	***0.1***	***-0.8***	***-0.8***	***-0.5***	***-0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***-0.5***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**0.4**	**-2.5**	**-1.6**	**-0.9**	**-0.8**	**-0.7**	**-0.6**	**-0.5**	**-0.4**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**
(2.1) Interest expenditure	*0.6*	*0.6*	*0.6*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.4*	*0.4*	*0.4*	*0.4*	*0.3*	*0.3*
(2.2) Growth effect	*0.7*	*-1.9*	*-1.0*	*0.0*	*-0.4*	*-0.4*	*-0.3*	*-0.2*	*-0.1*	*-0.2*	*-0.2*	*-0.2*	*-0.2*	*-0.2*
(2.3) Inflation effect	*-0.9*	*-1.1*	*-1.2*	*-1.4*	*-0.9*	*-0.8*	*-0.8*	*-0.7*	*-0.7*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.4*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**8.9**	**1.1**	**1.0**	**1.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*9.0*	*1.1*	*0.9*	*1.0*	*1.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	2.5	4.2	1.6	1.7	1.2	1.2	1.1	1.1	1.0	0.9	1.0	1.0	0.9	0.8
Gross financing needs	14.6	7.7	8.2	6.7	6.8	5.6	4.9	4.1	3.5	2.9	2.3	1.9	1.5	1.2

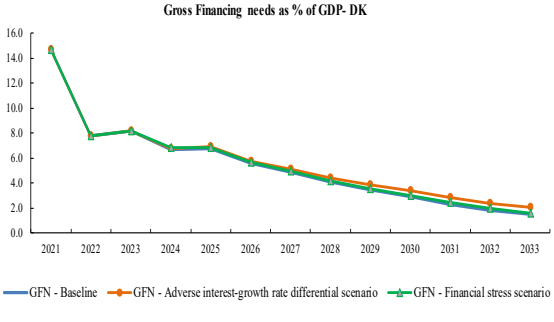












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
		Debt level (2033), % GDP	16.3	13.0	18.0	18.3	16.6				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	74%	69%	76%	74%	74%				
		Probability of debt ratio exceeding in 2027 its 2022 level						16%			
		Difference between 90th and 10th percentiles (pps. GDP)						17.9			

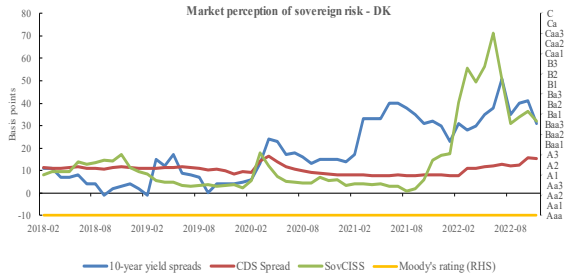
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.4**	**0.2**	**0.5**
Fiscal sub-index	0.3	0.0	0.4
Financial competitiveness sub-index	0.5	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**-0.5**	**-0.1**	**-0.6**	**1.5**
of which Initial Budgetary position	-2.3	-1.7	-1.7	-1.7
Ageing costs	1.8	1.6	1.2	3.2
of which Pensions	*-1.5*	*-1.5*	*-1.9*	*-1.5*
Health care	*0.7*	*0.6*	*0.6*	*1.6*
Long-term care	*3.0*	*2.8*	*2.8*	*3.5*
Others	*-0.4*	*-0.3*	*-0.3*	*-0.3*
Required structural primary balance related to S2	**2.0**	**1.6**	**1.2**	**3.3**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**-1.7**	**-1.9**	**-0.7**
of which *Initial budgetary position*	*-2.3*	*-2.2*	*-2.2*
Debt requirement	*-0.7*	*-0.6*	*-0.7*
Ageing costs	*1.2*	*1.0*	*2.2*
Required structural primary balance related to S1	**0.0**	**-0.1**	**1.1**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	31.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - DK (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	13.2	2.4	26.5

Net International Investment Position (IIP) - DK (2021)	Net IIP (% GDP):
	77.0

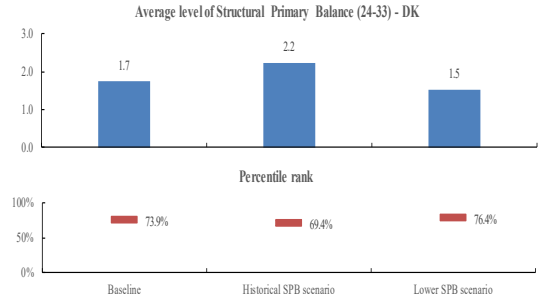
5. Risks related to government's contingent liabilities

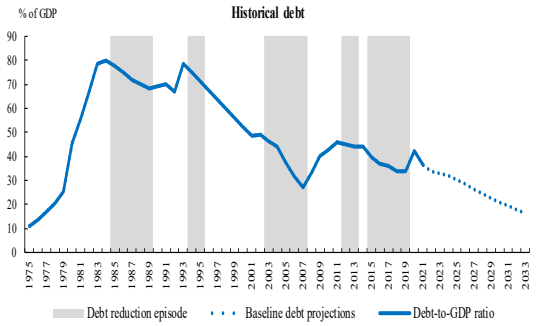
General government contingent liabilities	DK						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	12.2	11.6	11.8	11.4	11.5	11.1	7.5
of which One-off guarantees	*12.2*	*11.6*	*14.5*	*11.4*	*11.4*	*11.0*	*6.4*
Standardised guarantees	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.3*

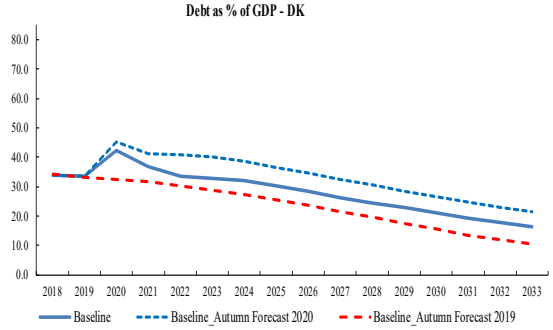
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

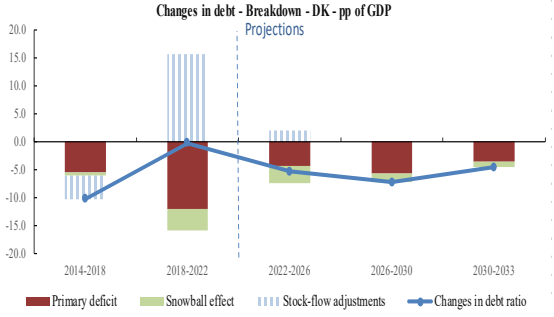
Government's contingent liability risks from banking sector - DK (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	12.3	11.7	311.8	1.5	-0.6	27.3	0.19%	0.55%

6. Realism of baseline assumptions









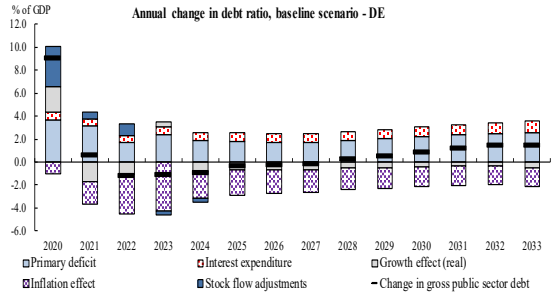
7. Underlying macro-fiscal assumptions

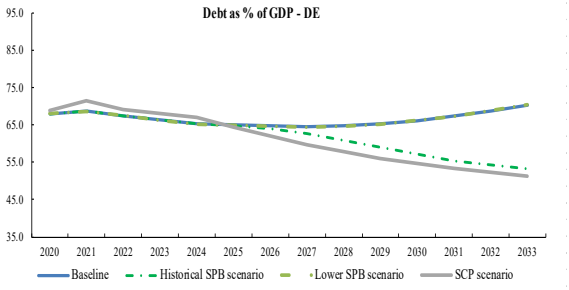
Macro-fiscal assumptions, Denmark	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	33.7	32.8	32.1	22.8	19.3	16.3	32.8	22.9	25.4
Primary balance	2.3	1.0	0.9	1.3	1.4	1.1	1.4	1.3	1.3
Structural primary balance (before CoA)	2.2	2.3	1.7	1.7	1.7	1.7	2.1	1.7	1.8
Real GDP growth	3.0	0.0	1.3	0.6	0.9	1.1	1.4	0.9	1.0
Potential GDP growth	1.8	1.5	1.4	0.6	0.9	1.1	1.6	0.7	1.0
Inflation rate	3.3	4.4	2.7	2.6	2.5	2.4	3.5	2.6	2.8
Implicit interest rate (nominal)	1.6	1.6	1.6	1.7	1.8	1.8	1.6	1.7	1.7
Gross financing needs	8.2	6.7	6.8	2.9	1.9	1.2	7.2	3.1	4.1
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	38.8	37.5	33.6	13.0	5.5	-1.3	36.6	17.2	22.7
Primary balance	1.8	2.9	2.9	3.5	3.5	3.3	2.6	3.5	3.0
Structural primary balance (before CoA)	3.8	4.2	4.1	4.1	4.1	4.1	4.1	4.1	3.7
Real GDP growth	2.7	1.1	2.5	1.4	1.4	1.4	2.1	1.7	2.0
Gross financing needs	5.5	5.3	3.1	-1.7	-2.5	-3.1	4.6	-0.9	0.9
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	33.7	32.8	32.1	21.9	17.2	13.0	32.8	21.7	24.5
Primary balance	2.3	1.0	0.9	1.8	2.0	1.8	1.4	1.7	1.6
Structural primary balance (before CoA)	2.2	2.3	1.7	2.4	2.4	2.4	2.1	2.3	2.2
Real GDP growth	3.0	0.0	1.3	0.8	1.1	1.1	1.4	0.9	1.0
Gross financing needs	8.2	6.7	6.8	2.2	0.6	-0.1	7.2	2.4	3.6
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	33.7	32.9	32.2	23.0	19.6	16.6	32.9	23.1	25.6
Implicit interest rate (nominal)	1.6	1.9	1.7	1.8	1.8	1.9	1.8	1.8	1.8
Gross financing needs	8.2	6.8	6.8	3.0	1.9	1.3	7.3	3.2	4.2
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	33.7	32.9	32.0	23.6	20.6	18.0	32.8	23.8	26.0
Primary balance	2.3	0.8	1.1	1.1	1.1	0.9	1.4	1.1	1.2
Structural primary balance (before CoA)	2.2	1.9	1.5	1.5	1.5	1.5	1.9	1.5	1.6
Real GDP growth	3.0	0.3	1.6	0.6	0.9	1.1	1.6	0.8	1.0
Gross financing needs	8.2	7.1	6.6	3.4	2.6	2.0	7.3	3.6	4.5
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	33.7	32.9	32.4	23.1	19.6	16.6	33.0	23.2	25.7
Exchange rate depreciation	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Gross financing needs	8.2	6.8	6.8	3.0	1.9	1.3	7.3	3.2	4.2
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	33.7	33.0	32.5	24.2	21.0	18.3	33.0	24.3	26.5
Implicit interest rate (nominal)	1.6	1.8	1.8	2.0	2.1	2.1	1.7	2.0	1.9
Real GDP growth	3.0	-0.5	0.8	0.1	0.4	0.6	1.1	0.4	0.6
Gross financing needs	8.2	6.8	6.9	3.4	2.4	1.7	7.3	3.5	4.4

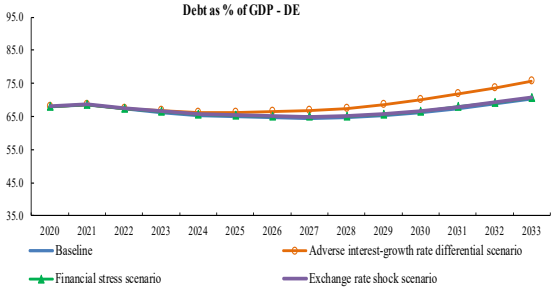
Germany

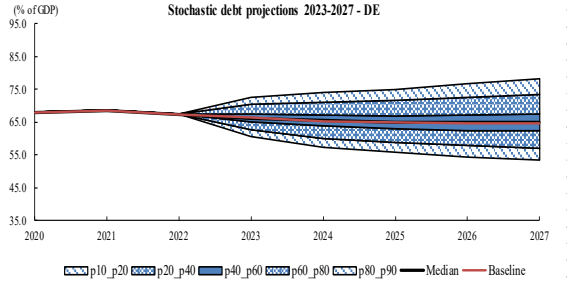
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

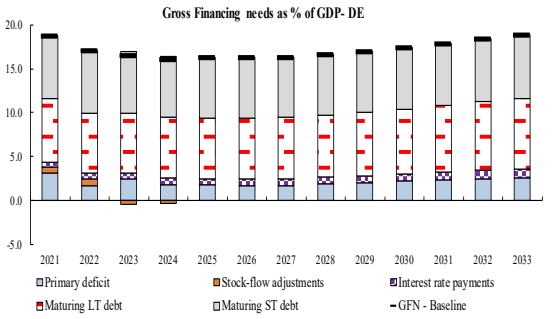
DE - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**68.0**	**68.6**	**67.4**	**66.3**	**65.4**	**65.0**	**64.7**	**64.5**	**64.8**	**65.3**	**66.2**	**67.4**	**68.8**	**70.3**
Changes in the ratio (-1+2+3)	*9.1*	*0.6*	*-1.2*	*-1.1*	*-0.9*	*-0.4*	*-0.3*	*-0.2*	*0.3*	*0.5*	*0.9*	*1.2*	*1.4*	*1.5*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-3.7**	**-3.2**	**-1.7**	**-2.4**	**-1.8**	**-1.8**	**-1.7**	**-1.7**	**-1.9**	**-2.0**	**-2.2**	**-2.4**	**-2.5**	**-2.6**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-2.3***	***-2.6***	***-1.4***	***-1.7***	***-1.4***	***-1.5***	***-1.6***	***-1.7***	***-1.9***	***-2.0***	***-2.2***	***-2.4***	***-2.5***	***-2.6***
(1.1.1) Structural primary balance (bef. CoA)	*-2.3*	*-2.6*	*-1.4*	*-1.7*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.3*	*0.4*	*0.6*	*0.8*	*1.0*	*1.2*	*1.4*	*1.5*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*	*0.3*
(1.2) Cyclical component	***-1.4***	***-0.5***	***0.0***	***-0.7***	***-0.4***	***-0.3***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***-0.1***	***-0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.8**	**-3.1**	**-3.9**	**-3.2**	**-2.4**	**-2.2**	**-2.0**	**-1.9**	**-1.6**	**-1.5**	**-1.3**	**-1.1**	**-1.0**	**-1.1**
(2.1) Interest expenditure	*0.6*	*0.6*	*0.6*	*0.7*	*0.8*	*0.7*	*0.7*	*0.7*	*0.8*	*0.8*	*0.8*	*0.9*	*1.0*	*1.0*
(2.2) Growth effect	*2.2*	*-1.7*	*-1.0*	*0.4*	*-0.9*	*-0.7*	*-0.7*	*-0.7*	*-0.5*	*-0.5*	*-0.4*	*-0.3*	*-0.4*	*-0.5*
(2.3) Inflation effect	*-1.0*	*-2.0*	*-3.5*	*-4.3*	*-2.3*	*-2.2*	*-2.1*	*-2.0*	*-1.9*	*-1.8*	*-1.7*	*-1.7*	*-1.6*	*-1.6*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**3.6**	**0.6**	**1.0**	**-0.4**	**-0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*3.6*	*0.7*	*0.8*	*-0.4*	*-0.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*-0.1*	*0.2*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-2.9	-3.1	-2.0	-2.4	-2.2	-2.3	-2.3	-2.5	-2.7	-2.8	-3.0	-3.2	-3.4	-3.6
Gross financing needs	20.1	18.7	17.1	16.5	16.1	16.3	16.3	16.3	16.6	16.9	17.3	17.9	18.4	18.9

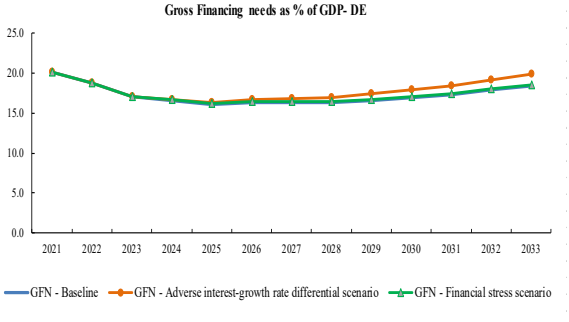












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM
		Debt level (2033), % GDP	70.3	53.1	70.3	75.8	70.8				
		Debt peak year	2033	2022	2033	2033	2033				
		Fiscal consolidation space	88%	53%	89%	88%	88%				
		Probability of debt ratio exceeding in 2027 its 2022 level						40%			
		Difference between 90th and 10th percentiles (pps. GDP)						24.7			

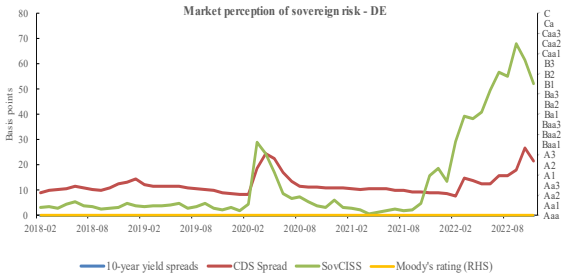
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.2**	**0.2**	**0.5**
Fiscal sub-index	0.4	0.2	0.4
Financial competitiveness sub-index	0.1	0.1	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.6**	**3.6**	**3.6**	**5.7**
of which Initial Budgetary position	0.5	1.5	1.6	1.6
Ageing costs	2.1	2.1	2.0	4.1
of which Pensions	*1.0*	*1.0*	*1.0*	*1.0*
Health care	*0.4*	*0.4*	*0.3*	*1.1*
Long-term care	*0.2*	*0.1*	*0.2*	*1.5*
Others	*0.5*	*0.5*	*0.5*	*0.5*
Required structural primary balance related to S2	**2.2**	**2.1**	**2.2**	**4.2**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.7**	**2.8**	**3.9**
of which *Initial budgetary position*	*0.8*	*1.0*	*0.8*
Debt requirement	*0.1*	*0.1*	*0.1*
Ageing costs	*1.7*	*1.7*	*2.9*
Required structural primary balance related to S1	**1.2**	**1.3**	**2.4**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	0.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - DE (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	12.3	2.7	41.5

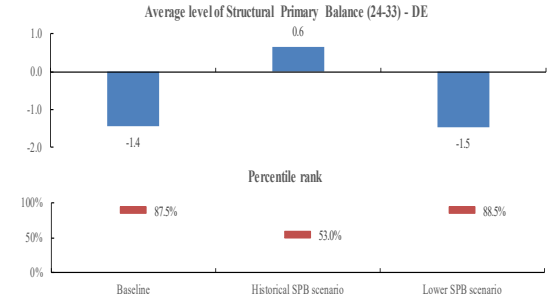
Net International Investment Position (IIP) - DE (2021)	Net IIP (% GDP):
	70.7

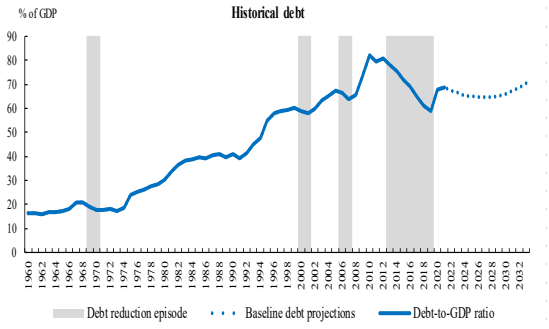
5. Risks related to government's contingent liabilities

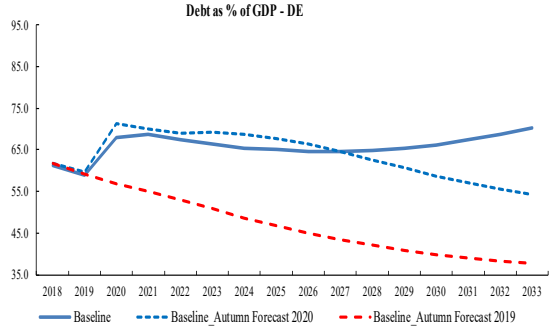
General government contingent liabilities		DE						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		14.3	13.4	12.8	13.1	18.4	17.3	7.5
of which One-off guarantees		*14.3*	*13.4*	*12.8*	*13.1*	*18.4*	*17.3*	*6.4*
Standardised guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.2	0.2	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.5	0.3	0.1	0.1	0.1	0.0	0.9

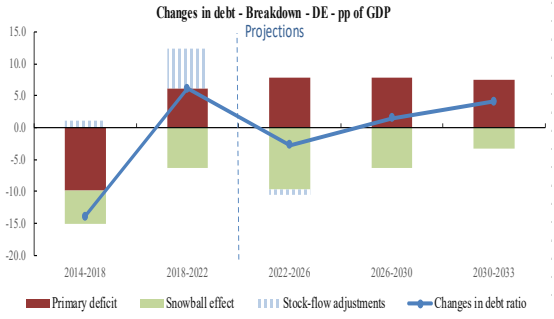
Government's contingent liability risks from banking sector - DE (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	5.7	11.5	123.8	1.0	-0.1	35.3	0.01%	0.12%

6. Realism of baseline assumptions









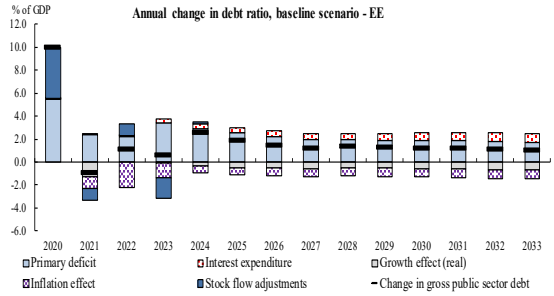
7. Underlying macro-fiscal assumptions

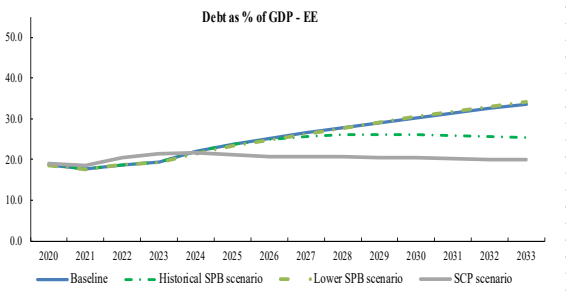
Macro-fiscal assumptions, Germany	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	67.4	66.3	65.4	65.3	67.4	70.3	66.4	66.3	66.3
Primary balance	-1.7	-2.4	-1.8	-2.0	-2.4	-2.6	-2.0	-2.1	-2.1
Structural primary balance (before CoA)	-1.4	-1.7	-1.4	-1.4	-1.4	-1.4	-1.5	-1.4	-1.5
Real GDP growth	1.6	-0.6	1.4	0.8	0.5	0.8	0.8	0.8	0.8
Potential GDP growth	0.7	0.7	0.8	0.8	0.5	0.8	0.7	0.7	0.7
Inflation rate	5.3	6.8	3.6	2.9	2.6	2.4	5.2	2.9	3.5
Implicit interest rate (nominal)	1.0	1.1	1.2	1.3	1.4	1.5	1.1	1.3	1.2
Gross financing needs	17.1	16.5	16.1	16.9	17.9	18.9	16.6	17.2	17.1
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	69.2	68.1	66.9	56.1	53.4	51.4	68.1	58.6	61.3
Primary balance	-2.0	-0.1	0.4	0.2	-0.1	-0.3	-0.6	0.3	-0.5
Structural primary balance (before CoA)	-2.1	-0.4	0.9	0.9	0.9	0.9	-0.5	0.9	0.1
Real GDP growth	4.6	1.7	-0.1	0.9	0.8	0.9	2.1	1.0	1.5
Gross financing needs	14.9	13.8	12.5	10.5	10.3	10.2	13.7	11.0	12.2
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	67.4	66.3	65.4	58.9	55.4	53.1	66.4	59.0	60.8
Primary balance	-1.7	-2.4	-1.8	0.3	0.4	0.2	-2.0	-0.1	-0.6
Structural primary balance (before CoA)	-1.4	-1.7	-1.4	1.3	1.3	1.3	-1.5	0.9	0.3
Real GDP growth	1.6	-0.6	1.4	1.2	1.0	0.8	0.8	0.8	0.8
Gross financing needs	17.1	16.5	16.1	13.7	12.9	12.7	16.6	13.9	14.6
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	67.4	66.4	65.6	65.7	67.8	70.8	66.5	66.7	66.7
Implicit interest rate (nominal)	1.0	1.3	1.3	1.3	1.4	1.5	1.2	1.4	1.3
Gross financing needs	17.1	16.7	16.2	17.0	18.0	19.0	16.7	17.3	17.2
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	67.4	66.2	65.3	65.3	67.4	70.3	66.3	66.3	66.3
Primary balance	-1.7	-2.2	-1.9	-2.1	-2.4	-2.6	-1.9	-2.1	-2.1
Structural primary balance (before CoA)	-1.4	-1.4	-1.5	-1.5	-1.5	-1.5	-1.4	-1.5	-1.5
Real GDP growth	1.6	-0.8	1.5	0.8	0.5	0.8	0.7	0.8	0.8
Gross financing needs	17.1	16.3	16.1	16.9	17.9	18.9	16.5	17.2	17.0
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	67.4	66.5	65.8	65.7	67.8	70.6	66.6	66.7	66.7
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	17.1	16.6	16.2	17.0	17.9	19.0	16.6	17.3	17.1
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	67.4	66.7	66.2	68.5	71.7	75.8	66.8	69.6	68.9
Implicit interest rate (nominal)	1.0	1.2	1.4	1.6	1.8	1.9	1.2	1.7	1.5
Real GDP growth	1.6	-1.1	0.9	0.3	0.0	0.3	0.4	0.3	0.3
Gross financing needs	17.1	16.7	16.4	17.9	19.1	20.4	16.7	18.2	17.8

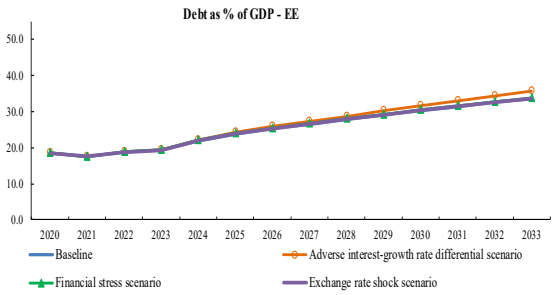
Estonia

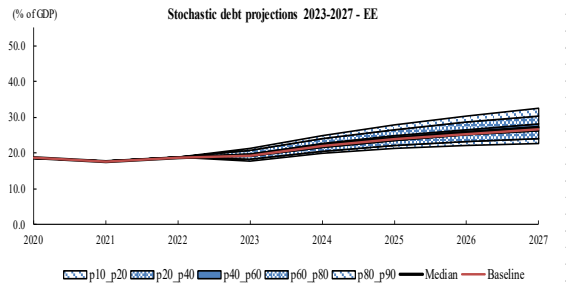
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

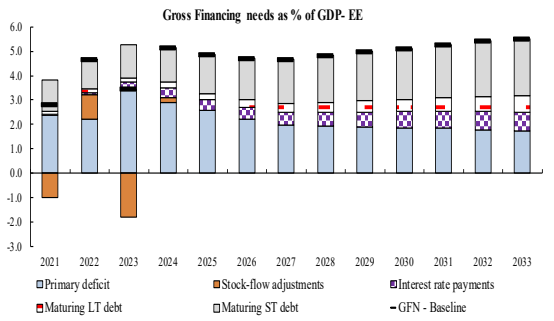
EE - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**18.5**	**17.6**	**18.7**	**19.3**	**21.9**	**23.8**	**25.3**	**26.5**	**27.8**	**29.1**	**30.3**	**31.4**	**32.5**	**33.6**
Changes in the ratio (-1+2+3)	*10.0*	*-0.9*	*1.1*	*0.6*	*2.6*	*1.9*	*1.5*	*1.2*	*1.3*	*1.3*	*1.2*	*1.2*	*1.1*	*1.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-5.4**	**-2.4**	**-2.2**	**-3.4**	**-2.9**	**-2.6**	**-2.2**	**-2.0**	**-1.9**	**-1.9**	**-1.9**	**-1.8**	**-1.8**	**-1.7**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-3.9***	***-4.1***	***-1.7***	***-2.2***	***-1.9***	***-1.9***	***-1.9***	***-2.0***	***-1.9***	***-1.9***	***-1.9***	***-1.8***	***-1.8***	***-1.7***
(1.1.1) Structural primary balance (bef. CoA)	*-3.9*	*-4.1*	*-1.7*	*-2.2*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*	*-1.9*
(1.1.2) Cost of ageing					*0.0*	*0.0*	*-0.1*	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.2*	*-0.2*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-1.5***	***0.7***	***-0.7***	***-1.2***	***-1.0***	***-0.6***	***-0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***1.0***	***0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**0.1**	**-2.3**	**-2.1**	**-1.0**	**-0.5**	**-0.7**	**-0.7**	**-0.7**	**-0.6**	**-0.6**	**-0.7**	**-0.7**	**-0.7**	**-0.7**
(2.1) Interest expenditure	*0.0*	*0.0*	*0.1*	*0.3*	*0.4*	*0.5*	*0.5*	*0.5*	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*	*0.8*
(2.2) Growth effect	*0.0*	*-1.3*	*0.0*	*-0.1*	*-0.4*	*-0.5*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.6*	*-0.6*	*-0.7*	*-0.7*
(2.3) Inflation effect	*0.0*	*-1.0*	*-2.2*	*-1.2*	*-0.6*	*-0.6*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.8*	*-0.8*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**4.4**	**-1.0**	**1.0**	**-1.8**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*4.4*	*-1.0*	*1.0*	*-1.8*	*0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-4.0	-4.1	-1.8	-2.5	-2.3	-2.4	-2.4	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	-2.5
Gross financing needs	10.5	2.8	4.6	3.5	5.1	4.9	4.7	4.7	4.8	5.0	5.1	5.3	5.4	5.5

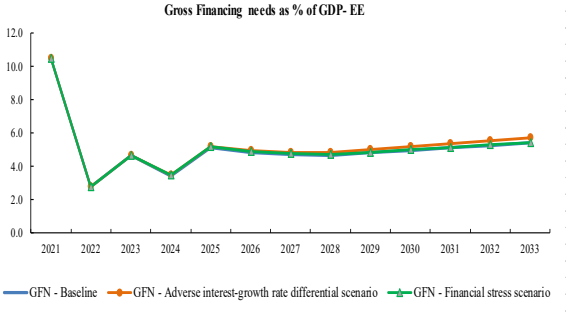












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
		Debt level (2033), % GDP	33.6	25.4	34.1	35.7	33.8				
		Debt peak year	2033	2029	2033	2033	2033				
		Fiscal consolidation space	94%	77%	94%	94%	94%				
		Probability of debt ratio exceeding in 2027 its 2022 level						100%			
		Difference between 90th and 10th percentiles (pps. GDP)						9.7			

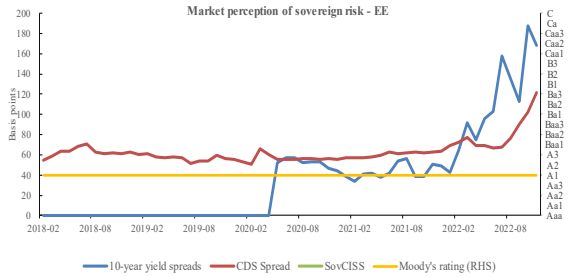
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.5**	**0.1**	**0.5**
Fiscal sub-index	0.3	0.1	0.4
Financial competitiveness sub-index	0.6	0.1	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**0.5**	**0.9**	**1.1**	**6.3**
of which Initial Budgetary position	1.8	2.0	2.0	2.0
Ageing costs	-1.3	-1.1	-0.9	4.2
of which Pensions	*-2.0*	*-1.7*	*-1.4*	*-1.6*
Health care	*0.7*	*0.6*	*0.6*	*1.7*
Long-term care	*0.3*	*0.3*	*0.2*	*4.4*
Others	*-0.3*	*-0.3*	*-0.3*	*-0.3*
Required structural primary balance related to S2	**-1.3**	**-1.0**	**-0.8**	**4.3**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**0.4**	**0.6**	**2.8**
of which *Initial budgetary position*	*1.8*	*1.8*	*1.8*
Debt requirement	*-0.9*	*-0.8*	*-0.9*
Ageing costs	*-0.5*	*-0.4*	*1.9*
Required structural primary balance related to S1	**-1.6**	**-1.3**	**0.9**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	168.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - EE (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	8.6	0.0	69.7

Net International Investment Position (IIP) - EE (2021)	Net IIP (% GDP):
	-13.0

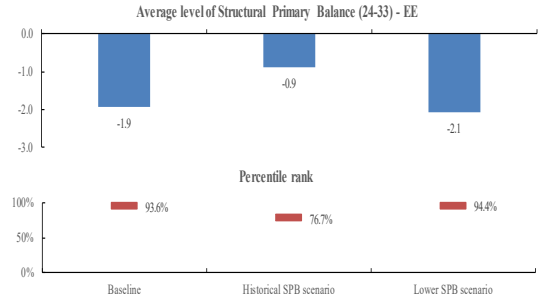
5. Risks related to government's contingent liabilities

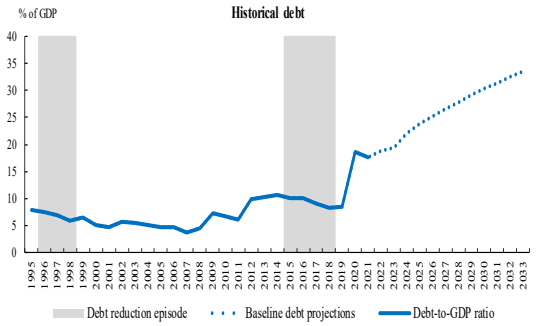
General government contingent liabilities	EE						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	1.8	1.7	1.6	1.4	2.0	1.7	7.5
of which One-off guarantees	*0.0*	*0.0*	*0.0*	*0.0*	*0.2*	*0.2*	*6.4*
Standardised guarantees	*1.8*	*1.7*	*1.5*	*1.4*	*1.8*	*1.5*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.0*	*0.3*

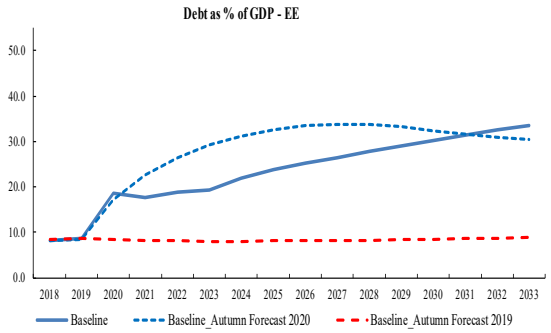
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9
	Securities issued under liquidity schemes	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Special purpose entity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Total	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9

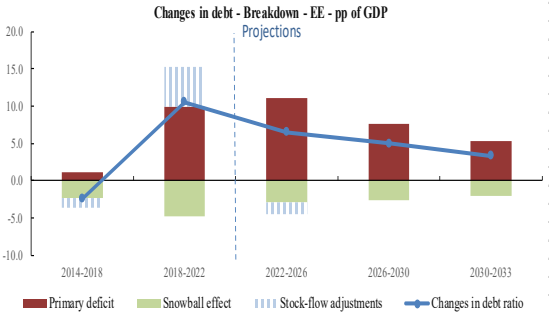
Government's contingent liability risks from banking sector - EE (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	6.5	15.1	99.8	0.7	-0.4	29.5	0.00%	0.02%

6. Realism of baseline assumptions









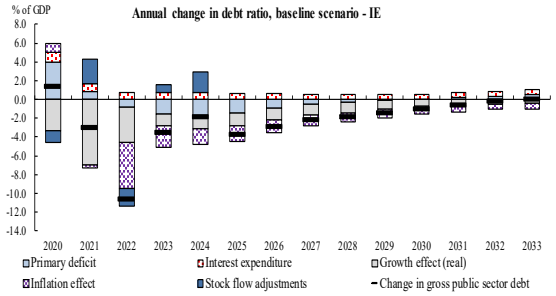
7. Underlying macro-fiscal assumptions

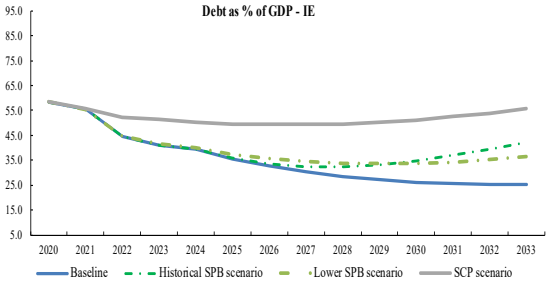
Macro-fiscal assumptions, Estonia	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	18.7	19.3	21.9	29.1	31.4	33.6	20.0	28.9	26.7
Primary balance	-2.2	-3.4	-2.9	-1.9	-1.8	-1.7	-2.9	-2.0	-2.2
Structural primary balance (before CoA)	-1.7	-2.2	-1.9	-1.9	-1.9	-1.9	-2.0	-1.9	-1.9
Real GDP growth	-0.1	0.7	2.1	2.0	2.2	2.2	0.9	2.2	1.9
Potential GDP growth	2.8	1.7	1.6	2.0	2.2	2.2	2.0	2.0	2.0
Inflation rate	14.3	6.9	3.0	2.6	2.5	2.4	8.1	2.6	4.0
Implicit interest rate (nominal)	0.5	1.8	2.2	2.3	2.4	2.5	1.5	2.3	2.1
Gross financing needs	4.6	3.5	5.1	5.0	5.3	5.5	4.4	5.0	4.9
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	20.4	21.4	21.6	20.5	20.2	19.9	21.1	20.6	20.5
Primary balance	-2.5	-2.1	-1.2	-0.8	-0.7	-0.6	-1.9	-0.8	-1.2
Structural primary balance (before CoA)	-2.3	-1.8	-1.0	-1.0	-1.0	-1.0	-1.7	-1.0	-1.4
Real GDP growth	3.7	3.5	3.0	2.9	2.9	2.5	3.4	3.0	3.6
Gross financing needs	4.1	3.3	2.5	2.3	2.3	2.2	3.3	2.2	2.5
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	18.7	19.3	21.9	26.1	25.8	25.4	20.0	25.4	24.1
Primary balance	-2.2	-3.4	-2.9	-0.8	-0.4	-0.3	-2.9	-1.0	-1.5
Structural primary balance (before CoA)	-1.7	-2.2	-1.9	-0.5	-0.5	-0.5	-2.0	-0.8	-1.1
Real GDP growth	-0.1	0.7	2.1	2.4	2.5	2.2	0.9	2.2	1.9
Gross financing needs	4.6	3.5	5.1	3.7	3.4	3.3	4.4	3.8	3.9
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	18.7	19.4	22.0	29.3	31.6	33.8	20.0	29.1	26.8
Implicit interest rate (nominal)	0.5	2.1	2.4	2.4	2.4	2.6	1.7	2.4	2.2
Gross financing needs	4.6	3.5	5.2	5.0	5.3	5.5	4.4	5.1	4.9
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	18.7	19.2	21.4	29.1	31.7	34.1	19.8	28.9	26.6
Primary balance	-2.2	-3.2	-2.8	-2.0	-2.0	-1.9	-2.7	-2.1	-2.2
Structural primary balance (before CoA)	-1.7	-1.9	-2.1	-2.1	-2.1	-2.1	-1.9	-2.1	-2.0
Real GDP growth	-0.1	0.4	2.9	2.0	2.2	2.2	1.1	2.2	1.9
Gross financing needs	4.6	3.1	5.0	5.1	5.4	5.7	4.2	5.1	4.9
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	18.7	19.3	21.9	29.1	31.4	33.6	20.0	28.9	26.7
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	4.6	3.5	5.1	5.0	5.3	5.5	4.4	5.0	4.9
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	18.7	19.4	22.1	30.2	33.0	35.7	20.1	30.1	27.6
Implicit interest rate (nominal)	0.5	2.0	2.4	2.6	2.7	2.9	1.6	2.6	2.4
Real GDP growth	-0.1	0.2	1.6	1.5	1.7	1.7	0.5	1.7	1.4
Gross financing needs	4.6	3.5	5.2	5.2	5.5	5.8	4.4	5.2	5.0

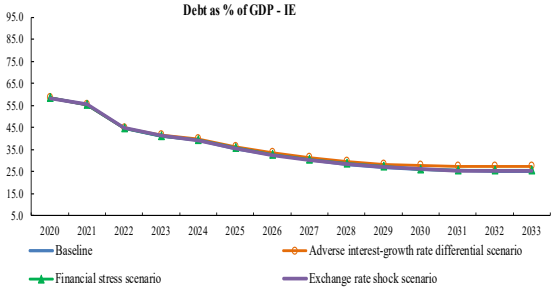
Ireland

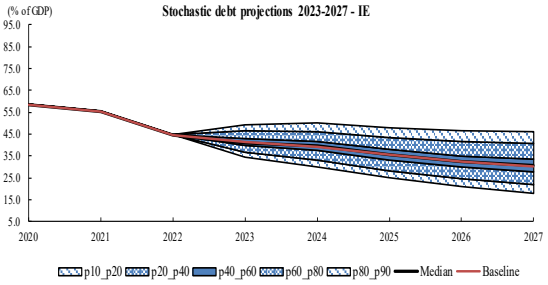
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

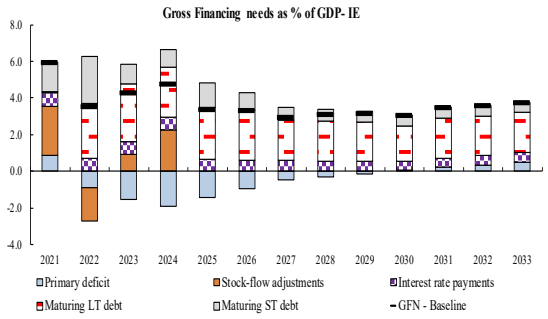
IE - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**58.4**	**55.4**	**44.7**	**41.2**	**39.3**	**35.5**	**32.6**	**30.4**	**28.5**	**27.1**	**26.1**	**25.5**	**25.3**	**25.3**
Changes in the ratio (-1+2+3)	*1.4*	*-3.0*	*-10.6*	*-3.5*	*-1.9*	*-3.8*	*-3.0*	*-2.2*	*-1.9*	*-1.4*	*-1.0*	*-0.6*	*-0.2*	*0.0*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-4.0**	**-0.9**	**0.9**	**1.5**	**1.9**	**1.4**	**1.0**	**0.5**	**0.3**	**0.1**	**0.0**	**-0.2**	**-0.4**	**-0.5**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-1.2***	***-2.1***	***-1.7***	***-0.1***	***1.0***	***0.8***	***0.7***	***0.5***	***0.3***	***0.1***	***0.0***	***-0.2***	***-0.4***	***-0.5***
(1.1.1) Structural primary balance (bef. CoA)	*-1.2*	*-2.1*	*-1.7*	*-0.1*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
(1.1.2) Cost of ageing					*0.0*	*0.2*	*0.3*	*0.5*	*0.7*	*0.9*	*1.1*	*1.2*	*1.4*	*1.5*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-2.8***	***1.2***	***2.5***	***1.6***	***0.9***	***0.6***	***0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**-1.4**	**-6.6**	**-7.9**	**-2.9**	**-2.2**	**-2.3**	**-2.0**	**-1.7**	**-1.6**	**-1.3**	**-1.0**	**-0.8**	**-0.5**	**-0.5**
(2.1) Interest expenditure	*1.0*	*0.8*	*0.7*	*0.7*	*0.7*	*0.7*	*0.6*	*0.6*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
(2.2) Growth effect	*-3.4*	*-6.9*	*-3.7*	*-1.3*	*-1.2*	*-1.4*	*-1.3*	*-1.1*	*-1.1*	*-0.9*	*-0.8*	*-0.6*	*-0.5*	*-0.5*
(2.3) Inflation effect	*0.9*	*-0.4*	*-4.9*	*-2.3*	*-1.7*	*-1.6*	*-1.3*	*-1.2*	*-1.0*	*-0.9*	*-0.8*	*-0.7*	*-0.6*	*-0.6*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**-1.2**	**2.6**	**-1.9**	**0.9**	**2.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-1.2*	*2.6*	*-1.9*	*0.9*	*2.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-2.2	-2.9	-2.4	-0.8	0.3	0.2	0.0	-0.1	-0.2	-0.4	-0.6	-0.7	-0.9	-1.0
Gross financing needs	12.1	5.9	3.6	4.3	4.8	3.4	3.3	3.0	3.1	3.2	3.1	3.5	3.6	3.8

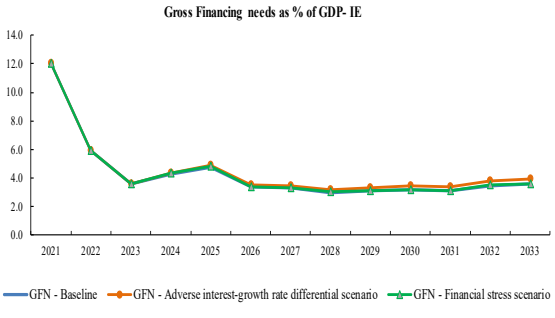












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	LOW	LOW	LOW	LOW	MEDIUM	LOW	MEDIUM
		Debt level (2033), % GDP	25.3	42.0	36.3	27.5	25.4				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	60%	80%	70%	60%	60%				
		Probability of debt ratio exceeding in 2027 its 2022 level						12%			
		Difference between 90th and 10th percentiles (pps. GDP)						28.1			

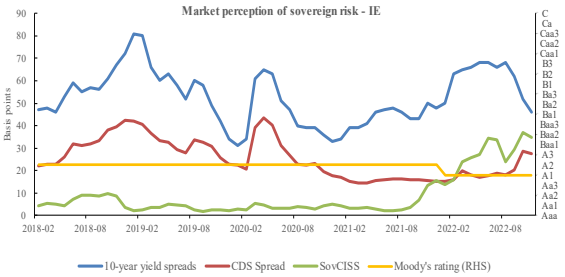
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.7**	**0.2**	**0.5**
Fiscal sub-index	0.8	0.0	0.4
Financial competitiveness sub-index	0.7	0.4	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**5.7**	**4.0**	**3.9**	**6.1**
of which Initial Budgetary position	0.6	-0.9	-0.8	-0.9
Ageing costs	5.0	4.9	4.8	7.0
of which Pensions	*2.3*	*2.3*	*2.3*	*2.3*
Health care	*1.2*	*1.2*	*1.1*	*1.7*
Long-term care	*1.6*	*1.6*	*1.5*	*3.1*
Others	*-0.1*	*-0.1*	*-0.1*	*-0.1*
Required structural primary balance related to S2	**5.2**	**5.1**	**5.0**	**7.1**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**1.6**	**1.6**	**2.7**
of which *Initial budgetary position*	*-1.4*	*-1.4*	*-1.4*
Debt requirement	*-0.5*	*-0.5*	*-0.5*
Ageing costs	*3.5*	*3.5*	*4.5*
Required structural primary balance related to S1	**2.6**	**2.7**	**3.7**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	46.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - IE (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	8.0	0.0	53.6

Net International Investment Position (IIP) - IE (2021)	Net IIP (% GDP):
	-145.5

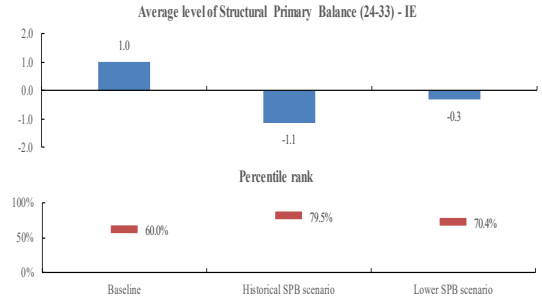
5. Risks related to government's contingent liabilities

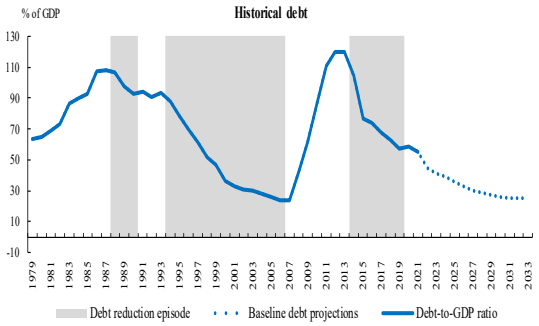
General government contingent liabilities	IE						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	1.5	0.2	0.0	0.0	0.2	0.3	7.5
of which One-off guarantees	*1.5*	*0.1*	*0.0*	*0.0*	*0.2*	*0.2*	*6.4*
Standardised guarantees	*0.0*	*0.1*	*0.0*	*0.0*	*0.0*	*0.1*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.7*	*0.8*	*0.7*	*0.7*	*0.7*	*0.6*	*0.3*

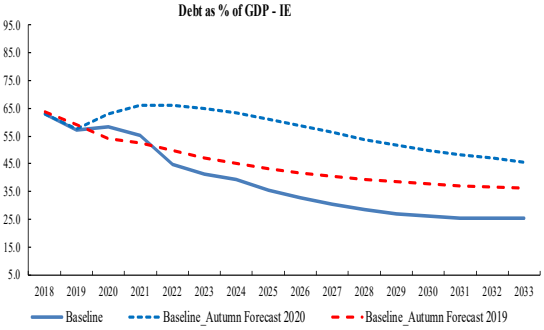
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.5	0.1	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	1.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	1.5	0.1	0.0	0.0	0.0	0.0	0.9

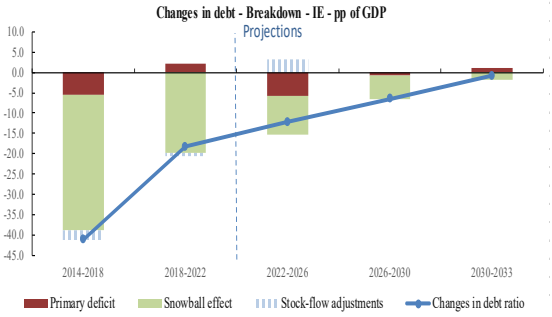
Government's contingent liability risks from banking sector - IE (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	2.6	8.3	72.5	2.4	-1.0	30.5	0.06%	0.65%

6. Realism of baseline assumptions









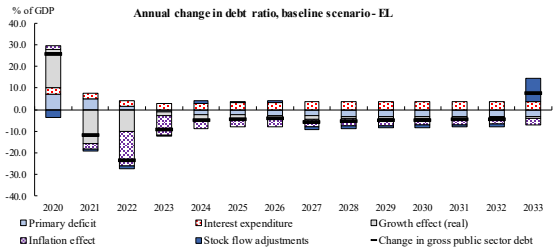
7. Underlying macro-fiscal assumptions

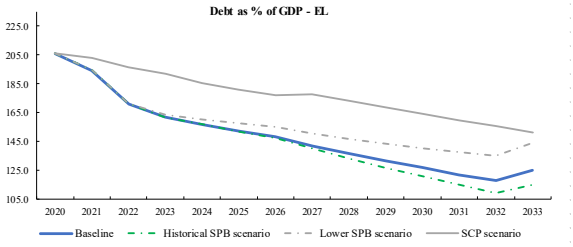
Macro-fiscal assumptions, Ireland	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.7	41.2	39.3	27.1	25.5	25.3	41.7	28.5	31.8
Primary balance	0.9	1.5	1.9	0.1	-0.2	-0.5	1.4	0.2	0.5
Structural primary balance (before CoA)	-1.7	-0.1	1.0	1.0	1.0	1.0	-0.3	1.0	0.7
Real GDP growth	7.9	3.2	3.1	3.5	2.5	1.9	4.7	3.1	3.5
Potential GDP growth	5.3	4.9	4.5	3.5	2.5	1.9	4.9	3.3	3.7
Inflation rate	9.8	5.4	4.4	3.2	2.7	2.4	6.5	3.2	4.0
Implicit interest rate (nominal)	1.5	1.7	1.8	2.0	2.1	2.3	1.7	2.0	1.9
Gross financing needs	3.6	4.3	4.8	3.2	3.5	3.8	4.2	3.3	3.5
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	52.3	51.4	50.3	50.2	52.5	55.6	51.3	50.7	51.3
Primary balance	-1.0	-0.3	-0.8	-2.5	-2.9	-3.1	-0.7	-2.2	-1.9
Structural primary balance (before CoA)	-2.4	-1.7	-1.5	-1.5	-1.5	-1.5	-1.9	-1.5	-1.8
Real GDP growth	5.1	5.0	3.8	3.3	2.3	2.0	4.6	3.3	4.6
Gross financing needs	4.4	6.5	5.6	8.0	9.0	9.7	5.5	7.6	7.1
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.7	41.2	39.3	33.3	37.0	42.0	41.7	35.6	37.2
Primary balance	0.9	1.5	1.9	-2.2	-3.1	-3.4	1.4	-1.8	-1.0
Structural primary balance (before CoA)	-1.7	-0.1	1.0	-1.8	-1.8	-1.8	-0.3	-1.4	-1.1
Real GDP growth	7.9	3.2	3.1	3.0	2.0	1.9	4.7	3.2	3.5
Gross financing needs	3.6	4.3	4.8	6.0	7.5	8.6	4.2	6.0	5.5
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.7	41.3	39.4	27.2	25.6	25.4	41.8	28.6	31.9
Implicit interest rate (nominal)	1.5	1.9	1.9	2.0	2.1	2.3	1.8	2.0	2.0
Gross financing needs	3.6	4.4	4.8	3.2	3.5	3.8	4.2	3.3	3.6
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.7	41.5	40.1	33.6	34.2	36.3	42.1	34.9	36.7
Primary balance	0.9	1.0	1.2	-1.2	-1.5	-1.8	1.0	-1.0	-0.5
Structural primary balance (before CoA)	-1.7	-1.0	-0.3	-0.3	-0.3	-0.3	-1.0	-0.3	-0.5
Real GDP growth	7.9	3.8	3.6	3.5	2.5	1.9	5.1	3.0	3.5
Gross financing needs	3.6	5.1	5.5	5.2	5.8	6.5	4.7	5.2	5.1
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.7	41.2	39.3	27.1	25.5	25.3	41.7	28.5	31.8
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	3.6	4.3	4.8	3.2	3.5	3.8	4.2	3.3	3.5
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.7	41.4	39.8	28.5	27.3	27.5	42.0	29.9	32.9
Implicit interest rate (nominal)	1.5	1.8	2.0	2.2	2.4	2.6	1.8	2.3	2.1
Real GDP growth	7.9	2.7	2.6	3.0	2.0	1.4	4.4	2.6	3.1
Gross financing needs	3.6	4.3	4.9	3.4	3.8	4.2	4.3	3.6	3.7

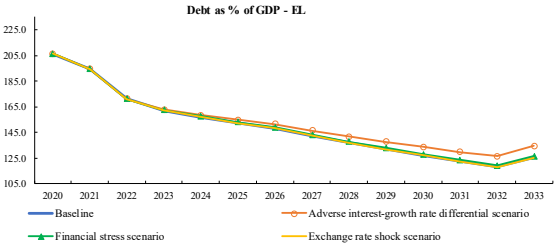
Greece

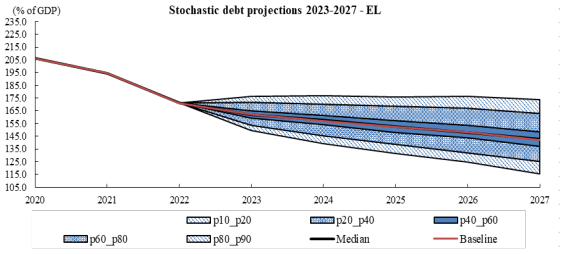
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

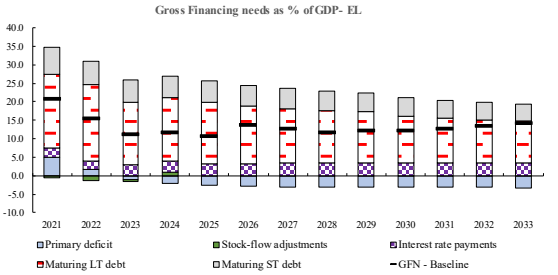
EL - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**206.3**	**194.5**	**171.1**	**161.9**	**156.9**	**152.4**	**148.3**	**142.3**	**136.8**	**131.8**	**127.0**	**122.4**	**118.0**	**125.4**
Changes in the ratio (-1+2+3)	*25.7*	*-11.7*	*-23.4*	*-9.2*	*-5.0*	*-4.6*	*-4.1*	*-6.0*	*-5.5*	*-5.0*	*-4.8*	*-4.6*	*-4.3*	*7.3*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-6.9**	**-5.0**	**-1.6**	**1.1**	**2.2**	**2.5**	**2.8**	**3.0**	**3.1**	**3.1**	**3.1**	**3.1**	**3.1**	**3.2**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***0.1***	***-2.1***	***-0.9***	***1.8***	***2.5***	***2.2***	***2.0***	***1.9***	***1.8***	***1.8***	***1.7***	***1.7***	***1.8***	***1.5***
(1.1.1) Structural primary balance (bef. CoA)	*0.1*	*-2.1*	*-0.9*	*1.8*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*	*2.5*
(1.1.2) Cost of ageing					*0.0*	*0.2*	*0.4*	*0.5*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.8*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.2*
(1.2) Cyclical component	***-7.6***	***3.7***	***0.9***	***0.7***	***0.3***	***0.2***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.6***	***-0.8***	***-0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**22.6**	**-16.0**	**-23.7**	**-7.7**	**-3.7**	**-2.3**	**-2.0**	**-1.7**	**-1.0**	**-0.7**	**-0.5**	**-0.2**	**0.0**	**-0.2**
(2.1) Interest expenditure	*3.0*	*2.5*	*2.4*	*3.0*	*3.0*	*3.1*	*3.3*	*3.5*	*3.6*	*3.5*	*3.6*	*3.6*	*3.7*	*3.6*
(2.2) Growth effect	*18.0*	*-15.8*	*-10.0*	*-1.6*	*-3.0*	*-1.8*	*-1.8*	*-1.7*	*-1.2*	*-1.1*	*-0.9*	*-0.8*	*-0.7*	*-1.0*
(2.3) Inflation effect	*1.6*	*-2.6*	*-16.1*	*-9.1*	*-3.7*	*-3.6*	*-3.5*	*-3.5*	*-3.3*	*-3.2*	*-3.1*	*-3.0*	*-2.9*	*-2.8*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**-3.9**	**-0.7**	**-1.3**	**-0.4**	**1.0**	**0.3**	**0.6**	**-1.3**	**-1.4**	**-1.2**	**-1.3**	**-1.3**	**-1.3**	**10.7**
(3.1) Base	*-3.9*	*-0.7*	*-1.3*	*-0.4*	*1.0*	*0.3*	*0.6*	*-1.3*	*-1.4*	*-1.2*	*-1.3*	*-1.3*	*-1.3*	*10.7*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-2.9	-4.6	-3.4	-1.1	-0.5	-0.6	-0.8	-1.0	-1.1	-1.1	-1.1	-1.1	-1.2	-1.1
Gross financing needs	19.7	20.6	15.3	11.0	11.6	10.5	13.4	12.5	11.6	12.1	12.1	12.4	13.3	14.1

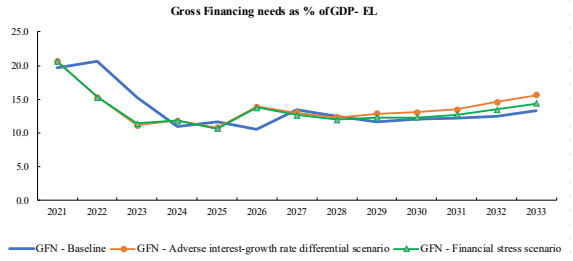












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	HIGH	Overall	HIGH	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW
		Debt level (2033), % GDP	125.4	115.4	144.5	134.5	126.5				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	24%	21%	39%	24%	24%				
		Probability of debt ratio exceeding in 2027 its 2022 level						12%			
		Difference between 90th and 10th percentiles (pps. GDP)						58.4			

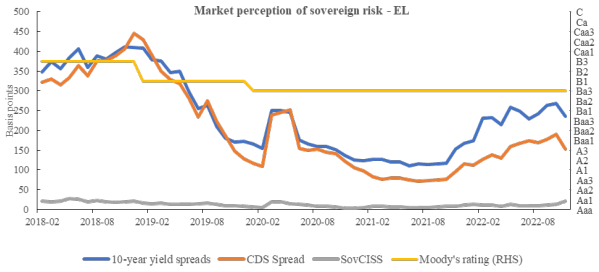
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.76**	**0.41**	**0.46**
Fiscal sub-index	0.87	0.33	0.36
Financial competitiveness sub-index	0.72	0.45	0.49

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**-2.2**	**-3.6**	**-2.6**	**-0.8**
of which Initial Budgetary position	0.3	-1.7	-1.3	-1.7
Ageing costs	-2.5	-1.9	-1.3	0.9
of which Pensions	*-2.6*	*-2.1*	*-1.4*	*-2.1*
Health care	*0.7*	*0.6*	*0.6*	*1.4*
Long-term care	*0.0*	*0.0*	*0.0*	*2.1*
Others	*-0.6*	*-0.5*	*-0.5*	*-0.5*
Required structural primary balance related to S2	**-1.8**	**-1.1**	**-0.1**	**1.7**

S1 indicator		Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index		**-1.7**	**-1.1**	**-0.5**
of which *Initial budgetary position*		*-2.6*	*-2.3*	*-2.7*
Debt requirement		*2.1*	*1.9*	*2.1*
Ageing costs		*-1.1*	*-0.8*	*0.1*
Required structural primary balance related to S1		**0.8**	**1.4**	**2.0**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	235.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - EL (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	5.5	0.3	78.9

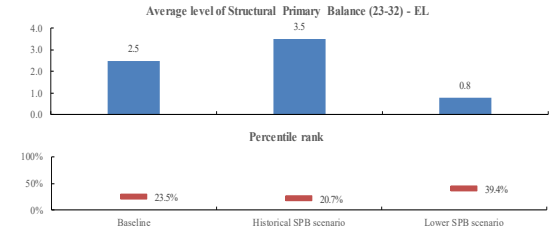
Net International Investment Position (IIP) - EL (2021)	Net IIP (% GDP):
	-171.9

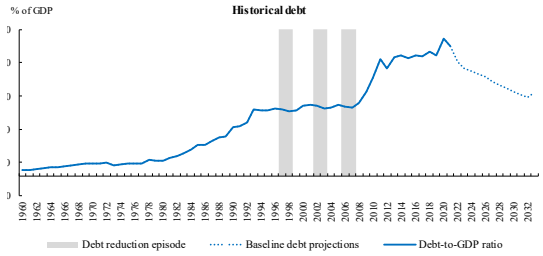
5. Risks related to government's contingent liabilities

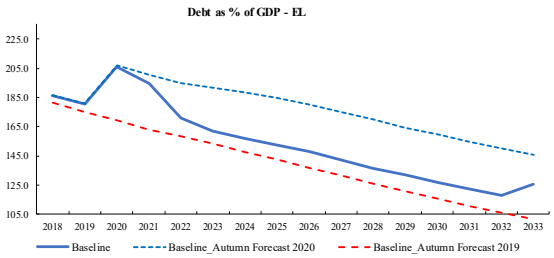
General government contingent liabilities		EL						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		6.5	4.4	4.1	4.1	6.3	14.4	7.5
of which One-off guarantees		*6.5*	*4.3*	*4.1*	*4.1*	*5.4*	*13.4*	*6.4*
Standardised guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*1.0*	*1.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.2*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	2.2	0.2	0.2	0.2	1.6	10.2	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	2.2	0.2	0.2	0.2	1.6	10.2	0.9

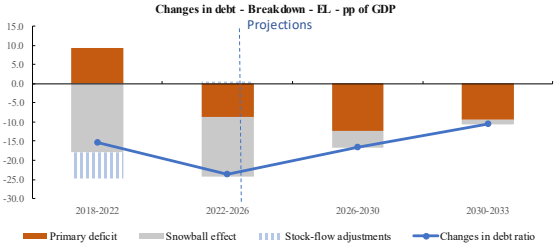
Government's contingent liability risks from banking sector - EL (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	-0.1	7.5	61.8	5.2	-9.6	41.8	0.11%	1.50%

6. Realism of baseline assumptions









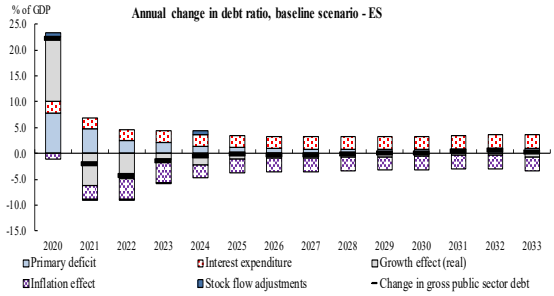
7. Underlying macro-fiscal assumptions

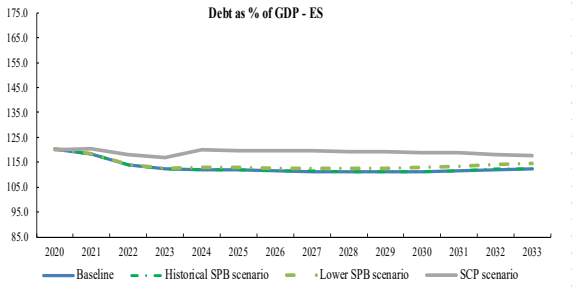
Macro-fiscal assumptions, Greece	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	171.1	161.9	156.9	131.8	122.4	125.4	163.3	133.8	141.2
Primary balance	-1.6	1.1	2.2	3.1	3.1	3.2	0.6	3.0	2.4
Structural primary balance (before CoA)	-0.9	1.8	2.5	2.5	2.5	2.5	1.1	2.5	2.2
Real GDP growth	6.0	1.0	2.0	0.8	0.6	0.9	3.0	0.9	1.4
Potential GDP growth	0.3	0.6	1.0	0.8	0.6	0.9	0.6	0.8	0.8
Inflation rate	9.0	5.6	2.3	2.4	2.4	2.4	5.6	2.4	3.2
Implicit interest rate (nominal)	1.4	1.8	1.9	2.7	2.9	3.2	1.7	2.7	2.4
Gross financing needs	15.3	11.0	11.6	12.1	12.4	14.1	12.6	12.4	12.5
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	180.2	168.6	155.2	125.8	115.1	113.2	168.0	127.0	137.3
Primary balance	-1.6	1.1	2.1	3.0	3.0	3.2	0.5	2.9	2.3
Structural primary balance (before CoA)	0.5	1.8	2.4	2.7	2.7	2.7	1.6	2.7	2.4
Real GDP growth	3.1	4.8	3.5	1.0	0.7	1.1	3.8	1.3	1.9
Gross financing needs	3.0	3.0	0.2	-0.7	-0.7	8.2	2.0	0.7	1.1
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	171.1	161.9	156.9	127.2	115.1	115.4	163.3	129.0	137.6
Primary balance	-1.6	1.3	1.0	4.4	4.4	4.6	0.2	4.1	3.1
Structural primary balance (before CoA)	-0.9	2.0	1.3	3.8	3.8	3.8	0.8	3.6	2.9
Real GDP growth	6.0	1.0	2.0	0.8	0.6	0.9	3.0	0.9	1.4
Gross financing needs	15.3	11.0	11.6	10.4	10.1	11.3	12.6	10.8	11.3
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	171.1	162.4	157.5	132.8	123.5	126.5	163.7	134.8	142.0
Implicit interest rate (nominal)	1.4	2.1	2.0	2.7	2.9	3.2	1.8	2.7	2.5
Gross financing needs	15.3	11.4	11.8	12.3	12.7	14.4	12.8	12.7	12.7
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	171.1	163.9	160.6	143.9	138.0	144.5	165.2	146.0	150.8
Primary balance	-1.6	-0.8	0.5	1.4	1.4	1.5	-0.6	1.3	0.8
Structural primary balance (before CoA)	-0.9	-0.1	0.8	0.8	0.8	0.8	-0.1	0.8	0.6
Real GDP growth	6.0	1.0	2.0	0.8	0.6	0.9	3.0	0.9	1.4
Gross financing needs	15.3	12.9	13.4	15.7	16.7	19.2	13.9	15.9	15.4
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	171.1	161.9	156.9	131.8	122.4	125.4	163.3	133.8	141.2
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	15.3	11.0	11.6	12.1	12.4	14.1	12.6	12.4	12.5
7. Adverse interest-growth rate differential	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	171.1	162.7	158.5	137.5	129.8	134.5	164.1	139.5	145.7
Implicit interest rate (nominal)	1.4	1.9	2.0	2.8	3.1	3.4	1.8	2.8	2.5
Real GDP growth	6.0	0.5	1.5	0.3	0.1	0.4	2.7	0.4	1.0
Gross financing needs	15.3	11.1	11.8	12.9	13.5	15.6	12.7	13.3	13.1

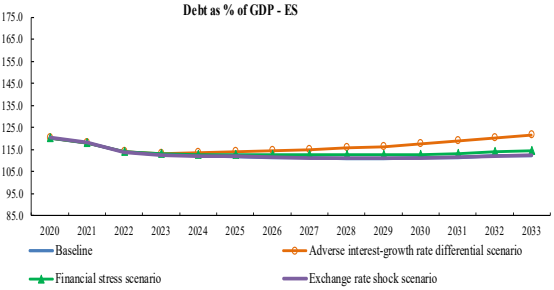
Spain

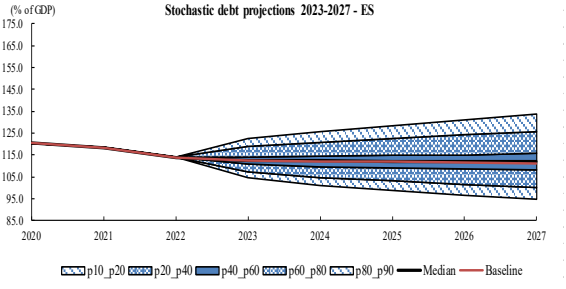
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

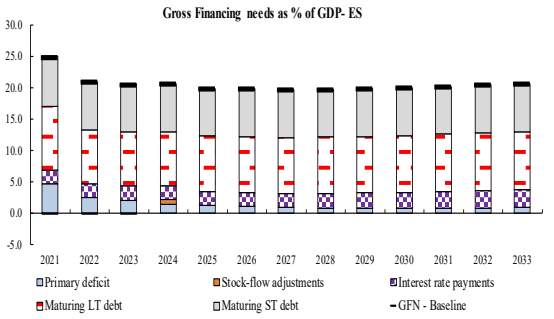
ES - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**120.4**	**118.3**	**114.0**	**112.5**	**112.1**	**111.8**	**111.6**	**111.2**	**111.1**	**111.1**	**111.2**	**111.6**	**112.1**	**112.4**
Changes in the ratio (-1+2+3)	22.2	-2.1	-4.3	-1.4	-0.5	-0.2	-0.3	-0.3	-0.1	0.0	0.1	0.4	0.6	0.3
of which														
(1) Primary balance (1.1+1.2+1.3)	**-7.9**	**-4.7**	**-2.4**	**-2.0**	**-1.4**	**-1.2**	**-1.0**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.8**	**-0.9**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-1.6***	***-1.7***	***-1.5***	***-1.3***	***-1.1***	***-1.1***	***-0.9***	***-0.8***	***-0.8***	***-0.8***	***-0.8***	***-0.8***	***-0.8***	***-0.9***
(1.1.1) Structural primary balance (bef. CoA)	-1.6	-1.7	-1.5	-1.3	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
(1.1.2) Cost of ageing					0.0	-0.1	-0.2	-0.3	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3
(1.1.3) Others (taxes and property incomes)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(1.2) Cyclical component	***-5.7***	***-2.9***	***-0.9***	***-0.8***	***-0.3***	***-0.2***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***-0.5***	***-0.1***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**13.5**	**-6.7**	**-6.7**	**-3.4**	**-2.6**	**-1.4**	**-1.3**	**-1.2**	**-0.9**	**-0.8**	**-0.6**	**-0.4**	**-0.2**	**-0.6**
(2.1) Interest expenditure	2.2	2.2	2.2	2.3	2.2	2.3	2.3	2.3	2.4	2.4	2.5	2.6	2.7	2.8
(2.2) Growth effect	12.4	-6.2	-5.0	-1.0	-2.2	-1.1	-1.0	-0.9	-0.7	-0.6	-0.5	-0.4	-0.3	-0.8
(2.3) Inflation effect	-1.2	-2.7	-4.0	-4.6	-2.6	-2.6	-2.6	-2.6	-2.6	-2.6	-2.6	-2.6	-2.7	-2.7
(2.4) Exchange rate effect linked to the interest rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(3) Stock-flow adjustments	**0.8**	**-0.1**	**0.0**	**-0.1**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	0.8	-0.1	0.0	-0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(3.2) Adjustment due to the exchange rate effect	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pro memoria														
Structural balance	-3.8	-3.9	-3.7	-3.6	-3.4	-3.3	-3.2	-3.2	-3.2	-3.2	-3.3	-3.4	-3.6	-3.7
Gross financing needs	27.8	24.8	21.0	20.5	20.6	19.9	19.8	19.7	19.7	19.8	19.9	20.2	20.5	20.6

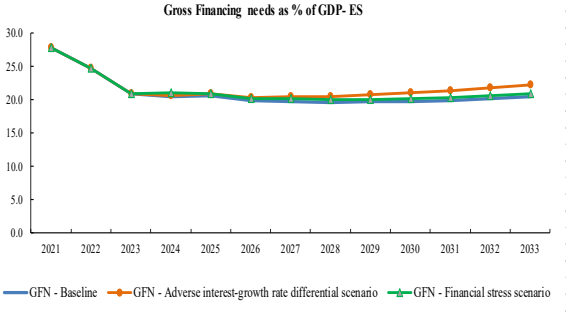












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	HIGH	Overall	MEDIUM	MEDIUM	HIGH	HIGH	HIGH	HIGH	LOW	MEDIUM	MEDIUM
		Debt level (2033), % GDP	112.4	112.5	114.6	121.7	114.4				
		Debt peak year	2022	2022	2033	2033	2033				
		Fiscal consolidation space	77%	77%	78%	77%	77%				
		Probability of debt ratio exceeding in 2027 its 2022 level						46%			
		Difference between 90th and 10th percentiles (pps. GDP)						38.9			

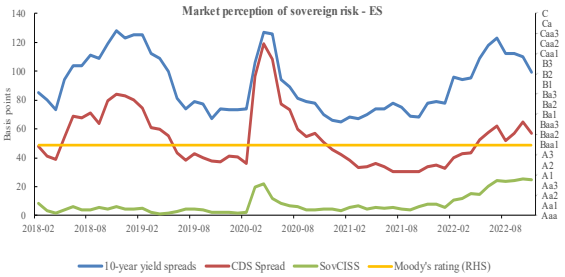
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.8**	**0.3**	**0.5**
Fiscal sub-index	0.7	0.6	0.4
Financial competitiveness sub-index	0.8	0.2	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.2**	**1.0**	**2.0**	**3.5**
of which Initial Budgetary position	3.0	1.7	1.9	1.6
Ageing costs	-0.8	-0.7	0.1	1.9
of which Pensions	*-2.2*	*-2.0*	*-1.1*	*-2.0*
Health care	*1.2*	*1.1*	*1.1*	*1.9*
Long-term care	*0.7*	*0.6*	*0.6*	*2.3*
Others	*-0.4*	*-0.4*	*-0.4*	*-0.4*
Required structural primary balance related to S2	**-0.3**	**-0.2**	**0.9**	**2.4**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.4**	**3.0**	**3.8**
of which *Initial budgetary position*	*0.9*	*1.1*	*0.9*
Debt requirement	*1.1*	*1.1*	*1.1*
Ageing costs	*0.4*	*0.8*	*1.8*
Required structural primary balance related to S1	**1.3**	**1.8**	**2.7**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	99.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - ES (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	6.9	0.0	43.2

Net International Investment Position (IIP) - ES (2021)	Net IIP (% GDP):
	-71.5

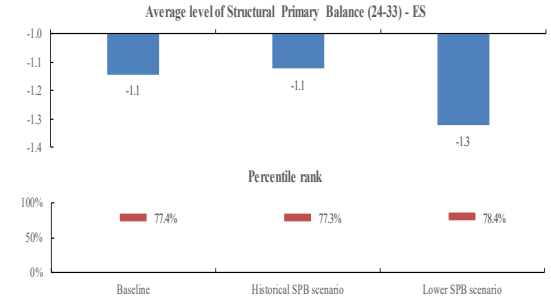
5. Risks related to government's contingent liabilities

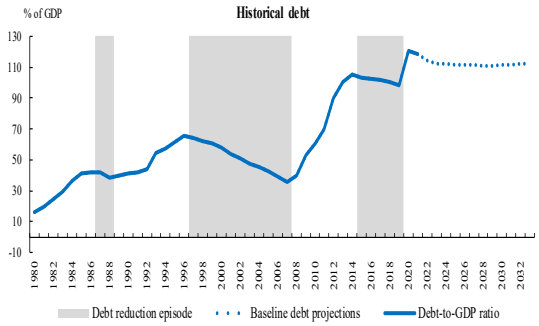
General government contingent liabilities	ES						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	7.8	6.5	2.5	2.1	10.7	11.6	7.5
of which One-off guarantees	*7.8*	*6.5*	*5.6*	*2.1*	*10.7*	*3.0*	*6.4*
Standardised guarantees	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*8.6*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.4*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*

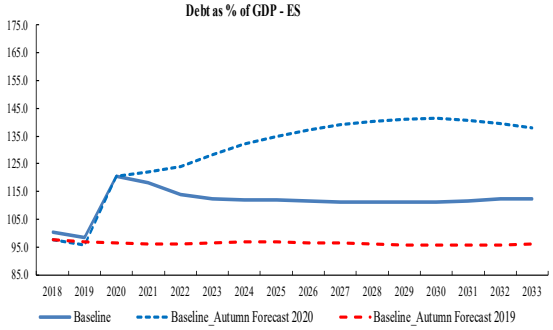
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.1	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	3.7	3.4	3.0	2.8	0.0	0.0	0.0
	Total	3.8	3.4	3.0	2.8	0.0	0.0	0.9

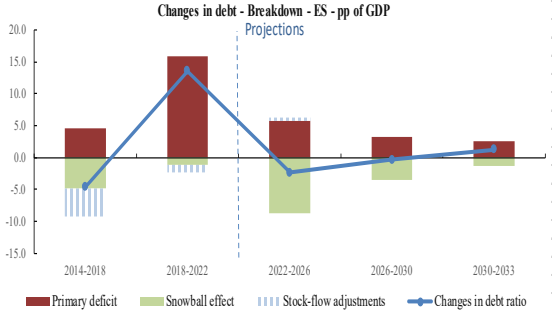
Government's contingent liability risks from banking sector - ES (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	2.5	3.7	102.0	2.8	-0.4	41.8	0.15%	1.28%

6. Realism of baseline assumptions









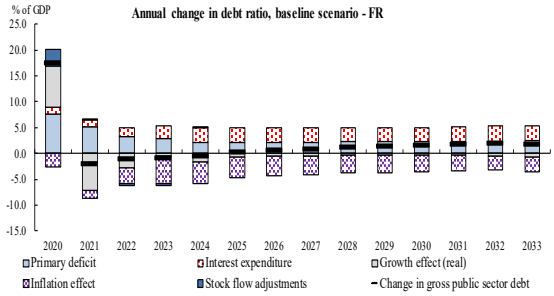
7. Underlying macro-fiscal assumptions

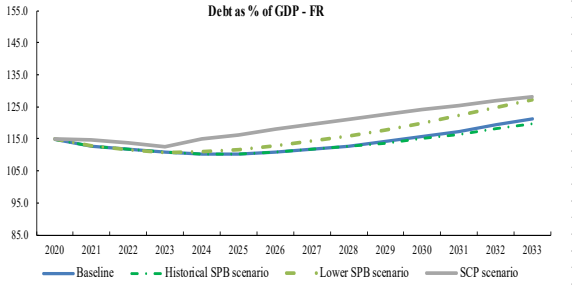
Macro-fiscal assumptions, Spain	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	114.0	112.5	112.1	111.1	111.6	112.4	112.8	111.6	111.9
Primary balance	-2.4	-2.0	-1.4	-0.8	-0.8	-0.9	-2.0	-0.9	-1.2
Structural primary balance (before CoA)	-1.5	-1.3	-1.1	-1.1	-1.1	-1.1	-1.3	-1.1	-1.2
Real GDP growth	4.5	1.0	2.0	0.6	0.3	0.7	2.5	0.7	1.1
Potential GDP growth	1.0	0.8	1.1	0.6	0.3	0.7	1.0	0.6	0.7
Inflation rate	3.5	4.3	2.4	2.4	2.4	2.4	3.4	2.4	2.7
Implicit interest rate (nominal)	2.0	2.1	2.1	2.3	2.4	2.6	2.1	2.3	2.2
Gross financing needs	21.0	20.5	20.6	19.8	20.2	20.6	20.7	20.0	20.2
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	118.2	117.0	120.1	119.1	118.7	117.5	118.4	119.3	119.1
Primary balance	-3.1	-1.9	-2.0	-1.0	-1.1	-1.2	-2.3	-1.2	-1.8
Structural primary balance (before CoA)	-2.0	-2.0	-1.6	-1.6	-1.6	-1.6	-1.9	-1.6	-1.7
Real GDP growth	5.5	4.0	-0.3	0.8	0.5	1.3	3.1	0.9	1.8
Gross financing needs	22.6	21.4	21.5	20.2	20.2	20.2	21.8	20.4	21.1
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	114.0	112.5	112.1	111.3	111.6	112.5	112.8	111.7	112.0
Primary balance	-2.4	-2.0	-1.4	-0.8	-0.8	-0.9	-2.0	-0.9	-1.2
Structural primary balance (before CoA)	-1.5	-1.3	-1.1	-1.1	-1.1	-1.1	-1.3	-1.1	-1.2
Real GDP growth	4.5	1.0	2.0	0.6	0.4	0.7	2.5	0.7	1.1
Gross financing needs	21.0	20.5	20.6	19.8	20.2	20.6	20.7	20.0	20.2
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	114.0	113.0	112.8	112.7	113.4	114.4	113.3	113.1	113.2
Implicit interest rate (nominal)	2.0	2.6	2.3	2.4	2.5	2.7	2.3	2.4	2.4
Gross financing needs	21.0	21.0	20.9	20.2	20.6	21.1	21.0	20.4	20.5
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	114.0	112.5	112.9	112.6	113.4	114.6	113.1	113.1	113.1
Primary balance	-2.4	-2.1	-1.8	-0.9	-1.0	-1.1	-2.1	-1.1	-1.3
Structural primary balance (before CoA)	-1.5	-1.4	-1.3	-1.3	-1.3	-1.3	-1.4	-1.3	-1.3
Real GDP growth	4.5	1.1	1.6	0.6	0.3	0.7	2.4	0.7	1.1
Gross financing needs	21.0	20.6	21.0	20.2	20.6	21.2	20.9	20.4	20.6
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	114.0	112.5	112.1	111.1	111.6	112.4	112.9	111.6	111.9
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	21.0	20.5	20.6	19.8	20.2	20.6	20.7	20.0	20.2
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	114.0	113.2	113.4	116.5	118.9	121.7	113.5	117.1	116.2
Implicit interest rate (nominal)	2.0	2.2	2.2	2.6	2.8	3.0	2.1	2.6	2.5
Real GDP growth	4.5	0.5	1.5	0.1	-0.2	0.2	2.2	0.2	0.7
Gross financing needs	21.0	20.7	20.9	21.0	21.8	22.7	20.9	21.3	21.2

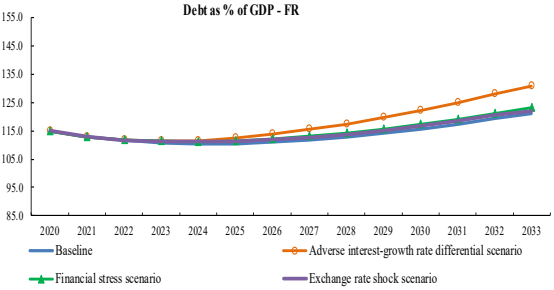
France

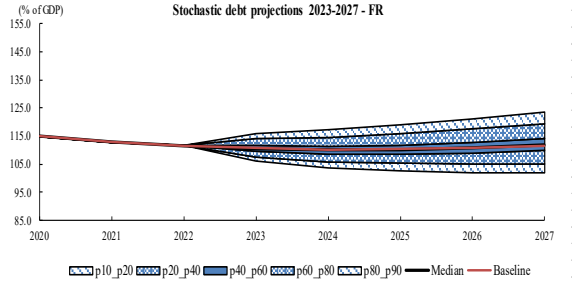
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

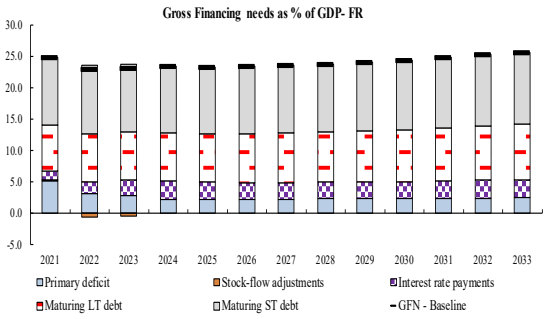
FR - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**115.0**	**112.8**	**111.7**	**110.8**	**110.2**	**110.4**	**110.9**	**111.7**	**112.8**	**114.1**	**115.6**	**117.4**	**119.4**	**121.1**
Changes in the ratio (-1+2+3)	*17.5*	*-2.1*	*-1.2*	*-0.9*	*-0.6*	*0.2*	*0.5*	*0.8*	*1.1*	*1.3*	*1.5*	*1.8*	*2.0*	*1.7*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-7.7**	**-5.1**	**-3.2**	**-2.8**	**-2.1**	**-2.1**	**-2.2**	**-2.2**	**-2.3**	**-2.3**	**-2.3**	**-2.4**	**-2.4**	**-2.4**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-3.5***	***-4.3***	***-3.2***	***-2.4***	***-2.0***	***-2.1***	***-2.1***	***-2.2***	***-2.3***	***-2.3***	***-2.3***	***-2.4***	***-2.4***	***-2.4***
(1.1.1) Structural primary balance (bef. CoA)	*-3.5*	*-4.3*	*-3.2*	*-2.4*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.1*	*0.2*	*0.3*	*0.4*	*0.4*	*0.4*	*0.4*	*0.4*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*0.0*
(1.2) Cyclical component	***-4.1***	***-0.8***	***0.1***	***-0.3***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***-0.1***	***-0.1***	***-0.1***	***-0.1***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**6.6**	**-7.4**	**-4.0**	**-3.3**	**-2.9**	**-2.0**	**-1.6**	**-1.4**	**-1.2**	**-1.0**	**-0.8**	**-0.6**	**-0.4**	**-0.7**
(2.1) Interest expenditure	*1.3*	*1.4*	*1.8*	*2.5*	*2.9*	*2.8*	*2.7*	*2.7*	*2.7*	*2.7*	*2.7*	*2.7*	*2.9*	*2.9*
(2.2) Growth effect	*8.0*	*-7.2*	*-2.8*	*-0.5*	*-1.6*	*-0.8*	*-0.6*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.4*	*-0.8*
(2.3) Inflation effect	*-2.6*	*-1.5*	*-3.0*	*-5.3*	*-4.2*	*-4.0*	*-3.8*	*-3.6*	*-3.4*	*-3.3*	*-3.1*	*-3.0*	*-2.8*	*-2.8*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**3.2**	**0.1**	**-0.3**	**-0.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*3.2*	*0.2*	*-0.7*	*-0.5*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*-0.1*	*0.4*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-4.8	-5.7	-5.0	-4.9	-4.9	-4.9	-4.9	-4.9	-5.0	-5.0	-5.0	-5.1	-5.3	-5.3
Gross financing needs	28.3	24.8	22.9	23.2	23.4	23.3	23.3	23.5	23.8	24.0	24.4	24.8	25.3	25.6

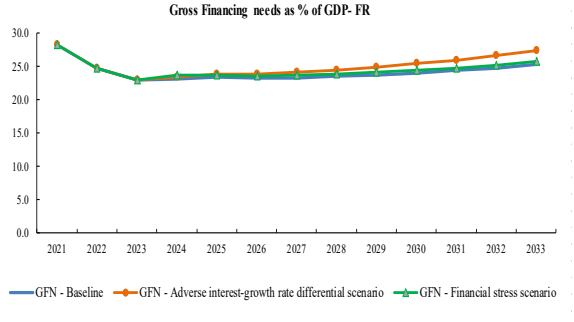












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	HIGH	Overall	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	LOW	MEDIUM	MEDIUM
		Debt level (2033), % GDP	121.1	119.8	127.1	130.7	123.0				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	92%	91%	97%	92%	92%				
		Probability of debt ratio exceeding in 2027 its 2022 level						51%			
		Difference between 90th and 10th percentiles (pps. GDP)						21.7			

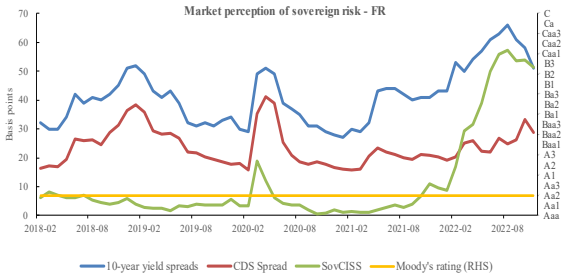
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.4**	**0.3**	**0.5**
Fiscal sub-index	1.0	0.6	0.4
Financial competitiveness sub-index	0.1	0.2	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**1.8**	**0.9**	**2.0**	**4.0**
of which Initial Budgetary position	3.1	2.2	2.5	2.2
Ageing costs	-1.3	-1.3	-0.5	1.8
of which Pensions	*-2.1*	*-2.2*	*-1.3*	*-2.2*
Health care	*0.6*	*0.6*	*0.6*	*1.5*
Long-term care	*0.7*	*0.7*	*0.7*	*2.9*
Others	*-0.5*	*-0.4*	*-0.4*	*-0.4*
Required structural primary balance related to S2	**-1.1**	**-1.1**	**0.0**	**2.0**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.4**	**3.0**	**4.0**
of which *Initial budgetary position*	*1.5*	*1.7*	*1.5*
Debt requirement	*1.1*	*1.1*	*1.1*
Ageing costs	*-0.3*	*0.1*	*1.4*
Required structural primary balance related to S1	**0.4**	**1.0**	**2.0**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	51.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - FR (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	10.2	3.2	46.2

Net International Investment Position (IIP) - FR (2021)	Net IIP (% GDP):
	-32.1

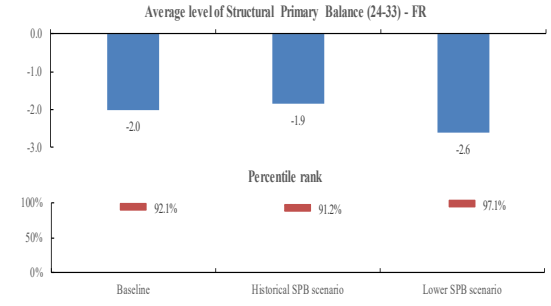
5. Risks related to government's contingent liabilities

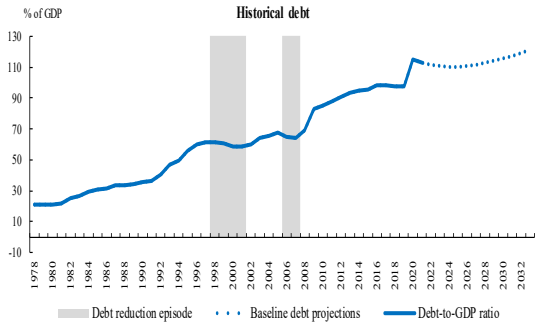
General government contingent liabilities	FR						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	12.0	12.0	12.0	11.6	17.0	15.3	7.5
of which One-off guarantees	*9.7*	*9.7*	*9.6*	*9.3*	*14.4*	*12.9*	*6.4*
Standardised guarantees	*2.2*	*2.3*	*2.4*	*2.3*	*2.6*	*2.4*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*

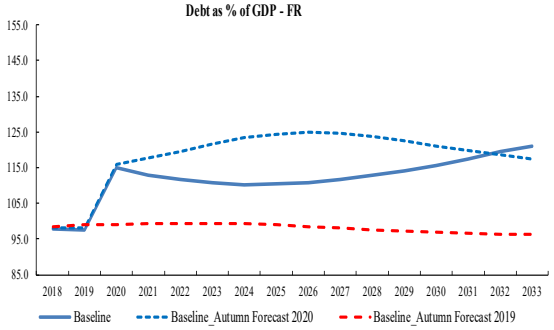
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	2.0	1.6	1.5	1.3	1.3	1.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	2.0	1.6	1.5	1.3	1.3	1.0	0.9

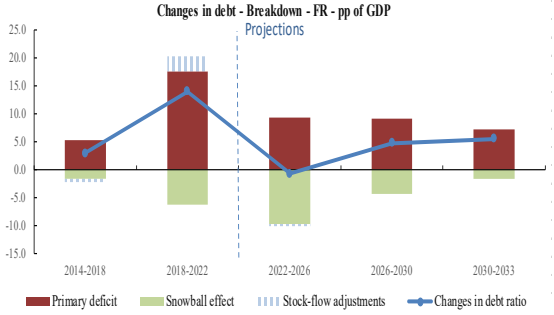
Government's contingent liability risks from banking sector - FR (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	6.5	6.3	108.5	1.8	-0.2	48.6	0.06%	0.65%

6. Realism of baseline assumptions









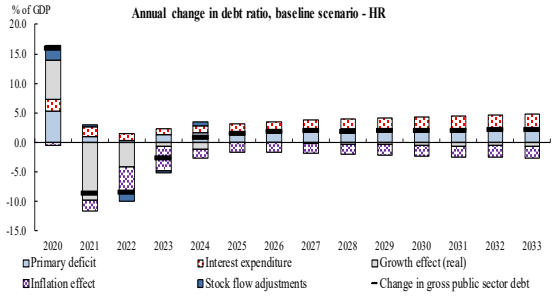
7. Underlying macro-fiscal assumptions

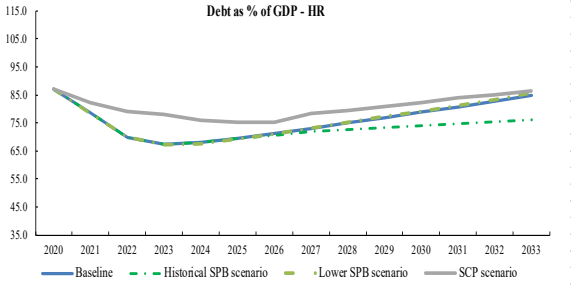
Macro-fiscal assumptions, France	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	111.7	110.8	110.2	114.1	117.4	121.1	110.9	114.8	113.9
Primary balance	-3.2	-2.8	-2.1	-2.3	-2.4	-2.4	-2.7	-2.3	-2.4
Structural primary balance (before CoA)	-3.2	-2.4	-2.0	-2.0	-2.0	-2.0	-2.5	-2.0	-2.1
Real GDP growth	2.6	0.4	1.5	0.4	0.4	0.7	1.5	0.5	0.7
Potential GDP growth	1.2	1.1	1.1	0.4	0.4	0.7	1.1	0.5	0.6
Inflation rate	2.7	5.0	3.9	3.0	2.6	2.4	3.9	3.0	3.2
Implicit interest rate (nominal)	1.7	2.3	2.8	2.4	2.4	2.5	2.3	2.5	2.4
Gross financing needs	22.9	23.2	23.4	24.0	24.8	25.6	23.1	24.2	24.0
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	113.7	112.6	115.0	122.7	125.6	128.1	113.8	121.1	119.2
Primary balance	-4.2	-3.0	-3.1	-3.8	-3.8	-3.9	-3.4	-3.6	-3.9
Structural primary balance (before CoA)	-4.1	-3.8	-3.4	-3.4	-3.4	-3.4	-3.8	-3.4	-3.7
Real GDP growth	3.8	3.0	0.0	0.9	0.9	1.1	2.3	0.8	1.7
Gross financing needs	20.6	19.8	20.5	22.9	23.7	24.3	20.3	22.3	22.0
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	111.7	110.8	110.2	113.7	116.5	119.8	110.9	114.3	113.5
Primary balance	-3.2	-2.8	-2.1	-2.2	-2.2	-2.2	-2.7	-2.2	-2.3
Structural primary balance (before CoA)	-3.2	-2.4	-2.0	-1.8	-1.8	-1.8	-2.5	-1.8	-2.0
Real GDP growth	2.6	0.4	1.5	0.4	0.4	0.7	1.5	0.5	0.7
Gross financing needs	22.9	23.2	23.4	23.8	24.4	25.2	23.1	24.0	23.8
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	111.7	111.4	111.0	115.6	119.1	123.0	111.3	116.3	115.0
Implicit interest rate (nominal)	1.7	2.8	3.0	2.5	2.5	2.6	2.5	2.6	2.6
Gross financing needs	22.9	23.7	23.7	24.4	25.2	26.1	23.4	24.6	24.3
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	111.7	110.7	110.9	117.8	122.2	127.1	111.1	118.5	116.6
Primary balance	-3.2	-3.1	-2.7	-2.9	-3.0	-3.0	-3.0	-2.9	-2.9
Structural primary balance (before CoA)	-3.2	-2.9	-2.6	-2.6	-2.6	-2.6	-2.9	-2.6	-2.7
Real GDP growth	2.6	0.8	1.2	0.4	0.4	0.7	1.6	0.5	0.7
Gross financing needs	22.9	23.6	24.0	25.2	26.2	27.3	23.5	25.4	24.9
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	111.7	111.4	111.2	115.1	118.3	122.1	111.4	115.8	114.7
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	22.9	23.3	23.6	24.2	25.0	25.8	23.2	24.4	24.1
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	111.7	111.5	111.6	119.6	124.8	130.7	111.6	120.5	118.2
Implicit interest rate (nominal)	1.7	2.4	2.9	2.8	2.8	2.9	2.4	2.8	2.7
Real GDP growth	2.6	-0.1	1.0	-0.1	-0.1	0.2	1.2	0.0	0.3
Gross financing needs	22.9	23.4	23.8	25.4	26.6	27.9	23.4	25.6	25.0

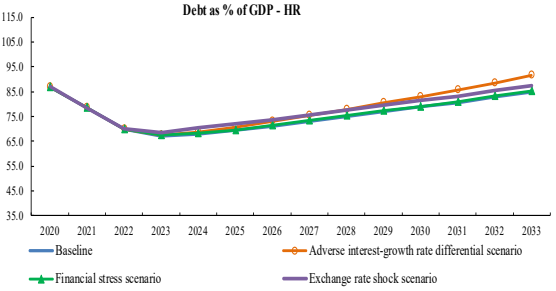
Croatia

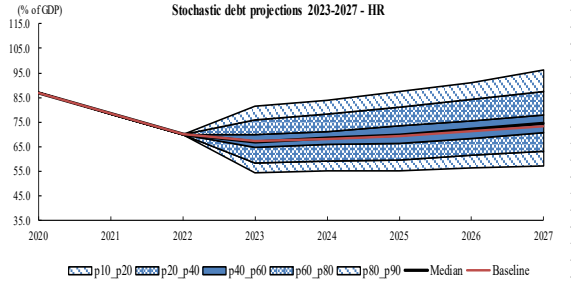
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

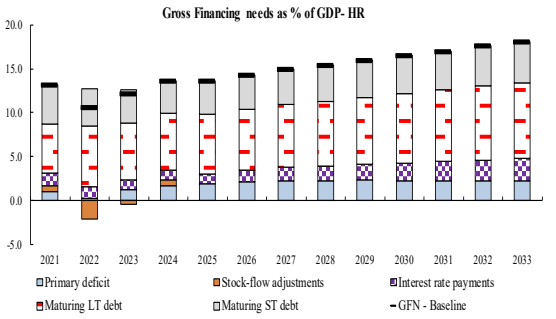
HR - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**87.0**	**78.4**	**70.0**	**67.2**	**68.0**	**69.4**	**71.1**	**73.1**	**75.0**	**76.9**	**78.8**	**80.7**	**82.8**	**84.9**
Changes in the ratio (-1+2+3)	*15.9*	*-8.6*	*-8.4*	*-2.7*	*0.8*	*1.4*	*1.7*	*2.0*	*1.9*	*1.9*	*1.9*	*1.9*	*2.1*	*2.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-5.3**	**-1.0**	**-0.3**	**-1.2**	**-1.6**	**-1.9**	**-2.1**	**-2.3**	**-2.3**	**-2.3**	**-2.3**	**-2.3**	**-2.3**	**-2.2**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-1.8***	***-1.5***	***-1.8***	***-2.0***	***-2.0***	***-2.1***	***-2.2***	***-2.3***	***-2.3***	***-2.3***	***-2.3***	***-2.3***	***-2.3***	***-2.2***
(1.1.1) Structural primary balance (bef. CoA)	*-1.8*	*-1.5*	*-1.8*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*	*-2.0*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*	*0.2*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-3.5***	***0.4***	***1.6***	***0.8***	***0.4***	***0.3***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**8.1**	**-10.1**	**-7.0**	**-3.7**	**-1.6**	**-0.5**	**-0.3**	**-0.3**	**-0.4**	**-0.4**	**-0.4**	**-0.3**	**-0.2**	**-0.2**
(2.1) Interest expenditure	*2.0*	*1.5*	*1.3*	*1.1*	*1.1*	*1.2*	*1.4*	*1.5*	*1.6*	*1.8*	*2.0*	*2.1*	*2.4*	*2.5*
(2.2) Growth effect	*6.6*	*-9.9*	*-4.2*	*-0.7*	*-1.1*	*-0.1*	*-0.1*	*-0.1*	*-0.3*	*-0.4*	*-0.5*	*-0.6*	*-0.6*	*-0.7*
(2.3) Inflation effect	*-0.5*	*-1.7*	*-4.1*	*-4.1*	*-1.6*	*-1.6*	*-1.6*	*-1.7*	*-1.7*	*-1.8*	*-1.8*	*-1.9*	*-1.9*	*-2.0*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**2.5**	**0.4**	**-1.7**	**-0.3**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.6*	*0.6*	*-2.1*	*-0.4*	*0.7*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.9*	*-0.2*	*0.4*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-3.8	-3.0	-3.1	-3.1	-3.1	-3.3	-3.6	-3.8	-3.9	-4.1	-4.3	-4.4	-4.6	-4.8
Gross financing needs	21.4	13.2	10.6	12.2	13.6	13.6	14.3	14.9	15.4	16.0	16.5	17.0	17.6	18.1

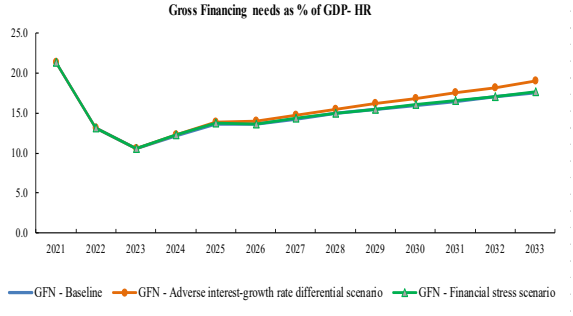












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios					Stochastic projections			
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress		S2	S1	Overall
LOW	HIGH	Overall	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM
		Debt level (2033), % GDP	84.9	76.2	85.6	91.5	85.3				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	58%	53%	59%	58%	58%				
		Probability of debt ratio exceeding in 2027 its 2022 level						62%			
		Difference between 90th and 10th percentiles (pps. GDP)						39.0			

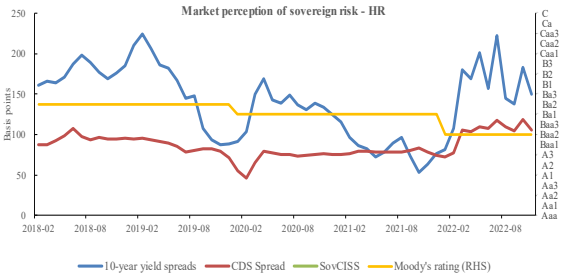
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.8**	**0.3**	**0.5**
Fiscal sub-index	0.6	0.3	0.4
Financial competitiveness sub-index	0.9	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**1.3**	**2.0**	**2.4**	**4.5**
of which Initial Budgetary position	1.8	2.6	2.7	2.6
Ageing costs	-0.5	-0.6	-0.4	1.9
of which Pensions	*-1.1*	*-1.1*	*-0.9*	*-1.1*
Health care	*0.6*	*0.5*	*0.5*	*1.4*
Long-term care	*0.2*	*0.1*	*0.1*	*1.8*
Others	*-0.1*	*-0.1*	*-0.1*	*-0.1*
Required structural primary balance related to S2	**-0.1**	**0.0**	**0.4**	**2.5**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.1**	**2.3**	**3.4**
of which *Initial budgetary position*	*2.2*	*2.4*	*2.2*
Debt requirement	*0.2*	*0.1*	*0.2*
Ageing costs	*-0.3*	*-0.2*	*1.0*
Required structural primary balance related to S1	**0.1**	**0.3**	**1.3**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	150.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - HR (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	5.7	70.7	34.0

Net International Investment Position (IIP) - HR (2021)	Net IIP (% GDP):
	-35.1

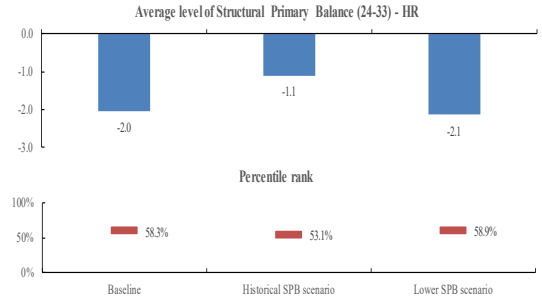
5. Risks related to government's contingent liabilities

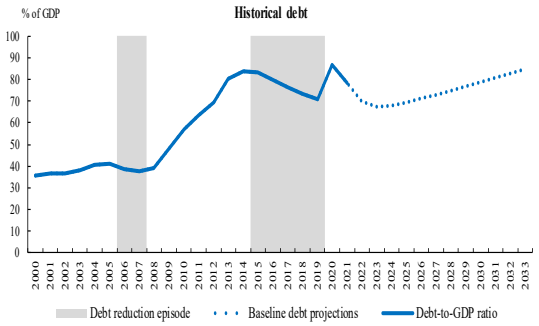
General government contingent liabilities	HR						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	2.6	2.6	1.4	1.1	1.7	1.9	7.5
of which One-off guarantees	*2.6*	*2.6*	*1.4*	*1.1*	*1.7*	*1.8*	*6.4*
Standardised guarantees	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.3*

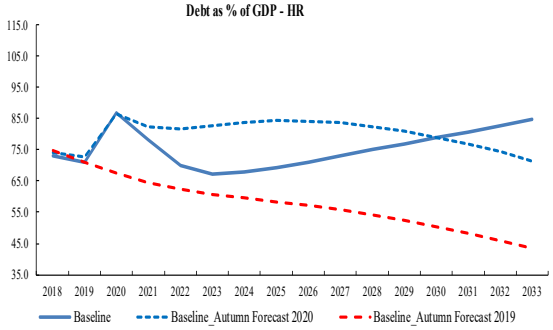
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

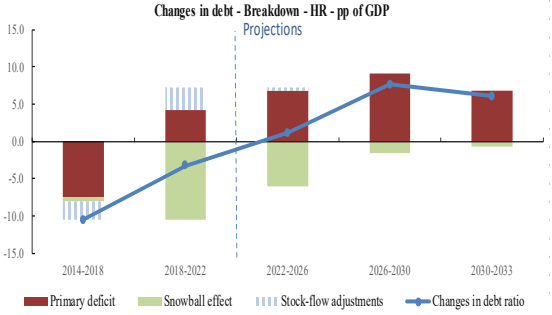
Government's contingent liability risks from banking sector - HR (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	3.0	7.3	62.5	2.9	-1.0	62.6	0.00%	0.09%

6. Realism of baseline assumptions









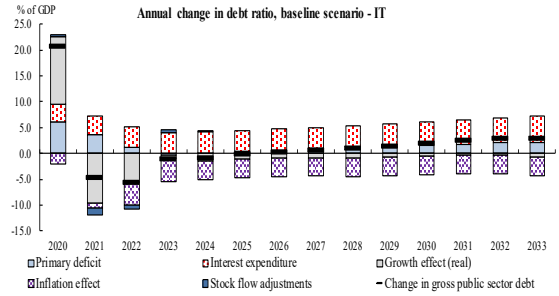
7. Underlying macro-fiscal assumptions

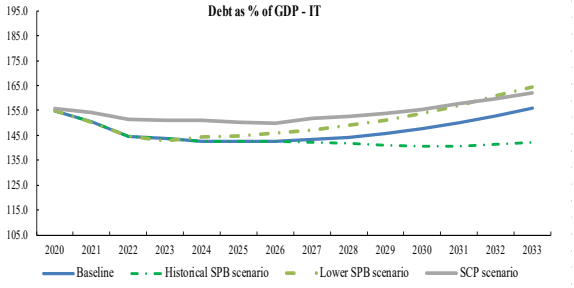
Macro-fiscal assumptions, Croatia	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.0	67.2	68.0	76.9	80.7	84.9	68.4	77.0	74.8
Primary balance	-0.3	-1.2	-1.6	-2.3	-2.3	-2.2	-1.0	-2.2	-1.9
Structural primary balance (before CoA)	-1.8	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Real GDP growth	6.0	1.0	1.7	0.6	0.8	0.9	2.9	0.5	1.1
Potential GDP growth	3.3	2.8	2.6	0.6	0.8	0.9	2.9	0.6	1.2
Inflation rate	5.5	6.3	2.4	2.4	2.4	2.4	4.7	2.4	3.0
Implicit interest rate (nominal)	1.8	1.7	1.7	2.5	2.8	3.2	1.7	2.5	2.3
Gross financing needs	10.6	12.2	13.6	16.0	17.0	18.1	12.1	15.9	15.0
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	79.2	78.0	75.9	80.8	83.8	86.3	77.7	79.6	79.7
Primary balance	-1.4	-1.2	-0.8	-2.7	-2.7	-2.6	-1.1	-2.1	-2.0
Structural primary balance (before CoA)	-1.9	-2.0	-2.4	-2.4	-2.4	-2.4	-2.1	-2.4	-2.3
Real GDP growth	5.6	3.9	3.7	1.1	0.7	1.0	4.4	1.2	2.3
Gross financing needs	12.2	12.6	11.7	15.2	16.2	16.6	12.2	14.3	13.9
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.0	67.2	68.0	73.3	74.6	76.2	68.4	73.1	71.9
Primary balance	-0.3	-1.2	-1.6	-1.2	-1.0	-1.0	-1.0	-1.3	-1.2
Structural primary balance (before CoA)	-1.8	-2.0	-2.0	-0.8	-0.8	-0.8	-2.0	-1.0	-1.2
Real GDP growth	6.0	1.0	1.7	0.7	0.9	0.9	2.9	0.5	1.1
Gross financing needs	10.6	12.2	13.6	14.4	14.8	15.4	12.1	14.4	13.8
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.0	67.3	68.2	77.2	81.1	85.3	68.5	77.3	75.1
Implicit interest rate (nominal)	1.8	1.9	1.7	2.5	2.8	3.2	1.8	2.5	2.4
Gross financing needs	10.6	12.3	13.7	16.0	17.1	18.1	12.2	16.0	15.1
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.0	67.2	67.7	77.2	81.3	85.6	68.3	77.3	75.0
Primary balance	-0.3	-1.2	-1.6	-2.4	-2.4	-2.3	-1.0	-2.3	-2.0
Structural primary balance (before CoA)	-1.8	-2.0	-2.1	-2.1	-2.1	-2.1	-2.0	-2.1	-2.1
Real GDP growth	6.0	1.0	2.1	0.6	0.8	0.9	3.0	0.5	1.1
Gross financing needs	10.6	12.2	13.5	16.1	17.2	18.3	12.1	16.0	15.1
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.0	68.6	70.6	79.4	83.3	87.4	69.7	79.5	77.1
Exchange rate depreciation	0.0%	1.6%	1.6%	0.0%	0.0%	0.0%	1.1%	0.0%	0.3%
Gross financing needs	10.6	12.4	14.1	16.4	17.5	18.5	12.4	16.4	15.4
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.0	67.6	68.8	80.5	85.7	91.5	68.8	80.7	77.7
Implicit interest rate (nominal)	1.8	1.8	1.8	2.8	3.2	3.6	1.8	2.8	2.6
Real GDP growth	6.0	0.5	1.2	0.1	0.3	0.4	2.6	0.0	0.7
Gross financing needs	10.6	12.3	13.9	16.8	18.2	19.6	12.2	16.8	15.7

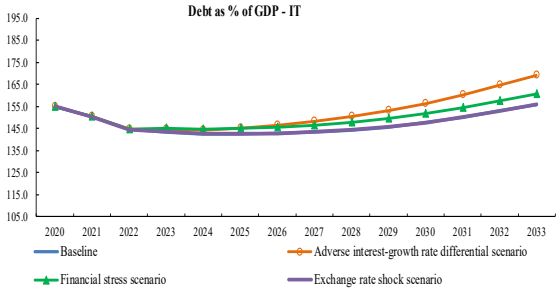
Italy

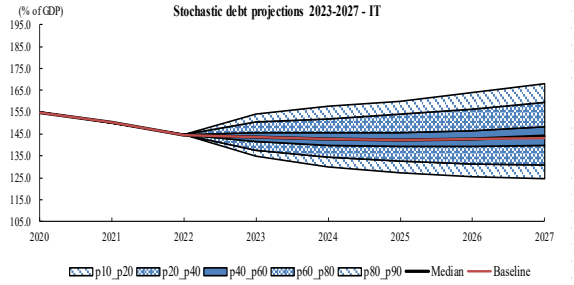
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

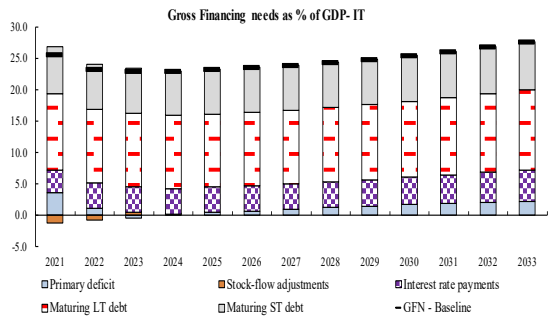
IT - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**154.9**	**150.3**	**144.6**	**143.6**	**142.6**	**142.4**	**142.7**	**143.4**	**144.3**	**145.7**	**147.6**	**150.1**	**153.0**	**155.9**
Changes in the ratio (-1+2+3)	*20.8*	*-4.6*	*-5.7*	*-1.0*	*-1.0*	*-0.2*	*0.3*	*0.7*	*0.9*	*1.4*	*1.9*	*2.5*	*2.9*	*2.9*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-6.0**	**-3.7**	**-1.1**	**0.4**	**-0.1**	**-0.4**	**-0.7**	**-0.9**	**-1.2**	**-1.4**	**-1.6**	**-1.8**	**-2.0**	**-2.2**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-1.6***	***-3.0***	***-2.0***	***-0.1***	***-0.5***	***-0.6***	***-0.8***	***-0.9***	***-1.2***	***-1.4***	***-1.6***	***-1.8***	***-2.0***	***-2.2***
(1.1.1) Structural primary balance (bef. CoA)	*-1.6*	*-3.0*	*-2.0*	*-0.1*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.3*	*0.5*	*0.8*	*1.1*	*1.4*	*1.6*	*1.9*	*2.0*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.1*	*0.1*	*0.1*	*0.2*	*0.2*	*0.3*	*0.3*	*0.3*
(1.2) Cyclical component	***-4.5***	***-1.0***	***0.5***	***0.3***	***0.3***	***0.2***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.1***	***0.4***	***0.4***	***0.2***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**14.4**	**-7.0**	**-6.0**	**-1.1**	**-1.1**	**-0.6**	**-0.4**	**-0.3**	**-0.3**	**0.0**	**0.3**	**0.6**	**0.9**	**0.7**
(2.1) Interest expenditure	*3.5*	*3.6*	*4.0*	*4.0*	*4.1*	*4.1*	*4.1*	*4.1*	*4.2*	*4.3*	*4.4*	*4.6*	*4.8*	*5.0*
(2.2) Growth effect	*13.1*	*-9.7*	*-5.4*	*-0.4*	*-1.6*	*-1.1*	*-0.9*	*-0.9*	*-1.0*	*-0.8*	*-0.6*	*-0.4*	*-0.4*	*-0.7*
(2.3) Inflation effect	*-2.1*	*-0.8*	*-4.6*	*-4.7*	*-3.6*	*-3.5*	*-3.5*	*-3.5*	*-3.5*	*-3.5*	*-3.5*	*-3.6*	*-3.6*	*-3.6*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**0.3**	**-1.3**	**-0.8**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*0.3*	*-1.3*	*-0.8*	*0.5*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-5.1	-6.6	-6.0	-4.1	-4.6	-4.7	-4.8	-5.0	-5.4	-5.7	-6.1	-6.4	-6.9	-7.2
Gross financing needs	30.0	25.5	23.2	23.0	23.0	23.2	23.5	23.9	24.3	24.8	25.4	26.1	26.9	27.5

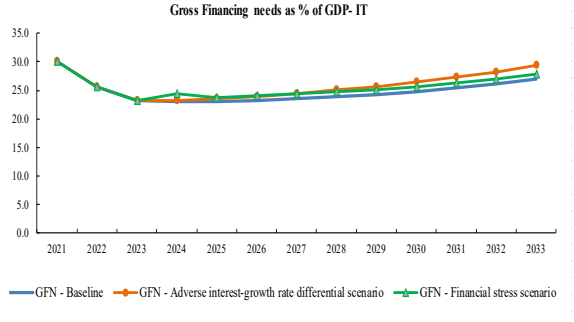












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	HIGH	Overall	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	LOW	MEDIUM	MEDIUM
		Debt level (2033), % GDP	155.9	142.2	164.4	169.1	160.6				
		Debt peak year	2033	2022	2033	2033	2033				
		Fiscal consolidation space	66%	46%	71%	66%	66%				
		Probability of debt ratio exceeding in 2027 its 2022 level						50%			
		Difference between 90th and 10th percentiles (pps. GDP)						43.7			

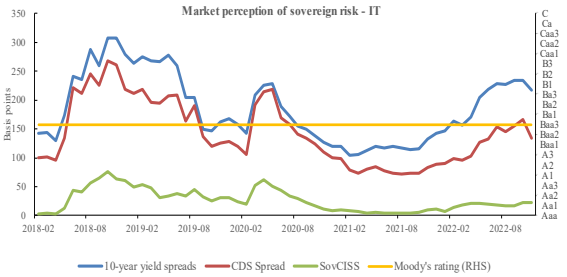
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.6**	**0.3**	**0.5**
Fiscal sub-index	1.0	0.7	0.4
Financial competitiveness sub-index	0.4	0.1	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.1**	**0.7**	**1.7**	**2.2**
of which Initial Budgetary position	2.6	1.1	1.4	1.1
Ageing costs	-0.5	-0.4	0.3	1.2
of which Pensions	*-1.9*	*-1.7*	*-1.0*	*-1.7*
Health care	*0.8*	*0.8*	*0.7*	*1.4*
Long-term care	*0.9*	*0.8*	*0.8*	*1.7*
Others	*-0.3*	*-0.3*	*-0.3*	*-0.3*
Required structural primary balance related to S2	**0.0**	**0.2**	**1.2**	**1.7**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.5**	**4.0**	**4.3**
of which *Initial budgetary position*	*0.7*	*1.1*	*0.7*
Debt requirement	*1.7*	*1.6*	*1.7*
Ageing costs	*1.0*	*1.4*	*1.8*
Required structural primary balance related to S1	**3.0**	**3.6**	**3.8**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	217.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - IT (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	13.1	0.1	29.1

Net International Investment Position (IIP) - IT (2021)	Net IIP (% GDP):
	8.1

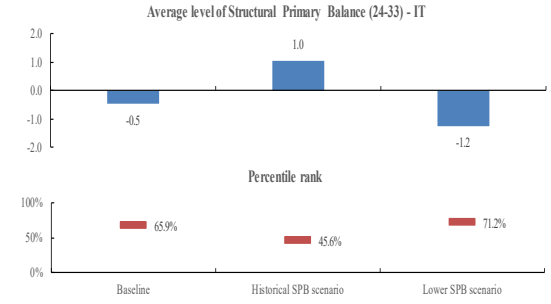
5. Risks related to government's contingent liabilities

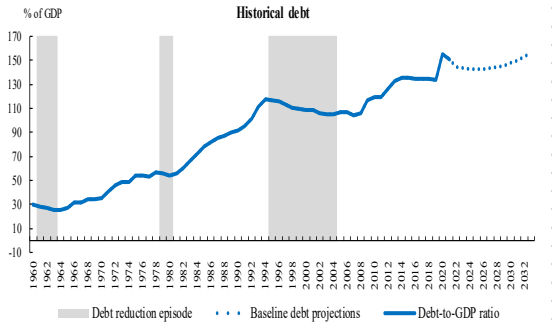
General government contingent liabilities	IT						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	2.4	3.9	4.3	4.8	13.1	16.0	7.5
of which One-off guarantees	*1.2*	*2.5*	*2.6*	*2.9*	*5.5*	*6.0*	*6.4*
Standardised guarantees	*1.2*	*1.4*	*1.7*	*1.9*	*7.6*	*10.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*

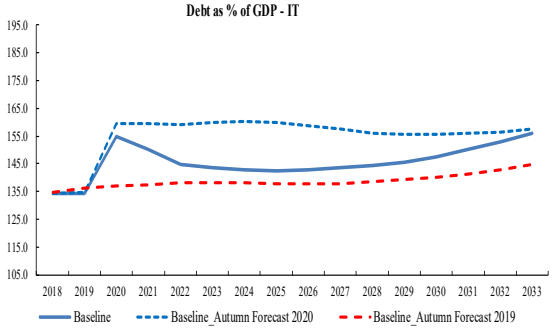
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.4	1.3	0.9	1.2	0.6	0.7	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.4	1.3	0.9	1.2	0.6	0.7	0.9

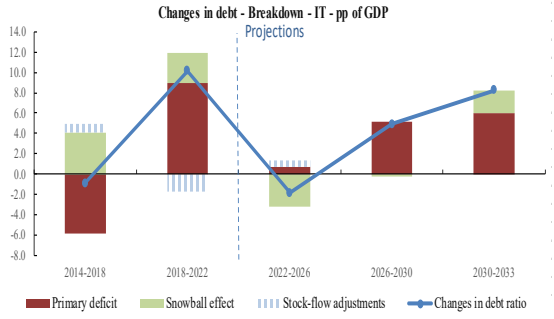
Government's contingent liability risks from banking sector - IT (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	3.3	2.6	92.3	2.6	-1.1	52.7	0.06%	0.79%

6. Realism of baseline assumptions









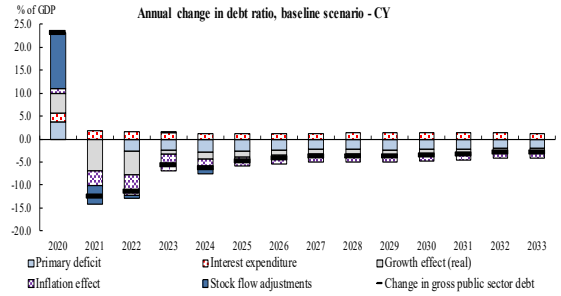
7. Underlying macro-fiscal assumptions

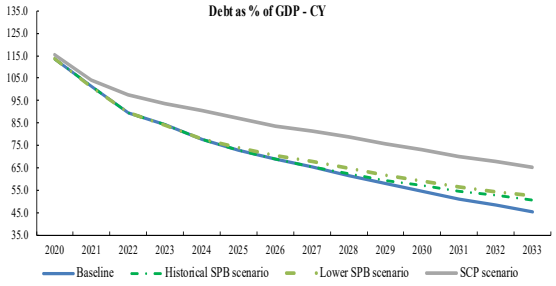
Macro-fiscal assumptions, Italy	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	144.6	143.6	142.6	145.7	150.1	155.9	143.6	147.2	146.3
Primary balance	-1.1	0.4	-0.1	-1.4	-1.8	-2.2	-0.3	-1.4	-1.1
Structural primary balance (before CoA)	-2.0	-0.1	-0.5	-0.5	-0.5	-0.5	-0.9	-0.5	-0.6
Real GDP growth	3.8	0.3	1.1	0.6	0.3	0.5	1.8	0.5	0.8
Potential GDP growth	1.0	0.6	1.1	0.6	0.3	0.5	0.9	0.6	0.7
Inflation rate	3.1	3.3	2.6	2.5	2.5	2.4	3.0	2.5	2.6
Implicit interest rate (nominal)	2.8	2.9	2.9	3.1	3.2	3.4	2.9	3.1	3.0
Gross financing needs	23.2	23.0	23.0	24.8	26.1	27.5	23.1	25.1	24.6
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	151.4	150.9	150.9	153.8	157.6	162.2	151.0	153.6	153.3
Primary balance	-2.9	-1.5	-1.3	-2.7	-3.2	-3.5	-1.9	-2.4	-2.6
Structural primary balance (before CoA)	-3.1	-2.3	-1.9	-1.9	-1.9	-1.9	-2.4	-1.9	-2.2
Real GDP growth	4.3	2.5	1.3	1.0	0.5	0.7	2.7	0.9	1.8
Gross financing needs	26.2	25.9	25.0	26.6	27.8	29.0	25.7	26.3	26.6
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	144.6	143.6	142.6	140.9	140.6	142.2	143.6	141.6	142.1
Primary balance	-1.1	0.4	-0.1	0.4	0.2	-0.2	-0.3	0.1	0.0
Structural primary balance (before CoA)	-2.0	-0.1	-0.5	1.5	1.5	1.5	-0.9	1.2	0.7
Real GDP growth	3.8	0.3	1.1	0.8	0.5	0.5	1.8	0.5	0.8
Gross financing needs	23.2	23.0	23.0	22.6	22.8	23.6	23.1	22.9	22.9
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	144.6	145.1	144.7	149.6	154.4	160.6	144.8	151.0	149.5
Implicit interest rate (nominal)	2.8	3.9	3.3	3.3	3.3	3.5	3.4	3.3	3.3
Gross financing needs	23.2	24.5	23.8	25.6	27.0	28.5	23.8	25.9	25.4
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	144.6	142.9	144.3	151.1	157.0	164.4	143.9	152.7	150.5
Primary balance	-1.1	-0.5	-0.9	-2.1	-2.6	-2.9	-0.8	-2.1	-1.8
Structural primary balance (before CoA)	-2.0	-1.6	-1.2	-1.2	-1.2	-1.2	-1.6	-1.2	-1.3
Real GDP growth	3.8	1.4	0.0	0.6	0.3	0.5	1.8	0.5	0.8
Gross financing needs	23.2	24.2	23.9	26.3	27.8	29.6	23.8	26.6	25.9
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	144.6	143.6	142.7	145.7	150.1	155.9	143.7	147.3	146.4
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	23.2	23.0	23.0	24.8	26.1	27.5	23.1	25.1	24.6
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	144.6	144.5	144.5	153.1	160.3	169.1	144.5	154.9	152.3
Implicit interest rate (nominal)	2.8	3.0	3.1	3.4	3.6	3.8	3.0	3.4	3.3
Real GDP growth	3.8	-0.2	0.6	0.1	-0.2	0.0	1.4	0.0	0.4
Gross financing needs	23.2	23.3	23.5	26.4	28.2	30.3	23.3	26.7	25.9

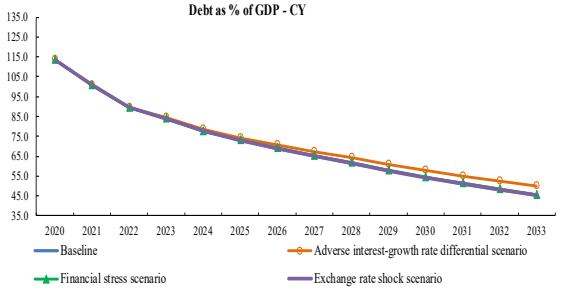
Cyprus

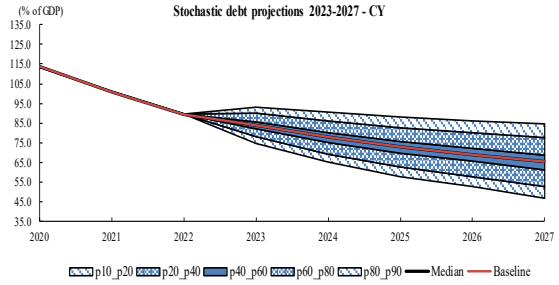
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

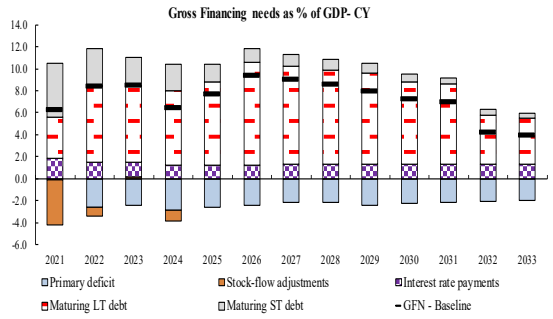
CY - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**113.5**	**101.0**	**89.6**	**84.0**	**77.7**	**73.0**	**68.9**	**65.2**	**61.6**	**57.8**	**54.4**	**51.2**	**48.2**	**45.4**
Changes in the ratio (-1+2+3)	*23.1*	*-12.5*	*-11.5*	*-5.6*	*-6.3*	*-4.7*	*-4.1*	*-3.7*	*-3.7*	*-3.8*	*-3.4*	*-3.2*	*-2.9*	*-2.8*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-3.7**	**0.1**	**2.6**	**2.5**	**2.9**	**2.6**	**2.4**	**2.2**	**2.2**	**2.5**	**2.3**	**2.2**	**2.1**	**2.0**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-2.4***	***-0.4***	***0.8***	***1.6***	***2.4***	***2.3***	***2.2***	***2.2***	***2.2***	***2.5***	***2.3***	***2.2***	***2.1***	***2.0***
(1.1.1) Structural primary balance (bef. CoA)	*-2.4*	*-0.4*	*0.8*	*1.6*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*	*2.4*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*-0.2*	*0.0*	*0.1*	*0.2*	*0.3*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.1*	*-0.1*
(1.2) Cyclical component	***-1.3***	***0.4***	***1.8***	***0.9***	***0.5***	***0.3***	***0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**7.4**	**-8.2**	**-8.1**	**-3.2**	**-2.4**	**-2.1**	**-1.7**	**-1.5**	**-1.5**	**-1.3**	**-1.1**	**-1.0**	**-0.9**	**-0.8**
(2.1) Interest expenditure	*2.1*	*1.8*	*1.5*	*1.3*	*1.2*	*1.2*	*1.2*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*
(2.2) Growth effect	*4.2*	*-6.9*	*-5.1*	*-0.9*	*-1.5*	*-1.4*	*-1.1*	*-1.0*	*-1.2*	*-1.1*	*-1.1*	*-1.0*	*-0.9*	*-0.9*
(2.3) Inflation effect	*1.1*	*-3.2*	*-4.5*	*-3.7*	*-2.1*	*-2.0*	*-1.8*	*-1.7*	*-1.6*	*-1.5*	*-1.4*	*-1.3*	*-1.2*	*-1.1*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**12.0**	**-4.1**	**-0.8**	**0.1**	**-1.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*12.0*	*-4.1*	*-0.8*	*0.1*	*-1.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-4.5	-2.2	-0.7	0.2	1.1	1.1	1.0	0.9	0.9	1.1	1.0	0.9	0.8	0.7
Gross financing needs	25.5	6.3	8.4	8.5	6.5	7.8	9.5	9.1	8.6	8.0	7.2	7.0	4.2	4.0

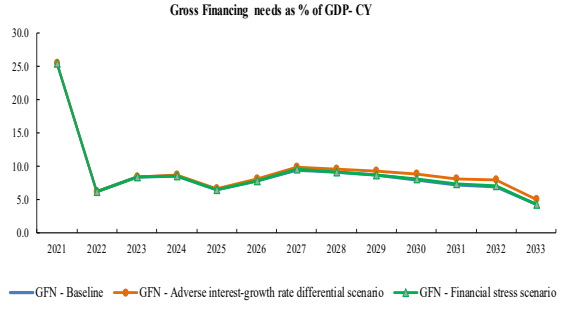












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	LOW	LOW	LOW	LOW	LOW	MEDIUM	LOW	LOW	LOW
		Debt level (2033), % GDP	45.4	50.6	52.3	50.2	45.7				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	28%	30%	30%	28%	28%				
		Probability of debt ratio exceeding in 2027 its 2022 level						6%			
		Difference between 90th and 10th percentiles (pps. GDP)						38.1			

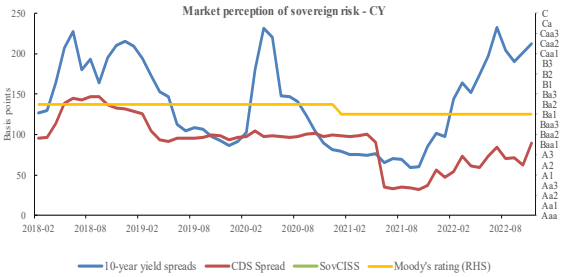
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.7**	**0.3**	**0.5**
Fiscal sub-index	0.6	0.1	0.4
Financial competitiveness sub-index	0.8	0.4	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**1.9**	**-0.8**	**-0.5**	**1.8**
of which Initial Budgetary position	0.7	-1.9	-1.8	-1.8
Ageing costs	1.1	1.0	1.2	3.6
of which Pensions	*1.0*	*0.9*	*1.1*	*0.9*
Health care	*0.3*	*0.3*	*0.2*	*0.6*
Long-term care	*0.2*	*0.2*	*0.2*	*2.4*
Others	*-0.4*	*-0.4*	*-0.4*	*-0.4*
Required structural primary balance related to S2	**1.7**	**1.5**	**1.8**	**4.1**

S1 indicator	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**-1.7**	**-1.5**	**-0.7**
of which *Initial budgetary position*	*-2.7*	*-2.5*	*-2.7*
Debt requirement	*0.4*	*0.4*	*0.4*
Ageing costs	*0.5*	*0.7*	*1.6*
Required structural primary balance related to S1	**0.6**	**0.9**	**1.6**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	212.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - CY (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	1.9	0.0	89.4

Net International Investment Position (IIP) - CY (2021)	Net IIP (% GDP):
	-117.8

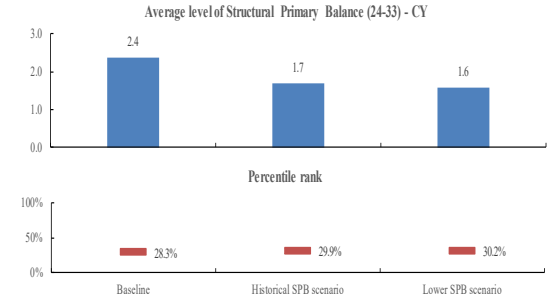
5. Risks related to government's contingent liabilities

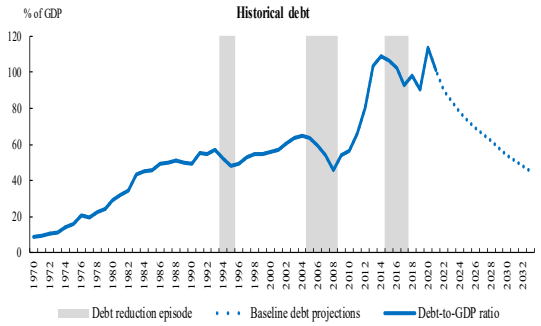
General government contingent liabilities	CY						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	8.0	7.8	7.2	6.7	6.9	6.0	7.5
of which One-off guarantees	*8.7*	*8.1*	*7.8*	*6.7*	*6.9*	*6.0*	*6.4*
Standardised guarantees	*0.3*	*0.2*	*0.0*	*0.0*	*0.0*	*0.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.3*

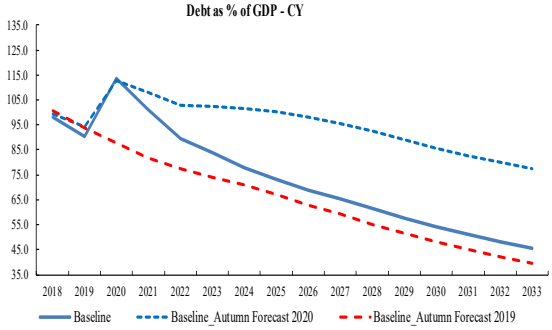
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	10.2	8.9	7.7	6.6	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	10.2	8.9	7.7	6.6	0.9

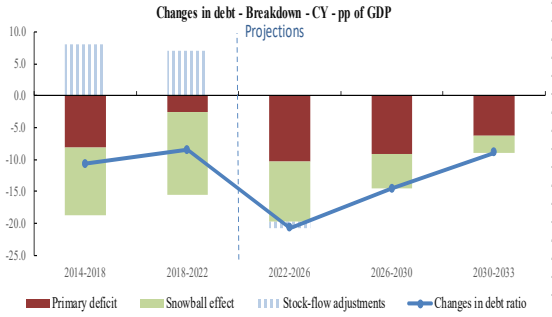
Government's contingent liability risks from banking sector - CY (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	4.3	-3.4	51.9	3.6	-5.5	28.5	0.15%	2.50%

6. Realism of baseline assumptions









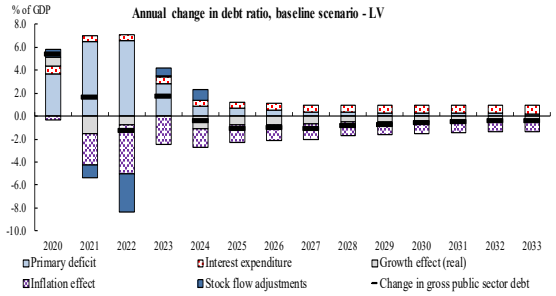
7. Underlying macro-fiscal assumptions

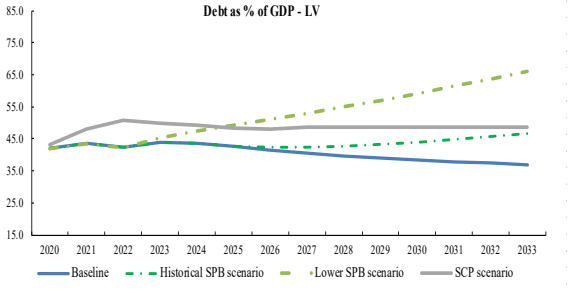
Macro-fiscal assumptions, Cyprus	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	89.6	84.0	77.7	57.8	51.2	45.4	83.8	58.4	64.7
Primary balance	2.6	2.5	2.9	2.5	2.2	2.0	2.6	2.3	2.4
Structural primary balance (before CoA)	0.8	1.6	2.4	2.4	2.4	2.4	1.6	2.4	2.2
Real GDP growth	5.6	1.0	1.9	1.9	1.9	2.0	2.8	1.8	2.1
Potential GDP growth	2.8	2.8	2.6	1.9	1.9	2.0	2.7	1.9	2.1
Inflation rate	4.6	4.3	2.6	2.5	2.5	2.4	3.8	2.5	2.8
Implicit interest rate (nominal)	1.7	1.6	1.5	2.2	2.5	2.7	1.6	2.2	2.1
Gross financing needs	8.4	8.5	6.5	8.0	7.0	4.0	7.8	7.3	7.4
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	97.6	93.4	90.5	75.7	70.2	65.2	93.8	78.7	83.6
Primary balance	0.2	0.6	1.4	1.1	0.9	0.7	0.7	1.1	0.6
Structural primary balance (before CoA)	-0.2	0.0	1.1	1.1	1.1	1.1	0.3	1.1	0.6
Real GDP growth	4.2	3.3	1.8	1.9	1.8	1.9	3.1	1.9	2.5
Gross financing needs	5.1	5.7	5.9	9.6	6.6	6.3	5.5	8.2	7.4
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	89.6	84.0	77.7	59.5	54.7	50.6	83.8	60.5	66.3
Primary balance	2.6	2.5	2.9	1.8	1.3	1.1	2.6	1.7	1.9
Structural primary balance (before CoA)	0.8	1.6	2.4	1.5	1.5	1.5	1.6	1.6	1.6
Real GDP growth	5.6	1.0	1.9	1.7	1.7	2.0	2.8	1.8	2.1
Gross financing needs	8.4	8.5	6.5	8.9	8.4	5.6	7.8	8.2	8.1
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	89.6	84.1	77.9	58.1	51.4	45.7	83.9	58.7	65.0
Implicit interest rate (nominal)	1.7	1.7	1.6	2.3	2.5	2.8	1.6	2.3	2.1
Gross financing needs	8.4	8.6	6.6	8.1	7.1	4.0	7.9	7.4	7.5
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	89.6	84.0	77.9	61.8	56.6	52.3	83.8	62.4	67.7
Primary balance	2.6	2.2	2.4	1.7	1.4	1.2	2.4	1.5	1.7
Structural primary balance (before CoA)	0.8	1.2	1.6	1.6	1.6	1.6	1.2	1.6	1.5
Real GDP growth	5.6	1.3	2.2	1.9	1.9	2.0	3.1	1.8	2.1
Gross financing needs	8.4	8.9	6.9	9.6	8.9	5.9	8.1	8.7	8.6
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	89.6	84.0	77.7	57.8	51.2	45.4	83.8	58.4	64.7
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	8.4	8.5	6.5	8.0	7.0	4.0	7.8	7.3	7.4
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	89.6	84.5	78.7	60.9	55.1	50.2	84.3	61.5	67.2
Implicit interest rate (nominal)	1.7	1.6	1.6	2.5	2.9	3.1	1.6	2.5	2.3
Real GDP growth	5.6	0.5	1.4	1.4	1.4	1.5	2.5	1.3	1.6
Gross financing needs	8.4	8.6	6.7	8.8	7.9	4.8	7.9	7.9	7.9

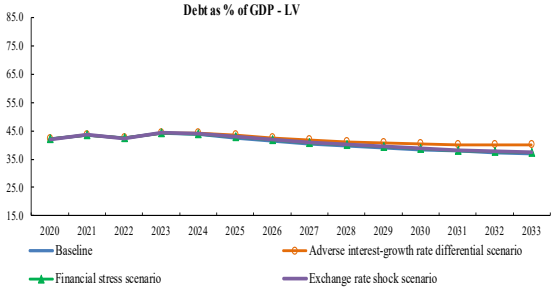
Latvia

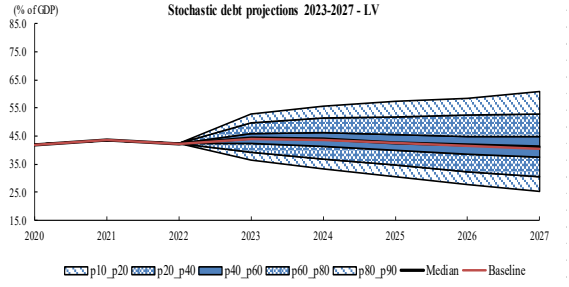
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

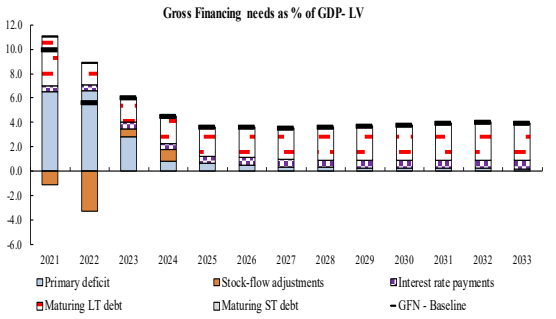
LV - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**42.0**	**43.6**	**42.4**	**44.0**	**43.6**	**42.6**	**41.5**	**40.4**	**39.6**	**38.9**	**38.3**	**37.8**	**37.3**	**36.9**
Changes in the ratio (-1+2+3)	*5.4*	*1.6*	*-1.2*	*1.7*	*-0.4*	*-1.1*	*-1.0*	*-1.1*	*-0.8*	*-0.7*	*-0.6*	*-0.5*	*-0.5*	*-0.4*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-3.7**	**-6.5**	**-6.6**	**-2.8**	**-0.8**	**-0.7**	**-0.5**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.3**	**-0.2**	**-0.2**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-2.9***	***-6.3***	***-6.4***	***-1.9***	***-0.3***	***-0.3***	***-0.3***	***-0.3***	***-0.3***	***-0.3***	***-0.3***	***-0.3***	***-0.2***	***-0.2***
(1.1.1) Structural primary balance (bef. CoA)	-2.9	-6.3	-6.4	-1.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
(1.1.2) Cost of ageing					0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-0.1
(1.1.3) Others (taxes and property incomes)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(1.2) Cyclical component	***-0.9***	***-0.3***	***-0.2***	***-0.9***	***-0.6***	***-0.4***	***-0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.1***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.1**	**-3.8**	**-4.5**	**-1.8**	**-2.2**	**-1.7**	**-1.6**	**-1.4**	**-1.1**	**-1.0**	**-0.9**	**-0.8**	**-0.7**	**-0.6**
(2.1) Interest expenditure	*0.6*	*0.5*	*0.5*	*0.6*	*0.5*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*	*0.7*
(2.2) Growth effect	*0.8*	*-1.5*	*-0.7*	*0.1*	*-1.1*	*-0.8*	*-0.7*	*-0.7*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.5*
(2.3) Inflation effect	*-0.4*	*-2.7*	*-4.3*	*-2.5*	*-1.6*	*-1.5*	*-1.4*	*-1.3*	*-1.2*	*-1.1*	*-1.1*	*-1.0*	*-0.9*	*-0.9*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**0.6**	**-1.1**	**-3.3**	**0.6**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*0.6*	*-1.1*	*-3.3*	*0.6*	*0.9*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-3.6	-6.8	-6.9	-2.5	-0.8	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
Gross financing needs	9.1	10.0	5.6	6.0	4.5	3.6	3.6	3.5	3.6	3.7	3.8	3.9	4.0	4.0

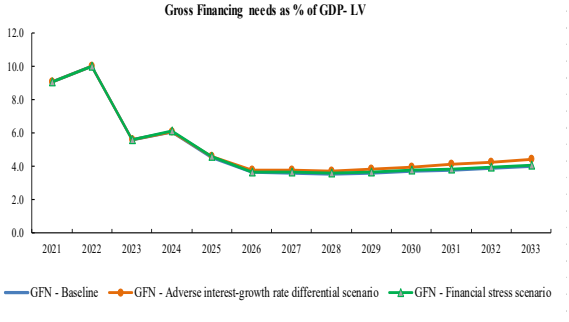












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	MEDIUM	LOW	LOW	LOW	LOW	LOW	LOW
		Debt level (2033), % GDP	36.9	46.6	66.0	39.9	37.2				
		Debt peak year	2023	2033	2033	2023	2023				
		Fiscal consolidation space	42%	73%	93%	42%	42%				
		Probability of debt ratio exceeding in 2027 its 2022 level						47%			
		Difference between 90th and 10th percentiles (pps. GDP)						35.8			

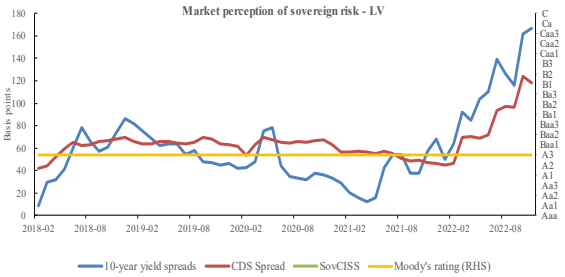
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.7**	**0.2**	**0.5**
Fiscal sub-index	0.5	0.2	0.4
Financial competitiveness sub-index	0.8	0.2	0.5

S2 indicator	2021 FSR	Baseline	2022 DSM Lower TFP growth	AWG risk scenario
Overall index	**0.7**	**-0.4**	**-0.2**	**3.5**
of which Initial Budgetary position	1.7	0.5	0.6	0.5
Ageing costs	-1.0	-0.9	-0.7	3.0
of which Pensions	*-1.3*	*-1.1*	*-0.9*	*-1.1*
Health care	*0.2*	*0.2*	*0.2*	*1.2*
Long-term care	*0.1*	*0.1*	*0.1*	*3.0*
Others	*-0.1*	*-0.1*	*-0.1*	*-0.1*
Required structural primary balance related to S2	**-0.8**	**-0.7**	**-0.4**	**3.2**

S1 indicator	Baseline	2022 DSM Lower TFP growth	AWG risk scenario
Overall index	**-0.6**	**-0.4**	**1.3**
of which *Initial budgetary position*	*0.2*	*0.2*	*0.1*
Debt requirement	*-0.3*	*-0.3*	*-0.3*
Ageing costs	*-0.5*	*-0.4*	*1.5*
Required structural primary balance related to S1	**-0.9**	**-0.7**	**1.0**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	167.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - LV (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	3.1	0.0	63.9

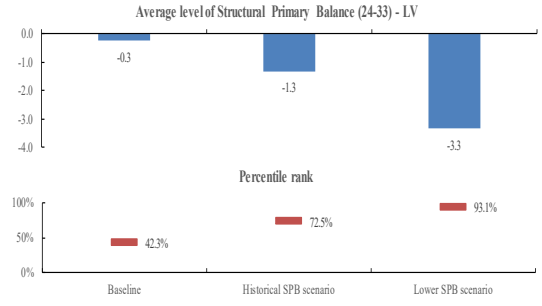
Net International Investment Position (IIP) - LV (2021)	Net IIP (% GDP):
	-27.4

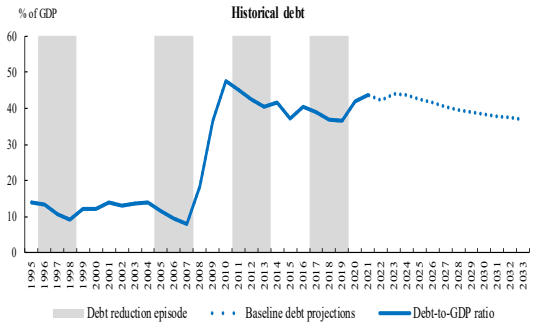
5. Risks related to government's contingent liabilities

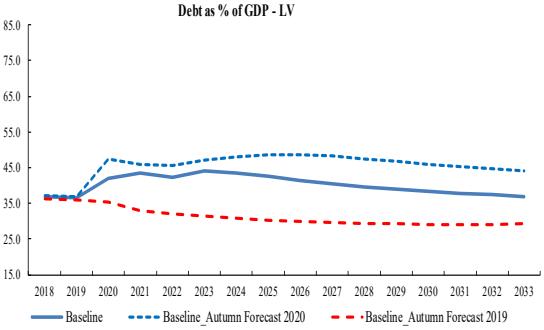
General government contingent liabilities		LV						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		1.4	1.3	1.4	1.4	1.9	1.9	7.5
of which One-off guarantees		*0.4*	*0.3*	*0.3*	*0.3*	*0.5*	*0.5*	*6.4*
Standardised guarantees		*1.0*	*1.0*	*1.1*	*1.2*	*1.4*	*1.4*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

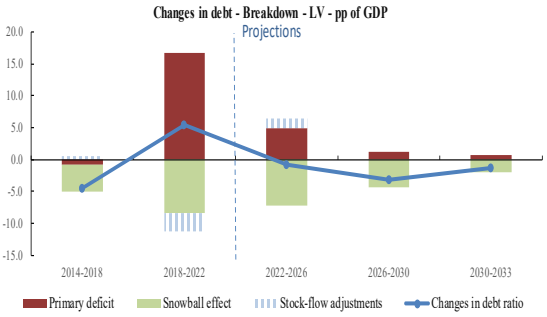
Government's contingent liability risks from banking sector - LV (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	0.9	10.9	70.3	0.6	-1.1	36.4	0.00%	0.02%

6. Realism of baseline assumptions









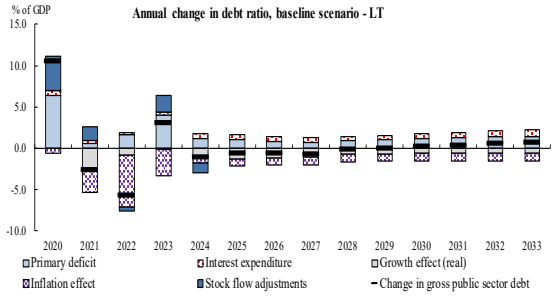
7. Underlying macro-fiscal assumptions

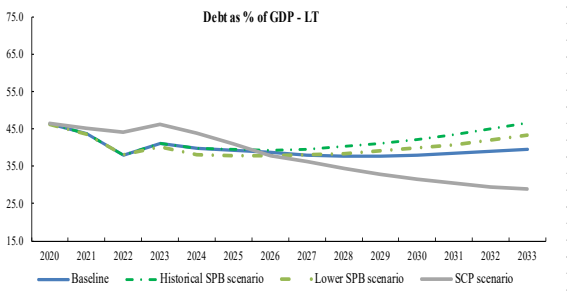
Macro-fiscal assumptions, Latvia	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.4	44.0	43.6	38.9	37.8	36.9	43.3	39.3	40.3
Primary balance	-6.6	-2.8	-0.8	-0.3	-0.3	-0.2	-3.4	-0.3	-1.1
Structural primary balance (before CoA)	-6.4	-1.9	-0.3	-0.3	-0.3	-0.3	-2.9	-0.3	-0.9
Real GDP growth	1.9	-0.3	2.6	1.3	1.2	1.3	1.4	1.5	1.5
Potential GDP growth	1.4	1.6	1.8	1.3	1.2	1.3	1.6	1.3	1.4
Inflation rate	11.0	6.2	3.8	2.9	2.6	2.4	7.0	3.0	4.0
Implicit interest rate (nominal)	1.4	1.5	1.3	1.7	1.8	2.0	1.4	1.7	1.6
Gross financing needs	5.6	6.0	4.5	3.7	3.9	4.0	5.4	3.8	4.2
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	50.7	50.0	49.3	48.7	48.6	48.6	50.0	48.6	48.9
Primary balance	-3.6	-1.9	-0.8	-1.4	-1.4	-1.3	-2.1	-1.2	-2.1
Structural primary balance (before CoA)	-3.4	-2.3	-1.5	-1.5	-1.5	-1.5	-2.4	-1.5	-2.2
Real GDP growth	5.0	4.6	2.3	1.8	1.7	1.5	4.0	1.7	2.5
Gross financing needs	11.1	7.6	6.4	6.0	5.7	5.7	8.3	6.0	7.1
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.4	44.0	43.6	43.2	44.8	46.6	43.3	43.8	43.7
Primary balance	-6.6	-2.8	-0.8	-1.6	-1.7	-1.6	-3.4	-1.5	-2.0
Structural primary balance (before CoA)	-6.4	-1.9	-0.3	-1.7	-1.7	-1.7	-2.9	-1.4	-1.8
Real GDP growth	1.9	-0.3	2.6	1.2	1.1	1.3	1.4	1.5	1.5
Gross financing needs	5.6	6.0	4.5	5.3	5.9	6.3	5.4	5.2	5.3
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.4	44.1	43.7	39.2	38.1	37.2	43.4	39.5	40.5
Implicit interest rate (nominal)	1.4	1.7	1.4	1.7	1.9	2.1	1.5	1.7	1.7
Gross financing needs	5.6	6.1	4.6	3.7	4.0	4.0	5.4	3.8	4.2
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.4	45.3	47.6	57.0	61.4	66.0	45.1	57.3	54.3
Primary balance	-6.6	-4.9	-3.3	-3.4	-3.3	-3.3	-4.9	-3.4	-3.8
Structural primary balance (before CoA)	-6.4	-4.9	-3.3	-3.3	-3.3	-3.3	-4.9	-3.3	-3.7
Real GDP growth	1.9	1.9	1.9	1.3	1.2	1.3	1.9	1.3	1.5
Gross financing needs	5.6	8.9	7.1	8.2	9.1	9.8	7.2	8.2	8.0
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.4	44.3	44.1	39.3	38.2	37.3	43.6	39.7	40.7
Exchange rate depreciation	0.0%	0.6%	0.6%	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%
Gross financing needs	5.6	6.1	4.6	3.7	3.9	4.0	5.4	3.8	4.2
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	42.4	44.3	44.1	40.7	40.2	39.9	43.6	41.1	41.7
Implicit interest rate (nominal)	1.4	1.6	1.4	1.9	2.2	2.4	1.4	1.9	1.8
Real GDP growth	1.9	-0.8	2.1	0.8	0.7	0.8	1.1	1.0	1.0
Gross financing needs	5.6	6.1	4.6	4.0	4.3	4.4	5.4	4.0	4.4

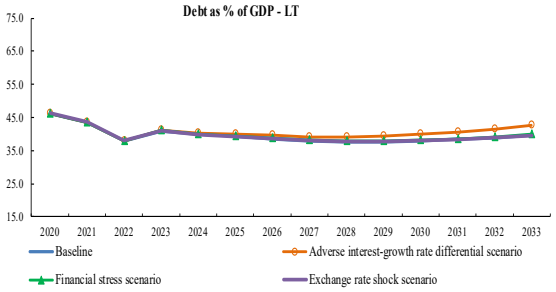
Lithuania

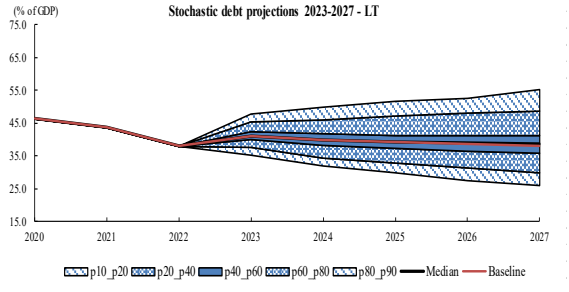
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

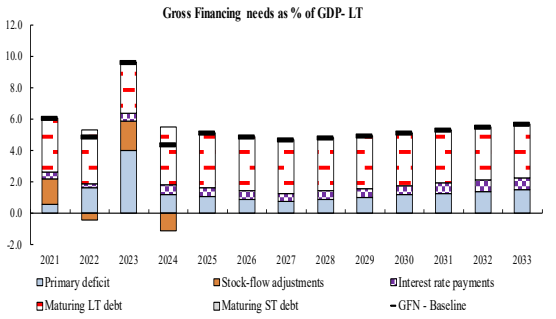
LT - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**46.3**	**43.7**	**38.0**	**41.0**	**39.9**	**39.3**	**38.7**	**37.9**	**37.8**	**37.8**	**38.0**	**38.4**	**38.9**	**39.6**
Changes in the ratio (-1+2+3)	*10.5*	*-2.7*	*-5.7*	*3.1*	*-1.1*	*-0.6*	*-0.6*	*-0.7*	*-0.2*	*0.0*	*0.2*	*0.4*	*0.5*	*0.8*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-6.4**	**-0.5**	**-1.6**	**-4.0**	**-1.2**	**-1.0**	**-0.8**	**-0.7**	**-0.9**	**-1.0**	**-1.2**	**-1.3**	**-1.4**	**-1.5**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-6.2***	***-0.9***	***-1.5***	***-3.0***	***-0.3***	***-0.4***	***-0.5***	***-0.7***	***-0.9***	***-1.0***	***-1.2***	***-1.3***	***-1.4***	***-1.5***
(1.1.1) Structural primary balance (bef. CoA)	-6.2	-0.9	-1.5	-3.0	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
(1.1.2) Cost of ageing					0.0	0.1	0.2	0.4	0.6	0.7	0.8	1.0	1.1	1.2
(1.1.3) Others (taxes and property incomes)					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(1.2) Cyclical component	***-0.2***	***0.4***	***0.0***	***-0.9***	***-0.9***	***-0.6***	***-0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**0.1**	**-4.8**	**-6.8**	**-2.8**	**-1.2**	**-1.6**	**-1.5**	**-1.4**	**-1.1**	**-1.0**	**-0.9**	**-0.9**	**-0.8**	**-0.7**
(2.1) Interest expenditure	*0.7*	*0.4*	*0.3*	*0.4*	*0.6*	*0.6*	*0.6*	*0.5*	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*	*0.8*
(2.2) Growth effect	*0.0*	*-2.5*	*-0.9*	*-0.2*	*-0.9*	*-1.3*	*-1.2*	*-1.1*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.6*	*-0.6*
(2.3) Inflation effect	*-0.6*	*-2.8*	*-6.2*	*-3.1*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*	*-0.9*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**4.1**	**1.6**	**-0.5**	**1.9**	**-1.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*4.1*	*1.6*	*-0.5*	*1.9*	*-1.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-6.9	-1.4	-1.8	-3.5	-0.9	-1.0	-1.1	-1.3	-1.4	-1.6	-1.8	-1.9	-2.1	-2.3
Gross financing needs	15.3	6.0	4.8	9.6	4.4	5.1	4.9	4.7	4.8	4.9	5.1	5.3	5.5	5.7

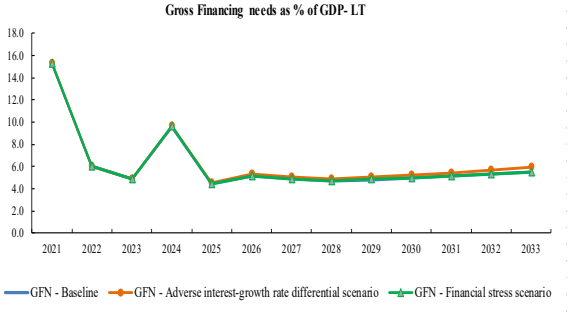












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	LOW	MEDIUM	LOW	LOW	LOW	LOW	LOW
		Debt level (2033), % GDP	39.6	46.7	43.2	42.6	39.9				
		Debt peak year	2023	2033	2033	2033	2023				
		Fiscal consolidation space	41%	61%	55%	41%	41%				
		Probability of debt ratio exceeding in 2027 its 2022 level						52%			
		Difference between 90th and 10th percentiles (pps. GDP)						29.3			

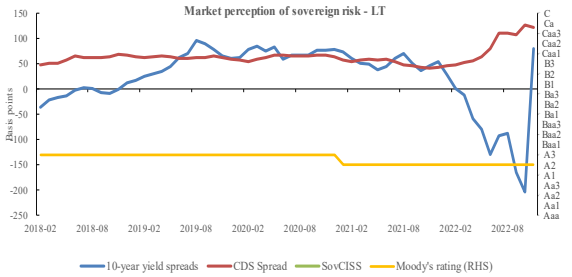
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.6**	**0.3**	**0.5**
Fiscal sub-index	0.6	0.1	0.4
Financial competitiveness sub-index	0.6	0.4	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**1.7**	**1.8**	**1.9**	**6.3**
of which Initial Budgetary position	0.6	0.5	0.6	0.5
Ageing costs	1.2	1.3	1.3	5.7
of which Pensions	*0.0*	*0.2*	*0.3*	*0.2*
Health care	*0.5*	*0.5*	*0.4*	*1.3*
Long-term care	*0.7*	*0.6*	*0.6*	*4.2*
Others	*0.0*	*0.0*	*0.0*	*0.0*
Required structural primary balance related to S2	**1.4**	**1.5**	**1.6**	**6.0**

S1 indicator	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**1.3**	**1.4**	**3.5**
of which *Initial budgetary position*	*0.2*	*0.3*	*0.1*
Debt requirement	*-0.4*	*-0.4*	*-0.4*
Ageing costs	*1.5*	*1.4*	*3.8*
Required structural primary balance related to S1	**1.0**	**1.1**	**3.2**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	81.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - LT (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	0.0	0.0	64.7

Net International Investment Position (IIP) - LT (2021)	Net IIP (% GDP):
	-7.4

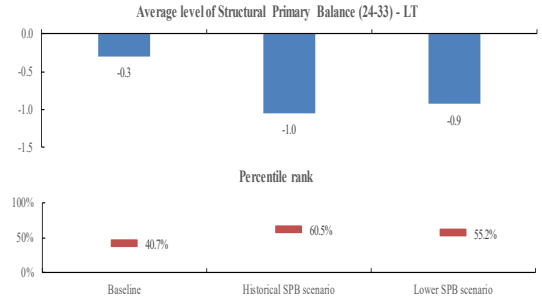
5. Risks related to government's contingent liabilities

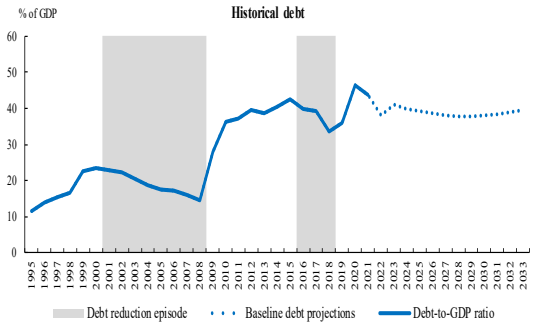
General government contingent liabilities	LT						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	1.0	1.0	0.9	0.8	1.2	1.2	7.5
of which One-off guarantees	*0.2*	*0.3*	*0.2*	*0.3*	*0.5*	*0.5*	*6.4*
Standardised guarantees	*0.8*	*0.8*	*0.7*	*0.6*	*0.7*	*0.7*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*0.3*

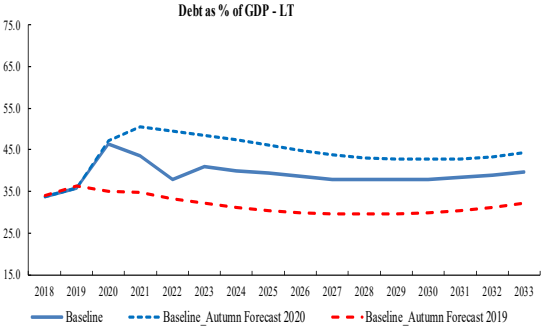
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

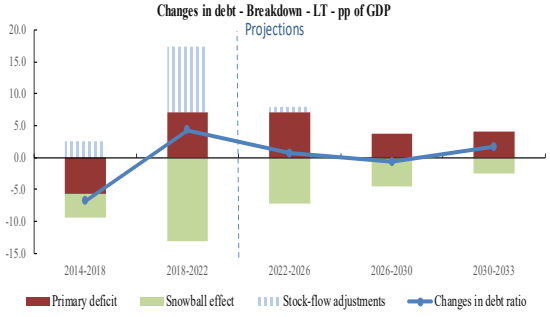
Government's contingent liability risks from banking sector - LT (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	5.9	16.1	68.5	0.9	0.0	38.5	0.01%	0.03%

6. Realism of baseline assumptions









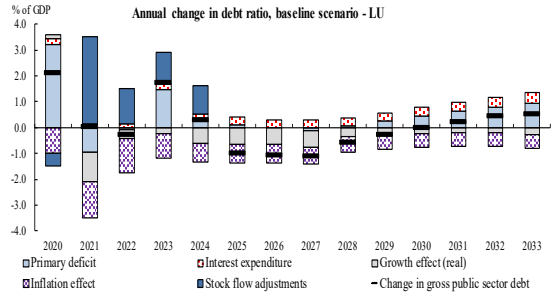
7. Underlying macro-fiscal assumptions

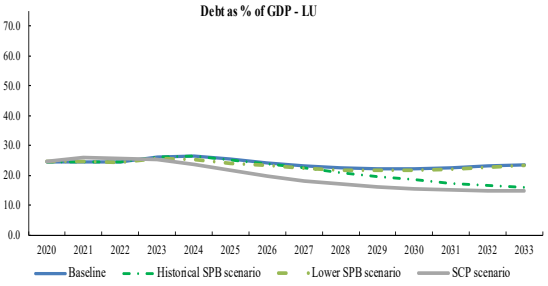
Macro-fiscal assumptions, Lithuania	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	38.0	41.0	39.9	37.8	38.4	39.6	39.6	38.5	38.8
Primary balance	-1.6	-4.0	-1.2	-1.0	-1.3	-1.5	-2.3	-1.1	-1.4
Structural primary balance (before CoA)	-1.5	-3.0	-0.3	-0.3	-0.3	-0.3	-1.6	-0.3	-0.6
Real GDP growth	2.5	0.5	2.4	1.9	1.7	1.6	1.8	2.3	2.1
Potential GDP growth	3.5	2.8	2.3	1.9	1.7	1.6	2.9	2.0	2.2
Inflation rate	16.5	8.9	2.3	2.4	2.4	2.4	9.3	2.4	4.1
Implicit interest rate (nominal)	0.7	1.3	1.6	1.6	1.8	2.1	1.2	1.7	1.6
Gross financing needs	4.8	9.6	4.4	4.9	5.3	5.7	6.3	5.1	5.4
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	44.1	46.1	43.9	32.8	30.4	28.8	44.7	35.3	37.8
Primary balance	-2.9	-1.1	0.6	0.4	0.1	-0.1	-1.1	0.5	-0.2
Structural primary balance (before CoA)	-2.5	-0.7	1.0	1.0	1.0	1.0	-0.8	1.0	0.2
Real GDP growth	3.6	3.6	2.2	2.1	2.0	1.5	3.2	2.3	2.7
Gross financing needs	5.2	8.0	3.6	3.0	3.0	3.1	5.6	3.0	3.9
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	38.0	41.0	39.9	41.1	43.6	46.7	39.6	41.9	41.3
Primary balance	-1.6	-4.0	-1.2	-2.0	-2.3	-2.5	-2.3	-1.9	-2.0
Structural primary balance (before CoA)	-1.5	-3.0	-0.3	-1.3	-1.3	-1.3	-1.6	-1.1	-1.3
Real GDP growth	2.5	0.5	2.4	1.9	1.7	1.6	1.8	2.3	2.1
Gross financing needs	4.8	9.6	4.4	6.2	6.7	7.4	6.3	6.2	6.2
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	38.0	41.1	40.0	37.9	38.6	39.9	39.7	38.7	38.9
Implicit interest rate (nominal)	0.7	1.4	1.7	1.6	1.8	2.1	1.3	1.7	1.6
Gross financing needs	4.8	9.6	4.4	5.0	5.3	5.7	6.3	5.1	5.4
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	38.0	40.2	38.0	39.0	40.8	43.2	38.7	39.7	39.4
Primary balance	-1.6	-2.7	-1.2	-1.6	-1.9	-2.1	-1.8	-1.6	-1.7
Structural primary balance (before CoA)	-1.5	-1.2	-0.9	-0.9	-0.9	-0.9	-1.2	-0.9	-1.0
Real GDP growth	2.5	-0.9	5.4	1.9	1.7	1.6	2.3	2.1	2.1
Gross financing needs	4.8	7.8	4.2	5.6	6.1	6.7	5.6	5.7	5.7
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	38.0	41.0	39.9	37.8	38.4	39.6	39.6	38.5	38.8
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	4.8	9.6	4.4	4.9	5.3	5.7	6.3	5.1	5.4
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	38.0	41.2	40.4	39.5	40.7	42.6	39.9	40.3	40.2
Implicit interest rate (nominal)	0.7	1.3	1.8	1.9	2.2	2.5	1.3	2.0	1.8
Real GDP growth	2.5	0.0	1.9	1.4	1.2	1.1	1.4	1.8	1.7
Gross financing needs	4.8	9.6	4.5	5.2	5.7	6.2	6.3	5.4	5.6

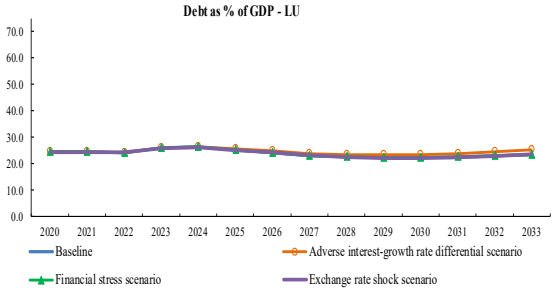
Luxembourg

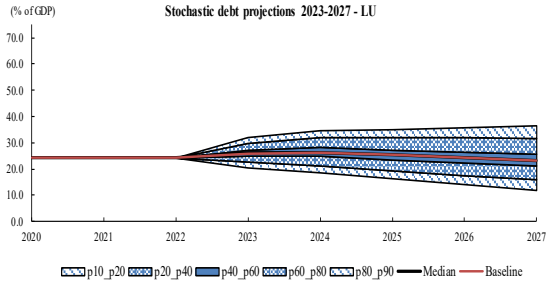
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

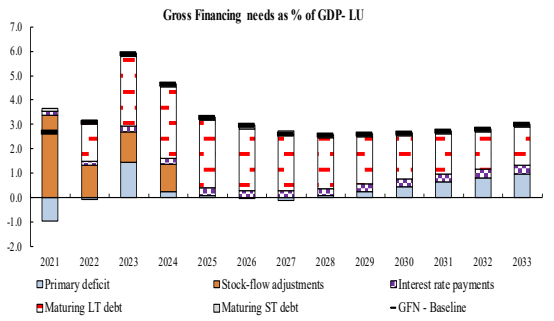
LU - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**24.5**	**24.5**	**24.3**	**26.0**	**26.3**	**25.3**	**24.2**	**23.1**	**22.6**	**22.3**	**22.3**	**22.5**	**23.0**	**23.5**
Changes in the ratio (-1+2+3)	*2.1*	*0.0*	*-0.3*	*1.7*	*0.3*	*-1.0*	*-1.1*	*-1.1*	*-0.6*	*-0.3*	*0.0*	*0.2*	*0.4*	*0.5*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-3.2**	**1.0**	**0.1**	**-1.5**	**-0.3**	**-0.1**	**0.0**	**0.1**	**-0.1**	**-0.3**	**-0.5**	**-0.6**	**-0.8**	**-1.0**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-1.9***	***0.9***	***0.4***	***-0.6***	***0.6***	***0.5***	***0.3***	***0.1***	***-0.1***	***-0.3***	***-0.5***	***-0.6***	***-0.8***	***-1.0***
(1.1.1) Structural primary balance (bef. CoA)	*-1.9*	*0.9*	*0.4*	*-0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*
(1.1.2) Cost of ageing					*0.0*	*0.2*	*0.4*	*0.6*	*0.8*	*1.1*	*1.3*	*1.5*	*1.7*	*1.9*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.1*	*0.1*	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*	*0.4*
(1.2) Cyclical component	***-1.3***	***0.0***	***-0.3***	***-0.9***	***-0.8***	***-0.6***	***-0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**-0.6**	**-2.4**	**-1.5**	**-0.9**	**-1.1**	**-1.1**	**-1.0**	**-1.0**	**-0.7**	**-0.5**	**-0.5**	**-0.4**	**-0.4**	**-0.4**
(2.1) Interest expenditure	*0.2*	*0.2*	*0.2*	*0.2*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.4*	*0.4*
(2.2) Growth effect	*0.2*	*-1.1*	*-0.3*	*-0.2*	*-0.6*	*-0.7*	*-0.7*	*-0.6*	*-0.4*	*-0.3*	*-0.2*	*-0.2*	*-0.2*	*-0.3*
(2.3) Inflation effect	*-1.0*	*-1.4*	*-1.3*	*-1.0*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.5*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**-0.5**	**3.4**	**1.3**	**1.2**	**1.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*-0.5*	*3.4*	*1.3*	*1.2*	*1.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-2.1	0.8	0.2	-0.8	0.3	0.2	0.0	-0.2	-0.4	-0.6	-0.8	-1.0	-1.2	-1.3
Gross financing needs	7.4	2.7	3.1	5.9	4.7	3.3	3.0	2.6	2.6	2.6	2.7	2.7	2.8	3.0

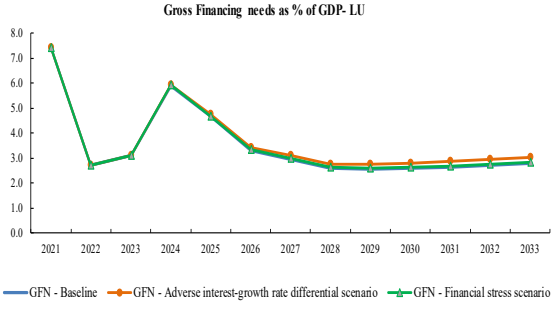












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	LOW	LOW	LOW	LOW	HIGH	MEDIUM	HIGH
		Debt level (2033), % GDP	23.5	15.9	23.3	25.3	23.6				
		Debt peak year	2024	2024	2023	2024	2024				
		Fiscal consolidation space	85%	79%	85%	85%	85%				
		Probability of debt ratio exceeding in 2027 its 2022 level						45%			
		Difference between 90th and 10th percentiles (pps. GDP)						24.3			

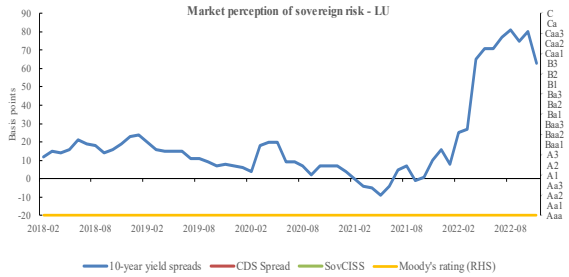
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.2**	**0.2**	**0.5**
Fiscal sub-index	0.3	0.1	0.4
Financial competitiveness sub-index	0.2	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**7.1**	**7.2**	**7.3**	**9.5**
of which Initial Budgetary position	-0.7	-0.4	-0.4	-0.4
Ageing costs	7.7	7.7	7.8	9.9
of which Pensions	*6.1*	*6.0*	*6.2*	*6.0*
Health care	*0.9*	*0.9*	*0.8*	*1.4*
Long-term care	*1.3*	*1.2*	*1.2*	*3.0*
Others	*-0.5*	*-0.4*	*-0.4*	*-0.4*
Required structural primary balance related to S2	**7.9**	**7.8**	**7.9**	**10.1**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.0**	**3.3**	**4.2**
of which *Initial budgetary position*	*-0.8*	*-0.8*	*-0.8*
Debt requirement	*-0.7*	*-0.7*	*-0.7*
Ageing costs	*4.6*	*4.8*	*5.7*
Required structural primary balance related to S1	**3.6**	**3.9**	**4.7**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	63.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - LU (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	2.2	0.0	49.7

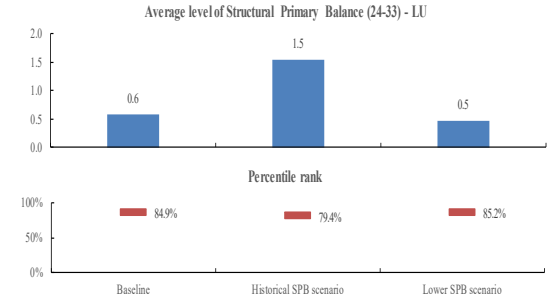
Net International Investment Position (IIP) - LU (2021)	Net IIP (% GDP):
	30.6

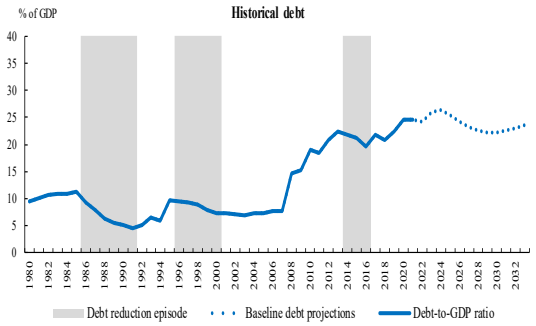
5. Risks related to government's contingent liabilities

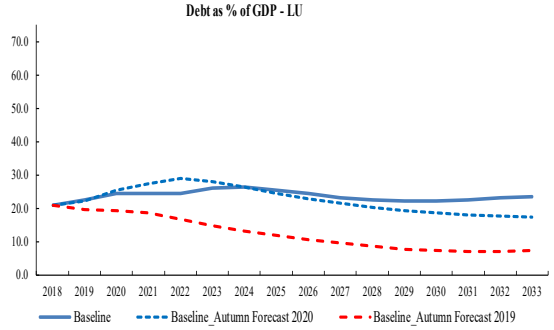
General government contingent liabilities		LU						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		12.2	11.6	11.1	10.6	11.0	8.7	7.5
of which One-off guarantees		*11.3*	*10.7*	*10.2*	*9.7*	*9.6*	*7.5*	*6.4*
Standardised guarantees		*0.8*	*0.8*	*0.9*	*0.9*	*1.4*	*1.2*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	3.8	3.5	3.3	2.9	2.6	2.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	3.8	3.5	3.3	2.9	2.6	2.0	0.9

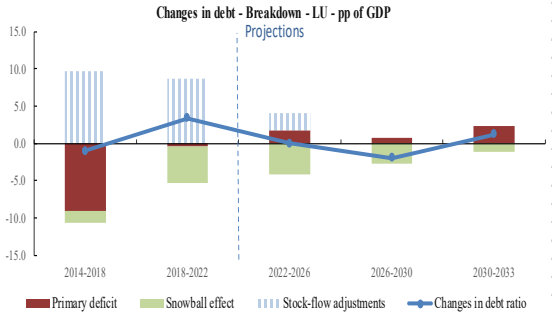
Government's contingent liability risks from banking sector - LU (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	53.9	13.9	143.5	1.3	-0.1	29.9	1.45%	5.62%

6. Realism of baseline assumptions









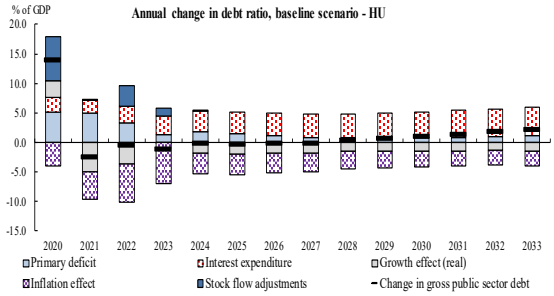
7. Underlying macro-fiscal assumptions

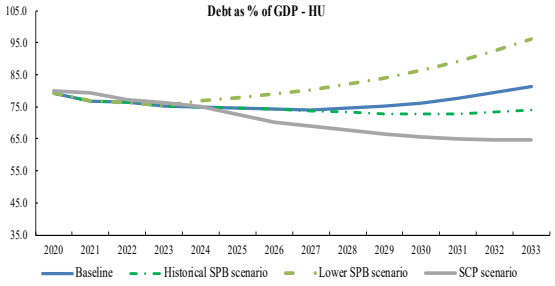
Macro-fiscal assumptions, Luxembourg	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	24.3	26.0	26.3	22.3	22.5	23.5	25.5	23.2	23.8
Primary balance	0.1	-1.5	-0.3	-0.3	-0.6	-1.0	-0.5	-0.4	-0.4
Structural primary balance (before CoA)	0.4	-0.6	0.6	0.6	0.6	0.6	0.1	0.6	0.5
Real GDP growth	1.5	1.0	2.4	1.3	0.9	1.2	1.6	1.7	1.7
Potential GDP growth	2.2	2.3	2.4	1.3	0.9	1.2	2.3	1.5	1.7
Inflation rate	5.7	4.2	2.9	2.6	2.5	2.4	4.3	2.6	3.0
Implicit interest rate (nominal)	0.7	1.1	1.1	1.4	1.6	1.7	1.0	1.5	1.3
Gross financing needs	3.1	5.9	4.7	2.6	2.7	3.0	4.6	2.8	3.2
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	25.6	25.3	23.6	16.1	15.0	14.6	24.8	17.9	19.8
Primary balance	0.3	0.6	0.6	0.3	0.0	-0.4	0.5	0.4	0.4
Structural primary balance (before CoA)	0.7	1.2	1.3	1.3	1.3	1.3	1.0	1.3	1.2
Real GDP growth	3.7	2.5	2.5	1.8	1.7	1.9	2.9	2.2	2.7
Gross financing needs	3.2	2.8	1.5	0.8	1.0	1.3	2.5	1.0	1.5
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	24.3	26.0	26.3	19.6	17.4	15.9	25.5	20.0	21.4
Primary balance	0.1	-1.5	-0.3	0.7	0.6	0.3	-0.5	0.5	0.3
Structural primary balance (before CoA)	0.4	-0.6	0.6	1.9	1.9	1.9	0.1	1.7	1.3
Real GDP growth	1.5	1.0	2.4	1.6	1.2	1.2	1.6	1.7	1.7
Gross financing needs	3.1	5.9	4.7	1.5	1.1	1.1	4.6	1.7	2.4
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	24.3	26.0	26.3	22.4	22.6	23.6	25.5	23.3	23.9
Implicit interest rate (nominal)	0.7	1.2	1.2	1.5	1.6	1.8	1.0	1.5	1.4
Gross financing needs	3.1	5.9	4.7	2.6	2.7	3.0	4.6	2.8	3.3
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	24.3	25.5	25.1	21.6	22.1	23.3	25.0	22.5	23.1
Primary balance	0.1	-0.8	0.0	-0.4	-0.7	-1.1	-0.2	-0.4	-0.4
Structural primary balance (before CoA)	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.5	0.5
Real GDP growth	1.5	0.2	4.1	1.3	0.9	1.2	1.9	1.6	1.7
Gross financing needs	3.1	4.9	4.3	2.6	2.8	3.1	4.1	2.8	3.1
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	24.3	26.0	26.3	22.3	22.5	23.5	25.5	23.2	23.8
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	3.1	5.9	4.7	2.6	2.7	3.0	4.6	2.8	3.2
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	24.3	26.1	26.6	23.4	24.0	25.3	25.7	24.3	24.7
Implicit interest rate (nominal)	0.7	1.1	1.3	1.8	2.0	2.1	1.0	1.8	1.6
Real GDP growth	1.5	0.5	1.9	0.8	0.4	0.7	1.3	1.2	1.2
Gross financing needs	3.1	5.9	4.7	2.8	2.9	3.3	4.6	3.0	3.4

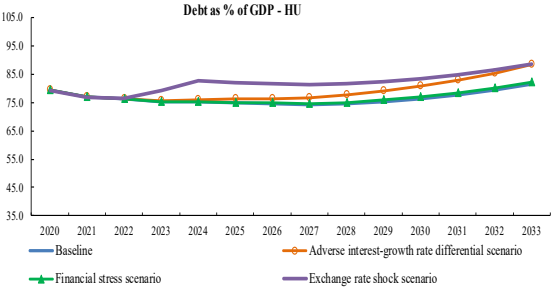
Hungary

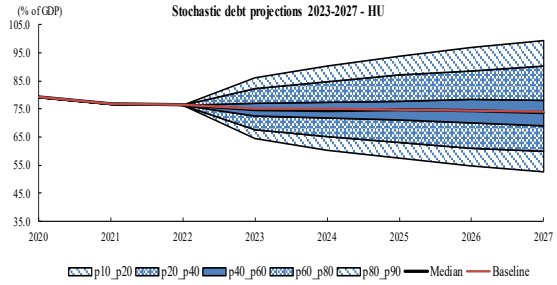
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

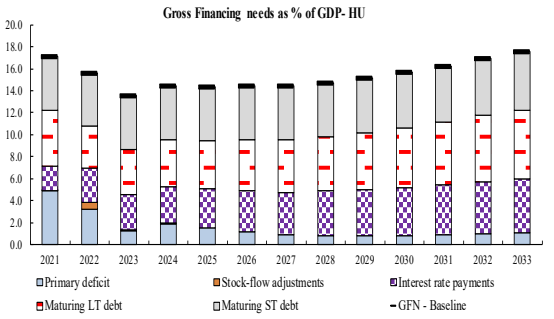
HU - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**79.3**	**76.8**	**76.4**	**75.2**	**75.1**	**74.7**	**74.4**	**74.2**	**74.5**	**75.2**	**76.2**	**77.6**	**79.4**	**81.5**
Changes in the ratio (-1+2+3)	*14.0*	*-2.5*	*-0.5*	*-1.2*	*-0.1*	*-0.4*	*-0.3*	*-0.3*	*0.4*	*0.7*	*1.0*	*1.4*	*1.8*	*2.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-5.2**	**-4.9**	**-3.2**	**-1.3**	**-1.9**	**-1.5**	**-1.2**	**-0.9**	**-0.8**	**-0.8**	**-0.8**	**-0.9**	**-1.0**	**-1.1**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-3.4***	***-4.4***	***-3.7***	***-0.6***	***-1.1***	***-1.1***	***-1.0***	***-0.9***	***-0.8***	***-0.8***	***-0.8***	***-0.9***	***-1.0***	***-1.1***
(1.1.1) Structural primary balance (bef. CoA)	*-3.4*	*-4.4*	*-3.7*	*-0.6*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*	*-1.1*
(1.1.2) Cost of ageing					*0.0*	*-0.1*	*-0.2*	*-0.3*	*-0.3*	*-0.4*	*-0.3*	*-0.3*	*-0.2*	*-0.1*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-1.9***	***-0.4***	***0.5***	***-0.7***	***-0.7***	***-0.5***	***-0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.1***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.4**	**-7.4**	**-7.1**	**-3.8**	**-2.1**	**-1.9**	**-1.5**	**-1.1**	**-0.5**	**-0.1**	**0.2**	**0.5**	**0.9**	**1.0**
(2.1) Interest expenditure	*2.3*	*2.3*	*2.9*	*3.1*	*3.4*	*3.6*	*3.7*	*3.9*	*4.0*	*4.2*	*4.4*	*4.5*	*4.7*	*4.9*
(2.2) Growth effect	*2.9*	*-5.0*	*-3.6*	*-0.1*	*-1.8*	*-2.0*	*-1.9*	*-1.9*	*-1.6*	*-1.5*	*-1.5*	*-1.5*	*-1.4*	*-1.4*
(2.3) Inflation effect	*-3.9*	*-4.7*	*-6.5*	*-6.9*	*-3.6*	*-3.4*	*-3.3*	*-3.1*	*-2.9*	*-2.8*	*-2.7*	*-2.6*	*-2.4*	*-2.5*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.1*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**7.4**	**0.0**	**3.3**	**1.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*6.6*	*0.0*	*0.6*	*0.1*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.8*	*0.0*	*2.7*	*1.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-5.8	-6.6	-6.8	-3.7	-4.5	-4.6	-4.7	-4.8	-4.9	-5.0	-5.2	-5.4	-5.7	-6.0
Gross financing needs	27.0	17.1	15.6	13.6	14.4	14.4	14.4	14.4	14.8	15.2	15.6	16.2	17.0	17.5

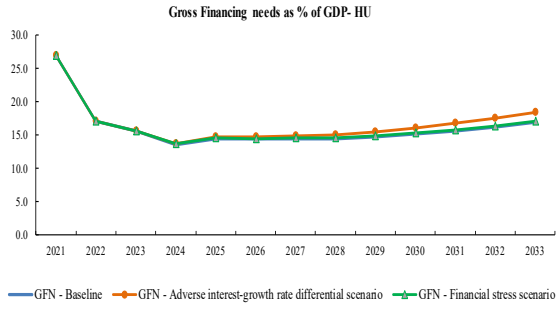












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	HIGH	Overall	MEDIUM	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	HIGH
		Debt level (2033), % GDP	81.5	74.1	96.3	88.3	82.2				
		Debt peak year	2033	2022	2033	2033	2033				
		Fiscal consolidation space	67%	59%	74%	67%	67%				
		Probability of debt ratio exceeding in 2027 its 2022 level						45%			
		Difference between 90th and 10th percentiles (pps. GDP)						46.7			

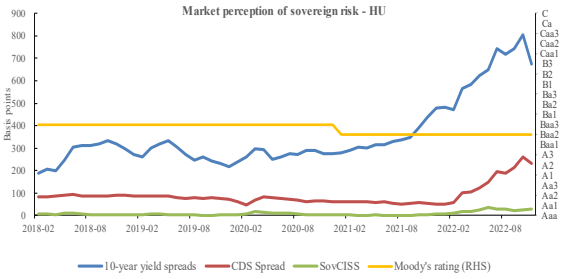
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.7**	**0.4**	**0.5**
Fiscal sub-index	0.6	0.4	0.4
Financial competitiveness sub-index	0.8	0.5	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**6.1**	**6.1**	**6.4**	**9.6**
of which Initial Budgetary position	1.6	1.6	1.8	1.6
Ageing costs	4.5	4.4	4.6	8.0
of which Pensions	*3.3*	*3.2*	*3.4*	*3.2*
Health care	*0.7*	*0.6*	*0.6*	*1.6*
Long-term care	*0.6*	*0.5*	*0.5*	*3.1*
Others	*0.0*	*0.1*	*0.1*	*0.1*
Required structural primary balance related to S2	**4.8**	**4.9**	**5.2**	**8.4**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**4.2**	**4.6**	**5.9**
of which *Initial budgetary position*	*1.6*	*1.7*	*1.4*
Debt requirement	*0.3*	*0.3*	*0.3*
Ageing costs	*2.4*	*2.6*	*4.2*
Required structural primary balance related to S1	**3.1**	**3.4**	**4.7**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	674.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - HU (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	5.9	22.6	31.7

Net International Investment Position (IIP) - HU (2021)	Net IIP (% GDP):
	-53.1

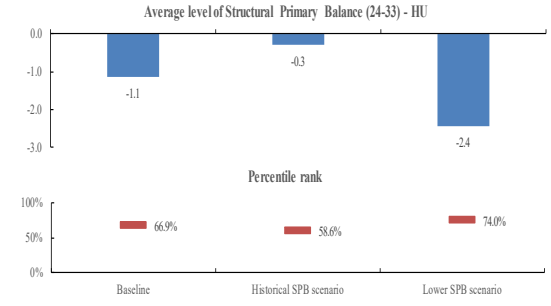
5. Risks related to government's contingent liabilities

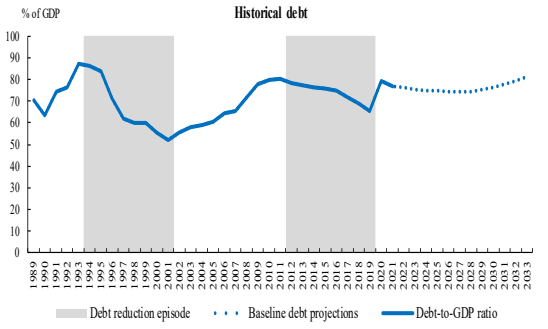
General government contingent liabilities	HU						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	5.8	5.0	5.1	6.4	8.1	9.1	7.5
of which One-off guarantees	*5.6*	*4.8*	*5.0*	*5.4*	*5.9*	*6.4*	*6.4*
Standardised guarantees	*0.2*	*0.1*	*0.1*	*1.0*	*2.2*	*2.8*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*1.6*	*1.5*	*1.3*	*1.1*	*1.1*	*0.9*	*0.3*

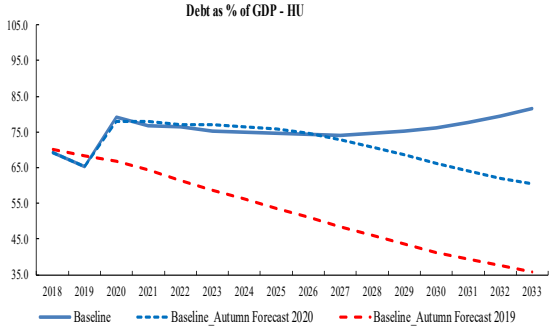
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

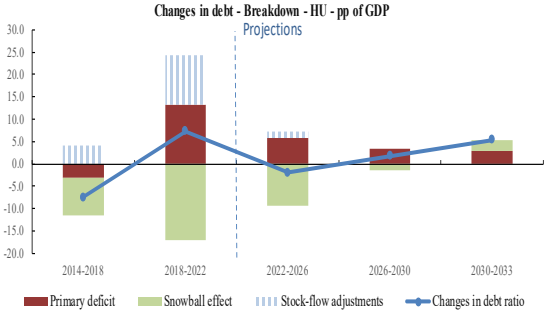
Government's contingent liability risks from banking sector - HU (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	12.7	16.5	79.4	3.7	0.1	63.9	0.02%	0.12%

6. Realism of baseline assumptions









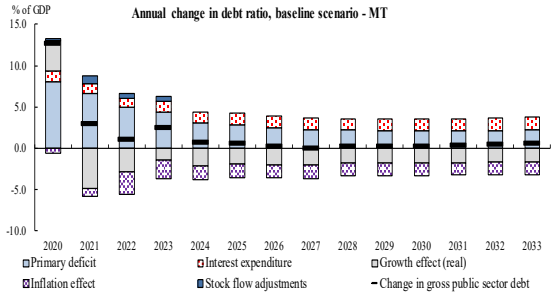
7. Underlying macro-fiscal assumptions

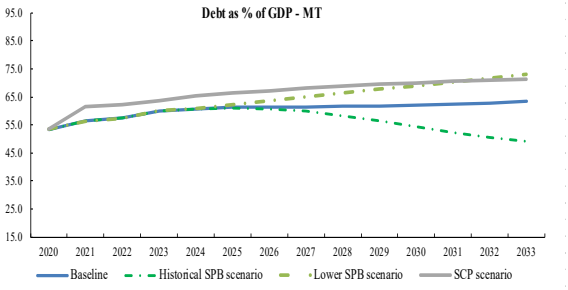
Macro-fiscal assumptions, Hungary	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	76.4	75.2	75.1	75.2	77.6	81.5	75.5	76.4	76.2
Primary balance	-3.2	-1.3	-1.9	-0.8	-0.9	-1.1	-2.1	-1.0	-1.3
Structural primary balance (before CoA)	-3.7	-0.6	-1.1	-1.1	-1.1	-1.1	-1.8	-1.1	-1.3
Real GDP growth	5.5	0.1	2.6	2.2	2.0	1.9	2.7	2.3	2.4
Potential GDP growth	3.4	2.8	2.6	2.2	2.0	1.9	2.9	2.1	2.3
Inflation rate	9.2	10.0	5.0	3.9	3.5	3.2	8.1	3.9	5.0
Implicit interest rate (nominal)	4.4	4.5	4.8	6.0	6.3	6.5	4.6	5.9	5.6
Gross financing needs	15.6	13.6	14.4	15.2	16.2	17.5	14.5	15.5	15.3
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	77.2	76.4	75.2	66.5	65.1	64.8	76.3	68.6	70.8
Primary balance	-3.3	-1.7	-1.2	-0.5	-0.6	-0.8	-2.1	-0.6	-1.3
Structural primary balance (before CoA)	-3.3	-1.6	-0.8	-0.8	-0.8	-0.8	-1.9	-0.8	-1.4
Real GDP growth	5.4	3.5	2.9	2.9	2.5	2.1	3.9	3.0	3.6
Gross financing needs	17.6	17.0	16.1	14.5	14.5	14.7	16.9	14.8	15.7
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	76.4	75.2	75.1	72.9	72.7	74.1	75.5	73.5	74.0
Primary balance	-3.2	-1.3	-1.9	0.1	0.3	0.0	-2.1	-0.2	-0.7
Structural primary balance (before CoA)	-3.7	-0.6	-1.1	0.0	0.0	0.0	-1.8	-0.2	-0.6
Real GDP growth	5.5	0.1	2.6	2.4	2.3	1.9	2.7	2.3	2.4
Gross financing needs	15.6	13.6	14.4	14.0	14.3	15.1	14.5	14.3	14.3
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	76.4	75.4	75.3	75.7	78.2	82.2	75.7	76.9	76.6
Implicit interest rate (nominal)	4.4	4.7	4.9	6.0	6.3	6.5	4.7	6.0	5.6
Gross financing needs	15.6	13.7	14.5	15.3	16.4	17.7	14.6	15.6	15.4
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	76.4	75.5	77.0	84.1	89.3	96.3	76.3	85.3	83.1
Primary balance	-3.2	-3.0	-2.8	-2.1	-2.2	-2.4	-3.0	-2.3	-2.4
Structural primary balance (before CoA)	-3.7	-3.1	-2.4	-2.4	-2.4	-2.4	-3.1	-2.4	-2.6
Real GDP growth	5.5	2.0	1.6	2.2	2.0	1.9	3.0	2.2	2.4
Gross financing needs	15.6	15.9	15.5	18.0	19.7	21.7	15.7	18.3	17.7
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	76.4	79.1	82.5	82.1	84.6	88.6	79.3	83.5	82.4
Exchange rate depreciation	0.0%	9.4%	9.4%	0.0%	0.0%	0.0%	6.3%	0.0%	1.6%
Gross financing needs	15.6	14.2	15.7	16.5	17.6	19.0	15.2	16.8	16.4
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	76.4	75.7	76.0	78.9	82.7	88.3	76.0	80.3	79.2
Implicit interest rate (nominal)	4.4	4.6	5.0	6.3	6.7	6.9	4.6	6.2	5.8
Real GDP growth	5.5	-0.4	2.1	1.7	1.5	1.4	2.4	1.8	2.0
Gross financing needs	15.6	13.7	14.7	16.1	17.5	19.2	14.7	16.5	16.0

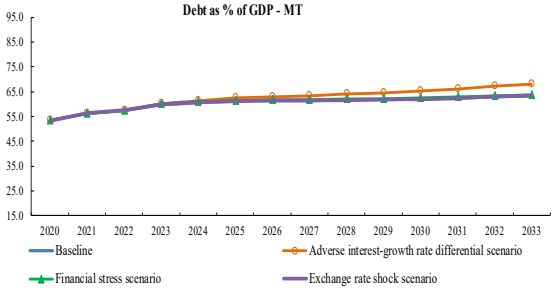
Malta

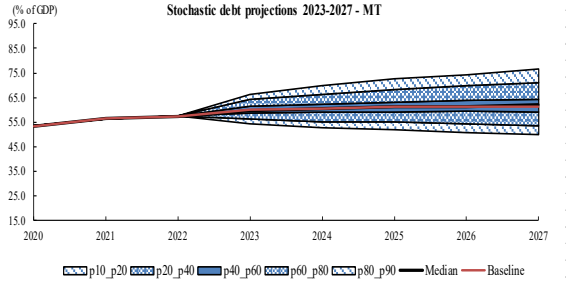
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

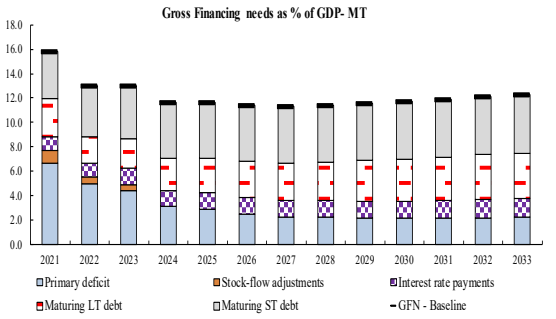
MT - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**53.3**	**56.3**	**57.4**	**59.9**	**60.6**	**61.2**	**61.4**	**61.4**	**61.6**	**61.8**	**62.1**	**62.5**	**62.9**	**63.4**
Changes in the ratio (-1+2+3)	*12.6*	*3.0*	*1.1*	*2.5*	*0.7*	*0.6*	*0.2*	*0.0*	*0.2*	*0.2*	*0.3*	*0.3*	*0.5*	*0.5*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-8.1**	**-6.6**	**-4.9**	**-4.4**	**-3.1**	**-2.9**	**-2.5**	**-2.3**	**-2.2**	**-2.2**	**-2.2**	**-2.1**	**-2.2**	**-2.2**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-4.4***	***-6.0***	***-4.9***	***-3.9***	***-2.5***	***-2.5***	***-2.3***	***-2.3***	***-2.2***	***-2.2***	***-2.2***	***-2.1***	***-2.2***	***-2.2***
(1.1.1) Structural primary balance (bef. CoA)	*-4.4*	*-6.0*	*-4.9*	*-3.9*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*
(1.1.2) Cost of ageing					*0.0*	*0.0*	*-0.2*	*-0.2*	*-0.3*	*-0.3*	*-0.3*	*-0.4*	*-0.3*	*-0.3*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-3.7***	***-0.6***	***-0.1***	***-0.5***	***-0.6***	***-0.4***	***-0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**4.3**	**-4.7**	**-4.5**	**-2.4**	**-2.4**	**-2.3**	**-2.3**	**-2.3**	**-2.0**	**-2.0**	**-1.9**	**-1.8**	**-1.7**	**-1.7**
(2.1) Interest expenditure	*1.3*	*1.1*	*1.1*	*1.3*	*1.3*	*1.3*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.5*	*1.5*
(2.2) Growth effect	*3.6*	*-4.9*	*-2.9*	*-1.5*	*-2.1*	*-2.0*	*-2.0*	*-2.0*	*-1.8*	*-1.8*	*-1.8*	*-1.7*	*-1.7*	*-1.7*
(2.3) Inflation effect	*-0.6*	*-0.9*	*-2.7*	*-2.2*	*-1.7*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.5*	*-1.5*	*-1.5*	*-1.5*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**0.2**	**1.0**	**0.6**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*0.2*	*1.0*	*0.6*	*0.5*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-5.7	-7.1	-6.0	-5.2	-3.8	-3.8	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.7	-3.7
Gross financing needs	16.1	15.8	13.0	13.0	11.6	11.6	11.4	11.3	11.4	11.5	11.7	11.9	12.1	12.2

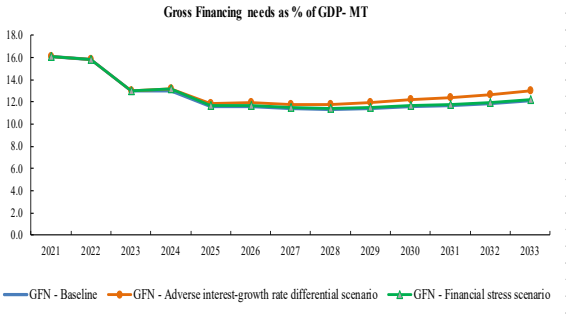












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios					Stochastic projections			
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress		S2	S1	Overall
LOW	MEDIUM	Overall	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	HIGH	MEDIUM	HIGH
		Debt level (2033), % GDP	63.4	49.0	73.2	68.1	63.9				
		Debt peak year	2033	2025	2033	2033	2033				
		Fiscal consolidation space	70%	52%	86%	70%	70%				
		Probability of debt ratio exceeding in 2027 its 2022 level						66%			
		Difference between 90th and 10th percentiles (pps. GDP)						26.7			

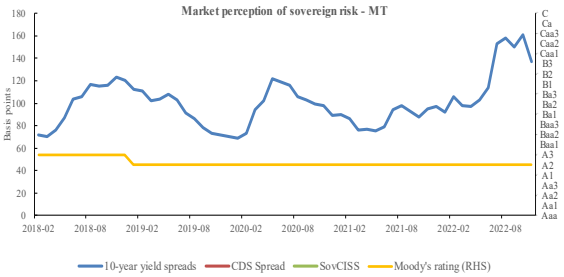
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.4**	**0.2**	**0.5**
Fiscal sub-index	0.2	0.2	0.4
Financial competitiveness sub-index	0.6	0.1	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**10.2**	**9.4**	**9.5**	**12.9**
of which Initial Budgetary position	3.5	2.7	2.8	2.7
Ageing costs	6.7	6.7	6.6	10.1
of which Pensions	*3.1*	*3.1*	*3.4*	*3.1*
Health care	*2.3*	*2.2*	*2.0*	*3.4*
Long-term care	*1.5*	*1.4*	*1.3*	*3.7*
Others	*-0.1*	*-0.1*	*-0.1*	*-0.1*
Required structural primary balance related to S2	**6.9**	**6.9**	**7.0**	**10.4**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**4.8**	**5.1**	**6.6**
of which *Initial budgetary position*	*2.1*	*2.2*	*2.2*
Debt requirement	*0.0*	*0.0*	*0.0*
Ageing costs	*2.7*	*2.8*	*4.4*
Required structural primary balance related to S1	**2.3**	**2.6**	**4.1**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	137.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - MT (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	8.5	0.0	23.8

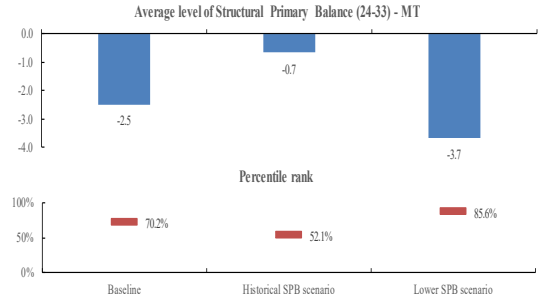
Net International Investment Position (IIP) - MT (2021)	Net IIP (% GDP):
	52.8

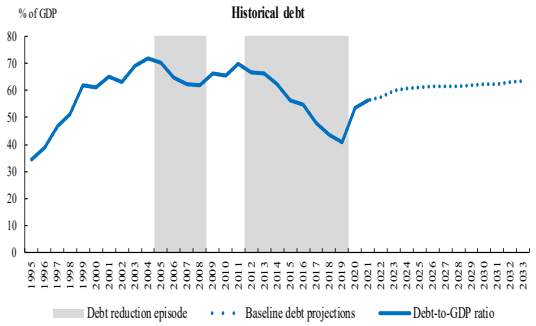
5. Risks related to government's contingent liabilities

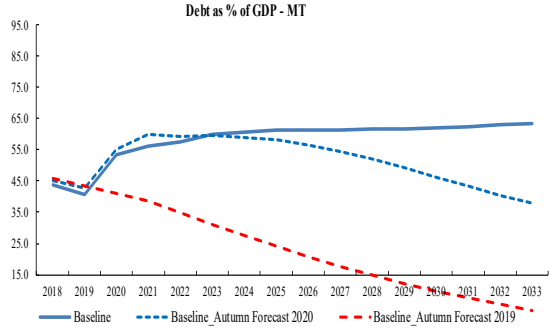
General government contingent liabilities		MT						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		13.2	8.9	8.2	7.0	8.9	8.2	7.5
of which One-off guarantees		*13.1*	*8.8*	*8.1*	*6.9*	*8.9*	*6.8*	*6.4*
Standardised guarantees		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*1.3*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9
	Securities issued under liquidity schemes	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Special purpose entity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Total	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9

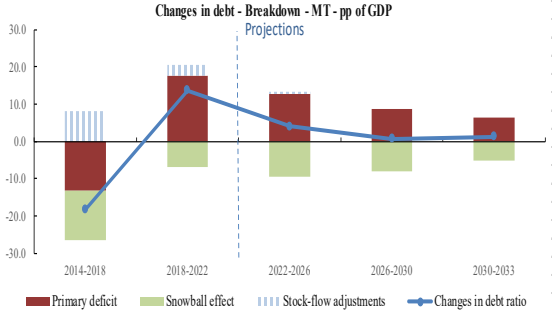
Government's contingent liability risks from banking sector - MT (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	9.4	5.1	52.5	2.6	-0.6	28.3	0.04%	0.46%

6. Realism of baseline assumptions









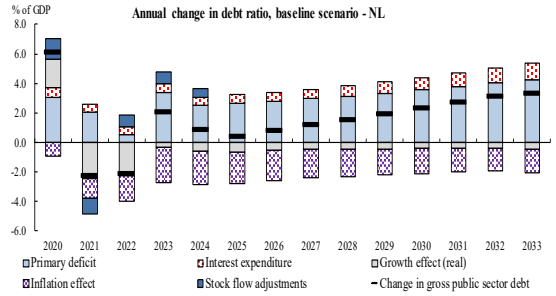
7. Underlying macro-fiscal assumptions

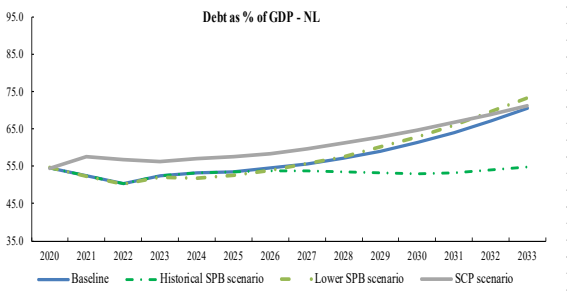
Macro-fiscal assumptions, Malta	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	57.4	59.9	60.6	61.8	62.5	63.4	59.3	62.1	61.4
Primary balance	-4.9	-4.4	-3.1	-2.2	-2.1	-2.2	-4.2	-2.3	-2.8
Structural primary balance (before CoA)	-4.9	-3.9	-2.5	-2.5	-2.5	-2.5	-3.7	-2.5	-2.8
Real GDP growth	5.7	2.8	3.7	3.1	2.9	2.9	4.0	3.1	3.4
Potential GDP growth	4.4	3.8	3.9	3.1	2.9	2.9	4.0	3.0	3.3
Inflation rate	5.0	4.1	2.8	2.6	2.5	2.4	4.0	2.6	2.9
Implicit interest rate (nominal)	2.2	2.4	2.4	2.4	2.5	2.6	2.3	2.4	2.4
Gross financing needs	13.0	13.0	11.6	11.5	11.9	12.2	12.5	11.7	11.9
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	62.4	63.6	65.3	69.6	70.6	71.4	63.8	68.6	67.1
Primary balance	-4.7	-3.7	-3.3	-2.7	-2.6	-2.7	-3.9	-2.8	-3.6
Structural primary balance (before CoA)	-3.9	-3.4	-3.0	-3.0	-3.0	-3.0	-3.4	-3.0	-3.5
Real GDP growth	6.2	4.8	2.6	2.7	2.6	2.9	4.5	2.7	3.3
Gross financing needs	13.4	13.2	12.8	12.9	13.0	13.3	13.2	12.9	13.4
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	57.4	59.9	60.6	56.4	52.3	49.0	59.3	55.8	56.7
Primary balance	-4.9	-4.4	-3.1	-0.2	0.3	0.2	-4.2	-0.6	-1.5
Structural primary balance (before CoA)	-4.9	-3.9	-2.5	-0.1	-0.1	-0.1	-3.7	-0.5	-1.3
Real GDP growth	5.7	2.8	3.7	3.5	3.4	2.9	4.0	3.1	3.4
Gross financing needs	13.0	13.0	11.6	9.0	8.2	7.9	12.5	9.2	10.1
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	57.4	60.1	60.8	62.2	62.9	63.9	59.4	62.4	61.7
Implicit interest rate (nominal)	2.2	2.7	2.5	2.5	2.5	2.6	2.5	2.5	2.5
Gross financing needs	13.0	13.2	11.7	11.6	12.0	12.3	12.6	11.8	12.0
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	57.4	60.0	60.7	67.7	70.3	73.2	59.4	67.7	65.6
Primary balance	-4.9	-4.7	-3.7	-3.4	-3.3	-3.4	-4.4	-3.4	-3.7
Structural primary balance (before CoA)	-4.9	-4.3	-3.7	-3.7	-3.7	-3.7	-4.3	-3.7	-3.8
Real GDP growth	5.7	3.1	4.8	3.1	2.9	2.9	4.5	3.0	3.4
Gross financing needs	13.0	13.4	12.1	13.5	14.1	14.8	12.8	13.5	13.4
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	57.4	59.9	60.6	61.8	62.5	63.4	59.3	62.1	61.4
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	13.0	13.0	11.6	11.5	11.9	12.2	12.5	11.7	11.9
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	57.4	60.3	61.3	64.7	66.2	68.1	59.7	64.9	63.6
Implicit interest rate (nominal)	2.2	2.6	2.6	2.7	2.8	3.0	2.4	2.8	2.7
Real GDP growth	5.7	2.3	3.2	2.6	2.4	2.4	3.7	2.6	2.9
Gross financing needs	13.0	13.1	11.8	12.2	12.7	13.2	12.6	12.3	12.4

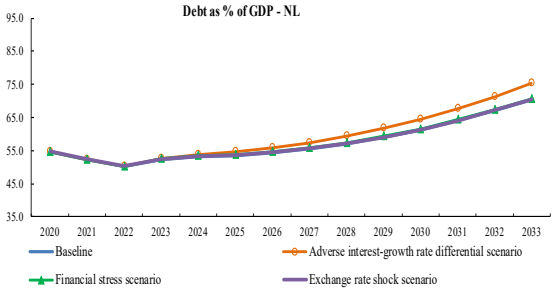
Netherlands

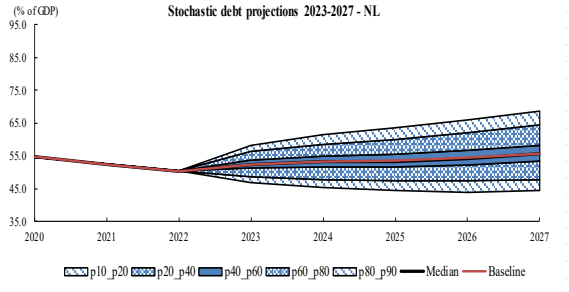
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

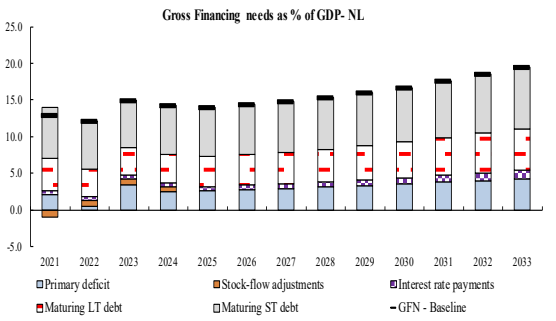
NL - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**54.7**	**52.4**	**50.3**	**52.4**	**53.2**	**53.6**	**54.4**	**55.6**	**57.1**	**59.0**	**61.3**	**64.0**	**67.1**	**70.4**
Changes in the ratio (-1+2+3)	*6.1*	*-2.2*	*-2.1*	*2.1*	*0.8*	*0.4*	*0.8*	*1.2*	*1.5*	*1.9*	*2.3*	*2.7*	*3.1*	*3.3*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-3.0**	**-2.0**	**-0.5**	**-3.4**	**-2.5**	**-2.6**	**-2.8**	**-2.9**	**-3.1**	**-3.3**	**-3.6**	**-3.8**	**-4.0**	**-4.3**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-0.6***	***-1.3***	***-1.5***	***-3.7***	***-2.5***	***-2.6***	***-2.8***	***-2.9***	***-3.1***	***-3.3***	***-3.6***	***-3.8***	***-4.0***	***-4.3***
(1.1.1) Structural primary balance (bef. CoA)	*-0.6*	*-1.3*	*-1.5*	*-3.7*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*	*-2.5*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.3*	*0.6*	*0.8*	*1.1*	*1.4*	*1.7*	*2.0*	*2.3*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.1*	*0.2*	*0.3*	*0.3*	*0.4*	*0.4*	*0.5*
(1.2) Cyclical component	***-2.4***	***-0.6***	***1.0***	***0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.7**	**-3.3**	**-3.4**	**-2.1**	**-2.3**	**-2.2**	**-2.0**	**-1.8**	**-1.6**	**-1.5**	**-1.3**	**-1.1**	**-0.9**	**-1.0**
(2.1) Interest expenditure	*0.7*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.6*	*0.7*	*0.7*	*0.8*	*0.8*	*0.9*	*1.0*	*1.1*
(2.2) Growth effect	*1.9*	*-2.5*	*-2.3*	*-0.3*	*-0.6*	*-0.7*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.5*
(2.3) Inflation effect	*-0.9*	*-1.3*	*-1.7*	*-2.4*	*-2.2*	*-2.1*	*-2.0*	*-1.9*	*-1.8*	*-1.8*	*-1.7*	*-1.6*	*-1.5*	*-1.6*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**1.4**	**-1.0**	**0.8**	**0.8**	**0.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.4*	*-1.0*	*0.8*	*0.8*	*0.6*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-1.3	-1.9	-2.1	-4.3	-3.1	-3.2	-3.4	-3.6	-3.8	-4.1	-4.4	-4.7	-5.0	-5.4
Gross financing needs	14.1	13.0	12.2	15.0	14.3	14.0	14.4	14.8	15.3	16.0	16.7	17.6	18.5	19.5

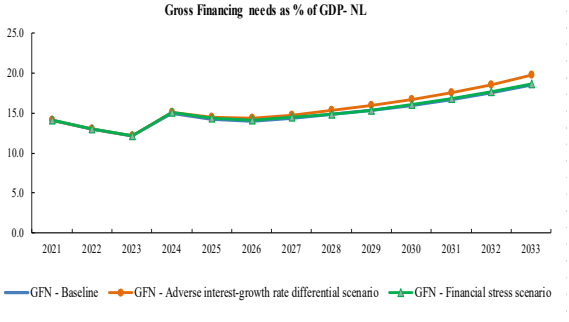












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM	LOW	HIGH	MEDIUM	HIGH
		Debt level (2033), % GDP	70.4	54.8	73.4	75.2	70.7				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	100%	90%	100%	100%	100%				
		Probability of debt ratio exceeding in 2027 its 2022 level						71%			
		Difference between 90th and 10th percentiles (pps. GDP)						24.4			

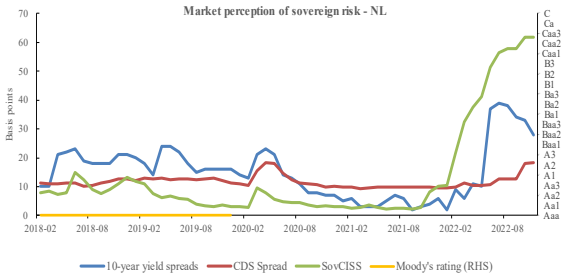
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.4**	**0.2**	**0.5**
Fiscal sub-index	0.6	0.1	0.4
Financial competitiveness sub-index	0.3	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**5.3**	**6.5**	**6.3**	**8.2**
of which Initial Budgetary position	1.4	2.7	2.8	2.7
Ageing costs	3.8	3.7	3.5	5.5
of which Pensions	*1.1*	*1.1*	*1.0*	*1.1*
Health care	*0.7*	*0.6*	*0.6*	*1.2*
Long-term care	*2.3*	*2.1*	*2.1*	*3.3*
Others	*-0.2*	*-0.1*	*-0.1*	*-0.1*
Required structural primary balance related to S2	**4.1**	**4.0**	**3.8**	**5.7**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**4.8**	**4.7**	**5.8**
of which *Initial budgetary position*	*2.0*	*2.1*	*2.0*
Debt requirement	*-0.2*	*-0.1*	*-0.2*
Ageing costs	*2.9*	*2.8*	*3.9*
Required structural primary balance related to S1	**2.3**	**2.2**	**3.3**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	28.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - NL (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	10.2	0.0	34.7

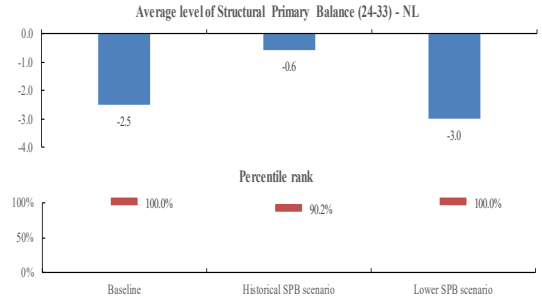
Net International Investment Position (IIP) - NL (2021)	Net IIP (% GDP):
	93.0

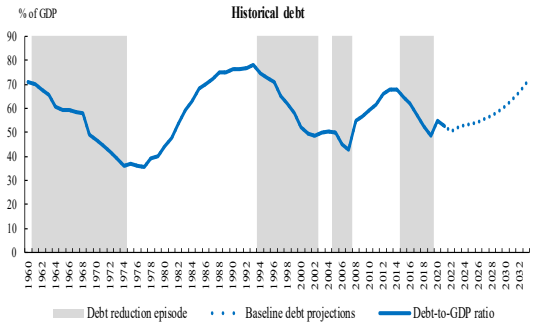
5. Risks related to government's contingent liabilities

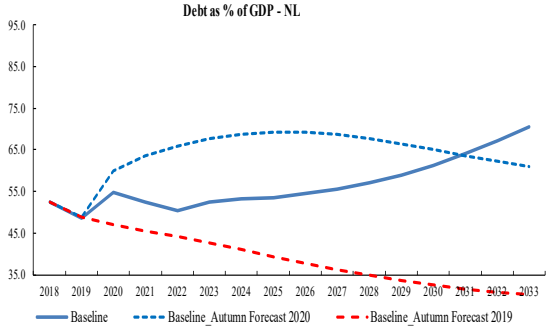
General government contingent liabilities		NL						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		3.6	3.4	3.2	3.0	5.9	4.4	7.5
of which One-off guarantees		*3.6*	*3.4*	*3.2*	*3.0*	*5.9*	*4.4*	*6.4*
Standardised guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

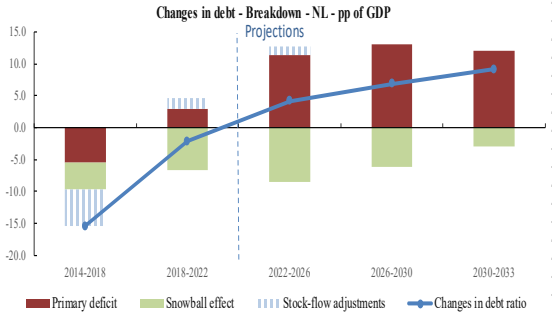
Government's contingent liability risks from banking sector - NL (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	11.7	15.0	115.8	1.3	-0.4	25.7	0.08%	0.59%

6. Realism of baseline assumptions









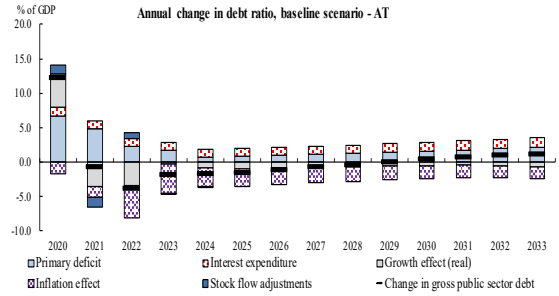
7. Underlying macro-fiscal assumptions

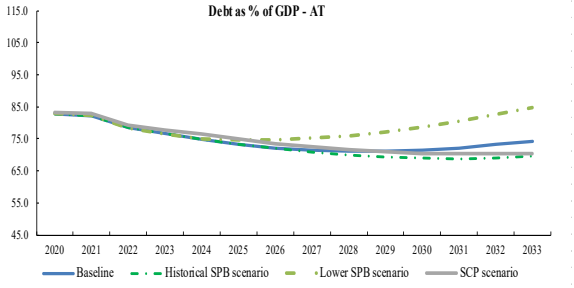
Macro-fiscal assumptions, Netherlands	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	50.3	52.4	53.2	59.0	64.0	70.4	52.0	60.3	58.2
Primary balance	-0.5	-3.4	-2.5	-3.3	-3.8	-4.3	-2.1	-3.4	-3.1
Structural primary balance (before CoA)	-1.5	-3.7	-2.5	-2.5	-2.5	-2.5	-2.6	-2.5	-2.5
Real GDP growth	4.6	0.6	1.3	0.8	0.6	0.8	2.2	0.9	1.2
Potential GDP growth	1.9	1.8	1.8	0.8	0.6	0.8	1.8	0.9	1.1
Inflation rate	3.4	5.0	4.4	3.2	2.7	2.4	4.3	3.2	3.5
Implicit interest rate (nominal)	1.2	1.2	1.1	1.4	1.5	1.7	1.2	1.4	1.4
Gross financing needs	12.2	15.0	14.3	16.0	17.6	19.5	13.8	16.3	15.7
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	56.8	56.2	56.9	62.8	66.7	71.1	56.7	61.9	60.6
Primary balance	-1.7	-1.2	-1.5	-2.8	-3.3	-3.7	-1.5	-2.5	-2.6
Structural primary balance (before CoA)	-2.0	-2.1	-1.9	-1.9	-1.9	-1.9	-2.0	-1.9	-2.1
Real GDP growth	3.3	2.3	0.3	0.4	0.4	0.7	2.0	0.5	1.2
Gross financing needs	12.1	11.6	12.0	14.7	16.0	17.4	11.9	14.2	14.0
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	50.3	52.4	53.2	53.2	53.2	54.8	52.0	53.6	53.2
Primary balance	-0.5	-3.4	-2.5	-1.3	-1.3	-1.7	-2.1	-1.6	-1.7
Structural primary balance (before CoA)	-1.5	-3.7	-2.5	0.0	0.0	0.0	-2.6	-0.4	-0.9
Real GDP growth	4.6	0.6	1.3	1.2	1.0	0.8	2.2	0.9	1.2
Gross financing needs	12.2	15.0	14.3	13.1	13.2	14.0	13.8	13.4	13.5
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	50.3	52.5	53.4	59.3	64.3	70.7	52.0	60.5	58.4
Implicit interest rate (nominal)	1.2	1.4	1.2	1.4	1.6	1.7	1.3	1.5	1.4
Gross financing needs	12.2	15.1	14.4	16.0	17.6	19.5	13.9	16.4	15.7
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	50.3	52.1	51.8	60.1	66.0	73.4	51.4	61.3	58.8
Primary balance	-0.5	-2.6	-2.4	-3.8	-4.3	-4.7	-1.8	-3.8	-3.3
Structural primary balance (before CoA)	-1.5	-2.3	-3.0	-3.0	-3.0	-3.0	-2.3	-3.0	-2.8
Real GDP growth	4.6	-0.4	3.4	0.8	0.6	0.8	2.5	0.8	1.2
Gross financing needs	12.2	13.6	13.9	16.6	18.4	20.5	13.2	16.9	15.9
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	50.3	52.4	53.2	59.0	64.0	70.4	52.0	60.3	58.2
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	12.2	15.0	14.3	16.0	17.6	19.5	13.8	16.3	15.7
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	50.3	52.7	53.8	61.6	67.6	75.2	52.3	63.0	60.3
Implicit interest rate (nominal)	1.2	1.3	1.3	1.8	1.9	2.2	1.3	1.8	1.6
Real GDP growth	4.6	0.1	0.8	0.3	0.1	0.3	1.9	0.4	0.7
Gross financing needs	12.2	15.1	14.5	16.7	18.6	20.8	13.9	17.1	16.3

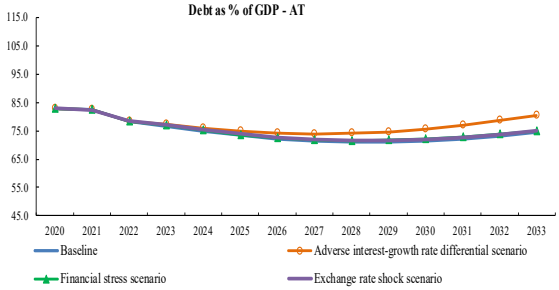
Austria

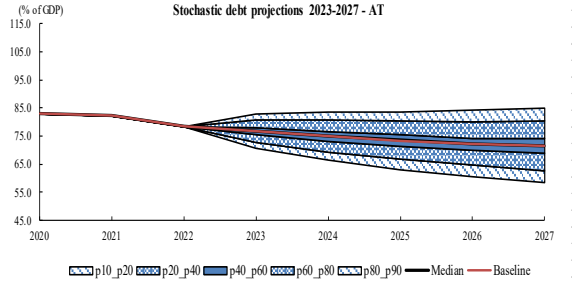
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

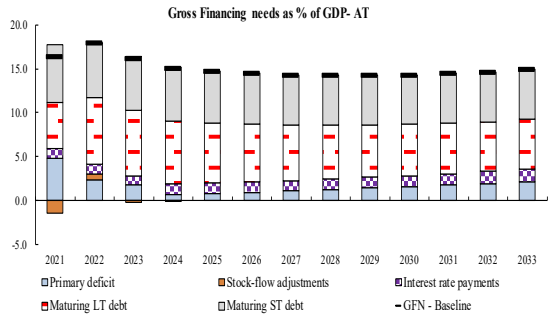
AT - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**82.9**	**82.3**	**78.5**	**76.6**	**74.9**	**73.3**	**72.2**	**71.4**	**71.0**	**71.1**	**71.5**	**72.2**	**73.3**	**74.4**
Changes in the ratio (-1+2+3)	*12.3*	*-0.6*	*-3.8*	*-1.8*	*-1.8*	*-1.6*	*-1.1*	*-0.8*	*-0.4*	*0.0*	*0.4*	*0.8*	*1.1*	*1.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-6.7**	**-4.8**	**-2.3**	**-1.7**	**-0.7**	**-0.8**	**-0.9**	**-1.1**	**-1.3**	**-1.4**	**-1.6**	**-1.8**	**-1.9**	**-2.1**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-3.7***	***-3.5***	***-3.0***	***-1.8***	***-0.6***	***-0.7***	***-0.9***	***-1.1***	***-1.3***	***-1.4***	***-1.6***	***-1.8***	***-1.9***	***-2.1***
(1.1.1) Structural primary balance (bef. CoA)	*-3.7*	*-3.5*	*-3.0*	*-1.8*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*	*-0.6*
(1.1.2) Cost of ageing					*0.0*	*0.2*	*0.3*	*0.5*	*0.7*	*0.9*	*1.0*	*1.2*	*1.4*	*1.5*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-3.0***	***-1.3***	***0.6***	***0.1***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**4.3**	**-4.0**	**-7.0**	**-3.4**	**-2.3**	**-2.4**	**-2.1**	**-1.9**	**-1.6**	**-1.4**	**-1.2**	**-1.0**	**-0.9**	**-1.0**
(2.1) Interest expenditure	*1.3*	*1.1*	*1.1*	*1.1*	*1.2*	*1.2*	*1.2*	*1.2*	*1.2*	*1.2*	*1.3*	*1.3*	*1.4*	*1.4*
(2.2) Growth effect	*4.8*	*-3.5*	*-3.4*	*-0.2*	*-0.8*	*-1.0*	*-0.8*	*-0.8*	*-0.7*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.7*
(2.3) Inflation effect	*-1.8*	*-1.6*	*-4.7*	*-4.3*	*-2.8*	*-2.6*	*-2.4*	*-2.3*	*-2.1*	*-2.0*	*-1.9*	*-1.8*	*-1.7*	*-1.7*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**1.3**	**-1.5**	**0.9**	**-0.1**	**-0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.3*	*-1.4*	*0.7*	*-0.2*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*-0.1*	*-0.1*	*0.2*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-5.0	-4.6	-4.1	-2.9	-1.8	-2.0	-2.1	-2.3	-2.5	-2.7	-2.9	-3.1	-3.3	-3.5
Gross financing needs	18.6	16.3	18.0	16.2	15.1	14.8	14.5	14.3	14.2	14.2	14.3	14.4	14.7	15.0

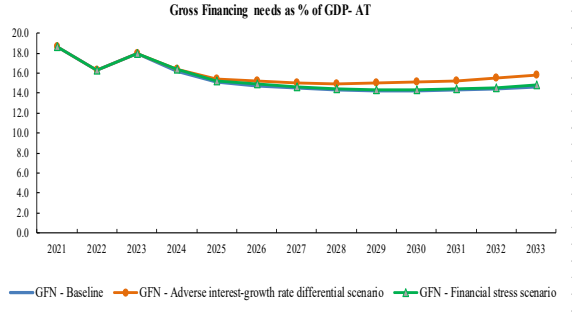












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	LOW	LOW	MEDIUM	MEDIUM	LOW	LOW	MEDIUM	MEDIUM	MEDIUM
		Debt level (2033), % GDP	74.4	69.5	84.8	80.3	75.0				
		Debt peak year	2022	2022	2033	2033	2022				
		Fiscal consolidation space	94%	85%	100%	94%	94%				
		Probability of debt ratio exceeding in 2027 its 2022 level						24%			
		Difference between 90th and 10th percentiles (pps. GDP)						26.4			

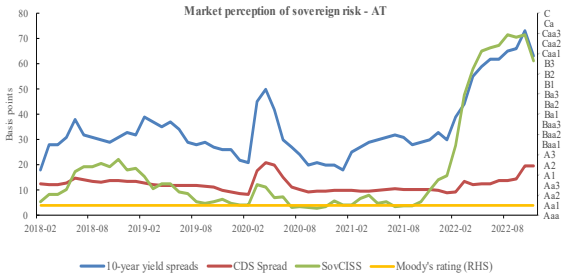
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.3**	**0.2**	**0.5**
Fiscal sub-index	0.6	0.4	0.4
Financial competitiveness sub-index	0.2	0.1	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.5**	**3.2**	**3.6**	**5.0**
of which Initial Budgetary position	0.9	0.8	0.9	0.9
Ageing costs	2.6	2.4	2.7	4.1
of which Pensions	*-0.1*	*-0.1*	*0.3*	*-0.1*
Health care	*1.0*	*1.0*	*0.9*	*1.7*
Long-term care	*1.6*	*1.5*	*1.5*	*2.5*
Others	*0.0*	*0.0*	*0.0*	*0.0*
Required structural primary balance related to S2	**2.7**	**2.6**	**3.0**	**4.4**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.4**	**2.7**	**3.5**
of which *Initial budgetary position*	*0.1*	*0.2*	*0.1*
Debt requirement	*0.3*	*0.3*	*0.3*
Ageing costs	*2.0*	*2.2*	*3.0*
Required structural primary balance related to S1	**1.8**	**2.1**	**2.9**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	63.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - AT (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	7.1	0.4	60.6

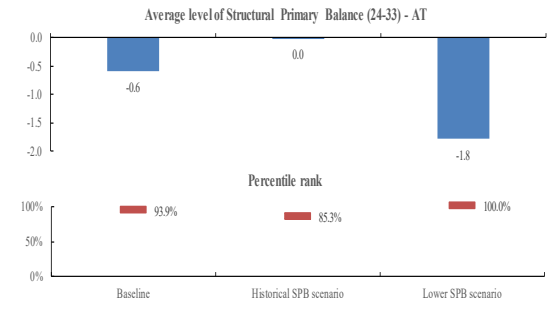
Net International Investment Position (IIP) - AT (2021)	Net IIP (% GDP):
	14.7

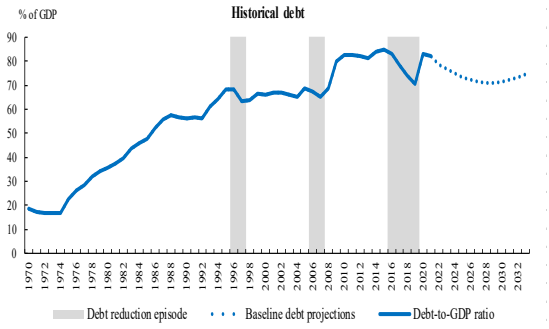
5. Risks related to government's contingent liabilities

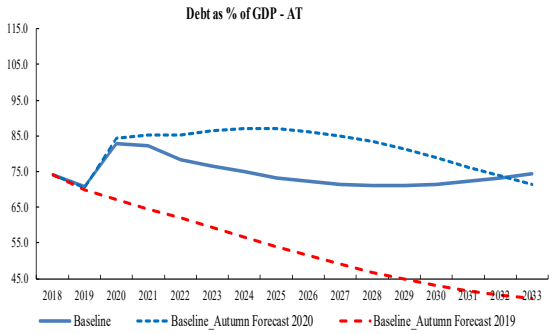
General government contingent liabilities		AT						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		17.2	16.3	16.3	16.1	19.0	17.1	7.5
of which	*One-off guarantees*	*17.2*	*16.3*	*16.3*	*16.1*	*19.0*	*17.1*	*6.4*
	Standardised guarantees	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.5	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.5	0.0	0.0	0.0	0.0	0.0	0.9

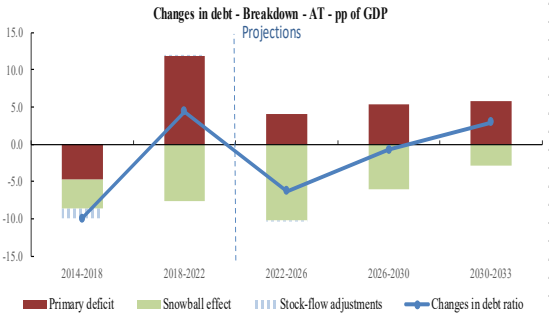
Government's contingent liability risks from banking sector - AT (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	7.4	12.4	96.2	1.8	-0.1	49.7	0.01%	0.43%

6. Realism of baseline assumptions









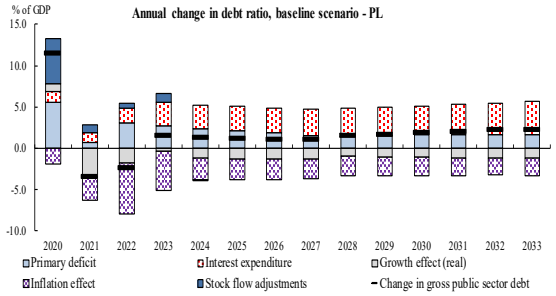
7. Underlying macro-fiscal assumptions

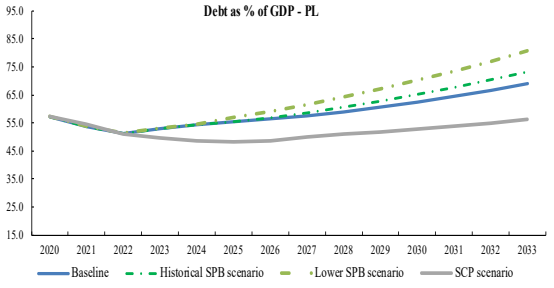
Macro-fiscal assumptions, Austria	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	78.5	76.6	74.9	71.1	72.2	74.4	76.7	72.3	73.4
Primary balance	-2.3	-1.7	-0.7	-1.4	-1.8	-2.1	-1.6	-1.4	-1.5
Structural primary balance (before CoA)	-3.0	-1.8	-0.6	-0.6	-0.6	-0.6	-1.8	-0.6	-0.9
Real GDP growth	4.6	0.3	1.1	0.9	0.7	1.0	2.0	1.0	1.2
Potential GDP growth	1.1	1.3	1.4	0.9	0.7	1.0	1.3	1.0	1.0
Inflation rate	6.1	5.8	3.7	2.9	2.6	2.4	5.2	2.9	3.5
Implicit interest rate (nominal)	1.5	1.5	1.7	1.8	1.9	2.0	1.6	1.8	1.8
Gross financing needs	18.0	16.2	15.1	14.2	14.4	15.0	16.4	14.5	15.0
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	79.4	77.6	76.5	70.9	70.4	70.4	77.9	72.4	74.3
Primary balance	-1.4	-0.2	-0.2	-1.0	-1.3	-1.6	-0.6	-0.8	-1.1
Structural primary balance (before CoA)	-1.5	-0.4	0.0	0.0	0.0	0.0	-0.6	0.0	-0.4
Real GDP growth	4.9	1.6	0.8	1.1	1.0	1.2	2.4	1.2	1.8
Gross financing needs	10.7	9.7	9.6	9.6	9.8	10.2	10.0	9.6	10.0
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	78.5	76.6	74.9	69.3	68.9	69.5	76.7	70.2	71.8
Primary balance	-2.3	-1.7	-0.7	-0.8	-1.0	-1.3	-1.6	-0.9	-1.0
Structural primary balance (before CoA)	-3.0	-1.8	-0.6	0.2	0.2	0.2	-1.8	0.1	-0.4
Real GDP growth	4.6	0.3	1.1	1.0	0.8	1.0	2.0	1.0	1.2
Gross financing needs	18.0	16.2	15.1	13.4	13.2	13.5	16.4	13.7	14.4
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	78.5	76.8	75.1	71.6	72.8	75.0	76.8	72.8	73.8
Implicit interest rate (nominal)	1.5	1.7	1.8	1.9	1.9	2.1	1.7	1.9	1.8
Gross financing needs	18.0	16.4	15.2	14.4	14.6	15.1	16.5	14.6	15.1
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	78.5	76.6	75.1	77.1	80.5	84.8	76.8	78.3	77.9
Primary balance	-2.3	-2.1	-1.3	-2.6	-3.0	-3.3	-1.9	-2.6	-2.4
Structural primary balance (before CoA)	-3.0	-2.4	-1.8	-1.8	-1.8	-1.8	-2.4	-1.8	-1.9
Real GDP growth	4.6	0.7	1.7	0.9	0.7	1.0	2.3	0.9	1.2
Gross financing needs	18.0	16.7	15.7	16.3	16.9	17.8	16.8	16.5	16.6
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	78.5	77.0	75.5	71.6	72.7	74.9	77.0	72.8	73.8
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	18.0	16.3	15.2	14.3	14.5	15.1	16.5	14.6	15.1
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	78.5	77.1	75.8	74.6	76.9	80.3	77.1	75.9	76.2
Implicit interest rate (nominal)	1.5	1.6	1.9	2.1	2.3	2.4	1.6	2.2	2.0
Real GDP growth	4.6	-0.2	0.6	0.4	0.2	0.5	1.7	0.5	0.8
Gross financing needs	18.0	16.4	15.4	15.1	15.5	16.3	16.6	15.4	15.7

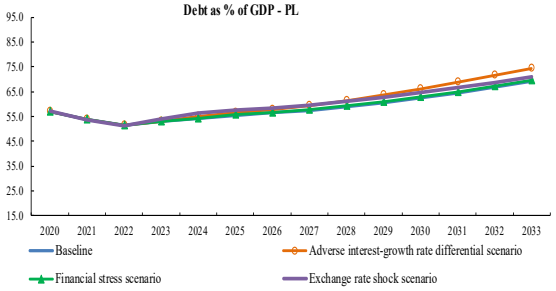
Poland

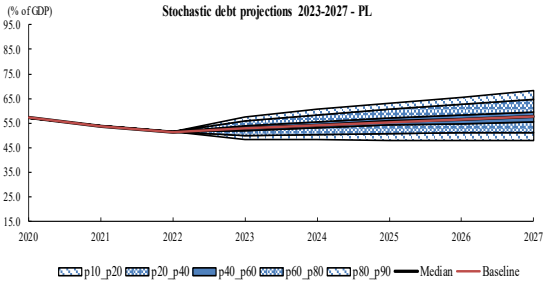
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

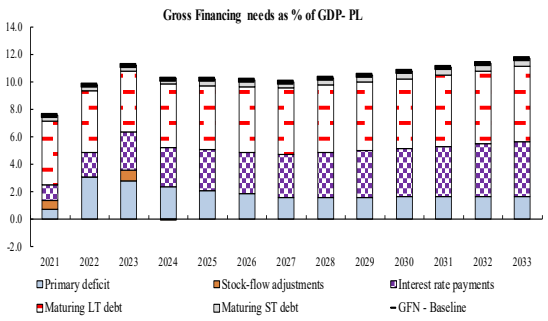
PL - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**57.2**	**53.8**	**51.3**	**52.9**	**54.2**	**55.4**	**56.5**	**57.5**	**59.1**	**60.7**	**62.6**	**64.6**	**66.8**	**69.0**
Changes in the ratio (-1+2+3)	*11.5*	*-3.4*	*-2.4*	*1.6*	*1.3*	*1.2*	*1.1*	*1.0*	*1.5*	*1.7*	*1.8*	*2.0*	*2.2*	*2.3*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-5.6**	**-0.7**	**-3.1**	**-2.8**	**-2.3**	**-2.1**	**-1.8**	**-1.6**	**-1.6**	**-1.6**	**-1.6**	**-1.6**	**-1.6**	**-1.6**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-4.7***	***-1.4***	***-3.8***	***-2.0***	***-1.4***	***-1.5***	***-1.5***	***-1.6***	***-1.6***	***-1.6***	***-1.6***	***-1.6***	***-1.6***	***-1.6***
(1.1.1) Structural primary balance (bef. CoA)	*-4.7*	*-1.4*	*-3.8*	*-2.0*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*	*-1.4*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.1*
(1.2) Cyclical component	***-1.2***	***0.4***	***0.4***	***-0.8***	***-1.0***	***-0.6***	***-0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.3***	***0.2***	***0.3***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**0.4**	**-5.1**	**-6.2**	**-2.3**	**-1.0**	**-0.9**	**-0.7**	**-0.5**	**0.0**	**0.1**	**0.2**	**0.4**	**0.6**	**0.7**
(2.1) Interest expenditure	*1.3*	*1.1*	*1.7*	*2.8*	*2.9*	*2.9*	*3.0*	*3.1*	*3.2*	*3.4*	*3.5*	*3.7*	*3.9*	*4.0*
(2.2) Growth effect	*0.9*	*-3.5*	*-1.8*	*-0.3*	*-1.3*	*-1.3*	*-1.3*	*-1.3*	*-1.0*	*-1.0*	*-1.1*	*-1.2*	*-1.2*	*-1.2*
(2.3) Inflation effect	*-1.9*	*-2.7*	*-6.1*	*-4.8*	*-2.6*	*-2.5*	*-2.5*	*-2.4*	*-2.3*	*-2.3*	*-2.2*	*-2.1*	*-2.1*	*-2.1*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**5.5**	**1.0**	**0.7**	**1.1**	**-0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*5.1*	*0.6*	*0.0*	*0.8*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.4*	*0.3*	*0.7*	*0.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-6.0	-2.5	-5.5	-4.8	-4.2	-4.4	-4.6	-4.7	-4.8	-5.0	-5.1	-5.3	-5.5	-5.6
Gross financing needs	15.6	7.6	9.8	11.2	10.2	10.2	10.1	10.0	10.2	10.5	10.7	11.0	11.3	11.7

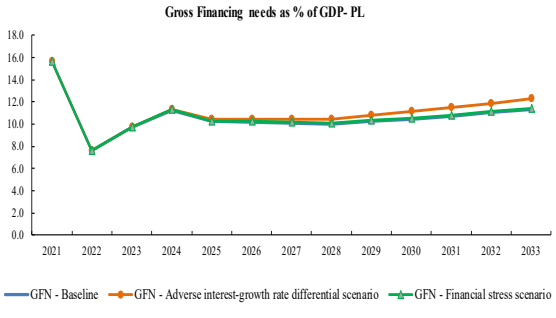












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	MEDIUM	MEDIUM
		Debt level (2033), % GDP	69.0	73.4	80.6	74.5	69.5				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	78%	86%	90%	78%	78%				
		Probability of debt ratio exceeding in 2027 its 2022 level						79%			
		Difference between 90th and 10th percentiles (pps. GDP)						20.4			

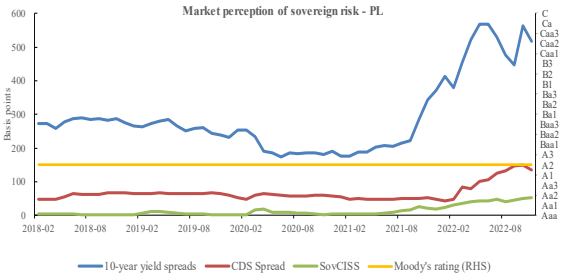
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.6**	**0.3**	**0.5**
Fiscal sub-index	0.2	0.2	0.4
Financial competitiveness sub-index	0.7	0.4	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.5**	**3.7**	**3.9**	**8.0**
of which Initial Budgetary position	1.7	2.1	2.2	1.9
Ageing costs	1.8	1.6	1.7	6.1
of which Pensions	*-0.9*	*-0.7*	*-0.4*	*-0.8*
Health care	*1.3*	*1.2*	*1.1*	*2.5*
Long-term care	*1.3*	*1.2*	*1.1*	*4.3*
Others	*0.0*	*0.0*	*0.0*	*0.0*
Required structural primary balance related to S2	**2.1**	**2.3**	**2.5**	**6.6**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**2.8**	**3.0**	**4.9**
of which *Initial budgetary position*	*2.0*	*2.0*	*1.9*
Debt requirement	*-0.1*	*-0.1*	*-0.1*
Ageing costs	*0.9*	*1.1*	*3.1*
Required structural primary balance related to S1	**1.4**	**1.7**	**3.6**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	517.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - PL (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	1.2	22.7	33.1

Net International Investment Position (IIP) - PL (2021)	Net IIP (% GDP):
	-39.5

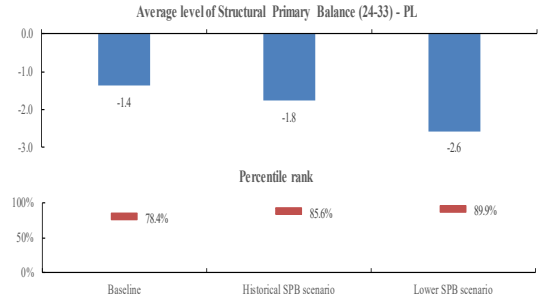
5. Risks related to government's contingent liabilities

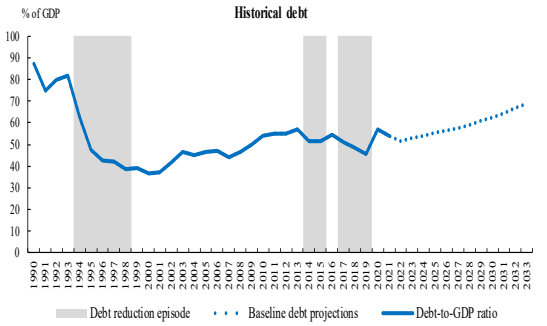
General government contingent liabilities	PL						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	1.7	1.4	1.2	1.2	2.1	3.1	7.5
of which One-off guarantees	*1.0*	*0.7*	*0.7*	*0.6*	*1.0*	*1.4*	*6.4*
Standardised guarantees	*0.7*	*0.7*	*0.6*	*0.6*	*1.1*	*1.6*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*

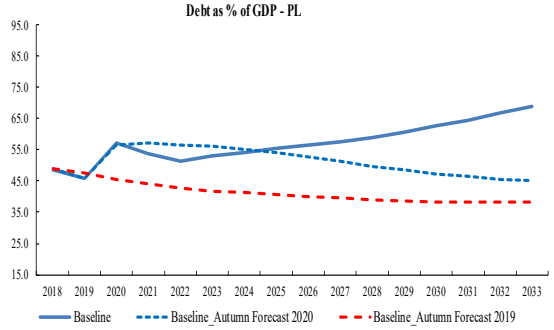
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9
	Securities issued under liquidity schemes	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Special purpose entity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Total	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9

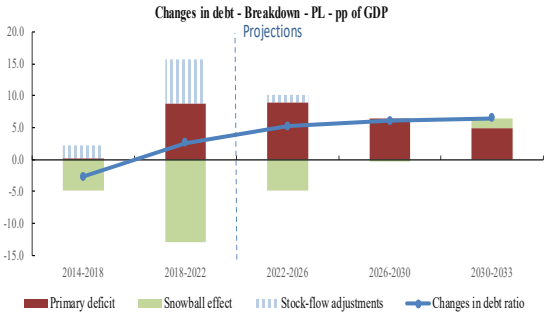
Government's contingent liability risks from banking sector - PL (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	4.0	9.2	83.6	4.3	-0.9	53.9	0.02%	0.80%

6. Realism of baseline assumptions









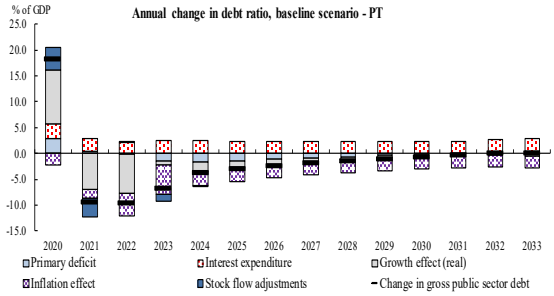
7. Underlying macro-fiscal assumptions

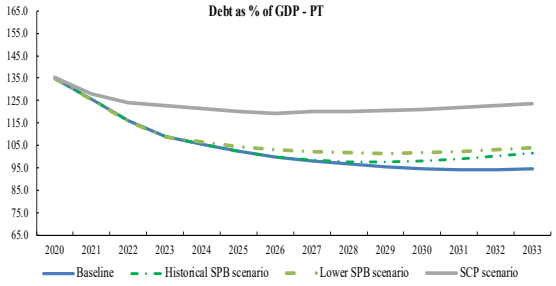
Macro-fiscal assumptions, Poland	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.3	52.9	54.2	60.7	64.6	69.0	52.8	61.4	59.2
Primary balance	-3.1	-2.8	-2.3	-1.6	-1.6	-1.6	-2.7	-1.7	-1.9
Structural primary balance (before CoA)	-3.8	-2.0	-1.4	-1.4	-1.4	-1.4	-2.4	-1.4	-1.6
Real GDP growth	4.0	0.7	2.6	1.9	2.0	1.9	2.4	2.1	2.2
Potential GDP growth	4.0	3.2	2.9	1.9	2.0	1.9	3.4	1.9	2.3
Inflation rate	12.8	10.3	5.1	4.0	3.5	3.3	9.4	4.0	5.3
Implicit interest rate (nominal)	3.8	5.9	5.8	6.1	6.2	6.3	5.2	6.1	5.9
Gross financing needs	9.8	11.2	10.2	10.5	11.0	11.7	10.4	10.6	10.6
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.0	49.6	48.7	51.8	53.7	56.2	49.8	51.1	51.3
Primary balance	-0.8	-1.3	-1.4	-2.5	-2.5	-2.5	-1.1	-2.2	-2.0
Structural primary balance (before CoA)	-1.0	-1.7	-2.2	-2.2	-2.2	-2.2	-1.7	-2.2	-2.1
Real GDP growth	5.2	4.6	4.1	2.8	2.8	2.3	4.7	2.8	3.3
Gross financing needs	6.5	6.8	6.9	8.2	8.5	8.9	6.7	7.9	7.6
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.3	52.9	54.2	62.9	67.8	73.4	52.8	63.5	60.9
Primary balance	-3.1	-2.8	-2.3	-2.2	-2.1	-2.1	-2.7	-2.2	-2.3
Structural primary balance (before CoA)	-3.8	-2.0	-1.4	-1.9	-1.9	-1.9	-2.4	-1.8	-2.0
Real GDP growth	4.0	0.7	2.6	1.9	2.0	1.9	2.4	2.1	2.2
Gross financing needs	9.8	11.2	10.2	11.3	12.0	12.8	10.4	11.4	11.1
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.3	53.0	54.4	61.1	65.0	69.5	52.9	61.7	59.5
Implicit interest rate (nominal)	3.8	6.1	6.0	6.1	6.2	6.4	5.3	6.1	5.9
Gross financing needs	9.8	11.3	10.3	10.5	11.1	11.8	10.4	10.7	10.7
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.3	53.2	54.7	67.2	73.5	80.6	53.1	67.8	64.2
Primary balance	-3.1	-3.5	-2.8	-2.8	-2.8	-2.8	-3.1	-2.8	-2.9
Structural primary balance (before CoA)	-3.8	-3.2	-2.6	-2.6	-2.6	-2.6	-3.2	-2.6	-2.7
Real GDP growth	4.0	1.6	3.2	1.9	2.0	1.9	2.9	2.0	2.2
Gross financing needs	9.8	12.3	10.7	12.5	13.4	14.5	10.9	12.6	12.2
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.3	53.9	56.3	62.8	66.6	71.1	53.9	63.4	61.0
Exchange rate depreciation	0.0%	4.3%	4.3%	0.0%	0.0%	0.0%	2.9%	0.0%	0.7%
Gross financing needs	9.8	11.4	10.5	10.8	11.3	12.0	10.5	11.0	10.9
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.3	53.2	54.9	63.6	68.6	74.5	53.1	64.4	61.6
Implicit interest rate (nominal)	3.8	6.0	6.0	6.4	6.6	6.8	5.3	6.4	6.1
Real GDP growth	4.0	0.2	2.1	1.4	1.5	1.4	2.1	1.6	1.7
Gross financing needs	9.8	11.3	10.4	11.1	11.9	12.8	10.5	11.3	11.1

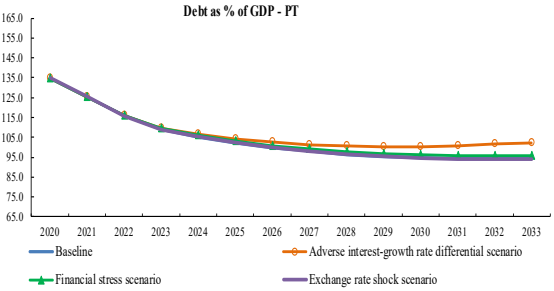
Portugal

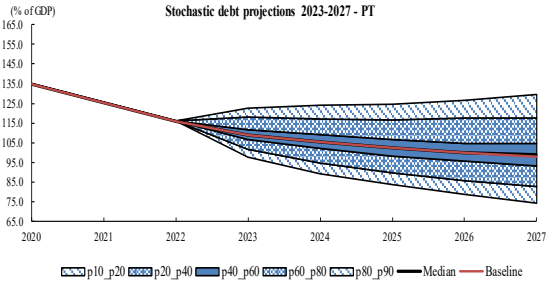
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

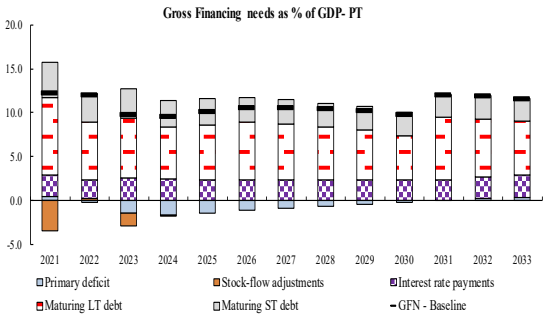
PT - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**134.9**	**125.5**	**115.9**	**109.1**	**105.3**	**102.2**	**99.9**	**98.0**	**96.5**	**95.4**	**94.7**	**94.3**	**94.3**	**94.3**
Changes in the ratio (-1+2+3)	*18.3*	*-9.4*	*-9.6*	*-6.8*	*-3.8*	*-3.0*	*-2.4*	*-1.8*	*-1.5*	*-1.1*	*-0.7*	*-0.4*	*0.0*	*0.0*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-2.9**	**-0.5**	**0.2**	**1.4**	**1.7**	**1.4**	**1.1**	**0.9**	**0.6**	**0.4**	**0.2**	**0.0**	**-0.2**	**-0.3**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***1.2***	***0.8***	***-0.5***	***1.3***	***1.4***	***1.2***	***1.1***	***0.9***	***0.6***	***0.4***	***0.2***	***0.0***	***-0.2***	***-0.3***
(1.1.1) Structural primary balance (bef. CoA)	*1.2*	*0.8*	*-0.5*	*1.3*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*	*1.4*
(1.1.2) Cost of ageing					*0.0*	*0.2*	*0.4*	*0.6*	*0.8*	*1.1*	*1.3*	*1.5*	*1.7*	*1.9*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
(1.2) Cyclical component	***-3.4***	***-1.6***	***0.9***	***0.3***	***0.2***	***0.2***	***0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***-0.7***	***0.3***	***-0.2***	***-0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**10.9**	**-6.4**	**-9.7**	**-4.0**	**-2.0**	**-1.6**	**-1.2**	**-1.0**	**-0.9**	**-0.7**	**-0.6**	**-0.4**	**-0.2**	**-0.3**
(2.1) Interest expenditure	*2.9*	*2.4*	*2.1*	*2.5*	*2.5*	*2.4*	*2.4*	*2.3*	*2.3*	*2.3*	*2.3*	*2.4*	*2.5*	*2.5*
(2.2) Growth effect	*10.3*	*-6.9*	*-7.5*	*-0.8*	*-1.8*	*-1.5*	*-1.1*	*-0.9*	*-0.8*	*-0.7*	*-0.6*	*-0.5*	*-0.4*	*-0.6*
(2.3) Inflation effect	*-2.3*	*-1.9*	*-4.3*	*-5.7*	*-2.7*	*-2.6*	*-2.5*	*-2.4*	*-2.4*	*-2.3*	*-2.3*	*-2.3*	*-2.3*	*-2.2*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**4.4**	**-3.5**	**0.2**	**-1.5**	**-0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*4.4*	*-3.5*	*0.2*	*-1.5*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-1.7	-1.6	-2.6	-1.2	-1.0	-1.2	-1.3	-1.5	-1.7	-1.9	-2.2	-2.4	-2.7	-2.9
Gross financing needs	20.8	12.3	12.0	9.9	9.6	10.1	10.6	10.6	10.5	10.3	9.8	12.1	11.9	11.7

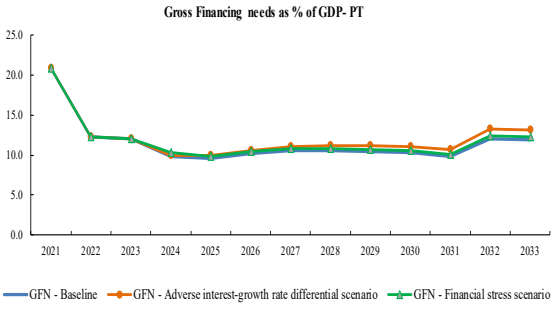












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
Overall (S0)	Overall		Deterministic scenarios					Stochastic projections	S2	S1	Overall
			Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress				
LOW	HIGH	Overall	HIGH	HIGH	HIGH	HIGH	HIGH	MEDIUM	LOW	LOW	LOW
		Debt level (2033), % GDP	94.3	101.3	104.0	102.4	96.0				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	34%	41%	44%	34%	34%				
		Probability of debt ratio exceeding in 2027 its 2022 level						22%			
		Difference between 90th and 10th percentiles (pps. GDP)						55.0			

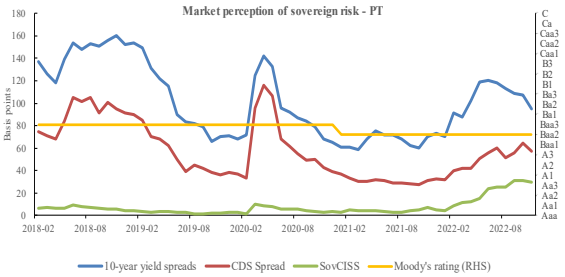
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.8**	**0.4**	**0.5**
Fiscal sub-index	1.0	0.5	0.4
Financial competitiveness sub-index	0.7	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**0.0**	**-2.1**	**-1.1**	**5.1**
of which Initial Budgetary position	1.1	-1.0	-0.8	-0.8
Ageing costs	-1.1	-1.1	-0.3	5.9
of which Pensions	*-3.0*	*-2.9*	*-2.1*	*-2.6*
Health care	*1.4*	*1.3*	*1.2*	*2.1*
Long-term care	*0.4*	*0.4*	*0.4*	*6.3*
Others	*0.1*	*0.2*	*0.2*	*0.2*
Required structural primary balance related to S2	**-0.8**	**-0.7**	**0.3**	**6.6**

S1 indicator	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**0.1**	**0.6**	**3.2**
of which *Initial budgetary position*	*-1.6*	*-1.4*	*-1.6*
Debt requirement	*1.0*	*0.9*	*1.0*
Ageing costs	*0.8*	*1.1*	*3.8*
Required structural primary balance related to S1	**1.6**	**2.1**	**4.6**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	95.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - PT (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	15.5	0.0	45.2

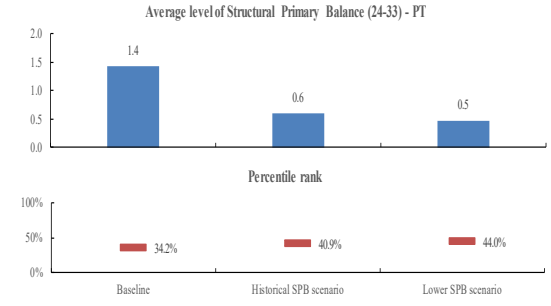
Net International Investment Position (IIP) - PT (2021)	Net IIP (% GDP):
	-94.7

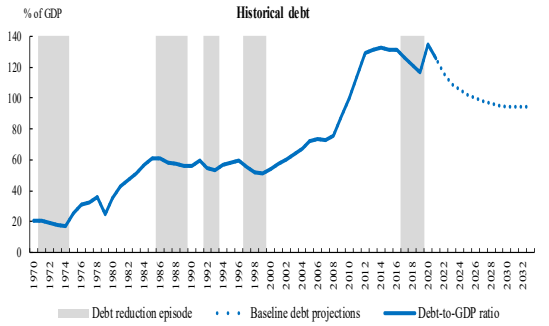
5. Risks related to government's contingent liabilities

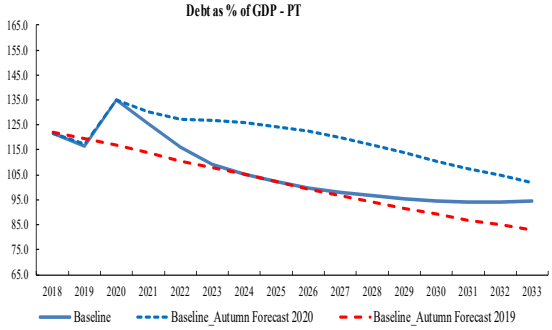
General government contingent liabilities		PT						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		5.6	6.4	5.6	4.8	6.4	6.1	7.5
of which One-off guarantees		*5.6*	*6.4*	*5.6*	*4.8*	*3.2*	*2.8*	*6.4*
Standardised guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*3.2*	*3.3*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*3.0*	*2.7*	*2.5*	*2.2*	*2.3*	*2.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	2.5	3.4	2.9	2.2	0.5	0.2	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	2.5	3.4	2.9	2.2	0.5	0.2	0.9

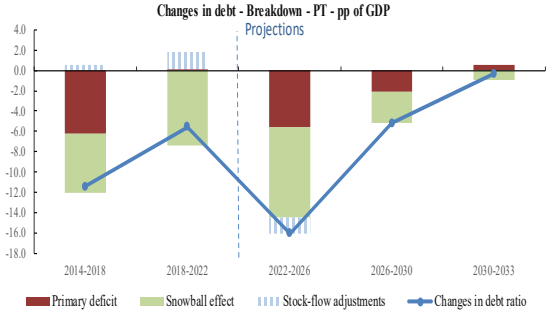
Government's contingent liability risks from banking sector - PT (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	4.0	9.4	73.3	3.3	-0.9	70.0	0.07%	1.18%

6. Realism of baseline assumptions









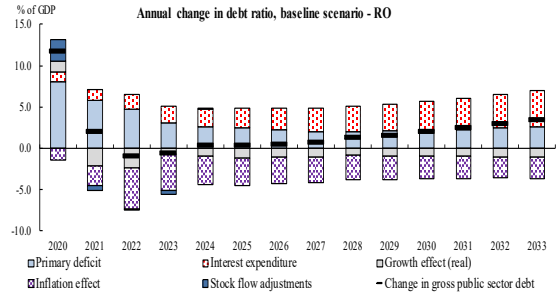
7. Underlying macro-fiscal assumptions

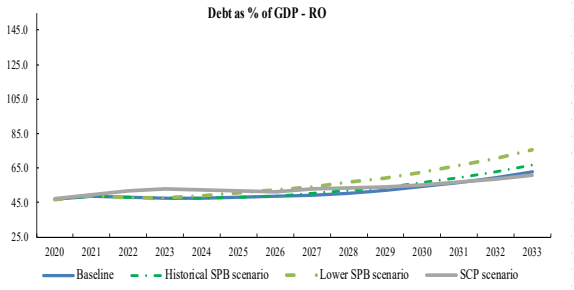
Macro-fiscal assumptions, Portugal	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	115.9	109.1	105.3	95.4	94.3	94.3	110.1	96.6	100.0
Primary balance	0.2	1.4	1.7	0.4	0.0	-0.3	1.1	0.5	0.6
Structural primary balance (before CoA)	-0.5	1.3	1.4	1.4	1.4	1.4	0.8	1.4	1.3
Real GDP growth	6.6	0.7	1.7	0.7	0.6	0.6	3.0	0.8	1.4
Potential GDP growth	1.8	1.8	1.8	0.7	0.6	0.6	1.8	0.9	1.1
Inflation rate	3.6	5.2	2.5	2.5	2.5	2.4	3.8	2.5	2.8
Implicit interest rate (nominal)	1.9	2.3	2.4	2.5	2.6	2.8	2.2	2.5	2.4
Gross financing needs	12.0	9.9	9.6	10.3	12.1	11.7	10.5	10.8	10.8
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	123.9	122.8	121.6	120.5	121.9	123.5	122.8	120.8	121.8
Primary balance	-1.1	-0.3	-0.1	-1.5	-1.9	-2.2	-0.5	-1.1	-1.1
Structural primary balance (before CoA)	-0.9	-0.5	-0.4	-0.4	-0.4	-0.4	-0.6	-0.4	-0.4
Real GDP growth	5.3	2.1	1.3	0.7	0.5	0.8	2.9	0.7	1.6
Gross financing needs	18.2	17.2	15.4	15.1	17.5	17.0	16.9	15.9	16.2
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	115.9	109.1	105.3	97.7	99.1	101.3	110.1	99.4	102.1
Primary balance	0.2	1.4	1.7	-0.5	-1.1	-1.5	1.1	-0.3	0.0
Structural primary balance (before CoA)	-0.5	1.3	1.4	0.3	0.3	0.3	0.8	0.5	0.6
Real GDP growth	6.6	0.7	1.7	0.5	0.4	0.6	3.0	0.8	1.4
Gross financing needs	12.0	9.9	9.6	11.3	13.7	13.5	10.5	11.9	11.5
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	115.9	109.8	106.1	96.8	95.8	96.0	110.6	98.0	101.1
Implicit interest rate (nominal)	1.9	2.9	2.5	2.6	2.7	2.8	2.4	2.6	2.6
Gross financing needs	12.0	10.3	9.9	10.5	12.4	11.9	10.7	11.1	11.0
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	115.9	108.8	106.5	101.4	102.1	104.0	110.4	102.6	104.5
Primary balance	0.2	0.6	0.9	-0.5	-1.0	-1.3	0.6	-0.5	-0.2
Structural primary balance (before CoA)	-0.5	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.4
Real GDP growth	6.6	1.7	1.0	0.7	0.6	0.6	3.1	0.8	1.4
Gross financing needs	12.0	10.9	10.5	11.8	13.9	13.7	11.1	12.4	12.1
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	115.9	109.1	105.3	95.4	94.3	94.3	110.1	96.6	100.0
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	12.0	9.9	9.6	10.3	12.1	11.7	10.5	10.8	10.8
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	115.9	109.8	106.6	100.3	100.7	102.4	110.8	101.6	103.9
Implicit interest rate (nominal)	1.9	2.4	2.5	2.8	2.9	3.1	2.3	2.8	2.7
Real GDP growth	6.6	0.2	1.2	0.2	0.1	0.1	2.7	0.3	0.9
Gross financing needs	12.0	10.0	9.9	11.1	13.2	13.0	10.6	11.7	11.4

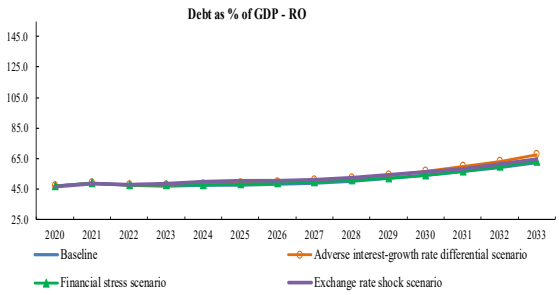
Romania

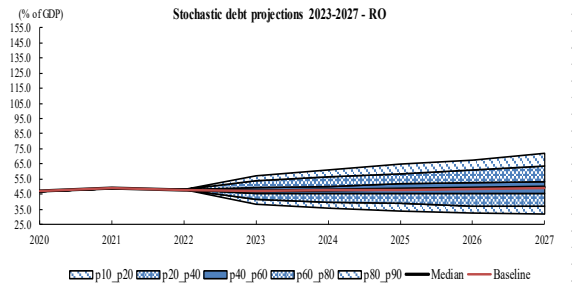
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

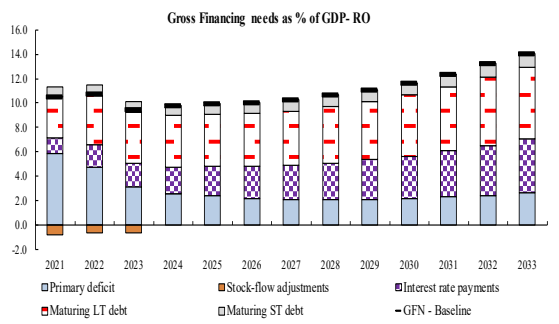
RO - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**46.9**	**48.9**	**47.9**	**47.3**	**47.6**	**48.0**	**48.5**	**49.2**	**50.5**	**52.0**	**54.0**	**56.5**	**59.4**	**62.8**
Changes in the ratio (-1+2+3)	*11.7*	*2.0*	*-1.0*	*-0.6*	*0.3*	*0.3*	*0.5*	*0.7*	*1.3*	*1.6*	*2.0*	*2.4*	*3.0*	*3.4*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-8.0**	**-5.8**	**-4.7**	**-3.1**	**-2.6**	**-2.4**	**-2.2**	**-2.1**	**-2.1**	**-2.1**	**-2.2**	**-2.3**	**-2.4**	**-2.6**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-6.3***	***-4.7***	***-4.5***	***-2.7***	***-2.2***	***-2.1***	***-2.1***	***-2.1***	***-2.1***	***-2.1***	***-2.2***	***-2.3***	***-2.4***	***-2.6***
(1.1.1) Structural primary balance (bef. CoA)	*-6.3*	*-4.7*	*-4.5*	*-2.7*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*
(1.1.2) Cost of ageing					*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*0.0*	*0.1*	*0.3*	*0.4*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-1.7***	***-1.1***	***-0.2***	***-0.4***	***-0.4***	***-0.3***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.1**	**-3.3**	**-5.6**	**-3.2**	**-2.3**	**-2.1**	**-1.7**	**-1.3**	**-0.8**	**-0.5**	**-0.2**	**0.1**	**0.5**	**0.7**
(2.1) Interest expenditure	*1.2*	*1.3*	*1.8*	*2.0*	*2.2*	*2.4*	*2.6*	*2.8*	*3.0*	*3.3*	*3.5*	*3.8*	*4.1*	*4.4*
(2.2) Growth effect	*1.3*	*-2.2*	*-2.4*	*-0.8*	*-1.0*	*-1.1*	*-1.1*	*-1.1*	*-0.9*	*-0.9*	*-1.0*	*-1.0*	*-1.0*	*-1.0*
(2.3) Inflation effect	*-1.4*	*-2.4*	*-5.0*	*-4.4*	*-3.5*	*-3.4*	*-3.2*	*-3.1*	*-2.9*	*-2.8*	*-2.7*	*-2.6*	*-2.6*	*-2.6*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**2.6**	**-0.6**	**-0.1**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*2.3*	*-0.8*	*-0.7*	*-0.6*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.3*	*0.2*	*0.5*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-7.5	-6.0	-6.4	-4.6	-4.3	-4.5	-4.7	-4.9	-5.1	-5.3	-5.7	-6.1	-6.5	-7.0
Gross financing needs	15.7	10.6	10.8	9.5	9.8	10.0	10.1	10.2	10.6	11.1	11.7	12.4	13.2	14.1

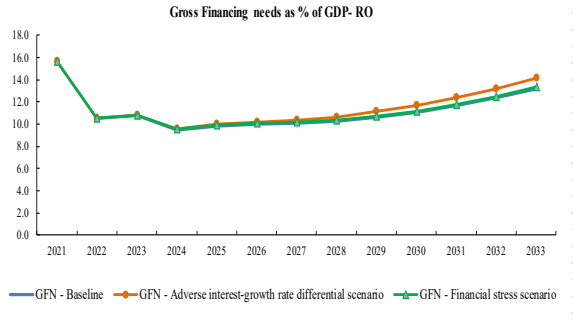












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM
		Debt level (2033), % GDP	62.8	67.0	75.3	67.4	63.2				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	75%	82%	86%	75%	75%				
		Probability of debt ratio exceeding in 2027 its 2022 level						55%			
		Difference between 90th and 10th percentiles (pps. GDP)						39.6			

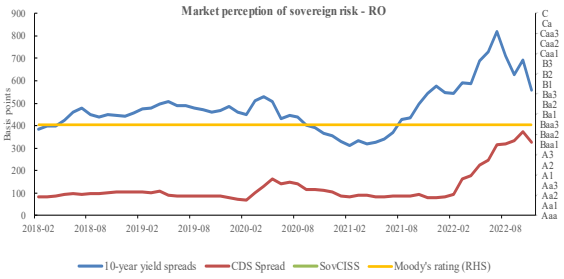
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.7**	**0.3**	**0.5**
Fiscal sub-index	0.5	0.2	0.4
Financial competitiveness sub-index	0.8	0.4	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**4.7**	**3.0**	**3.8**	**6.6**
of which Initial Budgetary position	4.7	2.7	2.8	2.7
Ageing costs	0.0	0.3	1.0	3.9
of which Pensions	*-1.0*	*-0.7*	*0.1*	*-0.7*
Health care	*0.8*	*0.7*	*0.7*	*1.8*
Long-term care	*0.3*	*0.3*	*0.3*	*2.9*
Others	*-0.1*	*-0.1*	*-0.1*	*-0.1*
Required structural primary balance related to S2	**0.5**	**0.8**	**1.7**	**4.5**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.6**	**4.3**	**5.4**
of which *Initial budgetary position*	*2.6*	*2.8*	*2.6*
Debt requirement	*-0.2*	*-0.2*	*-0.2*
Ageing costs	*1.2*	*1.7*	*3.0*
Required structural primary balance related to S1	**1.5**	**2.1**	**3.2**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	558.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - RO (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	5.1	53.3	49.2

Net International Investment Position (IIP) - RO (2021)	Net IIP (% GDP):
	-47.2

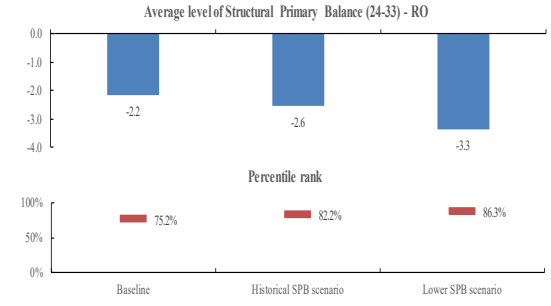
5. Risks related to government's contingent liabilities

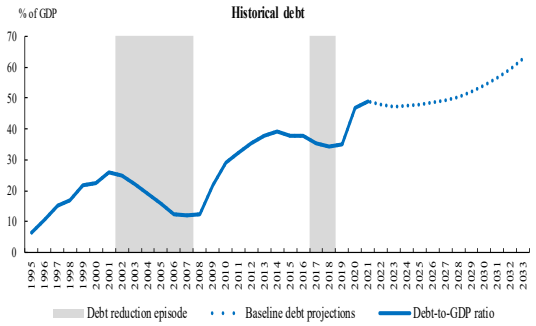
General government contingent liabilities	RO						EU
	2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)	2.4	2.3	2.1	2.0	3.4	4.1	7.5
of which One-off guarantees	*0.5*	*0.4*	*0.4*	*0.3*	*0.6*	*0.7*	*6.4*
Standardised guarantees	*1.9*	*1.9*	*1.7*	*1.7*	*2.8*	*3.4*	*1.1*
Public-private partnerships (PPPs) (% GDP)	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*

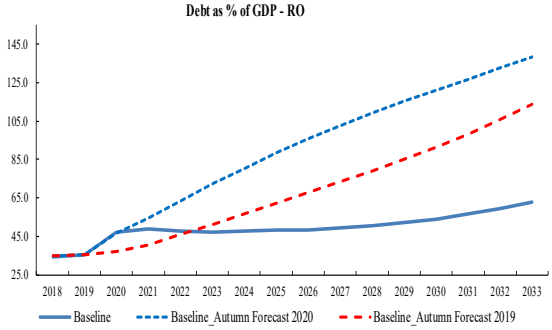
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9
	Securities issued under liquidity schemes	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Special purpose entity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Total	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9

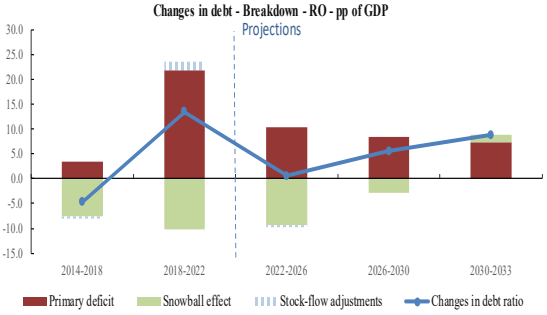
Government's contingent liability risks from banking sector - RO (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	3.8	4.4	63.2	2.9	-0.9	40.1	0.00%	0.02%

6. Realism of baseline assumptions









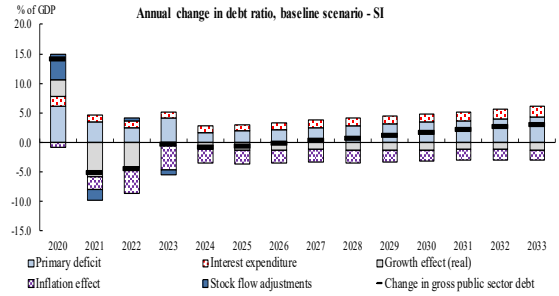
7. Underlying macro-fiscal assumptions

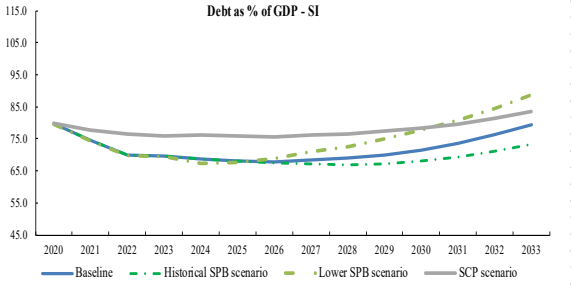
Macro-fiscal assumptions, Romania	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	47.9	47.3	47.6	52.0	56.5	62.8	47.6	53.4	52.0
Primary balance	-4.7	-3.1	-2.6	-2.1	-2.3	-2.6	-3.5	-2.3	-2.6
Structural primary balance (before CoA)	-4.5	-2.7	-2.2	-2.2	-2.2	-2.2	-3.1	-2.2	-2.4
Real GDP growth	5.8	1.8	2.2	2.0	2.0	1.9	3.3	2.1	2.4
Potential GDP growth	2.8	2.5	2.3	2.0	2.0	1.9	2.5	2.0	2.1
Inflation rate	11.4	10.0	8.0	6.0	5.1	4.6	9.8	6.0	6.9
Implicit interest rate (nominal)	4.3	4.6	5.0	7.0	7.5	7.9	4.6	6.9	6.3
Gross financing needs	10.8	9.5	9.8	11.1	12.4	14.1	10.0	11.5	11.1
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	51.8	52.7	52.5	54.2	56.8	60.8	52.3	54.1	53.4
Primary balance	-5.1	-3.7	-1.9	-1.8	-2.0	-2.3	-3.6	-1.7	-2.6
Structural primary balance (before CoA)	-4.6	-3.2	-2.1	-2.1	-2.1	-2.1	-3.3	-2.1	-2.7
Real GDP growth	5.1	4.4	4.3	2.8	2.6	2.1	4.6	3.0	3.6
Gross financing needs	10.8	9.5	8.5	9.3	10.2	11.2	9.6	9.1	9.4
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	47.9	47.3	47.6	54.0	59.5	67.0	47.6	55.4	53.5
Primary balance	-4.7	-3.1	-2.6	-2.6	-2.8	-3.2	-3.5	-2.7	-2.9
Structural primary balance (before CoA)	-4.5	-2.7	-2.2	-2.7	-2.7	-2.7	-3.1	-2.6	-2.7
Real GDP growth	5.8	1.8	2.2	2.0	2.0	1.9	3.3	2.1	2.4
Gross financing needs	10.8	9.5	9.8	11.9	13.4	15.3	10.0	12.2	11.7
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	47.9	47.4	47.8	52.4	56.9	63.2	47.7	53.8	52.3
Implicit interest rate (nominal)	4.3	4.8	5.2	7.0	7.5	7.9	4.8	6.9	6.4
Gross financing needs	10.8	9.6	9.9	11.2	12.5	14.2	10.1	11.6	11.2
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	47.9	47.9	49.0	59.4	66.3	75.3	48.3	60.8	57.7
Primary balance	-4.7	-4.1	-3.5	-3.3	-3.5	-3.8	-4.1	-3.4	-3.6
Structural primary balance (before CoA)	-4.5	-3.9	-3.3	-3.3	-3.3	-3.3	-3.9	-3.3	-3.5
Real GDP growth	5.8	2.7	2.3	2.0	2.0	1.9	3.6	2.0	2.4
Gross financing needs	10.8	10.7	10.8	13.4	15.2	17.5	10.7	13.8	13.1
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	47.9	48.6	50.1	54.2	58.6	64.9	48.9	55.6	53.9
Exchange rate depreciation	0.0%	2.0%	2.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.3%
Gross financing needs	10.8	9.7	10.2	11.5	12.8	14.5	10.2	11.9	11.5
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	47.9	47.6	48.2	54.5	59.9	67.4	47.9	56.0	54.0
Implicit interest rate (nominal)	4.3	4.7	5.2	7.4	7.9	8.4	4.8	7.3	6.6
Real GDP growth	5.8	1.3	1.7	1.5	1.5	1.4	2.9	1.6	2.0
Gross financing needs	10.8	9.5	10.0	11.7	13.2	15.2	10.1	12.1	11.6

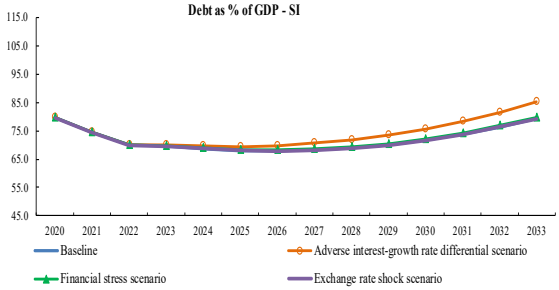
Slovenia

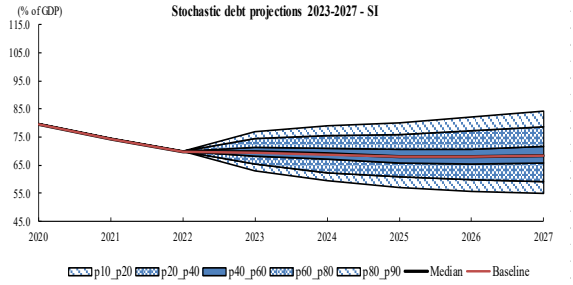
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

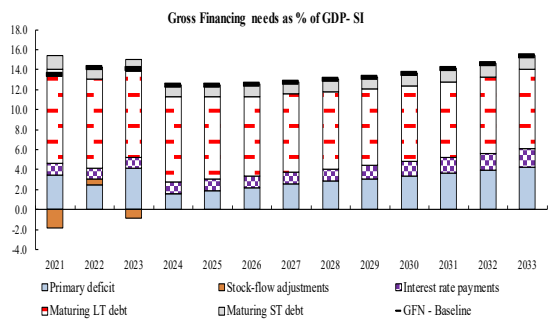
SI - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**79.6**	**74.5**	**69.9**	**69.6**	**68.8**	**68.1**	**67.9**	**68.3**	**68.9**	**70.0**	**71.6**	**73.7**	**76.3**	**79.3**
Changes in the ratio (-1+2+3)	*14.2*	*-5.1*	*-4.5*	*-0.4*	*-0.8*	*-0.7*	*-0.2*	*0.4*	*0.6*	*1.1*	*1.6*	*2.1*	*2.6*	*3.0*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-6.1**	**-3.4**	**-2.5**	**-4.1**	**-1.6**	**-1.9**	**-2.2**	**-2.5**	**-2.8**	**-3.1**	**-3.4**	**-3.7**	**-4.0**	**-4.3**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-4.4***	***-4.3***	***-4.7***	***-5.4***	***-2.2***	***-2.3***	***-2.4***	***-2.5***	***-2.8***	***-3.1***	***-3.4***	***-3.7***	***-4.0***	***-4.3***
(1.1.1) Structural primary balance (bef. CoA)	*-4.4*	*-4.3*	*-4.7*	*-5.4*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*	*-2.2*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.2*	*0.3*	*0.6*	*0.9*	*1.2*	*1.4*	*1.7*	*2.0*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-1.6***	***0.8***	***2.2***	***1.2***	***0.6***	***0.4***	***0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**3.7**	**-6.7**	**-7.6**	**-3.6**	**-2.4**	**-2.6**	**-2.4**	**-2.2**	**-2.2**	**-2.0**	**-1.8**	**-1.6**	**-1.4**	**-1.3**
(2.1) Interest expenditure	*1.6*	*1.2*	*1.1*	*1.1*	*1.1*	*1.1*	*1.1*	*1.2*	*1.2*	*1.3*	*1.4*	*1.5*	*1.7*	*1.8*
(2.2) Growth effect	*2.9*	*-5.9*	*-4.1*	*-0.5*	*-1.1*	*-1.4*	*-1.3*	*-1.2*	*-1.4*	*-1.4*	*-1.3*	*-1.2*	*-1.2*	*-1.3*
(2.3) Inflation effect	*-0.8*	*-2.0*	*-4.6*	*-4.1*	*-2.5*	*-2.3*	*-2.2*	*-2.1*	*-2.0*	*-1.9*	*-1.9*	*-1.8*	*-1.8*	*-1.8*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**4.3**	**-1.9**	**0.6**	**-0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*4.3*	*-1.9*	*0.6*	*-0.9*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-6.0	-5.5	-5.8	-6.4	-3.4	-3.4	-3.5	-3.7	-4.1	-4.4	-4.8	-5.2	-5.6	-6.1
Gross financing needs	20.8	13.5	14.2	14.1	12.5	12.5	12.6	12.8	13.0	13.3	13.7	14.1	14.6	15.4

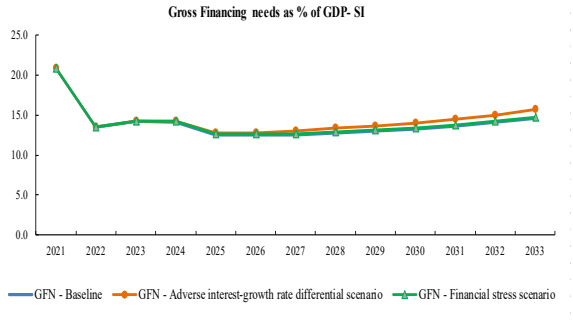












4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - SI (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	2.1	0.1	55.2

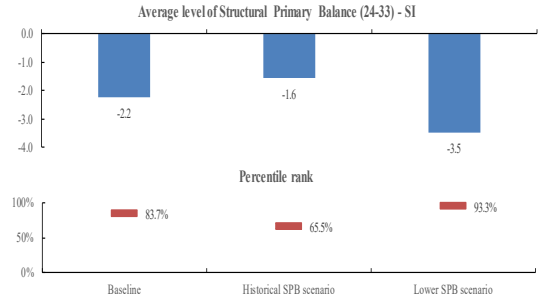
Net International Investment Position (IIP) - SI (2021)	Net IIP (% GDP):
	-6.8

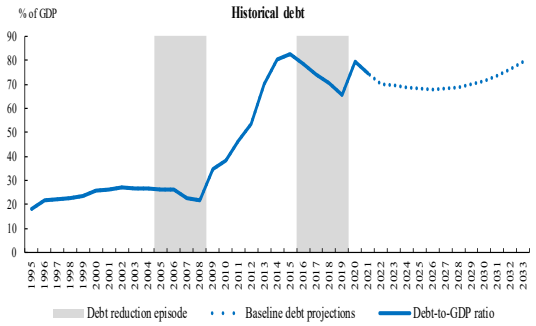
5. Risks related to government's contingent liabilities

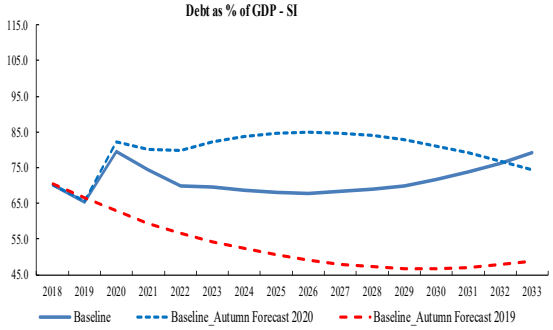
General government contingent liabilities		SI						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		9.6	8.6	7.5	6.4	6.4	5.5	7.5
of which One-off guarantees		*9.6*	*8.6*	*7.5*	*6.4*	*6.2*	*5.4*	*6.4*
Standardised guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*0.2*	*0.1*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0				0.0
	Special purpose entity	0.0	0.0	0.0				0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

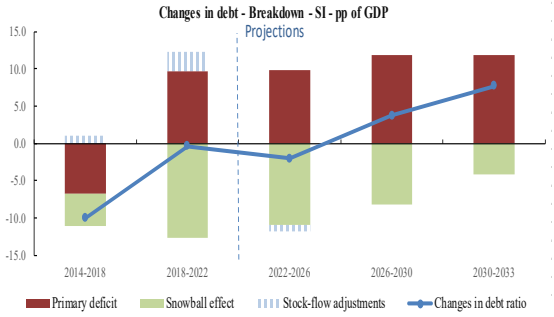
Government's contingent liability risks from banking sector - SI (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	3.5	11.5	69.4	2.2	-0.5	66.2	0.00%	0.21%

6. Realism of baseline assumptions









2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
Overall (S0)	Overall		Deterministic scenarios					Stochastic projections	S2	S1	Overall
			Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress				
LOW	MEDIUM	Overall	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	HIGH
		Debt level (2033), % GDP	79.3	73.3	88.7	85.1	79.8				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	84%	66%	93%	84%	84%				
		Probability of debt ratio exceeding in 2027 its 2022 level						45%			
		Difference between 90th and 10th percentiles (pps. GDP)						29.2			

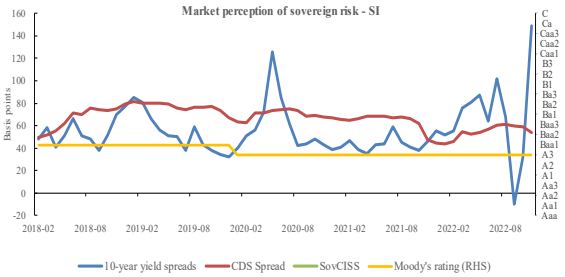
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.6**	**0.2**	**0.5**
Fiscal sub-index	0.6	0.3	0.4
Financial competitiveness sub-index	0.7	0.1	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**12.1**	**10.0**	**10.0**	**13.8**
of which Initial Budgetary position	4.7	2.6	2.7	2.6
Ageing costs	7.4	7.4	7.2	11.2
of which Pensions	*5.3*	*5.4*	*5.3*	*5.4*
Health care	*1.0*	*1.0*	*0.9*	*2.1*
Long-term care	*1.0*	*1.0*	*0.9*	*3.7*
Others	*0.1*	*0.1*	*0.0*	*0.1*
Required structural primary balance related to S2	**7.8**	**7.8**	**7.7**	**11.6**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**7.7**	**7.8**	**9.9**
of which *Initial budgetary position*	*2.0*	*2.1*	*2.1*
Debt requirement	*0.2*	*0.2*	*0.2*
Ageing costs	*5.6*	*5.6*	*7.7*
Required structural primary balance related to S1	**5.5**	**5.6**	**7.7**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	149.0

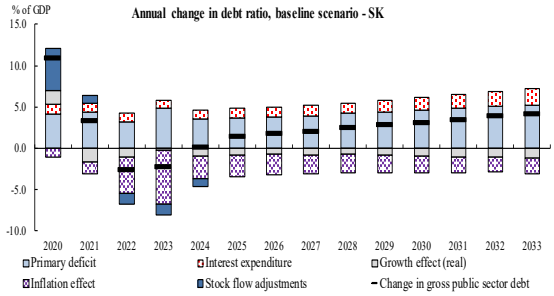
7. Underlying macro-fiscal assumptions

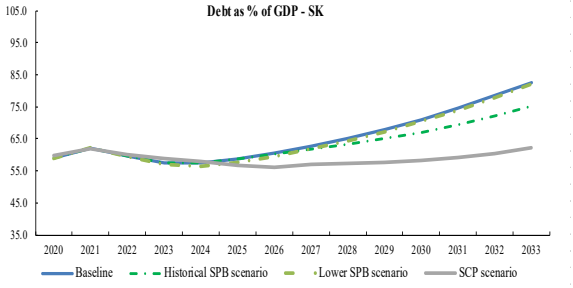
Macro-fiscal assumptions, Slovenia	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	69.9	69.6	68.8	70.0	73.7	79.3	69.4	71.6	71.0
Primary balance	-2.5	-4.1	-1.6	-3.1	-3.7	-4.3	-2.7	-3.1	-3.0
Structural primary balance (before CoA)	-4.7	-5.4	-2.2	-2.2	-2.2	-2.2	-4.1	-2.2	-2.7
Real GDP growth	6.2	0.8	1.7	2.1	1.8	1.7	2.9	1.9	2.2
Potential GDP growth	3.2	2.9	3.0	2.1	1.8	1.7	3.0	2.1	2.3
Inflation rate	6.6	6.2	3.7	2.9	2.6	2.4	5.5	2.9	3.6
Implicit interest rate (nominal)	1.7	1.7	1.7	2.0	2.2	2.4	1.7	2.0	1.9
Gross financing needs	14.2	14.1	12.5	13.3	14.1	15.4	13.6	13.5	13.6
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	76.4	76.0	76.2	77.3	79.7	83.7	76.2	77.5	77.3
Primary balance	-3.9	-2.7	-2.1	-3.4	-3.9	-4.5	-2.9	-3.1	-3.3
Structural primary balance (before CoA)	-4.9	-3.5	-2.5	-2.5	-2.5	-2.5	-3.6	-2.5	-3.1
Real GDP growth	4.2	2.9	2.3	2.7	2.5	2.1	3.1	2.6	3.1
Gross financing needs	14.3	13.9	14.0	14.1	14.6	15.8	14.1	14.2	14.2
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	69.9	69.6	68.8	67.3	69.3	73.3	69.4	68.7	68.9
Primary balance	-2.5	-4.1	-1.6	-2.3	-2.8	-3.4	-2.7	-2.4	-2.5
Structural primary balance (before CoA)	-4.7	-5.4	-2.2	-1.3	-1.3	-1.3	-4.1	-1.5	-2.1
Real GDP growth	6.2	0.8	1.7	2.1	1.9	1.7	2.9	1.9	2.2
Gross financing needs	14.2	14.1	12.5	12.1	12.7	13.8	13.6	12.5	12.8
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	69.9	69.7	69.0	70.5	74.2	79.8	69.6	72.0	71.4
Implicit interest rate (nominal)	1.7	1.9	1.9	2.1	2.2	2.5	1.8	2.1	2.0
Gross financing needs	14.2	14.3	12.6	13.4	14.2	15.5	13.7	13.7	13.7
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	69.9	69.4	67.3	74.9	80.9	88.7	68.9	76.3	74.5
Primary balance	-2.5	-3.3	-2.1	-4.3	-4.9	-5.5	-2.6	-4.2	-3.8
Structural primary balance (before CoA)	-4.7	-4.1	-3.5	-3.5	-3.5	-3.5	-4.1	-3.5	-3.6
Real GDP growth	6.2	-0.1	4.4	2.1	1.8	1.7	3.5	1.8	2.2
Gross financing needs	14.2	13.0	12.7	15.1	16.2	17.9	13.3	15.2	14.8
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	69.9	69.6	68.8	70.0	73.7	79.3	69.4	71.6	71.0
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	14.2	14.1	12.5	13.3	14.1	15.4	13.6	13.5	13.6
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	69.9	70.0	69.6	73.3	78.2	85.1	69.9	75.0	73.7
Implicit interest rate (nominal)	1.7	1.8	1.9	2.4	2.6	2.9	1.8	2.4	2.2
Real GDP growth	6.2	0.3	1.2	1.6	1.3	1.2	2.6	1.4	1.7
Gross financing needs	14.2	14.3	12.8	14.0	15.0	16.6	13.8	14.3	14.2

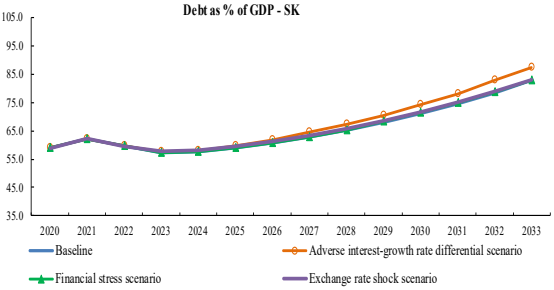
Slovakia

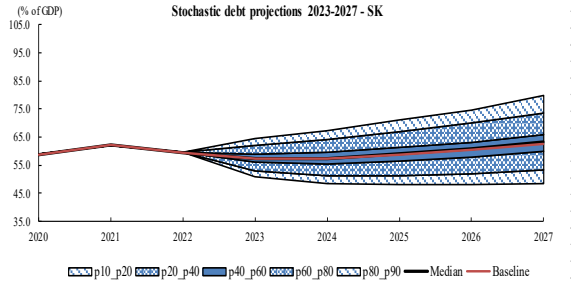
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

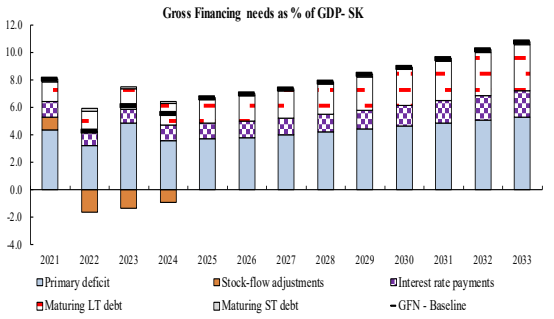
SK - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**58.9**	**62.2**	**59.6**	**57.4**	**57.4**	**58.8**	**60.6**	**62.7**	**65.2**	**68.0**	**71.1**	**74.5**	**78.5**	**82.6**
Changes in the ratio (-1+2+3)	*10.9*	*3.3*	*-2.6*	*-2.2*	*0.1*	*1.4*	*1.8*	*2.1*	*2.5*	*2.8*	*3.1*	*3.5*	*3.9*	*4.2*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-4.2**	**-4.4**	**-3.2**	**-4.8**	**-3.6**	**-3.7**	**-3.8**	**-4.0**	**-4.2**	**-4.4**	**-4.6**	**-4.8**	**-5.0**	**-5.2**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-3.3***	***-4.3***	***-3.2***	***-4.5***	***-3.3***	***-3.5***	***-3.7***	***-4.0***	***-4.2***	***-4.4***	***-4.6***	***-4.8***	***-5.0***	***-5.2***
(1.1.1) Structural primary balance (bef. CoA)	*-3.3*	*-4.3*	*-3.2*	*-4.5*	*-3.3*	*-3.3*	*-3.3*	*-3.3*	*-3.3*	*-3.3*	*-3.3*	*-3.3*	*-3.3*	*-3.3*
(1.1.2) Cost of ageing					*0.0*	*0.2*	*0.4*	*0.6*	*0.9*	*1.1*	*1.3*	*1.5*	*1.7*	*1.9*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(1.2) Cyclical component	***-0.9***	***-0.1***	***0.1***	***-0.3***	***-0.2***	***-0.2***	***-0.1***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.7**	**-2.0**	**-4.4**	**-5.8**	**-2.6**	**-2.3**	**-2.0**	**-1.9**	**-1.7**	**-1.6**	**-1.5**	**-1.4**	**-1.1**	**-1.1**
(2.1) Interest expenditure	*1.2*	*1.1*	*1.0*	*1.0*	*1.1*	*1.1*	*1.2*	*1.2*	*1.3*	*1.4*	*1.5*	*1.6*	*1.8*	*2.0*
(2.2) Growth effect	*1.6*	*-1.7*	*-1.1*	*-0.3*	*-1.0*	*-0.9*	*-0.8*	*-0.8*	*-0.8*	*-0.9*	*-1.0*	*-1.1*	*-1.1*	*-1.2*
(2.3) Inflation effect	*-1.1*	*-1.4*	*-4.3*	*-6.5*	*-2.7*	*-2.5*	*-2.4*	*-2.3*	*-2.2*	*-2.1*	*-2.0*	*-1.9*	*-1.8*	*-1.9*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**5.0**	**0.9**	**-1.4**	**-1.3**	**-0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*5.1*	*0.9*	*-1.6*	*-1.4*	*-0.9*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*-0.1*	*0.2*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-4.5	-5.3	-4.3	-5.5	-4.4	-4.7	-4.9	-5.2	-5.5	-5.8	-6.1	-6.5	-6.8	-7.2
Gross financing needs	14.2	8.0	4.3	6.1	5.5	6.7	7.0	7.4	7.9	8.4	8.9	9.5	10.2	10.7

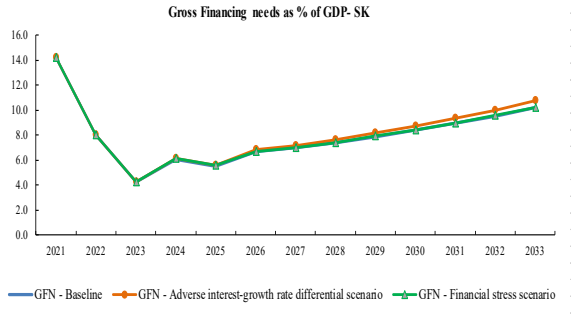












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	HIGH	Overall	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	HIGH	HIGH
		Debt level (2033), % GDP	82.6	75.2	82.1	87.4	82.9				
		Debt peak year	2033	2033	2033	2033	2033				
		Fiscal consolidation space	61%	55%	61%	61%	61%				
		Probability of debt ratio exceeding in 2027 its 2022 level						61%			
		Difference between 90th and 10th percentiles (pps. GDP)						31.3			

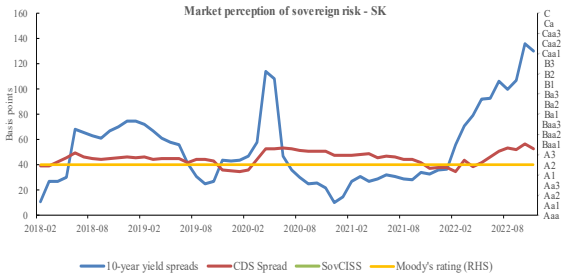
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.5**	**0.3**	**0.5**
Fiscal sub-index	0.5	0.2	0.4
Financial competitiveness sub-index	0.5	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**10.6**	**11.3**	**11.2**	**15.1**
of which Initial Budgetary position	2.8	3.7	3.8	3.7
Ageing costs	7.8	7.6	7.4	11.4
of which Pensions	*4.1*	*4.1*	*4.1*	*4.1*
Health care	*1.6*	*1.6*	*1.5*	*2.6*
Long-term care	*1.7*	*1.6*	*1.5*	*4.3*
Others	*0.4*	*0.4*	*0.3*	*0.4*
Required structural primary balance related to S2	**8.1**	**8.0**	**7.9**	**11.8**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**8.5**	**8.6**	**10.4**
of which *Initial budgetary position*	*3.2*	*3.3*	*3.3*
Debt requirement	*-0.1*	*0.0*	*-0.1*
Ageing costs	*5.3*	*5.3*	*7.2*
Required structural primary balance related to S1	**5.2**	**5.3**	**7.1**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	130.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - SK (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	3.6	0.0	49.6

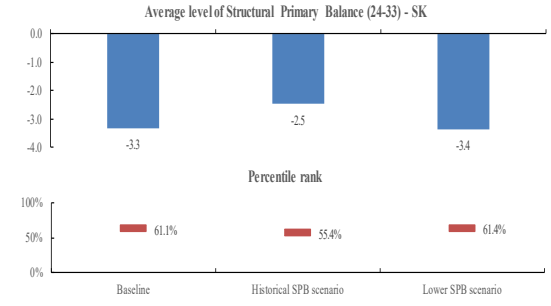
Net International Investment Position (IIP) - SK (2021)	Net IIP (% GDP):
	-61.0

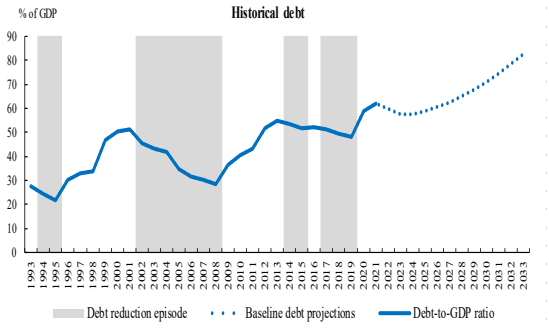
5. Risks related to government's contingent liabilities

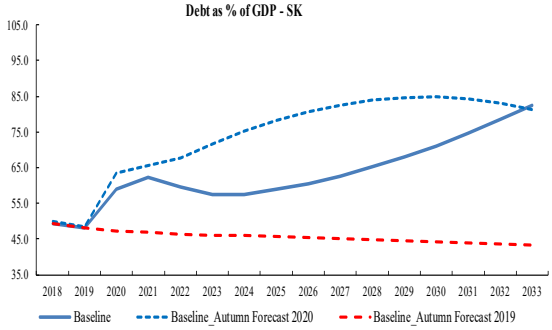
General government contingent liabilities		SK						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		0.0	0.0	0.0	0.0	0.7	1.0	7.5
of which One-off guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*6.4*
Standardised guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*0.6*	*0.9*	*1.1*
Public-private partnerships (PPPs) (% GDP)		3.2	2.9	2.7	1.7	1.7	1.5	0.3
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9
	Securities issued under liquidity schemes	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Special purpose entity	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.0
	Total	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.9

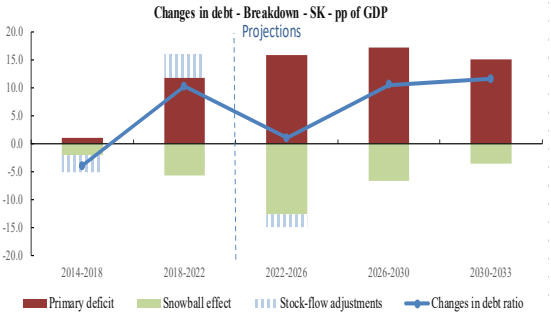
Government's contingent liability risks from banking sector - SK (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	5.5	6.4	111.5	1.5	-0.3	43.8	0.04%	0.71%

6. Realism of baseline assumptions









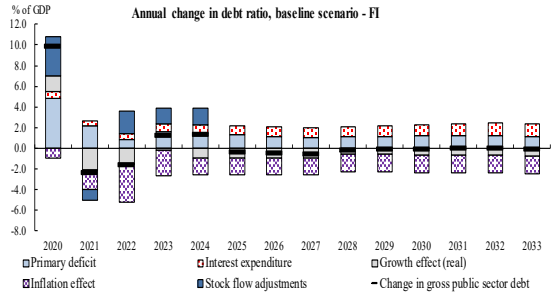
7. Underlying macro-fiscal assumptions

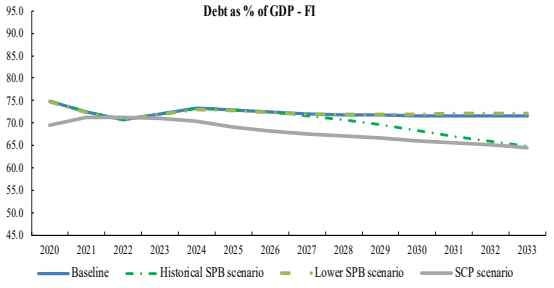
Macro-fiscal assumptions, Slovakia	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	59.6	57.4	57.4	68.0	74.5	82.6	58.1	69.1	66.4
Primary balance	-3.2	-4.8	-3.6	-4.4	-4.8	-5.2	-3.9	-4.4	-4.3
Structural primary balance (before CoA)	-3.2	-4.5	-3.3	-3.3	-3.3	-3.3	-3.7	-3.3	-3.4
Real GDP growth	1.9	0.5	1.9	1.4	1.6	1.6	1.4	1.5	1.5
Potential GDP growth	1.4	1.6	1.6	1.4	1.6	1.6	1.5	1.4	1.4
Inflation rate	7.5	12.2	4.9	3.4	2.8	2.4	8.2	3.4	4.6
Implicit interest rate (nominal)	1.8	1.9	2.1	2.2	2.4	2.6	1.9	2.3	2.2
Gross financing needs	4.3	6.1	5.5	8.4	9.5	10.7	5.3	8.5	7.7
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	60.0	59.0	58.0	57.7	59.3	62.2	59.0	57.9	58.5
Primary balance	-3.1	-1.9	-0.9	-2.2	-2.7	-3.1	-2.0	-1.9	-2.3
Structural primary balance (before CoA)	-3.2	-2.2	-1.0	-1.0	-1.0	-1.0	-2.1	-1.0	-1.6
Real GDP growth	5.3	4.0	2.9	2.8	2.6	2.0	4.1	2.6	3.0
Gross financing needs	6.1	4.8	4.3	6.1	6.8	7.5	5.1	5.7	5.7
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	59.6	57.4	57.4	65.1	69.3	75.2	58.1	65.9	63.9
Primary balance	-3.2	-4.8	-3.6	-3.4	-3.7	-4.1	-3.9	-3.6	-3.6
Structural primary balance (before CoA)	-3.2	-4.5	-3.3	-2.2	-2.2	-2.2	-3.7	-2.4	-2.7
Real GDP growth	1.9	0.5	1.9	1.6	1.8	1.6	1.4	1.5	1.5
Gross financing needs	4.3	6.1	5.5	7.3	8.1	9.1	5.3	7.5	6.9
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	59.6	57.4	57.5	68.2	74.8	82.9	58.2	69.3	66.5
Implicit interest rate (nominal)	1.8	2.0	2.1	2.3	2.4	2.6	2.0	2.3	2.2
Gross financing needs	4.3	6.1	5.6	8.4	9.6	10.8	5.3	8.6	7.7
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	59.6	57.0	56.3	67.2	73.9	82.1	57.6	68.3	65.7
Primary balance	-3.2	-4.0	-3.5	-4.4	-4.9	-5.3	-3.5	-4.4	-4.2
Structural primary balance (before CoA)	-3.2	-3.3	-3.4	-3.4	-3.4	-3.4	-3.3	-3.4	-3.4
Real GDP growth	1.9	-0.4	3.1	1.4	1.6	1.6	1.6	1.4	1.5
Gross financing needs	4.3	4.9	5.4	8.4	9.5	10.7	4.9	8.5	7.6
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	59.6	57.7	58.0	68.5	75.0	83.1	58.4	69.6	66.8
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	4.3	6.1	5.6	8.4	9.6	10.8	5.3	8.6	7.7
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	59.6	57.7	58.0	70.5	78.1	87.4	58.4	71.8	68.4
Implicit interest rate (nominal)	1.8	1.9	2.2	2.5	2.7	3.0	2.0	2.5	2.4
Real GDP growth	1.9	0.0	1.4	0.9	1.1	1.1	1.1	1.0	1.0
Gross financing needs	4.3	6.1	5.6	8.7	10.0	11.4	5.3	8.9	8.0

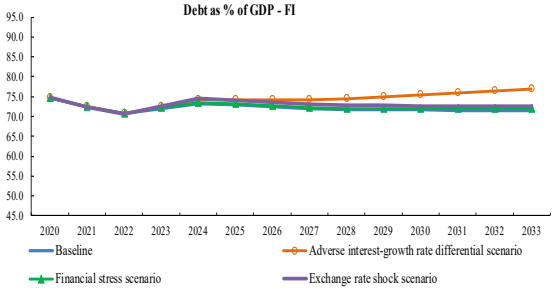
Finland

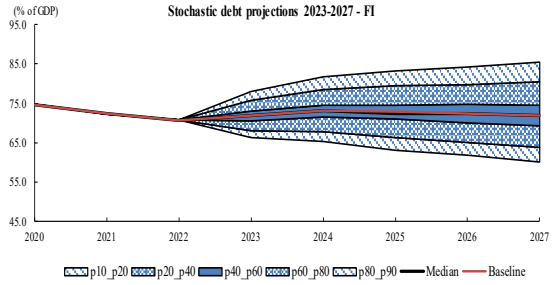
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

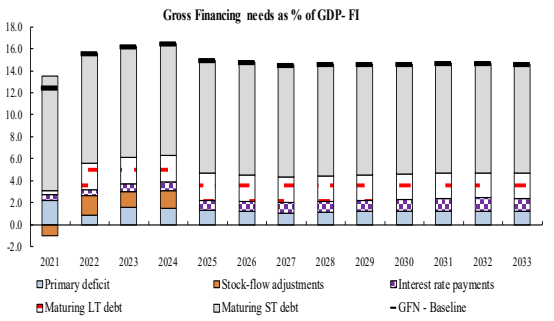
FI - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**74.8**	**72.4**	**70.7**	**72.0**	**73.3**	**72.9**	**72.5**	**71.9**	**71.8**	**71.7**	**71.6**	**71.6**	**71.6**	**71.5**
Changes in the ratio (-1+2+3)	*9.9*	*-2.4*	*-1.6*	*1.2*	*1.3*	*-0.4*	*-0.4*	*-0.6*	*-0.2*	*-0.1*	*-0.1*	*0.0*	*0.0*	*-0.1*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-4.8**	**-2.2**	**-0.8**	**-1.6**	**-1.4**	**-1.3**	**-1.2**	**-1.0**	**-1.1**	**-1.2**	**-1.2**	**-1.2**	**-1.2**	**-1.2**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-3.2***	***-1.5***	***-0.6***	***-0.8***	***-0.8***	***-0.9***	***-1.0***	***-1.0***	***-1.1***	***-1.2***	***-1.2***	***-1.2***	***-1.2***	***-1.2***
(1.1.1) Structural primary balance (bef. CoA)	*-3.2*	*-1.5*	*-0.6*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*	*-0.8*
(1.1.2) Cost of ageing					*0.0*	*0.1*	*0.2*	*0.3*	*0.4*	*0.5*	*0.6*	*0.6*	*0.6*	*0.5*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
(1.2) Cyclical component	***-1.6***	***-0.6***	***-0.3***	***-0.8***	***-0.7***	***-0.5***	***-0.2***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**1.2**	**-3.4**	**-4.6**	**-1.9**	**-1.7**	**-1.7**	**-1.6**	**-1.6**	**-1.3**	**-1.2**	**-1.3**	**-1.3**	**-1.2**	**-1.3**
(2.1) Interest expenditure	*0.7*	*0.5*	*0.6*	*0.7*	*0.8*	*0.9*	*0.9*	*0.9*	*1.0*	*1.0*	*1.1*	*1.1*	*1.2*	*1.2*
(2.2) Growth effect	*1.4*	*-2.1*	*-1.6*	*-0.2*	*-1.0*	*-1.0*	*-0.9*	*-0.9*	*-0.6*	*-0.6*	*-0.7*	*-0.7*	*-0.7*	*-0.8*
(2.3) Inflation effect	*-0.9*	*-1.9*	*-3.7*	*-2.5*	*-1.5*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.6*	*-1.7*	*-1.7*	*-1.7*	*-1.7*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**3.8**	**-1.1**	**2.2**	**1.5**	**1.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*3.9*	*-1.0*	*1.8*	*1.4*	*1.6*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*0.0*	*-0.1*	*0.4*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-3.9	-2.1	-1.1	-1.5	-1.6	-1.7	-1.9	-2.0	-2.1	-2.2	-2.3	-2.3	-2.4	-2.4
Gross financing needs	19.7	12.4	15.5	16.1	16.5	15.0	14.8	14.5	14.6	14.6	14.6	14.6	14.7	14.6

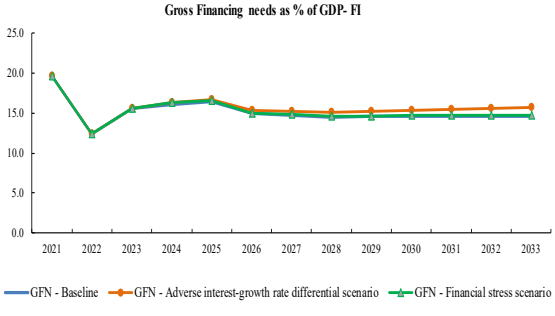












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	MEDIUM	Overall	LOW	LOW	LOW	MEDIUM	LOW	MEDIUM	MEDIUM	LOW	MEDIUM
		Debt level (2033), % GDP	71.5	64.7	72.1	76.9	71.9				
		Debt peak year	2024	2024	2024	2033	2024				
		Fiscal consolidation space	97%	86%	97%	97%	97%				
		Probability of debt ratio exceeding in 2027 its 2022 level						55%			
		Difference between 90th and 10th percentiles (pps. GDP)						25.4			

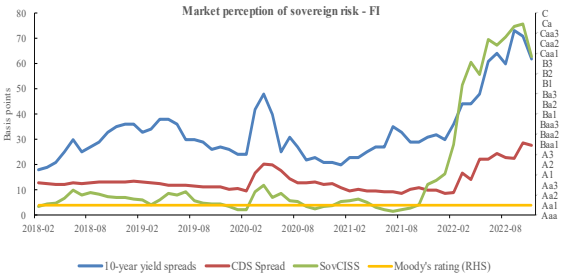
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.3**	**0.2**	**0.5**
Fiscal sub-index	0.4	0.2	0.4
Financial competitiveness sub-index	0.3	0.2	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**3.0**	**3.0**	**3.3**	**5.4**
of which Initial Budgetary position	1.0	1.1	1.1	1.1
Ageing costs	2.0	1.9	2.1	4.3
of which Pensions	*0.4*	*0.5*	*0.8*	*0.5*
Health care	*0.7*	*0.6*	*0.6*	*1.4*
Long-term care	*1.7*	*1.6*	*1.6*	*3.2*
Others	*-0.8*	*-0.8*	*-0.8*	*-0.8*
Required structural primary balance related to S2	**2.3**	**2.2**	**2.5**	**4.6**

S1 indicator		2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index		**1.1**	**1.4**	**2.4**
of which *Initial budgetary position*		*0.0*	*0.1*	*0.0*
Debt requirement		*0.3*	*0.3*	*0.3*
Ageing costs		*0.7*	*1.0*	*2.1*
Required structural primary balance related to S1		**0.3**	**0.6**	**1.7**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	62.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - FI (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	10.7	2.5	51.8

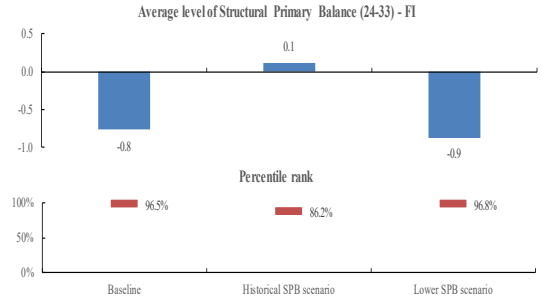
Net International Investment Position (IIP) - FI (2021)	Net IIP (% GDP):
	-1.4

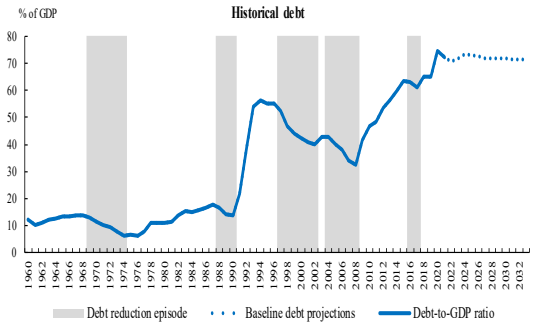
5. Risks related to government's contingent liabilities

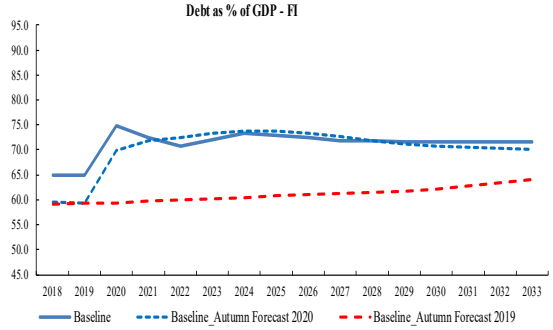
General government contingent liabilities		FI						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		27.8	23.7	15.3	15.5	16.7	17.0	7.5
of which One-off guarantees		*26.7*	*22.4*	*22.8*	*13.8*	*14.8*	*15.0*	*6.4*
Standardised guarantees		*1.1*	*1.2*	*1.5*	*1.7*	*1.9*	*2.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

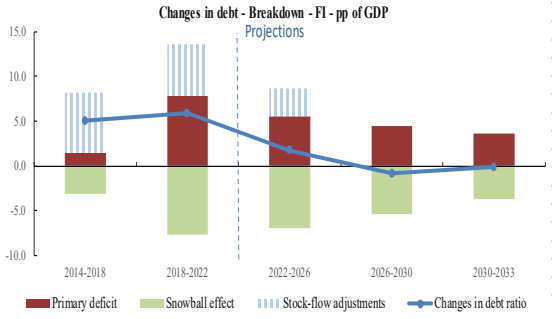
Government's contingent liability risks from banking sector - FI (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	6.1	4.6	162.5	1.1	-0.3	30.2	0.03%	0.29%

6. Realism of baseline assumptions









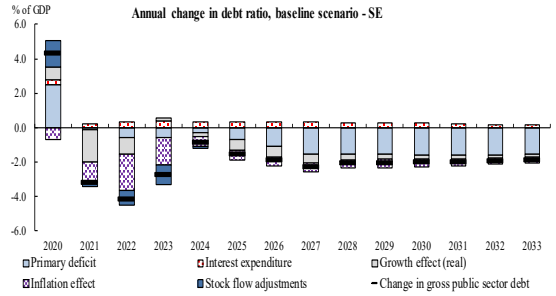
7. Underlying macro-fiscal assumptions

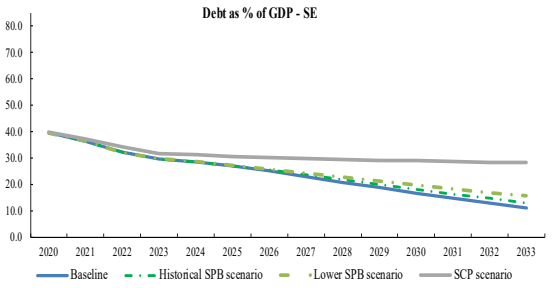
Macro-fiscal assumptions, Finland	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.7	72.0	73.3	71.7	71.6	71.5	72.0	71.9	71.9
Primary balance	-0.8	-1.6	-1.4	-1.2	-1.2	-1.2	-1.3	-1.2	-1.2
Structural primary balance (before CoA)	-0.6	-0.8	-0.8	-0.8	-0.8	-0.8	-0.7	-0.8	-0.7
Real GDP growth	2.3	0.2	1.4	0.9	1.0	1.2	1.3	1.1	1.2
Potential GDP growth	1.7	1.2	1.2	0.9	1.0	1.2	1.4	1.0	1.1
Inflation rate	5.3	3.7	2.2	2.4	2.4	2.4	3.7	2.3	2.7
Implicit interest rate (nominal)	0.9	1.1	1.2	1.5	1.6	1.8	1.0	1.5	1.4
Gross financing needs	15.5	16.1	16.5	14.6	14.6	14.6	16.0	14.7	15.0
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	71.2	71.0	70.3	66.6	65.5	64.5	70.8	67.3	68.2
Primary balance	-2.0	-1.0	-1.0	-1.3	-1.3	-1.3	-1.3	-1.2	-1.4
Structural primary balance (before CoA)	-1.7	-1.2	-0.9	-0.9	-0.9	-0.9	-1.2	-0.9	-1.1
Real GDP growth	2.8	2.3	0.7	1.1	1.4	1.4	2.0	1.2	1.6
Gross financing needs	10.0	9.9	8.6	9.4	9.7	9.6	9.5	9.2	9.5
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.7	72.0	73.3	69.6	67.0	64.7	72.0	69.2	69.9
Primary balance	-0.8	-1.6	-1.4	-0.3	0.0	0.0	-1.3	-0.4	-0.6
Structural primary balance (before CoA)	-0.6	-0.8	-0.8	0.4	0.4	0.4	-0.7	0.2	0.0
Real GDP growth	2.3	0.2	1.4	1.1	1.3	1.2	1.3	1.1	1.2
Gross financing needs	15.5	16.1	16.5	13.5	12.8	12.4	16.0	13.5	14.2
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.7	72.1	73.5	72.0	72.0	71.9	72.1	72.2	72.2
Implicit interest rate (nominal)	0.9	1.3	1.2	1.5	1.7	1.8	1.1	1.5	1.4
Gross financing needs	15.5	16.3	16.5	14.7	14.7	14.7	16.1	14.8	15.1
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.7	72.0	73.0	71.9	72.0	72.1	71.9	72.1	72.1
Primary balance	-0.8	-1.6	-1.4	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Structural primary balance (before CoA)	-0.6	-0.7	-0.9	-0.9	-0.9	-0.9	-0.7	-0.9	-0.8
Real GDP growth	2.3	0.2	1.8	0.9	1.0	1.2	1.4	1.1	1.2
Gross financing needs	15.5	16.1	16.3	14.7	14.8	14.8	16.0	14.8	15.1
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.7	72.6	74.5	72.7	72.6	72.5	72.6	73.0	72.9
Exchange rate depreciation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gross financing needs	15.5	16.3	16.7	14.8	14.8	14.8	16.2	14.9	15.2
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	70.7	72.4	74.2	75.0	75.9	76.9	72.4	75.2	74.5
Implicit interest rate (nominal)	0.9	1.2	1.3	1.7	1.9	2.1	1.1	1.8	1.6
Real GDP growth	2.3	-0.3	0.9	0.4	0.5	0.7	1.0	0.6	0.7
Gross financing needs	15.5	16.3	16.7	15.4	15.6	15.8	16.2	15.4	15.6

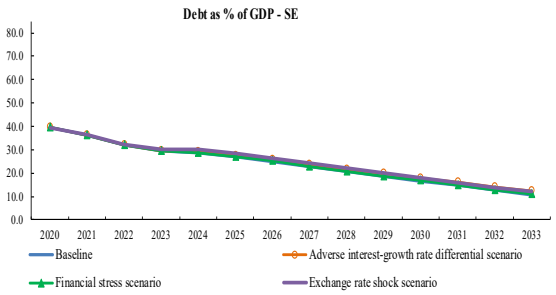
Sweden

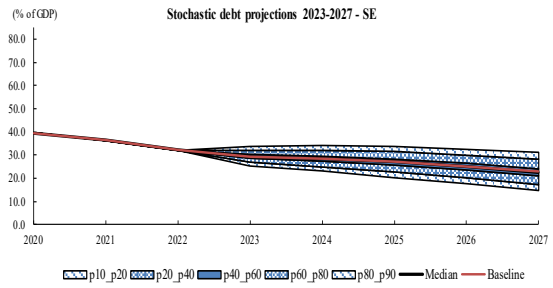
1. General Government Debt and financing needs projections under baseline and alternative scenarios and stress tests

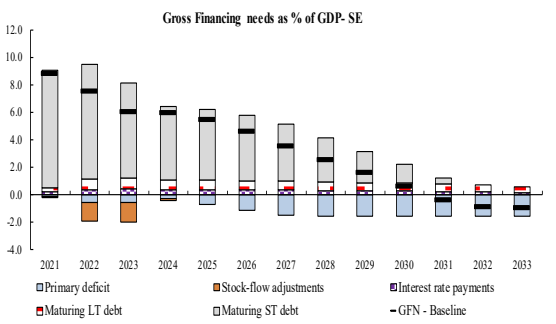
SE - Debt projections baseline scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross debt ratio	**39.5**	**36.3**	**32.1**	**29.4**	**28.5**	**27.0**	**25.1**	**22.8**	**20.7**	**18.7**	**16.7**	**14.7**	**12.7**	**10.9**
Changes in the ratio (-1+2+3)	*4.3*	*-3.2*	*-4.2*	*-2.7*	*-0.9*	*-1.6*	*-1.9*	*-2.3*	*-2.1*	*-2.0*	*-2.0*	*-2.0*	*-1.9*	*-1.9*
of which														
(1) Primary balance (1.1+1.2+1.3)	**-2.5**	**0.1**	**0.6**	**0.6**	**0.3**	**0.7**	**1.1**	**1.5**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**	**1.5**
(1.1) Structural primary balance *(1.1.1-1.1.2+1.1.3)*	***-0.5***	***0.5***	***0.3***	***1.4***	***1.5***	***1.5***	***1.5***	***1.5***	***1.6***	***1.6***	***1.6***	***1.6***	***1.6***	***1.5***
(1.1.1) Structural primary balance (bef. CoA)	*-0.5*	*0.5*	*0.3*	*1.4*	*1.5*	*1.5*	*1.5*	*1.5*	*1.5*	*1.5*	*1.5*	*1.5*	*1.5*	*1.5*
(1.1.2) Cost of ageing					*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.2*	*-0.2*	*-0.2*	*-0.3*	*-0.3*	*-0.3*
(1.1.3) Others (taxes and property incomes)					*0.0*	*0.0*	*0.0*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.1*	*-0.2*	*-0.2*
(1.2) Cyclical component	***-2.0***	***-0.4***	***0.3***	***-0.8***	***-1.2***	***-0.8***	***-0.4***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(1.3) One-off and other temporary measures	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***
(2) Snowball effect (2.1+2.2+2.3+2.4)	**0.4**	**-2.8**	**-2.8**	**-1.0**	**-0.5**	**-0.9**	**-0.8**	**-0.7**	**-0.5**	**-0.5**	**-0.4**	**-0.4**	**-0.4**	**-0.3**
(2.1) Interest expenditure	*0.3*	*0.2*	*0.3*	*0.4*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.3*	*0.2*	*0.2*	*0.2*	*0.2*
(2.2) Growth effect	*0.8*	*-1.9*	*-1.0*	*0.2*	*-0.2*	*-0.6*	*-0.6*	*-0.5*	*-0.3*	*-0.3*	*-0.3*	*-0.2*	*-0.2*	*-0.2*
(2.3) Inflation effect	*-0.7*	*-1.1*	*-2.2*	*-1.6*	*-0.6*	*-0.6*	*-0.5*	*-0.5*	*-0.5*	*-0.5*	*-0.4*	*-0.4*	*-0.4*	*-0.3*
(2.4) Exchange rate effect linked to the interest rate	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3) Stock-flow adjustments	**1.5**	**-0.3**	**-0.9**	**-1.2**	**-0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(3.1) Base	*1.6*	*0.0*	*-1.4*	*-1.5*	*-0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
(3.2) Adjustment due to the exchange rate effect	*-0.1*	*-0.2*	*0.5*	*0.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Pro memoria														
Structural balance	-0.7	0.3	-0.1	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4
Gross financing needs	12.6	8.9	7.5	6.1	6.0	5.5	4.7	3.6	2.6	1.6	0.7	-0.4	-0.9	-1.0

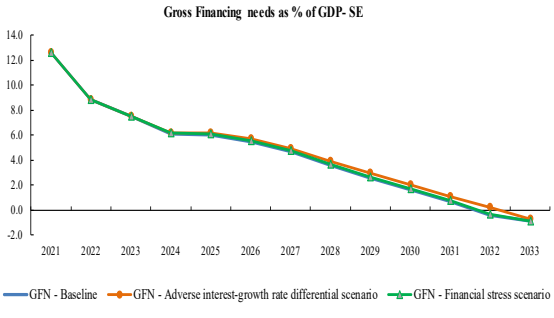












2. Risk classification and sustainability indicators summary tables

2.1. Risk classification summary table

Short term	Medium term - Debt sustainability analysis (DSA)								Long term		
			Deterministic scenarios								
Overall (S0)	Overall		Baseline	Historical SPB	Lower SPB	Adverse 'r-g'	Financial stress	Stochastic projections	S2	S1	Overall
LOW	LOW	Overall	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW	LOW
		Debt level (2033), % GDP	10.9	12.7	15.5	12.3	11.0				
		Debt peak year	2022	2022	2022	2022	2022				
		Fiscal consolidation space	61%	61%	72%	61%	61%				
		Probability of debt ratio exceeding in 2027 its 2022 level						8%			
		Difference between 90th and 10th percentiles (pps. GDP)						16.6			

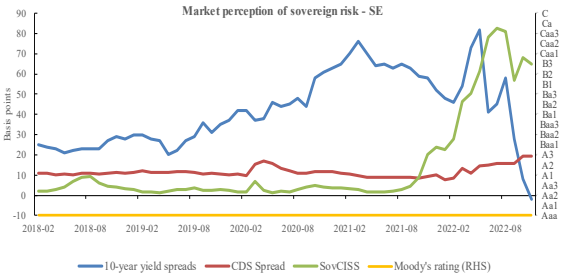
2.2. Sustainability indicators

S0 indicator	2009	2022	Critical threshold
Overall index	**0.3**	**0.2**	**0.5**
Fiscal sub-index	0.2	0.0	0.4
Financial competitiveness sub-index	0.4	0.3	0.5

S2 indicator	2021 FSR	2022 DSM Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**0.8**	**0.8**	**0.5**	**5.2**
of which Initial Budgetary position	-1.3	-1.3	-1.3	-1.3
Ageing costs	2.1	2.1	1.8	6.5
of which Pensions	*-0.1*	*0.0*	*-0.1*	*0.0*
Health care	*0.7*	*0.6*	*0.6*	*1.6*
Long-term care	*1.9*	*1.8*	*1.7*	*5.3*
Others	*-0.4*	*-0.4*	*-0.4*	*-0.4*
Required structural primary balance related to S2	**2.3**	**2.3**	**2.0**	**6.6**

S1 indicator	Baseline	2022 DSM Lower TFP growth	2022 DSM AWG risk scenario
Overall index	**-1.8**	**-1.8**	**0.6**
of which *Initial budgetary position*	*-1.8*	*-1.8*	*-1.8*
Debt requirement	*-0.8*	*-0.8*	*-0.8*
Ageing costs	*0.9*	*0.8*	*3.2*
Required structural primary balance related to S1	**-0.3**	**-0.3**	**2.1**

3. Financial information



Sovereign yield spreads (bp)* - as of November 2022	10-year	-2.0

4. Risks related to the structure of public debt financing and net International Investment Position

Public debt structure - SE (2021)	Share of short-term government debt (%):	Share of government debt in foreign currency (%):	Share of government debt by non-residents (%):
	24.9	3.4	19.1

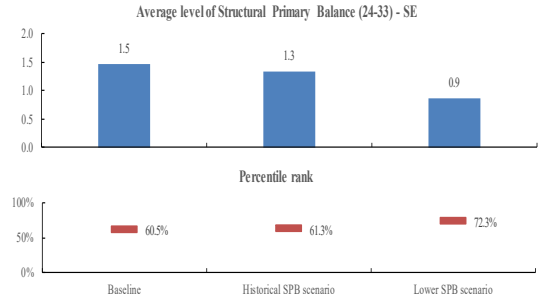
Net International Investment Position (IIP) - SE (2021)	Net IIP (% GDP):
	21.2

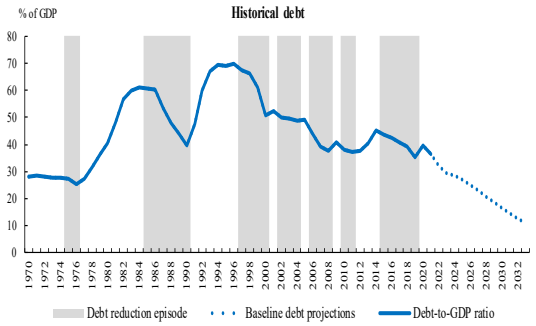
5. Risks related to government's contingent liabilities

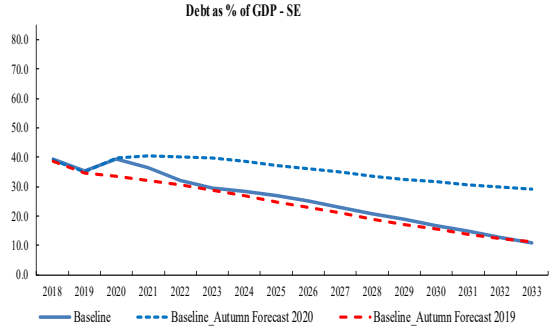
General government contingent liabilities		SE						EU
		2016	2017	2018	2019	2020	2021	2021
State guarantees (% GDP)		11.9	10.6	11.2	11.1	12.1	11.8	7.5
of which One-off guarantees		*10.5*	*9.8*	*10.0*	*11.1*	*12.1*	*11.8*	*6.4*
Standardised guarantees		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*1.1*
Public-private partnerships (PPPs) (% GDP)		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.3*
		2016	2017	2018	2019	2020	2021	2021
Contingent liabilities of gen. gov. related to support to financial institutions (% GDP)	Liabilities and assets outside gen. gov. under guarantee	0.0	0.0	0.0	0.0	0.0	0.0	0.9
	Securities issued under liquidity schemes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Special purpose entity	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	0.0	0.0	0.0	0.0	0.0	0.0	0.9

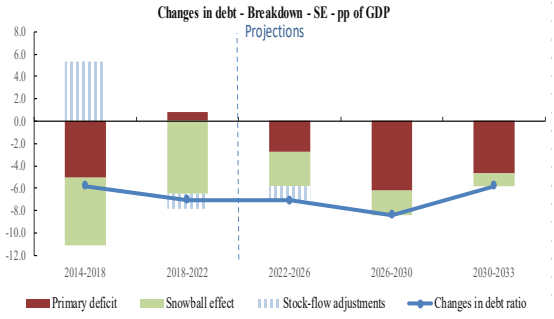
Government's contingent liability risks from banking sector - SE (2022)	Private sector credit flow (% GDP):	Change in nominal house price index (p.p.):	Bank loans-to-deposits ratio (%):	Share of non-performing loans (%):	Change in share of non-performing loans (p.p):	NPL coverage ratio (%)	Probability of gov't cont. liabilities (>3% of GDP) linked to banking losses and recap needs (SYMBOL):	
							Baseline	Stressed
	16.6	10.1	166.8	0.3	-0.1	51.3	0.03%	0.07%

6. Realism of baseline assumptions









7. Underlying macro-fiscal assumptions

Macro-fiscal assumptions, Sweden	Levels						Averages		
1. Baseline scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	32.1	29.4	28.5	18.7	14.7	10.9	30.0	18.8	21.6
Primary balance	0.6	0.6	0.3	1.6	1.6	1.5	0.5	1.4	1.2
Structural primary balance (before CoA)	0.3	1.4	1.5	1.5	1.5	1.5	1.0	1.5	1.4
Real GDP growth	2.9	-0.6	0.8	1.5	1.4	1.6	1.1	1.7	1.6
Potential GDP growth	1.6	1.5	1.5	1.5	1.4	1.6	1.5	1.5	1.5
Inflation rate	6.3	5.2	2.0	2.3	2.4	2.4	4.5	2.3	2.8
Implicit interest rate (nominal)	1.0	1.3	1.2	1.4	1.4	1.3	1.2	1.3	1.3
Gross financing needs	7.5	6.1	6.0	1.6	-0.4	-1.0	6.5	1.8	3.0
2. SCP scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	34.2	31.7	31.1	29.2	28.6	28.1	32.3	29.5	30.7
Primary balance	0.5	0.1	-0.3	-0.5	-0.5	-0.5	0.1	-0.4	-0.4
Structural primary balance (before CoA)	0.8	-0.1	-0.6	-0.6	-0.6	-0.6	0.0	-0.6	-0.4
Real GDP growth	3.5	3.0	2.0	1.7	1.5	1.8	2.8	1.7	2.1
Gross financing needs	5.3	4.3	4.7	5.2	5.4	5.4	4.8	5.1	5.2
3. Historical SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	32.1	29.4	28.5	20.0	16.3	12.7	30.0	19.9	22.5
Primary balance	0.6	0.6	0.3	1.3	1.4	1.4	0.5	1.2	1.0
Structural primary balance (before CoA)	0.3	1.4	1.5	1.3	1.3	1.3	1.0	1.3	1.3
Real GDP growth	2.9	-0.6	0.8	1.6	1.6	1.6	1.1	1.7	1.6
Gross financing needs	7.5	6.1	6.0	2.5	0.8	-0.7	6.5	2.5	3.5
4. Financial stress scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	32.1	29.5	28.6	18.8	14.8	11.0	30.1	18.9	21.7
Implicit interest rate (nominal)	1.0	1.6	1.2	1.4	1.4	1.3	1.3	1.4	1.3
Gross financing needs	7.5	6.2	6.1	1.7	-0.3	-0.9	6.6	1.9	3.0
5. Lower SPB scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	32.1	29.7	28.5	21.1	18.2	15.5	30.1	21.2	23.4
Primary balance	0.6	0.1	0.4	1.0	1.0	0.9	0.4	0.9	0.8
Structural primary balance (before CoA)	0.3	0.6	0.9	0.9	0.9	0.9	0.6	0.9	0.8
Real GDP growth	2.9	0.1	1.6	1.5	1.4	1.6	1.5	1.6	1.6
Gross financing needs	7.5	6.8	6.1	3.3	2.2	1.1	6.8	3.4	4.2
6. Exchange rate depreciation scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	32.1	30.2	30.0	19.9	15.9	12.0	30.8	20.1	22.7
Exchange rate depreciation	0.0%	6.5%	6.5%	0.0%	0.0%	0.0%	4.3%	0.0%	1.1%
Gross financing needs	7.5	6.3	6.3	1.9	0.1	-0.9	6.7	2.1	3.3
7. Adverse interest-growth rate differential scenario	**2022**	**2023**	**2024**	**2029**	**2031**	**2033**	**2022-24**	**2025-33**	**2022-33**
Gross public debt	32.1	29.6	28.9	19.8	16.0	12.3	30.2	19.9	22.5
Implicit interest rate (nominal)	1.0	1.4	1.3	1.5	1.5	1.4	1.3	1.5	1.4
Real GDP growth	2.9	-1.1	0.3	1.0	0.9	1.1	0.7	1.2	1.1
Gross financing needs	7.5	6.2	6.1	2.0	0.2	-0.9	6.6	2.1	3.2

ANNEX A9
Data sources and information

COUNTRY FICHES – DATA SOURCES AND INFORMATION

The projections presented in this report are based on the Commission 2022 autumn forecast and on the EPC-Commission Ageing Report 2021. The cut-off date for the preparation of the report was 31 October 2022, in line with the Commission 2022 autumn forecast. However, for some additional indicators, more recent information has been used.

Projections and fiscal sustainability indicators

Overall approach

See Annex A1 for a general presentation of the Commission's multi-dimensional approach, indicators, decision trees and thresholds underpinning the risk classification.

Short term

S0 indicator – Early-detection indicator of fiscal stress based on 25 fiscal and financial-competitiveness variables, including government gross financing needs. See Chapter 1, Box 1.1 and Annex A2.

Medium term

Debt sustainability analysis (DSA) – A set of *deterministic projections* including a baseline and alternative scenarios and stress tests (see Section 2.1 and Box 1 in the Introduction) and *stochastic projections* (see Section 2.2 and Annex A4).

Long term

S2 indicator – Long-term sustainability gap indicator measuring the permanent adjustment in the structural primary balance, compared to the baseline, required to stabilise public debt over the long term (see Section 3.1 and Annex A5).

S1 indicator – Long-term sustainability gap indicator measuring the permanent adjustment in the structural primary balance, compared to the baseline, required to reach a debt-to-GDP ratio of 60% by 2070 (see Section 3.2 and Annex A5).

Financial information

Market perception of sovereign risk

10-year bond yield spreads to the German Bund – ECB, Interest rate statistics database, Long-term interest rate for convergence purposes, 10 years maturity, Denominated in Euro, Basis points, Monthly average.

5-year Credit Default Swap (CDS) spread – Capital IQ database, provided by S&P Global, Daily close, Basis points, Extracted on January 2021.

SovCISS – Composite Indicator of Sovereign Stress – ECB, Pure number, Monthly, Available for 11 euro area countries (AT, BE, DE, ES, FI, FR, EL, IE, IT, NL, PT).

Moody's sovereign credit rating – Local currency long-term sovereign credit rating, Moody's, downloaded in December 2022.

Additional mitigating and aggravating factors

Risks related to the structure of government debt, the net international investment position and contingent liabilities (see Sections 4 and 5 below). The qualification of factors is based either on thresholds derived from a signalling approach or on a comparison with other Member States or the EU average.

Risks related to the structure of government debt financing and net International Investment Position

Government debt structure

Share of short-term government debt – Eurostat, 2022 data, General government consolidated gross debt, Original maturity of less than 1 year, as % of total, available for all countries except NL.

Share of short-term government debt (for the NL) – Eurostat, 2022 data, General government, % of GDP, Government consolidated gross debt at face value (Currency and Deposits, Short-term debt securities, Short-term loans) as share of total government consolidated gross debt.

Share of government debt in foreign currency – Eurostat, 2022 data, Debt by currency of issue, General Government, Foreign Currency, % of total, Available for all countries except DK, EL, FI, and SE.

Share of government debt in foreign currency (for DK, FI, EL, and SE) – ECB, 2022 data, Government Finance Statistics (GFS) database, Maastricht debt, General Government, Consolidated, All original maturities, Denominated in national currency; Denominated in currencies other than national currency and euro; Denominated in euro.

Share of government debt held by non-residents – Eurostat, 2022 data, General government consolidated gross debt, Rest of the world, Total-all maturities, % of total, Available for all countries except EL.

Net International Investment Position (IIP) – Eurostat, 2022 data, % of GDP.

Risks related to government's contingent liabilities

Risks related to government's contingent liabilities

Guarantees (State guarantees, one-off guarantees, and standardised guarantees) – Eurostat, 2022 data, % of GDP.

Public-private partnerships (PPPs) – Eurostat, 2022 data, % of GDP.

Contingent liabilities of general government related to support to financial institutions – Eurostat, 2022 data, % of GDP.

Government's contingent liability risks from the banking sector

Private sector credit flow – Eurostat (MIP scoreboard), 2022 data, % of GDP.

Change in nominal house price index – European Commission, DG ECFIN, Unit B1 House Price Database, 2022 data, y-o-y % change (2015=100).

Bank loan-to-deposit ratio – European Banking Authority (EBA), Risk indicator, Loan-to-deposit ratio for households and non-financial corporations, June 2022 data.

Share of non-performing loans – European Banking Authority (EBA), Risk indicator, Ratio of non-performing loans and advances (NPL ratio), June 2022 data.

Non-Performing Loans (NPL) coverage ratio – European Banking Authority (EBA), Risk indicator, Coverage ratio of non-performing loans and advances, June 2022 data.

SYMBOL model – Model estimating the potential impact of simulated bank losses on public finances (see Annex A6).

Realism of baseline projections

Percentile rank – Position of the average structural primary balance assumed in the projections in the country's past distribution of structural primary balances. The historical distributions start at the earliest in 1980, depending on data availability. The calculations use 3-year moving averages and exclude major crisis years, namely the Global Financial Crisis (2008-09) and the COVID-19 pandemic (2020-21).

Underlying macro-fiscal assumptions

See Box 1 in the Introduction.

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